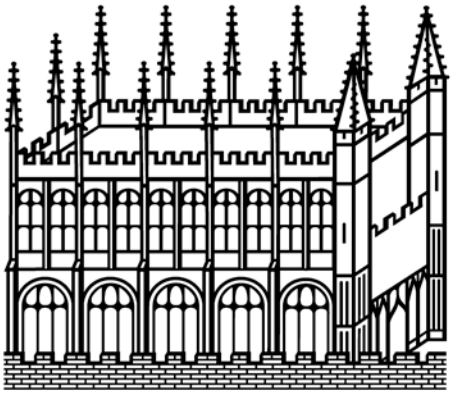


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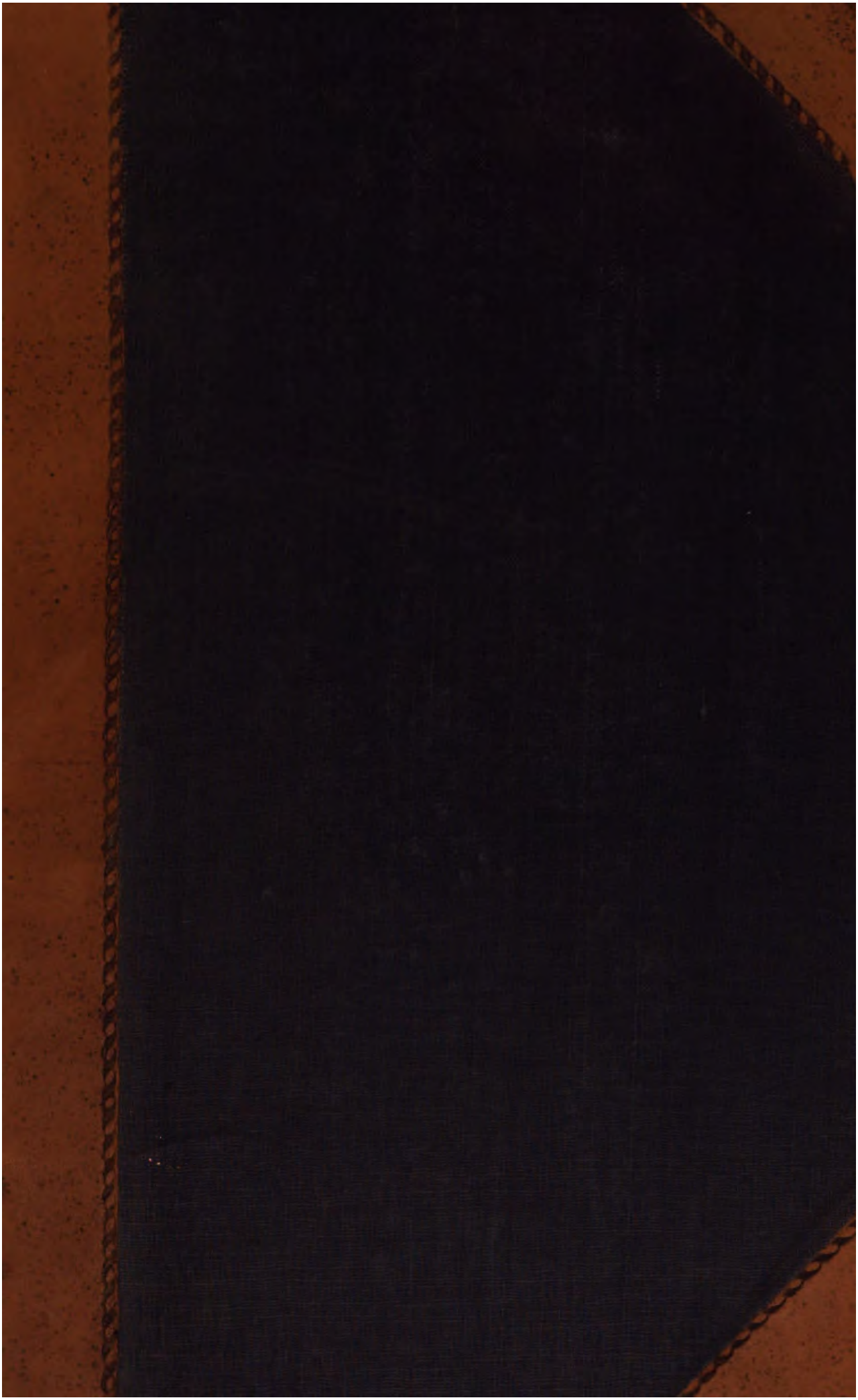
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THE

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2. *Die Verletzungen des Auges.* Von Dr. Adolf Zander und Dr. Arthur Geissler. 8vo, pp. 537. Leipzig und Heidelberg: 1864.

The Injuries of the Eye. By Dr. Adolf Zander and Dr. Arthur Geissler.

3. *Jaarlijksche Verslagen betrekkelijk de verpleging en het onderwijs in het Nederlandsch Gasthuis voor Ooglijders.* Door F. C. Donders. 1863—6. Utrecht: P. W. van de Weijer.

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4. *Ophthalmiatrische Beobachtungen.* Von Dr. Albert Mooren, dirigirendem Arzt der städtischen Augen-Klinik zu Düsseldorf. 8vo, pp. 345. Berlin: Hirschwald, 1867.

Ophthalmiatric Observations. By Dr. Albert Mooren, Chief Surgeon to the City Ophthalmic Hospital at Düsseldorf.

5. *Illustrations of some of the principal Diseases of the Eye, with a brief Account of their Symptoms, Pathology, and Treatment.* By Henry Power, F.R.C.S., M.B. Lond., Surgeon to the Westminster Ophthalmic Hospital; Assistant Surgeon to, and Lecturer on Physiology at, the Westminster Hospital. 8vo, Twelve Coloured Plates, pp. 631. London: 1867.

6. *The Royal London Ophthalmic Hospital Reports, and Journal of Ophthalmic Medicine and Surgery.* Edited by J. C. Wordsworth, J. W. Hulke, and J. Hutchinson. Vol. V. 1866. 8vo, pp. 399. London.

7. *Recent Advances in Ophthalmic Science.* The Boylston Prize Essay for 1865. By Henry W. Williams, M.D., Ophthalmic Surgeon to the City Hospital, Boston (U.S.), &c. &c. Small 8vo, pp. 166. Boston: 1866.

8. *Tension of the Eyeball; Glaucoma, &c. Some Account of the Operations practised in the Nineteenth Century for their relief.* By James Vose Solomon, F.R.C.S., Surgeon to the Birmingham and Midland Eye Hospital. 8vo, pp. 80. London: 1865.

9. *The Radical Cure of extreme divergent Strabismus.* By the same. 8vo, pp. 16. London: 1864.

10. *Lectures on Diseases of the Eye.* By N. C. Macnamara, Surgeon to the Calcutta Ophthalmic Hospital. 8vo, pp. 286. London: 1866.

Of the various works on ophthalmic surgery that are contained in the foregoing list, the first four possess one important character in common. Differing in their scope and objects, and thus requiring brief separate notices at our hands, they are alike in containing materials for a clinical history of one of the most serious diseases which the ophthalmic surgeon is called upon to treat—the so-called sympathetic ophthalmia. We purpose, therefore, in a few words to describe their separate aims and their respective merits; and then, at somewhat greater length, to analyse and compare their teaching upon the important subject to which we have referred.

Giving the first place to our own countryman, we hail with much pleasure Mr. Lawson's valuable contribution to medical literature. He has been fortunate in selecting a subject hitherto scarcely approached by writers, and he has treated it with great care, learning, and ability. The injuries of the eye must necessarily often fall into the hands of the nearest surgeon; and they are matters about which a full and explicit book of reference is especially required. The first attempt to supply this want was made by Mr. White Cooper; who, however, confined himself to the injuries of the eyeball, excluding those of the orbit and ocular appendages. Dr. Zander, of Chemnitz, and Dr. Geissler, of Meerane, both recognised the great utility of such a treatise, and both commenced to translate it into German. Their intentions became

known to each other, and led to a conference, which resulted in their determination to abandon their original project, and to write a new work on a more extended basis. Their 'Verletzungen des Auges,' delayed by the illness and death of Dr. Zander, was at length completed by his fellow-labourer, and was published, in two parts, in 1863 and 1864.

Mr. Lawson's treatise comes next in chronological order; and these three books form the whole of the systematic literature upon the subject.

The work of Mr. White Cooper, which appeared in 1859, and which was at the time fully noticed in this 'Review,' was unfortunate in being contemporaneous with a period of great change and active development in ophthalmic surgery; insomuch that, in some respects, it has become a record of the past rather than a trustworthy guide in the present. Drs. Zander and Geissler had the advantage of seeing the first-fruits of this period, before their labours were completed; and of writing when the uses of iridectomy were already established by abundant observation. Mr. Lawson, in his turn, has had time on his side; so that (for example) he has been able to introduce, into his section on traumatic cataract, a graphic description of the recent improvements in the methods of extracting the crystalline lens. Between works thus separated by their dates no comparison can be fairly instituted. It is enough to state that Mr. Lawson's treatise represents the most advanced ophthalmic surgery of the day; and that it is sufficiently full to meet all the probable requirements of practice. As a book of reference it is admirable; clear, concise, and properly dogmatic in its teaching. With its assistance, a surgeon not specially skilled in ophthalmology would treat, without misgiving, any accident to the eye that might be brought to him; and we trust that many of our readers will provide themselves with an ally so likely to be useful in emergencies. Those who are familiar with German, and who choose to have within reach facts and references about everything that has ever been done or written on the subject, will find their desires fulfilled by the 'Verletzungen des Auges.' Of the two works, the German is (almost as a matter of course) the most comprehensive in its plan, and the most copious in its details; and, if we were at all disposed to find fault with Mr. Lawson, we might complain that his book is too strictly a record of what is done at Moorfields. The wide and judicious eclecticism of that great hospital may almost justify a member of its staff in maintaining that its practice embraces the whole of ophthalmic surgery; but still, as a matter of fact, there are active minds at work elsewhere.

Mr. Lawson has written an excellent chapter on staphyloma; but in it he has not even mentioned Borelli's treatment by ligature, although this method, especially in partial cases, is described as yielding excellent results. This omission, and one or two others of less importance, scarcely detract from the general value of the book; and we only mention them for the sake of indicating the direction in which we shall look for improvement in a second edition.

The annual report of the Netherlands Ophthalmic Hospital may be regarded, we are informed, as the deliverance of Professor Donders upon the various points that his practice has brought prominently before him during the year. Many of the articles bear his name, and the rest are said to be written under his immediate influence and inspiration.

One of these, by Dr. J. J. Maats, on sympathetic ophthalmia, we select for further examination; and, in the meanwhile, we cannot but express our regret that matter so valuable should be published in the Dutch language. In the four reports lying before us, we find also, besides statistical records of great value, learned papers on a variety of abstruse questions connected with the optics and the physiology of vision; on the distribution of the ocular blood-vessels, by van Woerden and Donders; on visual disturbance in albuminuria, by van der Laan; on tumours within the eye, by Greve; and on the anatomical examination of extirpated eyes, by Rosow. All this wealth of scientific and important matter is printed in a dialect that bears about the same relation to German that Lowland Scotch does to English. We cannot but feel that this, even if it be patriotic, is inconvenient; and we trust that Professor Donders will in time take pity upon his readers all over the world, and will be content to write in some one of the languages that are commonly known to educated men. We presume that all Dutch practitioners must understand German; and that they could not be injured by that tongue being made the vehicle of future reports.

The ophthalmiatric observations of Dr. Mooren contain an account of the result of his experience as an ophthalmic surgeon, at Oedt and Düsseldorf, during the ten years ending in October, 1866. During this time, 32,425 persons came under his treatment for eye disease, and 5932 operations were performed upon them. He divides his book into twelve chapters, the first containing statistical tables, and the rest being devoted respectively to diseases of the orbit, of the eyelids, of the conjunctiva, of the lacrymal organs, of the cornea, of the sclera, of the choroid and iris, of the vitreous, of the lens, of the retina and optic nerves, and of the muscles and the

accommodation. On each of these subjects, Dr. Mooren writes from the fulness of his mind, and expresses the conclusions to which he has been guided by his wide experience. He is already too favorably known, as an observer and writer, to require from us any further commendation than that which is implied in the mere statement of the plan of his work; and we only regret that our space must limit our citations from it to a single subject. From the chapter on diseases of the choroïd and iris we select the section on sympathetic affections, as an example of the author's teaching, and for the purpose of comparing it with that of others.

The fact that disease occasionally extended itself from one eye to the other has long been known to careful observers, and was distinctly recognised by Beer, and still earlier by Himly. Mackenzie was, however, the first to bring the subject prominently before the profession, and to assign to the secondary disease the name of sympathetic ophthalmia, by which it has ever since been known. There seems reason to believe that this name has been employed to describe disorders very different in their nature, and in some of which the origin in sympathy was, at least, doubtful. In 1863 Mr. Critchett brought the subject before the Ophthalmological Congress at Heidelberg; and the discussion upon his paper, in which Donders, v. Graefe, Arlt, and others took part, has proved an important step towards the attainment of more exact knowledge.

Mr. Lawson says—

"There are *two* forms of sympathetic ophthalmia. The first, from being the slighter of the two, may be called sympathetic irritation. The second is the severe disease now so well known by the name of sympathetic ophthalmia."

With regard to the distinction between these two forms, Mr. Lawson is not clear. In one place he says that "sympathetic irritation seems to differ from sympathetic ophthalmia only in degree," and almost immediately afterwards that, in sympathetic irritation, "although the eye may be subjected to frequent recurrences of the attacks, yet no fibrinous effusions nor disorganizing changes of its different tissues take place." On the other hand, sympathetic ophthalmia "is essentially an adhesive or fibrinous inflammation. . . . Its tendency is to rapid plastic effusions, which soon become organized and incapable of absorption—blending the different tissues together, impairing their textures, and destroying their functions." Surely the difference here is not so much in degree as in kind.

Dr. Maats recognises at least three kinds of sympathetic disease of the eye, namely, sympathetic irido-cyclitis, sympathetic serous iritis, and sympathetic neurosis. He attributes at

least some of the discrepancies to be found in authors to a want of discrimination between these several forms.

Sympathetic irido-cyclitis corresponds to Mr. Lawson's second form, "the severe disease now so well known as sympathetic ophthalmia." The following case, condensed from Dr. Maats, furnishes a typical example:

"Herr H—, in August, 1863, suffered an extensive burn of his face from the bursting of a Papin's digester. The cornea of the right eye sustained a great loss of substance; and there was a small ulcer on the left also, but this healed perfectly without impairment of vision. In Feb. 1864 there was a very large staphyloma of the right eye, the left being normal in appearance and function. In the following April the staphyloma was removed by abscission in the ordinary way, and the perfectly clear lens escaped spontaneously. Within ten days the wound was so far closed that he was able to return home. At the end of April he came again, complaining of continuous pain in the stump of the eye operated upon. The stump was about two thirds of the normal size, very soft, painful, and the middle of the cicatrix presented a small suppurating spot. The left eye was not painful, and its vision was normal, but the vessels around the cornea were more than commonly injected. Counter-irritation was prescribed, and the patient was directed to return in two days. He remained away four days, and then came with irido-cyclitis, nearly total synechia posterior, vision about $\frac{3}{200}$. The stump of the right eye was at once enucleated, and iridectomy was performed upon the left. Notwithstanding this, and an active anti-phlogistic treatment, the irido-cyclitis continued, increased, and spread to the choroid, with acute supra-orbital pain, photopsia, and continually diminishing vision. By the end of June he scarcely saw the movement of a hand at one foot distance, and the aqueous humour was very turbid. In this state the patient (who had previously been under Dr. Moll, of the Hague) came to Prof. Donders at Utrecht.

"Professor Donders thought that he perceived swelling of the lens, and therefore resorted to iridectomy and extraction. The operation was done by a small flap, and without much trouble, but was attended by some loss of vitreous. The pain immediately decreased, the healing of the corneal wound proceeded favorably, but the eye remained a little too soft, and the opening in the iris closed. Nevertheless, the movements of a hand were seen at three feet distance, and colours were distinguished. Two months later the globe was still softer. An iridectomy was attempted; but the iris was very fragile, so that the piece seized by forceps tore away, and it could not be held by a hook. The eye wasted more and more, and became deeply grooved by the muscles. The perception of light continued good, and it may be hoped that it will remain."

With regard to the second form, the serous iritis, Dr. Maats writes as follows:

"We have yet to mention that, according to von Graefe, a less dangerous, simple serous iritis may be developed as a sympathetic ophthalmia; and Critchett coincides with this observation.

"There are also cases among those recorded by Pagenstecher that do not answer to the description of irido-cyclitis. It is evident that when a disease is common the proof of its sympathetic origin in any case is difficult to be given; and doubly so, when there is no determinate form of disease, in the eye first attacked, that can be assumed as the first step to the sympathetic ophthalmia. The indication assigned by Pagenstecher, that exertion of the yet comparatively normal eye increases the suffering of the diseased one, and that increase of the symptoms in the latter increases also the sympathetic symptoms, appears to us not entirely decisive. In cases of undoubted sympathetic irido-cyclitis there may be rather an alternation of disease between the two eyes than a simultaneous increase in both; and even improvement in the eye secondarily attacked, after enucleation of the other, is not positively proved. The most conclusive evidence would be, when between the seat of the inflammation in the two eyes a determinate link of union could be shown, as is the case in the typical form of sympathetic ophthalmia."

The third form of Dr. Maats, the sympathetic neurosis, corresponds to the sympathetic irritation of Mr. Lawson. Dr. Maats, however, recognises the most entire difference in *kind* between this affection and the sympathetic inflammation; although he admits the difficulty or impossibility of distinguishing in all cases the symptoms of developed sympathetic irritation from those premonitory of inflammation. Still, he would attribute this difficulty to the imperfection of diagnosis, not to any tendency on the part of one affection to glide into the other. Of his sympathetic neurosis he says that, while it may, for the time, entirely disable the eye, it has no tendency, however long continued, to produce any structural change; and that it is cured, immediately and perfectly, by the removal of the eye causing the irritation. The following case is an example:

"A blacksmith received a wound of the right eye from a piece of iron, causing laceration of the retina. Inflammation followed, and vision was lost. After a short time, and while the eye was still painful, he returned to his work. A few days later the left eye also was struck by a piece of iron, and the man was obliged to leave his work again. The eye became red, painful, sensitive to light, and was continually weeping. The man thought it was as certainly lost as the other. For two years he remained in the same condition, the pain continuing day and night, and his face deformed by photophobia. He could not readily distinguish large objects."

"Examination discovered that the right eye was atrophied, irritated, and painful. The left eye was opened with difficulty, and displayed a clear cornea, a normal iris, and a small clear pupil. In the belief that the left eye was suffering only from sympathetic

irritation, the right eyeball was removed. As soon as the patient recovered from the chloroform he said that all pain was gone from the left eye. Two hours afterwards he opened the eye as well as he had ever done, and Professor Donders found that the acuity of vision was normal. Ten days later he was supplied with an artificial eye, and discharged perfectly cured. His bowed-down head had become erect, his contorted face had recovered its natural expression, and he could scarcely have been recognised by those who had only seen him during his time of suffering.

"The case teaches that sympathetic neurosis may continue for two years in its most acute form without producing organic change. How far the blow from the piece of iron on the left eye had contributed to excite the irritation is hard to determine, but it is certain that the left eye showed no trace of any former injury, and that it suffered from no independent affection."

Dr. Maats is inclined to think that the cases described by writers, in which sympathetic ophthalmia, *actually established,* is said to have been arrested by the removal of the eye first affected, were really examples of irritation only. His experience teaches him that established sympathetic irido-cyclitis possesses an obstinate vitality of its own, quite independently of the cause in which it originated.

Besides these three forms, he calls attention to and briefly discusses cases of "doubtful sympathy;" and the question how far, apart from injury, the occurrence of sympathetic ophthalmia may be occasioned by internal inflammation, glaucomatous processes, &c. &c. On these points he arrives at no very definite conclusions, quotes von Graefe to the effect that the hypothesis of sympathetic influence should be accepted with great reservation, but not wholly excluded; calls attention to the probable existence of some common (*e. g.* constitutional) cause for the affection in both eyes; and, after citing some cases of probable sympathy, admits that, after all, proof of sympathy is wanting. He also quotes von Graefe, in order absolutely to exclude the idea of sympathy in glaucoma, and points out that in some diseases, such as recurrent iritis and suppurative panophthalmitis, the attack in one eye seems to exert an almost protective influence over the other—possibly on the principle of counter-irritation. He does not mention what seems to us a cogent point in the case, namely, the well-known fact that many diseases of clearly constitutional origin are almost always manifested first in one eye, and subsequently in the other. Inherited syphilitic keratitis, nerve atrophy, glaucoma, and senile cataract, all pursue a course on which a hypothesis of sympathy might be based, if it were not excluded by other considerations.

The following, recorded by v. Graefe, may be taken as an example of "doubtful sympathy:"

"The blind left eye of a man thirty-seven years old was soft, painful, with turbid aqueous humour, the iris vascular, chiefly at the margins of a previously made artificial pupil, swollen, and projected forwards; the lens turbid. From time to time there was slight ciliary neuralgia; the globe was generally painful when touched, and acutely so in the ciliary region. There was scarcely any perception of light. In the right eye the conjunctival vessels were somewhat prominent, the acuity of vision had sunk one third within a week; there was an appearance of cloudiness, with subjective sensations of light and colour. On careful examination, many hundreds of excessively fine points were found dotted over the posterior surface of the cornea, and visible by focal illumination (spots of iritis serosa). The commencement of the disorder by an increase of the symptoms in the left eye, the acute pain in the ciliary region, and the knowledge that, after injuries, such a serous iritis may be excited by sympathy, were the grounds for supposing this affection to be sympathetic. After enucleation the case progressed favorably. The points on Descemet's membrane became larger and more evident, but much less numerous, and at last entirely disappeared; the vascular injection and the subjective sensations disappeared also, and vision gradually returned, but all with the slowness peculiar to the affection. The examination of the extirpated eye, by Dr. Schweigger, tended to confirm the diagnosis. He found suppurative irido-choroiditis, pus in the vitreous body, atrophy with pigment deposit of the anterior half of the retina, and detachment of the posterior half."

If we now turn to Dr. Mooren, we find that he recognises many of the "doubtful" cases as instances of true sympathy. We shall perhaps treat him most fairly by placing an abstract of the whole of his remarks upon the subject before our readers. He says:—

"There were 37 cases of complete blindness from sympathetic disease, occasioned in the following manner:

Twelve times by wound of the sclerotica, with injury of the ciliary body at the same time.
Six times by phthisis bulbi of traumatic origin. Direct injury to the ciliary body could no longer be proved when the cases were seen; but was highly probable.
Seven times by reclination.
Four times by the formation of staphyloma.
Once by prolapsus iridis.
Once by choroiditis ectatica.
Three times by phthisis bulbi after irido-choroiditis, without injury.
Three times by detachment of the retina with subsequent irido-cyclitis.

"These 37 cases of blindness were in addition to another series of

sympathetic affections, which did not go on to an incurable stage. The causes of the disease, and the nature of the secondary maladies, are set forth in the following table:

Primary Disease.	*Secondary Disease.*
Nine times, reclination.	Nine times, arrested irido-cyclitis.
Twice, injury to the ciliary body by iris hook, in the dilaceration of capsular cataract.	Twice, acute irido-cyclitis.
Twice, phthisis bulbi traumatica.	Twice, irido-choroiditis.
Once, staphyloma formation.	Once, iritis.
Once, cretaceous lens deposit after choroiditis.	Once, cataracta accreta.
Once, action of an artificial eye upon a phthisical eyeball.	Once, irido-choroiditis.
Once, cyclitis spontanea.	Once, irido-choroiditis.
Once, glaucomatous choroiditis after teleangiectasia iridis.	Once, irido-choroiditis.
Twice, irido-choroiditis with participation of the ciliary body.	Twice, irido-choroiditis.

"In the nine first cases the reclination had been followed more or less quickly by irido-cyclitis, producing blindness of the eye operated upon. The previously and subsequently occurring absorption of the irritating lens, together with the antiphlogistic treatment that we may assume to have been employed,[1] had arrested the primary inflammation before the secondary had gained sufficient ground to possess the power of independent development. From two cases in which I slightly wounded the ciliary body with an iris hook, I infer that a certain persistence of the inflammation in the first eye is necessary to the production of destructive consequences in the second. In both cases, in operating for the dilaceration of capsule, the sharp point of the iris hook scratched the ciliary body. In consequence there occurred cyclitis, with severe ciliary neuralgia and slight hypopyon. Although the course of events in the eye injured was favorable, yet on the fourth day a slight iritis appeared in the other, and required the instillation of atropine. This secondary iritis first began to decline together with the primary cyclitis. That in neither of the two cases it proceeded to a profound sympathetic ophthalmia, I attribute entirely to the fact that the injury to the ciliary body was of a transient character, and too superficial to lead to a localisation of the resulting inflammation. The same passing influence in the production of sympathetic iritis was displayed by a staphylomatous eye. The morbid process was arrested by removal of the cretaceous lens through a transverse corneal section. Some have tried to convince me that the iritis of the second eye was possibly accidental and not sympathetic. This cannot be said in the last-mentioned case, in which the ciliary body of the staphylomatous eye was sensitive under pressure."

"There were thus twelve cases in which the primary cyclitis was

[1] It is hardly necessary to mention that Dr. Mooren would not himself perform reclination; and that these cases could only have been seen by him at a period subsequent to that operation.—Ed.

arrested (either by the removal or by the transitory character of its exciting cause) before its disturbing influence had been felt by the second eye in a sufficient degree to establish a sympathetic disease of independent character, capable of further spontaneous development.

"Of the remaining eight cases, there were six in which enucleation of the eye first diseased was performed, before an iridectomy to save the second eye could be thought of. Fortunately, considerable improvement of sight occurred in all of them, so much so that its preservation for the future, so far as human foresight extends, may be considered certain. I entertain no doubt whatever that, without enucleation of the eye first affected, and without iridectomy of the second, absolute blindness would have been the issue.

"In the other two cases, in which the primary disease appeared to be entirely arrested, enucleation was not performed, but only an iridectomy upon the second eye, to arrest the further development of the irido-choroiditis. The first case was one of teleangiectasia iridis; the second was in an old peasant woman, who, after being blind for years, recovered sufficient vision to count fingers across a room. These two cases are the only ones in which a spontaneous arrest of the primary disease occurred. Can we say that such an apparent arrest involves no further dangers for the second eye? As far as a single observation can decide, I think the question must be answered in the negative.

"A strong student, eighteen years of age, applied to me on account of long-standing impairment of vision of his left eye. As a little child he had been wounded in the ciliary body of the right eye by a sharp bit of iron. The injury attracted little notice, and the sight of the right eye was gradually destroyed by irido-cyclitis. Slight pain continued for some years, and at last entirely ceased. When I first saw the patient there was a slight concentric phthisis bulbi, the cornea was turbid from interlamellar deposit, there was no perception of light, and no tenderness on pressure. For about six years the left eye had been gradually losing ground; but, as the patient did not read or write much, the failure of sight attracted little notice. During the last six months it became so marked as to induce him to come to me. At that time No. 9 of Jaeger's types could only be read with great difficulty. The originally blue, but then green iris was united to the anterior capsule. Epithelial changes, chiefly in a stripe invading the transverse diameter of the cornea, had a fatty aspect. There could be no doubt about the existence of a sympathetic irido-cyclitis. As eleven years had elapsed since the original injury, and as the injured eye was insensitive to pressure, I thought that the primary inflammation had entirely ceased, and that enucleation was superfluous. An iridectomy of the second eye appeared to be sufficient. The firm adhesion of the iris, and the atrophy of its tissue, caused the operation to leave only an irregular opening. Vision was not improved, and in a few weeks the new pupil closed again. After this there was increased hyperæmia of the iris, with effusions of blood

into the anterior chamber. In spite of treatment the vision continued to fail. A second iridectomy, which at first made a good opening, produced no improvement; and at last the patient could only distinguish light from darkness.

"I never forgot that the sympathetic irido-cyclitis had proceeded so far, when I first saw the patient, as to possess the power of self-continuance. But notwithstanding this, and the absence of any evidence of the existence of the primary inflammation, I have often regretted that I did not perform enucleation. Although the prospect of thus saving vision was very remote, who can say but that it might have been realised? Besides the above case, I have seen three others in which, notwithstanding enucleation, the disease went on to blindness.

"The first of these cases was one of cyclitis of the left eye, that resisted iridectomy. The immediate effects were very good; but after a few weeks, without known cause, fresh signs of irritation appeared. The patient was a boy of thirteen; and I proposed to him another operation, without saying that I intended enucleation. Unfortunately he did not return, and I was not acquainted with his address. Ten days later I met him in the street, and was shocked to see that his previously sound eye was attacked by sympathetic irido-choroiditis. His father, who lived at a distance, was instantly summoned by telegraph; but, on account of the objection of the child, three more days were lost before enucleation could be performed. Neither this nor the subsequent iridectomy availed to arrest the progress of the disease. The eye became phthisical, and only perception of the movements of a hand remained.

"The second case, also in a boy, arose from a punctured wound of the ciliary body. The surgeon in attendance, who watched the case with extreme care, proceeded to immediate enucleation as soon as the commencement of sympathetic irido-choroiditis appeared in the sound eye. The inflammation went on; and, when I first saw the child, some weeks after the operation, vision was reduced to the difficult recognition of single letters of No. 19. The circular synechia resisted atropine; the vitreous was generally turbid. An iridectomy was performed, producing a wide opening, and appearing to promise a good result. After a few days the aqueous again became turbid, the coloboma smaller, the iris pushed forward, and the lens seemingly increased in size by intra-capsular cell proliferation. By the advice of Prof. v. Graefe, who was then in Düsseldorf, I applied warm compresses, under which the aqueous humour recovered its clearness, and the iris its position. Some months later a very large iridectomy was made, and the lens, which had become contracted, was at the same time removed. Notwithstanding the free pupil, vision was limited to the perception of the movements of a hand; and after a few weeks the pupil was again closed.

"The third case, with a similar unfortunate ending, occurred in a boy of thirteen, after a wound of the eyeball from a steel splinter. Notwithstanding early enucleation, irido-cyclitis attacked the other eye. At first the disease seemed to be checked, but after the lapse

of six months the pupil was again closed. A second iridectomy produced no improvement.

"Recapitulating these facts, we have, besides the thirty-seven cases first mentioned, four in which sympathetic disease, once established, went on to blindness notwithstanding enucleation. There were, therefore, twenty cases of arrest of sympathetic inflammation, against forty-one in which it terminated in absolute loss of sight.

"This is the dark side of the picture, and I turn from it to the results of treatment when the patient is seen sufficiently early. Fifty-five enucleations, performed under such circumstances, were in every case followed by perfectly favorable results. All patients to whom I explained their danger underwent the operation willingly, except two, who left to consult another surgeon, or at least not to return. In one of these cases I saw the patient again, totally blind, seven years after I had in vain warned him of the fate that awaited him. The tears of the poor fellow could not recall the past!

"The circumstances that rendered enucleation necessary were as follows:

Twenty-three times, wound of the anterior part of the sclerotic, or of the ciliary body.
Once, traumatic dislocation of the lens without rupture of the sclerotic.
Twice, cretaceous lenses.
Five times, staphyloma.
Once, irido-cyclitis after out-scooping of cataract.
Eleven times, non-traumatic irido-cyclitis.
Once, prolapsus iridis.
Once, detachment of the retina with consecutive irido-cyclitis.
Twice, glaucomatous choroiditis with frequently recurring effusions of blood into the anterior chamber.
Seven times, partial choroiditis ectatica.
Once, choroiditis purulenta.

"The causes of sympathetic disease may be referred, as far as my observations extend, to three wholly distinct groups:

"1. To direct wounding of the ciliary region.
"2. To some mechanical irritation of the ciliary body, either from the presence of a foreign substance—*e. g.* an artificial eye—or from a lens displaced, either by reclination, luxation, or staphyloma, &c. &c.
"3. To any inflammation of a part of the uveal tract when this reaches its culminating point in cyclitis.

"*In all the cases observed, tenderness of the ciliary body under pressure was the unfailing symptom that pointed out the danger of sympathetic disease.*

"*The mere impairment or limitation of the accommodation of the sound eye when taken alone has no significance as regards the risk of sympathetic disease; and first acquires an important significance when it occurs together with pain of the ciliary region.*

"*In the presence of the latter symptom the enucleation of the eye first diseased affords the only possibility of saving the second one.*

"I say 'possibility,' not 'probability,' since in all the fifty-five cases in which the conditions of sympathetic disease were present, and in which enucleation was performed in time, no outbreak of destructive inflammation occurred; while in thirty-seven cases in which enucleation was not performed, and in four cases in which it was performed too late, incurable blindness closed the scene. Although in some cases of reclination the sympathetic inflammation was arrested by the absorption of the lens, and in some cases of staphyloma by its removal, yet such a result is too uncertain for any expectation of it to be permitted to influence treatment, or to produce neglect of enucleation. Even in six cited cases of apparent arrest of inflammation there was no improvement of vision until enucleation was performed; and there remain only two cases in which arrest without enucleation occurred. This result is altogether outweighed by the cases of the young men in whom blindness was produced, although no symptom of any permanent influence of the original cyclitis could be discovered.

"When once the conditions for a destructive action upon the second eye are present the greatest care is necessary, in order not to make the sudden discovery that treatment will be 'too late.'

"A boy six years old was brought to me last year with the history that he had been playing near his father's anvil, and was struck on the ciliary region and slightly wounded by a flying particle of iron. The symptoms were so slight that the child was still running about; notwithstanding some intolerance of light and lacrymation that were ascribed to commencing strumous ophthalmia. The child came to me for the first time seven weeks after the accident, and the impending blindness from acute irido-cyclitis of both eyes was then imminent. An iridectomy was performed; but, as might have been expected, with no useful result. Three months only elapsed between the injury and total blindness; and it would seem from this and other cases that iridectomy can do very little, or even nothing, to check the course of an established sympathetic inflammation. It should, however, be performed while any glimmer of hope remains.

"Among the 116 cases observed there were 48 in which a wound of the ciliary body was either evident or probable from the direction and the history of the injury.

"Although sympathetic inflammation was less common after staphyloma than the frequency of that affection would have allowed us to expect, yet this is probably to be explained by the fact that, in by far the greater number of staphylomata, the new formation is removed before the lens has set up cyclitis. Since I have observed sympathetic ophthalmia, excited by the pressure of an artificial eye upon a wasted globe, I have never applied an artificial eye without first removing the lens. It appears that its presence is necessary to the setting up of chronic cyclitis, except in cases where the contraction of the cicatrix, after an injury, is itself a sufficient source of

permanent irritation. The occurrence of irido-cyclitis, after the out-scooping of cataract, was the result of bruising of the ciliary body by the use of traction instruments that were unsuited to the length of the section and the size of the lens.

"It is very remarkable that many observers deny the power of non-traumatic cyclitis, whether primary or arising as a complication, to excite sympathetic ophthalmia. My own opinion is entirely different from theirs. I am convinced that there are an infinite number of cases of amaurosis, after irido-choroiditis, referred to the operation of some supposed common cause, in which the second eye is attacked only through the influence of the first. If it were possible to watch the development of the disease in such cases from the beginning, it would be easy to obtain proof of such an opinion; but, for me, the small number of cases that I have seen afford evidence enough.

"The same applies to detachment of the retina. This condition is not of itself a cause of sympathetic ophthalmia, but only through the intermediation of cyclitis. In the summer of 1860 I was consulted by a gentleman with detachment of the retina of the left eye, and who had suffered during the year past from the most acute irido-cyclitis as a complication. The pain was so severe that the patient for many months was unable to lie down at night. All remedies had been fruitless, and the pain was seated in the upper and inner part of the ciliary body. Every attempt to use the accommodation of the right eye, which was myopic = $\frac{1}{3}$, with a high degree of sclerotico-choroiditis posterior, was followed by conjunctival hyperæmia and lacrymation. My proposal to perform enucleation was instantly accepted. The sympathetic phenomena were immediately relieved, and the patient was soon enabled to resume his office as a counsellor in a court of justice. Only a few months ago I saw him again, and the vision and power of work of his right eye had increased beyond all expectation.

"The cases of choroiditis ectatica that produced or rendered possible a sympathetic disease are so far especially remarkable that the disorganization was generally only partial. It seems as if the protrusion of the anterior segment of the eyeball by mechanical disturbance of the circulation was favorable to the development of cyclitis.

"Whether, as von Graefe supposes, the general increase of intra-ocular tension diminishes the probability of sympathetic disease, by diminishing the conducting power of the ciliary nerves, I am not in a position to say. Such an action is not unlikely; but it seems to be going too far to say that the outbreak of acute glaucoma in the second eye, immediately after an operation on the first, is not of a sympathetic character. If I may be allowed to form any conclusion from the small number of my observations, I must say that von Graefe's opinion has contributed to strengthen my assumption of a sympathetic influence. The four cases on which my observations rest were all remarkable for relative integrity of vision. With correction of the existing presbyopia No. 1 was read fluently; the field

of vision was not contracted, the sensibility of the cornea not diminished, and there was no coloured vision.

"When the tendency to glaucoma is present, there may yet have been no single symptom which has indicated the rapid, or unexpectedly speedy, outbreak of the disease in the second eye. As far as I am informed, all observers mention the unexpected outbreak of the second glaucoma, showing that the general conditions were such as to render this outbreak improbable. If, therefore, an attack of sympathetic glaucoma (admitting the expression) is observed in slight degrees of the malady, and only seldom in its higher degrees, there must be some connection between the phenomena by which the occurrence of the outbreak in the one case and its absence in the other may be explained. Von Graefe's opinion is in complete harmony with this, if we assume that the development of a sympathetic glaucoma can only take place when the diminution of the sensibility of the ciliary nerves is yet not very cousiderable, and when, under considerable increase of tension, these nerves retain their conducting power.

"That a certain degree of distension of the ciliary body, such as obtains in the early stage of increased intra-ocular tension, favours the development of sympathetic disease, is shown, I think, by the two following observations, in both of which a degenerated lens was removed from one eye. In both cases the original irido-choroiditis had been arrested by an iridectomy upwards and inwards; in one case four years, in the other two years, prior to the cataract operation; in both cases all appearance of inflammation had entirely ceased. Extraction of the cataracts by a superior corneal section required, in both cases, an enlargement of the opening left by the original iridectomy. The healing process was not interrupted until the fourth day, when in both cases iritis set in, pursuing by no means a violent course, but producing in a few days an outbreak of irido-cyclitis with hypopyon in the second eye, the one not operated upon. This secondary inflammation was first checked when the primary was arrested by treatment. I do not hesitate for an instant to ascribe this to a sympathetic influence. But such an effect would only be possible if the predisposing conditions for the development of sympathetic disease were already present in the second eye. It may seem a paradox, but is the expression of my own conviction, to say that the cause of this influence must be sought in the iridectomy, since the slight dragging upon the ligamentum pectinatum by the iris forceps produces a temporary, yet for the time actual, increased sensitiveness of the ciliary body. More cannot be said than that this effect of the operation, under favorable circumstances, is too slight to exert an influence upon the other eye; but I am in no way convinced that iridectomy can never produce any unworthy reaction."

"Be this as it may, the sympathetic influence of the ciliary body upon the second eye must in no way be underrated. Since I have observed that, in cases of purulent choroiditis, the greatest sensitiveness of the ciliary body to pressure may continue after the suppuration is completed, and may thus keep up the conditions necessary

for sympathetic ophthalmia, I have thought it prudent in such cases to proceed to the most speedy possible enucleation.

"It is scarcely necessary to mention that among the eyes removed on account of the presence of morbid growths, there were some in which the co-existence of active irido-cyclitis involved the possibility of sympathetic ophthalmia. These are not included in the foregoing numbers, since the primary condition for which removal was required was the morbid growth, and not the cyclitis.

"In 1859 I saw a case that simulated all the phenomena of cyclitis. An aged landowner of Westphalia had been operated upon for cataract of the left eye, by reclination, by a surgeon of his own locality. Vision was obtained for a week or two, and then failed, with continuous pain. When I first saw the patient the blindness was complete; at the lower part of the eye the lens was visible, shrunken, and calcareous. It was partly adherent to the posterior surface of the iris, but still freely moveable in the fluid vitreous. Since the operation the neuralgia had continued day and night, and in spite of all remedies. The pain was greatly increased by pressure upon the front half of the globe. All exertion of the other eye (in which there was no cataract) was rendered impossible, since abundant lacrymation and headache followed all employment of its accommodation.

"I did not doubt that I had to deal with a cyclitis favorable to the development of sympathetic disease, and therefore advised enucleation. The patient consented, with the reservation that an endeavour to remove the displaced lens should first be made. This was done, after a large iridectomy, by iris forceps. At the moment of extraction the pain was experienced in its greatest severity, a cold sweat covered the forehead of the patient, and his whole frame shook under the influence of the neuralgia.

"The pain gradually subsided, and after an opiate at night ceased, and did not return. From that time dated the perfect recovery of the patient; and in a few days all tenderness of the ciliary body had disappeared.

"Although all the symptoms, the presence of the displaced lens, the increased tenderness of the ciliary region under pressure, and, lastly, the hindered accommodation of the second eye, seemed to support my diagnosis of a cyclitis likely to produce sympathetic disease, yet the result proved this diagnosis to be erroneous. There was only a neuralgia, that might, perhaps, in course of time, have led to inflammation, but that did not actually amount to that condition. I have not seen any other case so remarkable.

"In most instances the sympathetic disease assumed the form of irido-cyclitis; and only once have I seen amaurosis produced by sympathetic serous choroiditis.

"It is well known that in former times sympathetic blindness was ascribed, not to the influence of the ciliary body, but to an extension of disease through the intermediation of the optic nerve. Upon the action of the ciliary body there is now no doubt, but is the action of the optic nerve excluded? Upon this question I have only the

light of a single observation, but this seems to me so convincing that it hardly requires a second.

"In the spring of 1860 I saw a poor weaver, who had just before lacerated the cornea and sclera of one eye with the brass-tipped point of a shuttle. Cataplasms were applied, and, two days later, on account of great pain about the wound, the eyeball was removed under chloroform. It unfortunately happened that, in dividing the optic nerve, the blades of the Cooper's scissors waddled a little, and contused the nerve trunk. The accident attracted no notice, and the patient was discharged as cured in a few days. In a few weeks he returned, complaining of increasing weakness of vision, photopsy, and weight over the brow. Although nothing was shown by the ophthalmoscope, yet I thought of the influence of the contused nerve-trunk, and, suspecting neuritis, ordered a seton to the neck and sublimate internally. The symptoms were not checked by this treatment, and vision had declined to No. 14. Since enucleation of the wounded eyeball had been performed two days after the original injury, I thought a sympathetic ophthalmia scarcely possible; but in order to meet the possibility betimes, before any trace of iritis could be seen, and more for my own satisfaction than from the presence of any necessity, I made an iridectomy. Intolerance of light continued after the wound had healed; and in November the patient could only decipher letters of No. 16. At the same time the optic disc presented a somewhat whitish aspect; and all doubt as to the presence of structural disease of the nerve was thus removed. Until May, 1862, I saw the patient from time to time; and the pallor of the disc increased until the lamina cribrosa became visible in patches. Since then the morbid process has been arrested, and vision has so far improved that the patient can read No. 12.

"In this case the disease was manifestly not produced by the first injury, but only by the contusion of the nerve-substance itself. The facts show, at least, that sympathetic amaurosis from disease of the optic nerve must not be ranked among impossibilities or improbabilities."

Mr. Lawson sums up his account of sympathetic ophthalmia in the following general conclusions:

"1. That it is a peculiar inflammation of one eye, originating solely from an irritation in the other.

"2. That the most frequent causes of sympathetic ophthalmia are—

"*α*. Penetrating wounds of the eye, and especially those which involve the ciliary region.

"*β*. Foreign bodies within the eye.

"*γ*. The irritation excited in the sound eye by degenerative changes taking place in the one already lost.

"3. That one of the great peculiarities of sympathetic inflammation is its tendency to the rapid effusion of lymph into all the tissues of the eye which it invades, capable of speedy organization.

"4. That the disease once started is very difficult to arrest; that it

is recurrent in its nature; and that, even if the first attack be arrested, a recurrence is almost certain to take place.

"5. That it is seldom, if ever, excited by a suppurative inflammation of the wounded eye.

"6. That the removal of the injured eye affords the best chance of arresting the disease; and if this operation is resorted to in its very early stage, there is a good prospect of its doing so.

"7. That if the symptoms of sympathetic ophthalmia are fully developed, the removal of the injured eye (the source of the irritation) may fail to arrest the disease, though it will afford a chance that should not be neglected.

"8. That in no instance have I ever seen sympathetic ophthalmia *originate* in an eye after the other had been removed on account of an injury. I have frequently seen it continue its course after the removal of the injured eye, but in each case sympathetic symptoms were manifested before the eye was removed. Hence the importance of diagnosing in what cases of injury sympathetic ophthalmia is likely to follow; and the necessity of at once excising such injured eyes as are prone to produce it, and especially if they are already lost for all visual purposes.

"9. That in the treatment of sympathetic ophthalmia, any operation on the eye whilst it is inflamed is positively prejudicial; but that when all the activity of the disease has subsided, much may often be done by some operative procedure to regain for the patient some of the sight he has lost, and also at the same time to prevent a recurrence of the attacks.

"10. That in the early stage of the disease the tension of the globe is often increased to T + 1 or + 2; but that in the later stage the eye becomes soft from atrophy of the vitreous, causing a diminution in its consistence and bulk, and that this state is often followed by detachment of the retina."

We find, therefore, that our authors are in general agreement with regard to the character and the severity of sympathetic ophthalmia, and that they differ only in the extent to which they recognise its existence. Looking at much the same facts, they classify them somewhat differently. Dr. Mooren is disposed to push the doctrine of sympathy farther than more cautious men will follow him, and to receive it as a sufficient explanation of phenomena that most observers would refer to other causes. He seems, moreover, to be impatient of the nice distinctions made by others, and to put together, without sufficient notice of their differences, all the forms of sympathetic disease. His cases on page 15 and page 17 clearly belong to the same order as that reported by Dr. Maats at p. 7, and are very different from genuine sympathetic irido-cyclitis. He assumes, without evidence, that they would or might have terminated in it; although the experience of Prof. Donders seems to show the contrary. On the whole, we cannot acquit Dr. Mooren of a

tendency to push a hypothesis beyond its proper limits, and to overstep the bounds of philosophic caution in his conclusions. We are by no means sure that in this he may not do good service to the public. Time and careful observation are needed in order to assign the exact limits of the danger from sympathy; and in order to discover any trustworthy symptoms by which this danger may be discerned while still distant, and while still within the power of preventive treatment. At present we seem only to know for certain that sympathetic irido-cyclitis never commences after the eye causing the irritation has been removed. In dealing with intelligent patients, or with patients who are in a hospital and under constant observation, it may often be permissible to wait and watch, especially for observers who have a well-grounded confidence in their own power to detect the beginning of mischief. But when we read the history already quoted from Dr. Maats, of the gentleman who was told to return on the second day, and who returned on the fourth day with irremediable disease, we cannot but feel that those who wait and watch assume a very grave responsibility, and incur a risk which ought to be clearly understood and consented to by the patient. There can be no doubt that we know enough to justify us in saying that the rule of treatment for sightless, shrunken, and irritable eyes, should be early removal; and that we do not know enough to enable us to say when and under what circumstances this rule may be departed from with safety. The latter knowledge will ultimately be gained by men having special opportunities; the former should be the present guide in practice of those from whom such opportunities are withheld.

It is manifest that Dr. Mooren, writing in the strain of the passage we have cited, will do little or nothing to clear up the difficulty by which the question is surrounded. Professor Donders, however, has approached this difficulty in a spirit of philosophical inquiry, and has made attempts to discover the exciting cause, the course, and the exact nature of the so-called sympathetic influence. Dr. Maats enters at some length into this part of the subject, commencing as follows:

"When Manni sought for the cause of the periodicity of certain diseases, he knew that the general periodicity of nature was expressed very clearly in the lives of mankind; and he came to the conclusion that we might legitimately wonder that so many diseases are not periodic.

"The same kind of reasoning has been used in seeking for an explanation of sympathetic ophthalmia. It is well known that the impressions of the two retinæ coincide, so that we do not know with which of the two eyes we perceive any object; that in both eyes the

accommodation effort is equal and simultaneous, that in certain mental emotions the tears flow from both eyes; that the actions of many muscles are united together in both eyes; that the reflex phenomena, such as contraction of the pupil (even when only one retina is exposed to the light), the closure of the eyelids, the spasmodic closure and the lacrymation in irritation of one eye, take place at once in both; and that by the use of one eye both are fatigued. We know also that in strong closure of one eye the field of vision of the other is from time to time confused; and that a number of organic defects, such as anomalies of refraction, which are congenital, occur in both eyes at once. Hence we might wonder that inflammation of one eye should not always entail inflammation of the other. But here, as in general, the proverb applies, 'Those who know too much know nothing.' We may say with humility that the occurrence of sympathetic ophthalmia is as yet in no way explained.

"Mackenzie and others were at first inclined to attribute to the optic nerve an important part in its production. They had a dim perception that the key to the phenomena would be found in the chiasma nervorum opticorum; and the more, since they believed that the sympathetic inflammation commenced in the retina. Mackenzie was, however, already inclined to call in the intervention of the ciliary nerves and of the vaso-motor ganglia; and gradually the optic nerve was pushed into the background. It was felt that the part assigned to it was unphysiological; and cases were observed in which the nerve was wholly useless, or even ossified, and yet no symptoms of sympathetic ophthalmia appeared. Many observers thus came naturally to the conclusion that the sympathy arose through the intervention of the ciliary nerves; and among these Arlt holds the first place. V. Graefe, Heinrich, Müller, Bowman, and Pagenstecher, expressed the same opinion. When it is considered that a persistent irritation of the ciliary region, in which the ciliary nerves chiefly ramify and are distributed, is the starting-point for sympathetic ophthalmia, and that this is first manifested in the ciliary region of the other eye, it is scarcely possible to question the intervention of the ciliary nerves in what H. Müller calls 'this fatal sympathy.' Bowman insists chiefly on the intervention of the vaso-motor nerves that reach the eye with the vessels themselves; and he mentions instances in which the inflammation of the sympathetically affected eye corresponded accurately to the seat of injury in the other. He records the following remarkable case:

"A little boy, five years old, was wounded by a penknife in the ciliary region, just behind and parallel with the cornea on the nasal side. The knife had passed through the ciliary muscle and the base of the iris, but had not wounded the lens. There was a small prolapsus of the iris, which, however, did not project beyond the wound, and occasioned no irritation; there was no pain, and only a slight photophobia. On account of the absence of unfavorable symptoms, and the clean edges of the wound, a very favorable prognosis was given. The ordinary precautions and treatment were used, and in a week the wound had healed and the sight was good. The pupil re-

mained drawn towards the wound. It appeared that, with ordinary care, no further danger was to be feared. Of care there was no want; and some weeks after, when the child had ceased to suffer, the wound was entirely forgotten. Five months later the patient was brought to me again, it having been remarked that his sight had gradually become impaired. He had felt no pain. On examining the wounded eye, I found the pupil pressed against the cornea, especially in the neighbourhood of the wound, and the iris firmly adherent to the lens. In the other eye a similar condition existed, but in a less degree. In the precisely corresponding part of the eye, on the temporal side, the iris was swollen and adherent to the lens, and in the ciliary region the vessels were conspicuous, showing the presence of a deep-seated chronic inflammation. The right eye was wounded below and in the nasal angle, the left now displayed these limited changes below and on the temporal side. The case exhibited in a remarkable way the symmetry of these sympathetic affections.

"After great care this patient recovered very good vision in six weeks; but the iris is still prominent, and I fear that he is not secure from further changes."

"But in what way can the inflammation be propagated to the other eye, either through the ciliary or the vaso-motor nerves?

"We read in Stellwag von Carion, 'Also in calcification of the lens and in bony deposits on the inner side of the choroid, we may remark a tendency to sympathetic affections of the other eye, and may explain this on the ground that the tissue hypertrophy often affects the sheaths of the ciliary nerves, extends gradually to their trunks, and so involves the nerves themselves in conditions of morbid irritation.' The propagation of inflammatory morbid conditions along the nerves is well known; but whether earlier writers had used this explanation of the cases in question we do not know. Only in H. Müller do we find, in the examination of an extirpated eye that had set up sympathetic ophthalmia, special reference to the ciliary nerves. The eye was the subject of sclerectasia, irido-choroiditis, solutio retinæ, and capsular cataract. We read that the ciliary nerves were atrophied in front of a certain point; the fibrillæ had not undergone decomposition, and were still visible in section, but were pale from medullary atrophy. Müller found all the altered fibrillæ furnished with dark sheaths, in such a manner that they resembled bare axial cylinders, but without being much increased in thickness. 'It is not too much to say,' he observes in a note, 'that to the ciliary nerves must be ascribed the origin of many deep-seated disorders. On the other hand, it is obvious that the secondary affections of the ciliary nerves, which follow from choroiditis and similar diseases, are of great importance with regard to the further course of such diseases, and with regard to relapses in the same eye.

"In order to know in what manner inflammation of the one eye may be sympathetically carried over to the other, there are, as Professor Donders has pointed out, two ways open. The first is by comparative anatomical observation of enucleated eyes, whether or not they have excited sympathetic ophthalmia. The second is, to

produce artificial injuries in the eyes of animals, of the same character as those that produce liability to sympathetic ophthalmia in man. If we could in this way succeed in producing sympathetic ophthalmia in animals, we should have opportunity, not only to examine the lesions in both eyes, but also to ascertain the state of the nerves outside of the eyes. We have instituted such experiments with nine rabbits and two dogs, but, to our regret, with negative results.

"In some rabbits a puncture with a scalpel was made in the ciliary region; in others a foreign body, a piece out of a grain of shot, was introduced into the eye; in others, threads were passed by a curved needle through a part of the ciliary region, and were tied outside of the eye. In all of them more or less acute inflammation speedily followed the injury, with softening of the eyeball, injection of the vessels, discoloration of the iris, contraction of the pupil, deposit of exudation in the pupillary space, &c. In some of them, after a few days, these appearances had vanished, and the eyes had regained their normal aspect. In others, there were circumscribed exudations in the vitreous body, that slowly increased and involved a great deal of the vitreous, lastly occasioning some turbidity of the lens. In two, in which threads were passed through the ciliary region, phthisis bulbi was produced. In those in which the eye recovered a normal aspect, a second wound was made, through the sclerotic from above, at a small distance from the cornea, over a length of three or four millimètres, so as to let the ciliary processes project outwards. This wound was daily touched with acetate of potash; but, notwithstanding, the symptoms of inflammation were not acute, and the wound soon healed over. In two dogs, by a wound of the sclerotic, the ciliary muscle and processes were laid bare and for a certain distance drawn out of the eye. In one of them slight inflammation and speedy recovery followed; in the other acute iritis with turbidity of the cornea, exudation in and closure of the pupil, and hardening of the eye. By none of these injuries did we succeed in producing sympathetic ophthalmia of the other eye. During ten weeks the animals were kept under close observation, and in all of them the unwounded eyes remained perfectly healthy; and no morbid state could be observed in any of them with the ophthalmoscope."

Dr. Maats proceeds to the next part of the inquiry, to the actual condition of enucleated eyes, at greater length than we can follow him, and with the aid of lithographic illustrations that should be reproduced in order to do full justice to his descriptions. He gives an account of the dissection of eighteen enucleated eyes. Of these the first two had actually excited destructive irido-cyclitis of their fellows, which had gone on, in spite of treatment, to complete blindness. The cases are fully detailed in an earlier part of the paper, and the mischief arose in both from injury. This, in the first case, was a blow from a flail upon a previously healthy eye; and, in the second, a thrust received by an eye that had already been blind for nineteen years. In both cases one of the ciliary nerves was found actually

engaged in the cicatrix at the seat of injury, and more or less adherent to the coats of the eye and to the effused lymph.

The remaining sixteen eyes were all removed because they were useless and painful; but none of them had excited sympathetic ophthalmia, and only a few a small degree of sympathetic irritation, which was immediately relieved by the operation. Of the sixteen—

Three had been destroyed by common inflammation and its results.
One by syphilitic inflammation.
Two by glaucoma.
One by staphyloma corneæ.
Two by wounds from splinters of metal.
Four by wounds from percussion caps.
One by an umbrella thrust.
Two by "injury," nature not specified.

The morbid appearances were, of course, various; but in none of them was there any special implication of any ciliary nerve in a cicatrix or an inflammatory deposit. The ciliary nerves were in many cases more or less changed or degenerated in structure, charged with oil-globules and the like, but not in any decided way involved in the disease. Dr. Maats sums up the cases in the following general conclusions:

"We give these cases as simple facts. They are enough to prove, 1st, that indications for enucleation often exist; 2nd, that the operation presents no difficulty, and is easily recovered from; 3rd, that in many diseased conditions of the one eye the other remains free. A severe sympathetic ophthalmia was only developed in the first two cases. Had they any peculiarity? Doubtless. They both commenced by a wound of the ciliary region, with subsequent prolapsus and adhesion of the inner parts to the adventitious tissue formed in and about the wound. In both the choroid was involved, and one of the ciliary nerves. In both irido-cyclitis had existed. In none of the remainder had the same kind of injury been sustained, or was the same kind of adhesion present. In none was sympathetic ophthalmia produced. The ciliary region was often implicated in the morbid process, shrivelled together, adherent to other parts, &c.; but this seemed insufficient to produce sympathetic ophthalmia. Is tension or traction of normal ciliary nerves requisite? However this may be, the cases cited afford a basis for the belief that the intervention of definite nerves is necessary to the production of sympathetic ophthalmia. From a physiological, or even from a pathological point of view, this conclusion is not without importance. That nerve-paralysis of nutrition is not sufficient to cause inflammation is well known. But the influence of irritation, or of morbid processes arising in the nerves, in producing inflammation, is quite another matter; and although the experimental evidence of this by

Samuel has not been confirmed by Meissner and others, and the influence is not clearly declared in experiments, yet pathology furnishes the necessary proof. It is, in our opinion, postulated by sympathetic ophthalmia, and so far this is of pathological importance; but it follows also from those inflammatory processes that occupy a determinate nerve limit, especially such as are bounded by the middle line, like herpes zoster; and this last is not isolated. We sometimes see cases of acute skin disease affecting the cheek and forehead, bounded exactly by the median line, and even complicated by ophthalmia. Two such cases occurred here last year; in one of them together with obstinate cyclitis, that continued long after the pustules were cicatrized; in the other with keratitis and iritis. In both of them the skin and the eye on the other side remained entirely unaffected."

The belief that the ciliary nerves, or one of them, must be the ordinary source of the irritation from which sympathetic ophthalmia springs, is strengthened by a case reported by Mr. Vose Solomon, in the 'Dublin Quarterly Journal' for 1863. A man received an injury to his left eye from molten iron, which destroyed the sight, and produced symblepharon of the lower lid. Two months after the accident he suffered from sympathetic irritation of the right eye, evinced by pain, a feeling of internal compression, and by a floating cobweb in the field of vision. There was no photophobia, but the pain and dimness of sight increased so much that the disorganised globe was removed by enucleation, in the usual way, between eight and nine months after the accident. Relief was felt within three hours after the operation. The band to the lower eyelid soon reunited, and opposed an obstacle to the introduction of an artificial eye. The band was divided, and a glass mash introduced. The mash excited a good deal of local pain, and reproduced sympathetic ocular disturbance of the same degree and kind as that which existed prior to enucleation. Removal of the mash relieved the symptoms; its re-introduction at the end of a fortnight restored them, and its final abandonment was followed by permanent improvement, although the eye continued to be irritable at times. Upon this case, and others somewhat similar, Mr. Solomon long ago founded the opinion that the fifth pair furnished the channels of irritation in sympathetic, or, as he called it, reflex ophthalmia. It seems difficult, if the ciliary nerves furnish the ordinary channels, to assign any reason why other branches of the fifth should not sometimes exert a similar influence. We have ourselves seen a case in which slight iritis seemed to be produced by the irritation of an old and roughened artificial eye, worn over a globe that had dwindled after internal suppuration, and in which excision of this globe at once checked the inflammation. Neither in this case nor in Mr. Solomon's,

however, was there any appearance of irido-cyclitis; and it may fairly be considered probable that the form assumed by sympathetic ophthalmia may vary with the nerve filament by which the primary irritation is conveyed. The probability that the fifth pair may exert an influence in causing sympathetic disease is further heightened by the recent researches of Wegner upon the influence of these nerves on the production of glaucoma.

On the all-important subject of *treatment* we learn but little, and that chiefly of a negative character. Dr. Mooren only refers to it incidentally, and displays a belief in the utility of iridectomy. He would resort to this operation as an expedient not to be neglected, even where he expected but little good from it. Dr. Maats passes in review the history of the treatment. He relates that, when the present method of enucleating the eye had been suggested by O'Ferrall and carried into practice by Bonnet, and had been performed in this country by Mr. Critchett, it was tried by Mr. Pritchard, of Bristol, as a remedy for sympathetic ophthalmia. For a time much was expected from it. Experience, however, has proved that sympathetic irido-cyclitis so soon acquires an independent vitality, and a power of running its course unchecked, that enucleation of the first eye, when the disease is actually present in the other, is of rare or questionable utility. It appears probable that the cases described by writers, in which enucleation arrested the established disease, were examples either of sympathetic irritation only, or at most of sympathetic serous iritis. Dr. Maats concludes that enucleation, as a curative measure, should not be neglected, but that very little must be expected from it. He follows Mr. Critchett in believing that iridectomy is seldom useful during the acute stage of the secondary disease. The operation is very difficult of performance; on account of the friability of the iris, and the firm adhesions of its posterior surface to the capsule of the lens. The opening that is made is soon closed by fresh effusion. Both in this country and in Holland experience seems to show that the inflammation should be guided and controlled by careful antiphlogistic treatment of the ordinary kind, in the hope that it may be exhausted without destruction of the retina, and that at some future time an iridectomy, with or without extraction of the lens, may restore a certain amount of vision. Excessive tension may be relieved by paracentesis, and the precise character of the general treatment must be adapted to the power and constitutional state of the patient.

As regards the prevention of sympathetic ophthalmia, there is but one opinion among our authors, or among men conversant

with this terribly destructive malady. Dr. Maats appears to consider it possible that there may be a time before the sympathetic disease has shown itself, but in which the morbid influence has travelled along the ciliary nerves far enough to obtain an independent existence, and in which enucleation may be too late. The existence of such a period must be problematical, and its duration would probably be short. Putting it out of the question, we may say that timely enucleation certainly takes away one of the essential conditions of sympathetic ophthalmia, and destroys the risk of its occurrence. It may sometimes arrest its progress or mitigate its severity when actually present. It cures sympathetic irritation absolutely and at once, and may thus restore a patient who is practically blind to all the advantages of sight. For the patient it is no loss, but rather a gain, to be relieved of a blind and painful eye. The operation, performed after the method of Bonnet and Arlt, is simple, free from danger, and followed by speedy and complete recovery. The diseased eye is usually of uncomely aspect, and the substitution for it of a well-fitting artificial one will be a gain in point of appearance. In the striking words of v. Graefe, "We must not forget the importance of the issue. The danger of double blindness is so alarming as to outweigh all other considerations; and even if we enucleate ten times uselessly for once that we set aside an actual peril, the operation, in my judgment, would still remain advisable."

The work of Mr. Power is remarkable for the number and beauty of the plates by which it is illustrated, and for the marked influence of German ophthalmology upon the mind of the author.

The plates are referred to in the Preface as being themselves the cause of the book; and they deserve, therefore, the first consideration. They contain fifty-four coloured representations of the surface, and eighteen of the fundus of the eye, all from Mr. Power's original drawings, reproduced by chromo-lithography. In saying that these figures are somewhat coarse and hard as compared with nature, and therefore more or less inaccurate, we only express the deficiency of the art, and re-echo the judgment of the author. We read in the Preface that "chromo-lithography was scarcely capable, without an expenditure totally disproportioned to the end in view, of expressing the fine shadings of colour which enable the practised eye to distinguish various yet similar forms of disease;" and we cannot look at these, or at any other plates of ordinary varieties of eye disease, without some feeling of regret for the expense incurred upon them.

In the letter-press Mr. Power travels over a wide range of subjects, and treats them with much care and perspicuity. The

few books upon ophthalmic surgery recently published in this country have been remarkable for their neglect of the German literature of the subject; and there are many matters which have been discussed, and many results obtained at Utrecht or Berlin, with which the English reader has hitherto had no opportunity of acquainting himself. The 'Ophthalmic Review,' and recently the 'Ophthalmic Hospital Reports,' have done something towards publishing abstracts of important foreign papers; but they have done little or nothing to supply a general view or digest of continental teaching. In this respect we attach especial value to the work of Mr. Power. On every subject of which he treats he appears to be familiar with its German aspect; and he reproduces this aspect in language of his own, checked by the teaching of his own experience. For the English reader Mr. Power's book contains much that is valuable and much that will be new. We would point to the chapter on strabismus as one of great excellence, and one to which our remarks especially apply.

On the question of cataract extraction, and on that only, Mr. Power, although perfectly familiar with German writings, seems to lag a little in the rear of German practice. He dwells rather fondly upon flap extraction, and bestows the faintest possible praise upon the modified linear method of von Graefe; saying of it, indeed, "The chief objection to the operation appeared to me to be the difficulty of seizing the iris for the performance of iridectomy, and the almost certain escape of a large amount of vitreous." We believe that the difficulties inseparable from a new operation will disappear with practice; and in this particular case we think they may be due to the section adopted. Mr. Power gives a woodcut, said to be copied from Stellwag von Carion—the original of which is unknown to us—which professes to represent "the section of the cornea made by von Graefe." Anything less like the reality it would be difficult to conceive.

Mr. Power's volume reached us only when this article was already in type, and when it was impossible to arrange for a more extended notice. We are therefore compelled to take leave of it, and we do so with a full conviction that it will be of great utility to the profession.

We have left ourselves little space in which to notice the remaining books on our list. Fortunately, but little is required.

The lectures of Dr. Macnamara, in their Indian edition, we have already mentioned with approval. The present work is the English edition, revised and freed from most of the blemishes by which the former was disfigured. Still, it is essentially the same work, and does not require any further description.

Dr. Williams was the successful competitor for the Boylston Prize, offered by Harvard University, for the best dissertation on "Recent Advances in Ophthalmic Science." The author modestly states that "it is not devoid of the faults incident to such a treatise;" but he hopes that it may assist the student and busy practitioner. We apprehend that the chief business of a student or of a practitioner should be to make himself thoroughly master of the knowledge required for the discharge of the duties of his calling. A surgeon desiring to treat eye disease ought to know a great deal more than this little book can teach him, and one who had no such desire might without inconvenience know less. We much doubt whether such a volume can be of any real utility, or can serve any other purpose than to enable its readers to gain a smattering of its subject-matter. As far as it goes, it is well done; and the parts relating to the ophthalmoscope and to refraction are illustrated by numerous original diagrams, of remarkable clearness and ingenuity, designed and drawn by Dr. John Green.

The Reports of the Royal London Ophthalmic Hospital assume, year by year, a more general character, and thus acquire an increasing value. The present volume contains many contributions from members of the hospital staff, chiefly from Messrs. Bowman, Hutchinson, Hulke, Lawson, and Streatfeild. Of the value of their labours, and of those of Dr. Hughlings Jackson, it is almost superfluous to speak. There are a variety of minor papers, by men of repute who are unconnected with the hospital; and a periscope, containing a large number of abstracts from foreign ophthalmic journals.

Mr. Vose Solomon's work on 'Tension of the Eyeball' is an attempt to revive a forgotten controversy, on a subject that we think is not worth disputing about. The various endeavours that have been made to cure glaucoma by incisions in the ciliary region have, as a rule, signally failed of success; and every ophthalmic surgeon must have met with blind patients bearing the scars of such operations, and remaining melancholy monuments of surgical perversity. It would be better to throw a veil over the past history of this painful question, than to spend time in discussing the respective no-merits of straight and oblique punctures. The events with which Mr. Solomon deals occurred in a period when ophthalmic surgeons were gradually working up to the present state of knowledge about intra-ocular tension; and the proceedings that were justifiable then could no longer be justified now. Even setting aside the known efficacy of iridectomy, it may be doubted whether the ciliary region should not be scrupulously avoided by operators, as being the chief source and centre of sympathetic irritation.

The little pamphlet on the cure of extreme divergent strabismus, by the same author, contains an account of an ingenious operation for this purpose. How far it would fulfil its objects, and whether it possesses any advantages over the better known method with which the name of Mr. Critchett is commonly associated, are questions to which we are unable to reply. Fortunately the cases of divergent strabismus due to excessive tenotomy of the internal rectus are now extremely rare; and the paralytic cases frequently admit of cure by the continuous galvanic current.[1]

Review II.

Essai sur la Pellagre observée à Corfou. Par C. Prétenderis Typaldos, Professeur de Clinque Médicale à l'Université d'Athènes, Médecin de S. M. le Roi des Heleenes, etc. Athènes. 1866.

Essay on Pellagra observed at Corfu. By C. Prétenderis Typaldos, Professor of Clinical Medicine in the University of Athens, etc. Athens. 1866.

One of the most striking features of the present age is the great attention paid in all civilised countries to the promotion of the public health. At home our tables are covered with reports of commissions and parliamentary committees on sanatory matters—the state of the mining population, the influence of various trades and occupations on the health of the persons employed in them, the conditions of the dwellings of the poor, and the prevalence of different epidemic diseases. On

[1] Since the foregoing article was in type, an original paper on sympathetic ophthalmia, by Dr. E. Meyer, has appeared in the 'Annales d'Oculistique.' The author records three cases in which he carried out, with perfectly satisfactory results, the suggestion of v. Graefe to divide the ciliary nerves behind the seat of the original injury, as a substitute for enucleation of the globe. The first case was one of pronounced sympathetic irritation, and was cured. The other two are not described. The operation was performed by pinching up and incising the conjunctiva, as if for a strabismus operation, and by freely separating it from its attachments by scissors. A strabismus hook was next passed under the nearest rectus muscle, so as to fix the globe. V. Graefe's linear knife was then made to puncture the sclerotic, to emerge, and to cut its way out, in such a manner as to make a subconjunctival linear wound, parallel with the corneal margin, and of sufficient length to divide any nerves passing back from the seat of injury. Care was taken to avoid the lens. Vitreous humour protruded through the wound, and in one case required to be cut away. The incision in the conjunctiva was closed by suture, and a compressive bandage applied. The method seems worthy of trial, because an artificial eye always moves imperfectly upon the muscular stump left after enucleation. In cases where the injured eye was much disfigured, and an artificial one was required for cosmetic reasons, it would still be prudent, when all irritation had subsided, to remove the ciliary circle by abscission, rather than to run the risk of mischief being set up by the regions of which the nerves had been left undivided.

the continent, and especially in France, the most elaborate investigations are undertaken in all branches of hygiene; and the United States set a noble example, during the late war, of attention to the wants of the soldiers in the field and the wounded in hospital, and are now making an energetic effort to check the high rate of mortality which prevails in some of their large cities. In Northern Italy the attention of the Government has long been devoted to the great prevalence of pellagra among the peasantry in certain districts and the social evils which it entails, in the hope of detecting some means by which its ravages may be arrested. More recently the attention of the French Government has been directed to the existence of a similar disease in certain parts of the south of France; and the work of Dr. Typaldos shows that pellagra also occurs in the Island of Corfu.

After a brief notice of the medical topography of the island, the author states that the knowledge of the occurrence of pellagra, and probably, indeed, its existence at all in this locality, is of quite recent origin. In 1839 a case, which it was thought might be an instance of the disease, was seen by one of the local practitioners, and in 1858 the occasional occurrence of pellagra in the island was brought under the notice of Dr. Typaldos, and induced him to enter upon an investigation of the subject with a view to ascertain to what extent the disease prevailed, and what were the circumstances under which it occurred. In pursuance of this investigation he collected forty-eight cases in 1859, 1860, and 1861. The particulars of these cases he has detailed in his work, and he shows that the disease prevails in 27 villages out of 117 inhabited by the peasantry. These 27 villages contain a total population of 15,458 persons, and in them the disease occurs in the proportion of from 1 in 1218 to 19 in 480 of the population. The reports are followed by an analysis of the information obtained and a discussion of the causes giving rise to the endemic, and the pamphlet altogether throws much light upon the symptomatology and etiology of pellagra; and, as being the first medical work we have seen from the press of Athens, affords a very favorable indication of the state of science among the higher branches of the profession in the Hellenic Kingdom.

To the description of the disease given by Dr. Typaldos, it is not necessary to allude, for it corresponds in general with that of others which have been recently published. We shall, therefore, confine ourselves to his observations upon the causes which apparently conduce to the prevalence of the endemic in Corfu. Under this head the author passes in review the atmospheric influences to which the population are exposed, the character

of the soil and the habitations and habits of the peasantry, and the facts which he collected as to the effect of age, sex, hereditary predisposition and contagion on the spread of the disease; but his remarks upon the latter points referring only to a small number of cases, and to a district in which the disease has probably only recently made its appearance, possess very inferior interest and importance to the elaborate reports which have been published upon the disease in the Milanese and other parts of Northern Italy. As in those localities so in the Island of Corfu, the subjects of the disease are almost always the peasantry in the rural districts; but exceptions occur to this rule sufficient to show that working in the fields and in the open air cannot be accepted as the essential cause upon which it depends; though doubtless the cutaneous affections on the exposed parts of the body are due to the influence of the sun's rays. So, also, although the circumstances of the persons who suffer from pellagra in Corfu are always very depressed, and fully warrant the term which has been applied to the disease in France, of "mal de misère;" this equally does not explain its specific nature, for the population, in other parts, are equally exposed to want and its attendant evils without suffering from any similar affection. The author, therefore, concludes that the alimentary regimen can alone be regarded as being the specific cause of the disease, and he dismisses the idea that the drinking water is at all concerned in its production. The general food of the peasants during the winter and spring, he states, to consist chiefly of bread and legumes, with oil, seasoned with onions, leeks, and garlic. The only animal food they take is salt fish and cheese and occasionally fresh fish. In the summer they get in addition, if the crop of oil has been abundant, a supply of wine, and are apt to indulge too freely in its use. Their staple diet is composed of bread, prepared with maize or Indian corn flour, which is called "barbarella." This, after being kneaded, is baked in the oven in the form of flat cakes, and is eaten either fresh or dry, the supply being often prepared for a week. When fresh cooked it is soft and pleasant to the taste, but when dry it is very heavy and indigestible. Of the persons whom Dr. Typaldos found to be labouring under pellagra, all without exception had lived upon this diet, either almost entirely or in chief part; and he ascertained that the prevalence of the disease corresponded in the different villages with the extent to which maize constituted the food of the peasants. Thus, in some localities they entirely live upon or have in addition to maize, bread made with sorgho (*Holcus sorghum*), rye, rice, or wheat, and he found that, when such grains are used, the people wholly escape or suffer only slightly from pellagra. The observations

of Dr. Typaldos show, therefore, that the disease occurs in Corfu under very similar circumstances to those which, since the time of Thouvenel, have been found to attend its prevalence in the north of Italy, and they indicate that its occurrence is in some way connected with the use of maize as the chief article of diet. The author further contends that it cannot be in consequence of the small proportion of the azotized elements in Indian corn that the grain is injurious; for it has been shown that when rye, rice, or sorgho are used the population do not suffer from pellagra, though those grains are still more deficient in azote than maize. He finally arrives at the conclusion that the essential cause of the disease is the consumption of maize which has been imperfectly ripened, or has undergone changes after being gathered; thus adopting the views of Ballardini, as advocated in the thesis of M. Roussel and described by Dr. Peacock in a paper in a former article of the review.[1] It has hitherto been maintained by the advocates of this view, that it is only when the grain is grown in too cold and wet a climate for it to be properly ripened, that it undergoes the changes which give rise to pellagra, the exil especially appearing in maize grown between the latitudes of 42 and 47 in France and Italy. The discovery that the disease prevails in Corfu between the latitudes 39° 20′ and 39° 50′ N. appears to be opposed to the former observations; but the author fully explains the apparent discrepancy. He states that the climate of Corfu is well adapted to the growth of maize; that the harvest generally takes place during dry and warm weather in from July to September, that the grain is well ripened, and that the peasants take great care in its preservation, drying it in the sun after removing the husks; and generally keeping the stock in their cottages. In ordinary seasons, therefore, the native grown corn is good and wholesome, and when the population consumes only that; they are free from pellagra. But within the last thirty years the cultivation of the vine has greatly extended in Corfu, and has, to a considerable extent, and especially in some localities, almost replaced the growth of maize; so that the supply of the latter grain is very insufficient for the wants of the population; and considerable quantities are imported from the neighbouring countries and from the Danubian provinces. The maize, which is the produce of Albania, Romagna, and Naples, is probably as good as that of home growth; but that from the Danube, having to be brought by a long sea voyage, is very often seriously altered and mildewed; and Dr. Typaldos has found that this constitutes the largest portion of the maize consumed in most parts of the island, and

[1] 'British and Foreign Medico-Chirurgical Review,' for January, 1863.

that much of the grain exposed for sale in the markets is seriously diseased. Occasionally, also, he states that in exceptionally bad seasons, as in 1857, when the summer in Corfu was very wet, the grain grown in the island is also not good. After a full investigation the author appears to have established the opinion, that in Corfu the essential cause of the prevalence of pellagra is the consumption of maize which has undergone changes which render it unfit for food; though he at the same time fully admits that other circumstances conduce to the production of the disease, and that it is predisposed to by the various evils which attend poverty and wretchedness. So far as the Island of Corfu is concerned, we adopt Dr. Typaldos' conclusion, but we cannot admit it as applicable to all the localities in which pellagra is known to prevail; for in some, as in certain districts of France, the disease exists where maize is not at all eaten by the people. It is possible that exceptional instances of this kind may admit of explanation; for though diseased maize may not be taken, some other diseased grain may, and similar effects may so be produced. It is, however, stated that pellagra is occasionally met with among people whose food presents nothing peculiar or different from that of others who do not suffer from the disease; and, though the facts of this kind which have as yet been recorded admit of some doubt, they should at least make us hesitate before we adopt any theory, which, though it may apparently explain the appearance of the disease in certain localities, may be opposed to the circumstances under which it occurs in others.

Review III.

Climatologie des Stations Hivernales du Midi de la France. (*Pau, Amélie-les-Bains, Hyères, Cannes, Nice, Menton.*) Par Jules Edmond Theophile de Valcourt.

The Climatology of the Winter Stations of the South of France, &c. By Dr. Jules E. T. de Valcourt.

This work on climatology, by a young physician, commends itself to our attention by a certain air of novelty and freshness.

Although appearing in the modest garb of a thesis, it contains a considerable amount of information, and this in a form so condensed as to render it the more valuable as an addition to the particular branch of medical literature on which it treats. Among other advantages, it posessses the very material one of being exempt from any extreme views consequent on strong local

attachments. Dr. de Valcourt tells us he passed four consecutive winter seasons in the medical stations of the south of France. This he evidently did in the character of a dispassionate observer. The result of his experience thus gained, as well as that of a laborious and honest investigation of the subject, is given to us in some two hundred small quarto pages, which will well repay a perusal by those acquainted with the French language. We are by no means sure that a translation would not be acceptable to other readers. For our own part, want of space will compel us to pass over much that is really interesting; but we will endeavour to follow the author in a rapid glance at the six stations in southern France which form the subject of his book. If we do not first pause to consider the introductory chapter on climate in general, and on that of France in particular, it is by no means because this is devoid of interest; to those indeed who have not already made themselves acquainted with the subject, it would perhaps prove as useful and interesting as any portion of the work.

Following our author in the order in which he writes, we begin with Pau.

This ancient capital of Bearn, of high historic interest, peculiar in its situation, lying between a sandy desert and snow-capped mountains, possessing a soil in some places retentive of moisture, but which for the most part permits the rapid percolation of every shower, whose inhabitants are scarcely less Spanish than French, besides what is physically good, affords ample materials of interest to every cultivated mind. Of late years the whole town has undergone a marked change; its streets are now clean, and open to the sunshine, so that its 3000 or 4000 visitors (as well as its 15,000 fixed inhabitants), including those settled in the immediate neighbourhood, possess many advantages over the frequenters of Pau in former times. With regard to actual temperature, Pau differs but little from Paris, as the following table shows:

	Whole year.	Winter.	Spring.	Summer.	Autumn.
Pau . . .	12.5°	5.33°	11.57°	18.63°	13.03°
Paris . .	10.8°	3.3°	10.4°	18.1°	11.2°
Difference .	1.7°	2.03°	1.17°	0.53°	2.41°

Or in Fahrenheit degrees:

	Whole year.	Winter.	Spring.	Summer.	Autumn
Pau . . .	53.69°	41.59°	52.82°	65.53°	55.45°
Paris . .	50.14°	37.44°	50.7°	54.4°	51.83°
Difference .	3.55°	4.15°	2.75°	1.12°	3.62°

The Pau temperature given is the result of ten years' careful observation made by Dr. Ottley, and does not essentially differ

from that derived from other sources. The night temperature is occasionally severe, but in the daytime the thermometer but rarely falls to 32° Fahr., as shown by another observer. In the winter of 1864, however, the mercury stood below this point on four consecutive days in January, whilst in February, at nine a.m., it was as low, or lower, on thirteen occasions. With regard to variations of temperature, it is a happy circumstance that these, for the most part, are inconsiderable during the hours of exercise, viz. from noon till three p.m.

In five years (from 1837 to 1841) snow fell on 55 days, and frost occurred on 111.

Regarding the indications afforded by the vegetation of the district, Dr. de Valcourt's remarks are so much to the purpose, that we quote them without abbreviation:

"The vegetation of a country affords the best proof of the accuracy of what has been written of the severity of its winters. Foreigners who have visited the shores of the Mediterranean are astonished, on arriving at Pau, at not finding in the environs of a town so celebrated for the mildness of its climate those plants which in other winter stations abound to such a degree as to constitute a principal element of the agricultural prosperity of the country.

"Orange, lemon, and palm trees are unable to endure the winter of Bearn; even the olive, though much less delicate, is unknown. The absence of this southern vegetation is a clear proof of the inferiority of the temperature of Pau to that of all other winter stations; and although the splendour and heat of the sunshine sometimes remind the visitor of more favoured spots, the leafless trees and the general sleep of vegetation afford unequivocal indications of a climate occasionally, at least, severe. It should not, however, be forgotten that if to a Parisian the temperature of Pau has only the advantage of one or two degrees (centigrade) over that of his native city, the difference to a German, and still more to a Russian, is very considerable indeed. As to the English, not only do they find a climate a little more temperate than their own, but they are enabled to enjoy many a sunny day which, in their native land, would be one of mist or fog; and this is an advantage fully appreciated by the generality of invalids."

Having thus referred to the sunshine of Pau, Dr. de Valcourt justly points out that the superiority of the town, in a sanitary point of view, lies rather in the nature of its soil and atmosphere —the latter so peculiarly calm—than in actual temperature. With regard to rain, Pau offers no exception to that extensive district whose shores are washed by the Atlantic Ocean; the annual average of rainy days being 122, and that of rainfall 1091·0 millimètres (nearly 43 inches). The soil, however, being for the most part sandy, and having the advantage of a good deal of sunshine, soon dries, even after heavy rains; so that

invalids are not deprived of outdoor exercise to the extent that might be supposed. The absence, too, of free moisture in the air is a noticeable fact.

Referring to the rarity of fogs at Pau, our author may well be pardoned a feeling of exultation in the superiority of a French town, when he declares that in a visit paid not long since to Scotland, during the three weeks of his stay, although it was in the month of August, "*un brouillard presque permanent transperçait nos vêtements.*"

The prevailing winds are the west, north-west, and south-west, which, coming from the Atlantic Ocean, accounts for the considerable amount of rain which falls.

We will conclude this brief epitome in Dr. de Valcourt's own words:

"The sedative climate of Pau exercises a manifest influence on the physical and intellectual condition of its inhabitants—a people phlegmatic and slow of speech. Strangers coming from more rigorous climates experience, after a little while, a change of temperament; their nervous irritability diminishes, their pulse becomes considerably slower, and so continues. An analogous change takes place in their *morale*, activity gives place to indecision and irresolution, idle musing succeeds to intellectual energy and the habit of continuous exertion.

"This is a very important result of the calm condition of the atmosphere. It explains the sanitary influence of the climate of Pau in certain cases, and its deleterious effect in others; it is suitable to invalids of a nervo-sanguine temperament, who still possess a fair amount of strength, but who are suffering exhaustion from febrile excitement. Phthisical patients belonging to this class are more numerous than people think; to these, tranquillity, both physical and moral, is indispensable; without it hygiène and therapeutics are powerless to arrest the progress of their disease. To such patients there are few winter stations capable of affording so much benefit as Pau.

"Nervous affections, including hysteria, are benefited by the climate of Pau, which, on the other hand, is detrimental to those who require to be stimulated. Phthisis of a scrofulous character demands a more bracing climate; and for all patients suffering from cachexia, from whatever cause arising, whether accompanied by tubercles or not, this is likewise indicated. People of a nervous constitution even find it difficult to endure so soft an air when nervous excitement has ceased to be a predominant symptom, and has given place to general debility. Finally, those who are of a rheumatic diathesis should avoid this climate, or that disease will not be long in developing itself. We are acquainted with many persons who, having accompanied sick relations to Pau, have suffered intensely from rheumatism, which it was impossible to attribute to any other cause than the influence of the climate. This disease, moreover, is very common among the inhabitants.

"From these facts we arrive at the following conclusions: Pau,

situated in a lovely country, offers to the stranger many and various advantages; the mean temperature is two degrees higher than that of Paris; and although the thermometer falls in winter as low as in the capital, severe frosts are of brief duration; snow and fogs are rare, and quickly disappear; there are many rainy days; the air is somewhat damp and soft, the atmosphere almost invariably calm; the daily variations of the thermometer and barometer are sometimes sudden, but confined within moderate limits; these variations greater in the months of February and March than at any other time exercise an unfavorable influence on invalids at that period of the year. To sum up: The climate is sedative, and manifestly beneficial to invalids whose nervous system is over-excited, or whose pulse is accelerated from feverishness, whilst it is prejudicial to the lymphatic, the rheumatic, and the debilitated."

Amélie-les-Bains (Arles-les-Bains, Arles-sur-Tech), although its sulphurous waters were known and valued in ancient times, is still but a village of some 800 inhabitants. From Paris the railroad conveys the invalid to Perpignan easily enough; but from that point the journey, though not a long one (some two-and-twenty miles), is sufficiently fatiguing from the frequent change of carriages. The crowd of bathers who flock to this favourite spot are a sufficient proof of the estimation in which it is held, notwithstanding its imperfect shelter from some of the colder winds, and its being cut off from much early and late sunshine by the adjacent mountains. It is, however, proposed to take advantage of a more favorable position on the other side of the river, where a larger amount of sunshine will be enjoyed; the village of Palalda appears to be the spot decided on. After a rapid glance at the geology of the neighbourhood and the exercise-ground—not too extensive—the author touches lightly on the bathing establishments, and proceeds to the consideration of temperature. On this subject it seems that "doctors disagree;" the annual mean, however, appears to be 15.28° (59.30° Fahr.); that of the winter, 7.96° (46.30° Fahr.); of the spring, 14·9 °(57.36° Fahr.); summer, 23° (73.43° Fahr.); autumn, 15.96° (56.72° Fahr.)

In the severe winter of 1864, during the night of January 5th-6th the mercury fell to 10° below zero (14° Fahr.), and on the 19th-20th February an immense quantity of snow intercepted all ordinary communications. This severity, however, is no doubt exceptional, since the olive-tree, though it does not attain any great size, yet flourishes in the district. In regard to temperature and vegetation, no less than to rain and wind, Dr. de Valcourt considers Amélie-les-Bains may fairly find a place between Pau and the Mediterranean stations. The rainfall cannot, it would seem, as yet, be given with perfect accuracy, but the following table may be regarded as approximatively correct:

		Fine days.	Cloudy.	Rainy.
Mean in Seasons	Spring	40	20	32
	Summer	59	17	16
	Autumn	53	26	12
	Winter	58	21	11
	Total	210	84	71

To this moderate number of rainy days may be added as among the *agrémens* of Amélie-les-Bains, to many invalids at least, a dry atmosphere and a general exemption from fogs. In the first ten months of the year 1864, the wind blew from the east 57 times; south-west, 54; south, 49; south-east, 36; north-west, 34; north, 34; west, 33; north-west, 11. The prejudicial winds are the dry, cold, and violent north-west (mistral), the north-east, and the east. Dr. de Valcourt's opinion of the climate of this station may be summed up in his own words:

"During the six months of the cold season it is tonic, without being too stimulating. In the month of September it is still too hot and dry for those who suffer from chest affections; all that could be desired in November; it becomes a little cold in December and January. During the remainder of the season it is variable; the days sometimes splendid and hot, sometimes rainy and tempestuous. The winds, however, are much less violent than at Montpellier or Perpignan, and are not continuous in March and April."

A summary, given by Dr. Bowyer, of cases in which the mineral waters of Amélie-les-Bains are likely to be beneficial, concludes the notice of this place.

HYÈRES—after Amélie-les-Bains, the most southern winter station in France, is the first place in which, travelling from west to east, the cultivation of orange-trees in the open ground strikes the attention. The town built on the southern slope of a hill upwards of 760 feet in height, is well protected by its neighbouring granite mountains from north and north-east winds, but not from the mistral. The vast marshes of the vicinity, so injurious to health in former times, have been drained to a great extent, and converted into fertile plantations; but still to the south-east of the town an extensive growth of reeds points out too plainly that much yet remains to be done ere the sanitary advantages of the district are fully developed. In a locality so charming in other respects, the existence of salt-pits in full operation is to be regretted, since so many other favorable and unobjectionable situations are to be found. In the *winter* season, however, Dr. de Valcourt remarks, these exercise no deleterious influence on the public health. Whilst

the town of Hyères itself, as we have already said, is exposed to the mistral, the adjacent hamlet of Carqueiranne and the charming valleys of Costa-Bella and Saint-Pierre-des-Horts, sprinkled with elegant villas, are sheltered from this noxious wind by protecting mountains. The writings of M. Denis, that accurate observer, are quoted, who, wishing honestly to show that Hyères is not the absolute paradise which some people have declared, assures us that a perpetual spring does not reign in this valley. The winter is not without its days of cold and rain; violent and even devastating winds are not unknown; in summer there is no lack of dust, and the heat is apt to last longer than could be wished; sudden and terrific storms also will sometimes pour down hailstones or torrents of rain upon the land. But,

"After all, and in spite of all, this is the valley beyond dispute most favoured of heaven in the whole of France; for the frosts, which are but momentary, are followed by a succession of days beautiful and warm, and the summer heat is tempered by those refreshing breezes from the sea which regularly blow during a portion of the day."

M. Denis divides the district into three zones, differing in temperature and in other respects, which, says Dr. de Valcourt appears perfectly justifiable in a medical point of view; in fact, the town (included in the first zone), which lies fully open to the south, and is protected from north and north-east winds, is insufficiently sheltered from the mistral. The littoral zone, nearer to the sea than the preceding, lies open both to the sea-breeze and the east wind, but escapes the mistral. This is especially the case as regards the valleys of Saint Pierre-des-Horts and of Costebelle; lastly, the third, naturally less warm on account of its northern aspect, is unsuitable to invalids. Notwithstanding the usual mildness of its climate, Hyères is subject to occasional frosts. In January, 1820, the thermometer (centigrade) was many degrees below zero for several days successively; all the orange-trees were frozen, a disaster which had not occurred since 1789. Having pointed out certain difficulties in arriving at an accurate knowledge of the temperature at different seasons, Dr. De Valcourt gives us the following as the result of his investigations, but "*sous toutes réserves.*" Mean winter, 8°.5 (46°.49 Fahr.); spring, 15° (59° Fahr.); summer, 23.4° (74° Fahr.); autumn, 15.5° (59.9° Fahr.); whole year, 15.6° (59.10° Fahr.).

Even during the exceptional days of coldness (from noon till three p.m.), invalids can take their daily exercise; in the unusually severe winter of 1863-64, in which more snow fell at

Hyères than had been observed by M. Denis in any winter for forty years, the mean temperature in January at one p.m. was as high as 11·6° (nearly 52° Fahr.). The richness and variety of vegetation excite the admiration of travellers, and numerous are the evergreen trees which afford a pleasing shade at every season of the year; an interesting list of the more delicate of these forms of vegetable life is given, which will serve to show how much there is at Hyères to delight the eye of a botanist, or of a simple admirer of nature. Orange-trees, however, no longer abound, as in former days, but, as is shown, their disappearance from especial cultivation is attributable to other causes than change of climate.

"Now-a-days the trees, which more particularly contribute to the preservation of the southern character of the place, are the magnificent palms; these for the most part display their majestic heads in the open country, but they are also to be seen in the town: of the seven existing in the 'Place des Palmiers' two are of surprising vigour."

A portion of the sea-shore enjoys also the grateful shade of magnificent pine-trees. An investigation of the register of Dr. Battaille from 1816 to 1829 enables our author to give the following account of the ordinary number of rainy days in the year:

Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
5·5	4·8	4·9	6·6	4·7	3·4	2	1·8	5·5	8	8·5	7

Winter.	Spring.	Summer.	Autumn.	Whole Year.
17·3	16·2	6·9	22	62·4

These numbers include every rainy day, even that in which a simple shower may have fallen. Snow is seen every two or three years, but during the present century it has not been known to remain at any time more than twenty-four hours upon the ground. Heavy dews fall during the hot season, to the great advantage of vegetation. Another and less agreeable form of moisture is thus referred to:

"We have been surprised at finding, according to the observations of M. Bataille, that fogs are not very uncommon in the mornings of spring and autumn, not even omitting those of summer: in the month of April, 1829, they were noticed seven times; they are, however, seldom so frequent as this. They come up from the sea-coast and the salt-pits at about nine a.m., become dense, and spread; proceeding slowly from south to north, they reach the mountains, and end their course by diffusion, and falling back into the valleys; they destroy the buds of the fig and olive, and even of the vine. Since the marshes have been drained these fogs have lessened; they

would, perhaps, altogether disappear if that vast extent of land now occupied by the salt-pits and *l'étang des Pasquiers* were reclaimed."

The mean annual rainfall according to observations of M. de Beauregard carefully conducted for twenty-five years (from 1824 to 1849), is 746 millimètres (29 inches), October and November alone afford a mean of 225 millimètres, whilst the three winter months give but 257 millimètres. The only wind that blows with violence is the cold and dry north-west, which will sometimes in a few moments lower the centigrade thermometer by four or five degrees (nine or ten degrees Fahr.); the north wind need be little dreaded, as the adjacent mountains cause it to pass above the town; the east winds are cold and wet; those from the south, hot and salutary in winter, are apt to be scorching in the summer. The advantage of sea breezes is experienced much more sensibly at Costa-Bella than in the town of Hyères itself. The north-west wind blows rather frequently in winter, but not with much violence, consequently at that season it is far less dreaded than in the spring—its time of strength. Sudden exposure to this wind, hazardous even to the healthy, is in the highest degree dangerous to the invalid.

"Finally, it may be stated that sixty-two rainy days, and not many more cloudy ones, are to be reckoned on, with some few morning fogs. Two fine days out of three are the usual proportion, even in the winter season." . . . "A residence at Hyères is suitable to those who require a dry, mild, yet bracing climate, and who are unable to endure the damp cold of northern countries; it is beneficial in asthma, pulmonary emphysema, chronic affections of the respiratory passages, and pulmonary consumption, unattended by excessive feverishness. Patients of a nervous temperament find Hyères suit them better than Coste-Belle, which agrees well with children of a lymphatic temperament. Let us again impress upon the invalid, which cannot be done too forcibly, the importance of exercising every possible care in avoiding the mistral, that single drawback to the excellency of this charming winter station."

Cannes.—It is a remarkable instance of the effect of routine, that Nice for so long a period should have enjoyed a sanitary reputation, whilst the superior advantages of a place so near to it as Cannes remained almost unknown till they attracted the attention of Lord Brougham, in 1834. Even so late as 1853, says Dr. de Valcourt, who first visited Cannes in the winter of that year, the number of invalids frequenting it was small. Since then, however, the annual influx has steadily increased, and now no place in France enjoys a higher reputation, as every English practitioner engaged to any extent in the treatment of chest diseases must be well aware. This favorable opinion

appears to be fully deserved; for though, like Hyères, it is not an absolute paradise, yet few of our patients return from a winter sojourn there who do not bring back a good report of Cannes.

The topography of the district, as given by our author, shows how favorably situated is the town: its protection from the mistral is especially pointed out, and its superiority over certain portions of the neighbouring country briefly, but well described. The mean annual temperature does not appear, as yet, to be fixed with absolute certainty; partly in consequence of the limited number of continuous observations made of late years: the following may, however, probably be accepted as sufficiently correct. Whole year 16.7° (60.92° Fahr.), winter 9° (48.1° Fahr.), spring 15.8° (59.14° Fahr.), summer 24.2° (75.23° Fahr.), autumn 18° (64° Fahr.). The lovely vegetation of the district depends as much on the varying character of its soil (whose interesting peculiarities are pretty fully noticed), as upon the mildness of its winters. A long list of the Flora is given, in which the orange-tree, chiefly cultivated for its flowers, still maintains an important place, whilst palm-trees are not unknown. After specifying the beautiful plants which charm the eye, even in the depth of winter, Dr. de Valcourt says, with enthusiasm in which it is easy to participate,

"This rich enumeration amply shows how great is the vital power of this favoured land. How can the invalid refrain from seeking the renewal of his health in such a climate! A climate where the soil seems to require no rest, where frost is almost unknown,[1] and where the ground, even during the least favorable portion of the year, is covered with a very harvest of flowers."

The east wind is the most prevalent, then the west; the north, as well as the south, is extremely rare; the latter, indeed, is almost unknown, a happy circumstance since the inhabitants of Cannes thus escape the "burning dryness" which accompanies this wind from the African Desert. Another point favorable to Cannes is the absence of any streams of water beyond mere rivulets, generally tortuous in their course, and free from those violent currents of air which such streams as the Var and the Paillon give rise to. The summer heat is tempered by refreshing sea-breezes, which habitually blow from sunrise to sunset. From the east and north-west winds, so trying to invalids in the winter season, the village of Cannet, situate a mile and three quarters from the sea-shore, is that portion of the district which has the good fortune to enjoy the most perfect shelter, this is

[1] The author's expression is, "Un pays dont la terre semble ne jamais connâitre ni la langueur ni les frimas."

shown in the luxuriant growth of its orange and other tender trees.

Dr. de Valcourt passed a winter near this village, and was struck with the absence of high winds during the entire period; and this, even when the mistral in the distance displayed its presence by clouds of dust sweeping over the roads.

The annual amount of rain falling at Cannes, according to Dr. Sève, is 677 millimètres (twenty-two inches); the number of rainy days fifty-two. Snow is seen occasionally, but rapidly disappears. Of fogs, it is sufficient to say, they are extremely rare.

Our author's views of Cannes may be considered pretty fully summed up in the following conclusions:

"The climate is bracing, the winter temperature is remarkably mild, as shown by the character of the vegetation; the country is healthy, and highly picturesque; rain seldom falls, the sky is usually unclouded; the winds, which are moderately strong on the sea-shore, may be altogether avoided in certain portions of the territory. The sea-breeze with its saline constituents, the east and north-west wind, sufficiently cold and somewhat strong, do not prevent a sojourn on the borders of the sea being quite suitable to the lymphatic and scrofulous, as well as to those suffering from rheumatism, or simply weakened by age or excessive labour; it agrees also with patients suffering from certain affections of the respiratory organs, chronic bronchitis, for example. On the other hand, those who are subject to hæmoptysis, to febrile attacks, and individuals of a nervous temperament, should avoid the sea-shore, and avail themselves of the admirable positions to be found within a few minutes walk of this, where they may enjoy a residence perfectly sheltered. With regard to exercise ground, the eminences, not too steep, the Isle Sainte-Marguerite and the Esterel, afford shade and ever-varying walks, whilst the sandy shore with its uniform and gentle slope is superior even to the far-famed strand at Trouville."

Nice.—Although no longer holding the proud position she once enjoyed, when, with Pisa and Montpellier, she wellnigh monopolised those invalids who sought a southern climate for their winter residence, is still admired by many. "Her newer rivals," as Dr. de Valcourt well observes, have "acquired in their turn a just and great celebrity;" nevertheless, a city of 50,000 inhabitants, beautifully built, on the shore of the Mediterranean, with wide streets full of life, and no lack of magnificent edifices, not to speak, at present, of those advantages of climate which it really does enjoy, is not likely to be without a heavy influx of winter visitors.

Nice is protected from the winds which blow over the continent, by mountains of various heights. From the configu-

ration of the ground on which its houses stand, it may be said, like our own Torquay, to possess different climates within its own especial one. The Paillon, and other streams, often nearly dry watercourses, when swollen by heavy rains, bring down vast quantities of pebbles, which, accumulating on the sea-shore, render the bathing at Nice far less agreeable than that at Cannes or Mentone. The geology of the district, in which Dr. de Valcourt tells us primitive rocks find no place, is more favorable to the fossil lover and botanist than to the simple seeker after health. The plain of Nice is composed of alluvion resting often on beds of clay, so that water is found very near the surface; this sometimes proves an inconvenience to builders who have to drive in piles to form their foundations; fortunately, however, the inclination of the land seawards allows its ready escape.

As the mean temperature obtained from various sources, and taken at sunrise, at two p.m., and at sunset, we have the following figures:

Winter.	Spring.	Summer.	Autumn.
8.33° (4.99°, F.)	13.7° (55.52°, F.)	22.9° (71.69°, F.)	16.17° (61.10°, F.)

Whole Year . . . . 15.27° (59.48°, F.)

During fifteen years, according to one observer, the mercury never rose higher than 32.5° (90.5° Fahr.), although there are exceptions, it does not usually fall lower than 3° below Zero (26.8° Fahr.); and sometimes there is not a single frost during the whole winter.

"Nice, then, enjoys a very mild climate, but those who live there are nevertheless exposed to sudden transitions from hot weather to cold; between north and south aspects, between sheltered and exposed positions, there is in winter a difference of from 10° to 15° and in the spring cold winds will in a moment chill the atmosphere."

The fertile plain produces magnificent olive-trees in great abundance; it is rich also in orange-trees, and so various and abundant are its flowers, that our author abstains from enumerating them; nevertheless, there are fewer plants in bloom here, in the month of January, than at Cannes. Observers differ as to the number of rainy days; the annual mean of fifty-six being given by two meteorologists, whilst M. Teysseire considers that, ordinarily, as many as seventy days of rain may be looked for: these he thus divides (adding also the amount of rainfall from observations made by M. Roubaudi)—

Seasons.	Winter.	Spring.	Summer.	Autumn.	Whole Year.
Number of days . .	16·6	22·9	21·8	10.5	71·3
	m.m.	m.m.	m.m.	m.m.	m.m.
Amount	179·3	189·7	71·6	267·4	707·9

nearly twenty-eight inches.

May, October, and November, are more especially the rainy months. Observations made with Saussure's hygrometer gave ninety as the maximum humidity of the air, and fifteen as the minimum; the greatest oscillations occur in January. Snow is rarely seen, but in February, 1853, it fell to the amount of 20 centimetres (nearly eight inches), to the extreme surprise of the inhabitants. Trifling fogs, occurring in the morning, are sometimes, but very rarely, seen. Storms are not very frequent, although in summer-time the air is charged with electricity; occasionally, however, terrific hurricanes occur.

M. Teysseire considers the yearly average to be one day and four tenths of snow, and six days of fog. Nice is much more *blowy* than the neighbouring towns; there are eighty-eight days of violent wind in the year, much of this comes from unfavorable quarters. The broad Paillon, whose bed is for the most part dry, may be regarded as the principal, though not the sole cause of this unquiet state of atmosphere. The mistral though not a frequent visitor is formidable when it comes, falling on the town with a force only partly broken by intervening and too distant heights. The *dust* of Nice is proverbial.

Dr. de Valcourt concludes his notice in the following words:

"What we have already said leads us naturally to sum up the advantages and inconveniences of this winter station. A pure air, a healthy district, a mild temperature, a luxurious vegetation; the resources of a large city—all these are well calculated to attract a multitude of strangers every year. But, nevertheless, the wellnigh constant atmospheric disturbance, the ever-penetrating dust, and the general and sometimes excessive dryness of the air, render the climate far too exciting for irritable constitutions."

"The sea-shore and the banks of the Paillon are especially hazardous to patients of a sanguine temperament, with hurried circulation, and a dry and painful cough, as well as to those subject or predisposed to hæmoptysis. The rheumatic, the gouty, the scrofulous, and all who stand in need of powerful stimulation, or of a dry atmosphere, find themselves wonderfully benefited by a residence at Nice. The eminences of Cimies afford some sheltered and highly favorable situations where invalids may escape the nervous excitement consequent on a residence close to the sea. The climatological distinction between the city and the hills is highly important, as we shall show in our last chapter."

MENTONE, built on the slope of a hill, with the sea to the south-east, and the maritime Alps on the north, enjoys a beautiful and sheltered situation, the advantages which are accurately described at some length in an interesting quotation from 'Le Chevalier Ardoino.' Lemon, orange, and olive trees declare the mildness of a climate which is at the same time refreshed by streams of water. A long avenue of plane-trees bordering the right bank of one of these, the Carrei, affords, in addition to the sea-shore, a level and very charming walk to those who are unable to mount the hills; whilst these latter, clothed with evergreen oaks, chestnuts, and pines, afford a charming *climb* to the stronger relatives or friends of invalids whose self-devotion entitles them to more consideration than they are apt to get. The geological formation of the district has no especial interest; the valleys are covered with a rich alluvial bed formed of sand, of the *débris* of rocks, and of vegetable mould, affording ample nourishment to the many trees of southern growth. Thirty million lemons of excellent quality, according to M. Abel Rendu, are annually gathered in the communes of Mentone, Roquebrune, and Monaco.

"In Sicily," says this writer, "there is only one lemon season in the year, viz. from September to March; in spring and summer a trifling amount only of fruit remains upon the trees, whilst at Mentone, where the heat is more moderate, these are constantly loaded with flowers and fruit, blossoming four or even five times a year."

Although those plants which especially belong to a soil of primary formation are not to be found at Mentone, the *flora* is nevertheless extremely rich.

Supplementary to notices extending over a longer period (but less recent), by other meteorologists we have a table, placed at our author's disposal by Dr. Farina, of that gentleman's observations taken three times a day, of temperature in 1863 and 1864. We extract the mean of each month:

January.	February.	March.	April.
8.8° (46.54° F.)	10.2° (50.3° F.)	13° (55.2° F.)	16.1° (60.9° F.)
May.	**June.**	**July.**	**August.**
19.4° (66.9° F.)	23.3° (73.9° F.)	25.1° (77.1° F.)	25.4° (77.7° F.)
September.	**October.**	**November.**	**December.**
21.2° (70° F.)	18.9° (66° F.)	13.4° (52.1° F.)	9.6° (49.2° F.)

There can be no doubt about the mildness of Mentone.

Rain falls on seventy-eight days in the year, and is more equally distributed among the different months than is the case elsewhere: subject to exceptions, the wet month *par excellence* appears to be November, and the dry one July. The annual

rainfall amounts to about 700 or 720 millimètres (a little under and a little over twenty-eight inches). The air, without being too moist, is free from excessive dryness. With regard to the relative frequency of winds, Dr. de Valcourt declares himself unable to arrive at any accurate conclusion, so greatly have observers thus far differed in their estimates. There are, however, two points on which writers agree; the frequency of east winds, and the rarity of the mistral. From the latter, as well as from the north and north-east winds, Mentone is well sheltered by protecting mountains, but less so from those which blow from the south-east and south-west. The annual average of windy days—more or less violent—may be set down as about eighty.

Dr. de Valcourt considers in regard to mildness of climate, that Mentone possesses a slight advantage over Nice, and even over Cannes; that the steepness of its hills is somewhat to be regretted, but that nevertheless the locality is admirably suited to scrofulous and rheumatic patients, and to phthisical ones able to endure the proximity of the sea.

From the concluding chapter, "On the Sanitary Influence of Climate and on the Curability of Consumption," we must limit ourselves to a single extract, viz. a quotation from a memoir by M. Rochard, which was "crowned" by the Academy in 1855.

"In the north of France," says this able writer, "the unhappy sufferer from phthisis, at the beginning of our long winter, and from his first bronchial attack, finds himself confined to his chamber, deprived of all society and of every external source of interest, compelled to pass his time between the fireside and his bed; the observance of medical prescriptions, a little reading, and perhaps some small amount of conversation, alone break the melancholy current of his thoughts. Let him, on the other hand, determine on a change of climate, a series of new impressions exhilarate, a higher and more equable temperature enable him to take continual exercise either in a carriage or on foot. His digestion is thus improved, his nights are more tranquil, his strength increases, and his bronchial attacks becoming less frequent, he escapes a material source of acceleration of his disease."

A table of thermometrical observations, extendiag over two winters (December, January, and February). and embracing all the stations treated of, is appended, and forms an appropriate termination to this highly creditable thesis.

Review IV.

Diseases of Women. Bernutz and Goupil. New Sydenham Society, 1866. Vol. II. Pp. 270.

M. Bernutz, in his essay on 'Pelvi-Peritonitis,' aims at showing—Firstly, that it has been very frequently confounded with diseases having a totally different origin and involving different tissues, that the group of symptoms called variously engorgements of the uterus, partial chronic metritis, ovaritis, peri-uterine phlegmons, is referable to intra-peritoneal inflammation, that the terms pelvic abscess, pelvic cellulitis, peri-metritis, peri-hysteritis, have been often used without due regard to the tissues really affected.

Secondly, that this morbid condition is of frequent occurrence in women, is generally symptomatic of inflammation of the ovaries or fallopian tubes, and homologous with orchitis in the male, the extent of the female *tunica vaginalis*, viz. the peritoneum in relation with the genital organs, giving rise to the more extended lesion. He is not, however, strictly correct in calling the fimbriated extremity of the fallopian tube the homologue of the epididymis, as this is represented by the parovarium,[1] or Rosenmuller's body; "Muller's duct in the embryo being developed into the fallopian tube of the female, but becoming atrophied in the male" (Farre).

Thirdly, that secondary symptoms have been allowed to obscure the primary disease, and consequently errors in treatment have been committed.

Setting on one side inflammation of, and abscesses in, the broad ligament, or involving the perirectal cellular tissue which he considers as varieties of phlegmon of the iliac fossæ, true pelvic cellulitis, and confining his observations to those phlegmons which have been supposed to be limited to, or chiefly seated in, the uterine cellular tissue, M. Bernutz asserts that it is an anatomical impossibility for the peri-uterine swellings called retro-, ante-, latero-uterine inflammatory tumours to be located in the cellular tissue between the uterus and peritoneum. "*For the cellular tissue separable is only a small band situate at the junction of the neck with the body of the uterus and at the sides at* $\frac{2}{5}$ *of an inch from the lateral borders of the uterus. The peri-uterine swellings under consideration are certainly not formed by the inflammation of this thin ring of*

[1] 'Der Neben-Eierstock des Weibes.' Kobelt. Heidelberg. 1847.

cellular tissue, which when involved but very slightly augments the swelling due to pelvi-peritonitis." Farre,[1] in his essay on the uterus, says,—"The peritoneum, after covering the fundus uteri and a portion of the posterior surface of the bladder, is suddenly arrested in its descent at a point very nearly opposite to, but sometimes a little below, the internal os uteri, and therefore about the seat of the junction of the body with the neck of the uterus, and here the bladder becomes attached to the cervix. On the posterior surface of the uterus the peritoneum is closely adherent to the tissues beneath, until it reaches the level of the anterior point of reflection. *At this point the peritoneum becomes much more loosely connected with the uterus by the interposition of a quantity of lax connective tissue which intervenes between it and the posterior cervical wall. Loose connective tissue separates the peritoneum from the posterior cervical wall to a great extent. Acute or chronic iaflammation of this tissue* (*perimetritis*) *causes deep congestion of the vessels accompanied by serous and occasionally by sanguineous and possibly fibrinous infiltration. The extreme laxity of the tissue readily admits of a great degree of distension. In this way is rapidly formed a tumour which almost invariably occupies the space between the peritoneum and the posterior wall of the uterus at the point where the body joins the cervix* (*retro-uterine tumour.*)" The contradiction between this description and that by M. Bernutz can only be reconciled on the supposition, that the subjects severally dissected varied as to the amount of cellular tissue at this place, or perhaps we ought to say is irreconcilable.

M. Bernutz takes a strong position against those who describe the tumours in question as cellulitic, when he asserts that only two cases, where at the autopsy proof of inflammation in this cellular tissue was found, have occurred in France during the three years since his essay first appeared in the 'Archives de Médecine,' one[2] of which is very imperfectly recorded, while the other[3] is a case of critical abscess occurring in the course of smallpox. The post-mortem record is, unquestionably, the only true guide, and we have here nine cases very elaborately detailed with autopsies. In eight the symptoms were those usually ascribed to perimetritis, while at the autopsy no lesion of the peri-uterine cellular tissue could be found, but adhesions and depôts of pus, formed amongst the pelvic viscera, corresponded with the tumour felt per vaginam.

[1] 'Cyclop. Anat. and Phys.' vol. v, § Art. "Uterus," p. 626, 630, 631.

[2] 'Gazette des Hôpitaux,' Av. 17me, 1858.

[3] Simon. 'Bulletins de la Société Anatomique de Paris,' xxxiii année, 1 série, t. iii, Juin, 1858, No. 10, p. 234.

M. Bernutz met with 99 cases at the hospitals La Pitié and Lourcine, which he thus classifies:

Class I.—43 puerperal { 35 after childbirth. 8 after abortion.
„ II.—28 blennorhagic.
„ III.—20 menstrual.
„ IV.—8 traumatic { 3 venereal excess. 2 with chancres on the cervix. 2 after the use of the uterine sound. 1 after the use of the vaginal douche.

The first class, as might be expected, is the most numerous, and under it he discusses the causality of puerperal fever. Briefly, he thinks that there exists a specific disease "la puerpéralité," and that the various lesions met with are symptomatic secondary affections. The puerperal entity may be either mali moris or boni moris. The modifications of the malignant kind originate *ab internó*, as in an epidemic constitution, mental emotion anti-hygienic conditions. The pelvi-peritonitis under consideration belongs to the benignant form, is, so to say, accidental, and generally lighted up by some *external* cause, which, in the majority of instances, is "the getting up" too soon after a "confinement."

The causation of pelvi-peritonitis, after abortion, is far more difficult to trace; it belongs to the class puerperal. It is often impossible to decide whether the cause of the abortion may not be also the cause of the serous inflammation. It seems probable, though proof is not obtainable, that it occurs more frequently without perceptible cause after abortion, than after labour at term.

The third class, menstrual pelvi-peritonitis, is allied to the first, inasmuch as the inflammation may be looked upon as the reflection on the peritoneum of the general condition caused by the puerperal or menstrual disturbance. Of the twenty cases observed, in three of them the only assignable cause for menstrual retention was syphilis and a mercurial course. In two dysmenorrhœa had previously existed. In the others the catamenia ceased abruptly after the application of cold water, or on mental emotion or local irritation of the uterus.

The analogy between male and female orchitis is most apparent in the blennorrhagic variety. The inflammation spreads by continuity of tissue from the vagina, along the uterine cavity and fallopian tubes to the peritoneum, as from the urethra, along the vas deferens to the epididymis and tunica vaginalis. The pelvic inflammation often appears first on the left and then on the right side, like the form of orchitis, called by Ricord *orchite*

à bascule. The vaginal discharge ceases on the development of the peritonitis, as is seen in the male subject when the gonorrhœa dries up on the establishment of orchitis.

The fourth class is illustrated by four cases detailed in the text, and sundry others are referred to in the notes according to the sub-varieties mentioned above.

The symptoms of pelvi-peritonitis are modified by the constitution and the idiosyncrasy of the patient, the exciting cause, and the form of the attack. In the acute form, where the well known signs of peritonitis have been present, or if that silent variety has occurred where, though pain and high fever are not marked, large quantities of corpuscular lymph are thrown out, and there is a general impression of a typhoïd character, should the patient survive the first impulse, the fever abates and extreme prostration follows, often accompanied by a rigor or evening chilliness. The abdomen becomes less painful and examination is possible. The uterus is found at first in the position it had before the attack; but after some days a tumour, the exact shape and position of which should be made out by bimanual exploration, is felt in one or more of the vaginal culs-de-sac, by election in the left latero-posterior. The uterus is now more or less displaced, especially when the tumour is retro-uterine, the cervix uteri being projected against the pubes, and drawn upwards in the vagina, exactly as in the case of hæmatocele. The tumour, at first presenting only a sense of resistance, becomes gradually more tense and prominent, semi-elastic, and then hard. If the morbid process continues, the tumour becomes easily perceptible abdominally, yielding a fibro-cartilaginous sensation between the hand on the belly and the finger in the vagina. It rarely rises above the pelvic brim, is separated by a space from the horizontal ramus of the pubes, and is free of the abdominal wall, an important diagnostic sign between it and phlegmon of the broad ligament. Exacerbations are frequently brought on by the menstrual molimen, or by too active treatment, or free examination. The tumour then increases, and often also appears in the opposite iliac fossa, the uterus being correspondingly displaced. These conditions may be repeated until a chronic state is set up, which brings on a general debility and almost defies cure; and in its train follows uterine irritability or neuralgia, so often the subject of empiric and quack treatment. Ulceration of the cervix often co-exists with the peritonitis, but it is only a coincidence and an index of the morbid condition of the cervico-uterine mucous membrane. Metrorrhagia is a special symptom in the acute form of female orchitis, and often appears as a critical discharge before resolution. It is most marked in the menstrual and

blennorrhagic classes, but, in the latter, is perhaps attributable to the mercurial course. The inflammation may terminate, though this is rare, by resolution, most frequently false membranes form binding down the uterus, and sometimes pus is formed. This latter occurs in the early stage of severe purulent peritonitis. Here the ordinary termination is by escape of pus per rectum. M. Bernutz knows of no case where a spontaneous opening has happened into the vagina, and only of one into the bladder. Should the pus burst into the abdominal peritoneum death is almost certain, and usually comes on rapidly. Sometimes the inflammation spreads from the pelvic to the abdominal serous membrane by simple continuity. A very fatal sequela is purulent consumption, the deposit of tubercle being quite secondary, and may not be found in the lungs, though the symptoms simulate pulmonary phthisis, but are relieved by escape of pus per rectum. Chronic pelvi-peritonitis is really a chronically morbid condition of the genital organs, which, from time to time, lights up fresh peritonitis, and it is remarkable that the serous membrane, once diseased, takes on inflammation more slowly, and the peritoneal symptoms, as pain and swelling, appear later and less marked than in the acute form. The false membranes may contort the intestines, and even cause strangulation, may induce sterility, but if impregnation takes place they will probably not interfere with gestation more than giving rise to hypogastric pains, and sometimes obstinate vomiting. The particular form of peritonitis depends much on the patient's diathesis.

Tubercular disease of the ovary, the analogue of male tubercular orchitis is not uncommon. The deposit invades also the rest of the genital organs, though it may be absent from the lungs, but it gives rise to no external symptoms, except perhaps leucorrhœa, unless inflammation occurs.

Tubercle is found primarily in the genital organs, and secondarily in the lungs, and *vice versâ.*

The affections with which acute sero-adhesive pelvi-peritonitis are most easily confounded are hæmatocele, inflammation of an ovarian cyst, and phlegmous of the iliac fossæ, especially the first and last. Pelvi-peritonitis, like hæmatocele, may occur in connection with amenorrhœa or with menorrhagia. That the mere fact of a peri-uterine tumour appearing coincidently with menstrual retention, is not sufficient of itself to determine it to be a hæmatocele, is shown by case No. 26, most minutely detailed in the original, when the symptoms, on first examination, were those of hæmatocele, but the antecedent history pointed to peritonitis, and the subsequent copious evacuation

of pus per rectum, without any trace of blood, followed by recovery to health, with fixidity of the uterus, proved the existence of purulent inflammation. In addition to the general history, with absence of dysmenorrhœa, we shall find that the tumour, examined from time to time, always presents the sensation of a purulent deposit, and not the varying one of extravasated blood.

Pelvi-peritonitis with metrorrhagia, and especially the purulent form presents many points of resemblance with hæmatocele. The differential points are the history, the tendency to recur, the absence of anæmia, the abscess-like character of the tumour, all which are contrary to hæmatocele. The diagnosis between pelvi-peritonitis and phlegmons of the iliac fossæ is not difficult to an unprejudiced observer. In the non-puerpera, the former is always to be suspected, as the latter is of rare occurrence. In the former, the tumour is readily felt per vaginam, and seldom rises above the pelvic brim; in the latter, it is first felt abdominally, and takes its course according as the abdominal or psoas muscles are involved. The former, when of the sero-adhesive kind, usually resolves without suppuration, the tendency of phlegmon is to form pus. In the puerpera the diagnosis is more difficult. The serous inflammation begins very soon after labour, and with a rigor. We have the characteristic pain and countenance, and the digestive functions are much interfered with. The reverse is usually the case with phlegmon when, also, free extension of the thigh is interfered with. *Per vaginam,* the tumour is readily perceptible, but in inflammation of the broad ligament nothing can be felt unless the muscular cellular tissue also becomes involved. The frequent relighting up of the inflammation, and consequent increase of the tumour is peculiar to the serous membrane. The diagnosis between pelvi-peritonitis engorgements of the uterus, uterine deviations, fibrous tumours, and hysteralgia, can be made out by a careful attention to the history and repeated vaginal examinations.

We shall only notice a few points in the treatment. In the acute stage M. Bernutz gives opium in small hourly doses to narcotism, and then covers the abdomen with a camphorated blister; no calomel, nor any purgatives, *diète absolue.*

In this, and in the subacute stage, puncture is only to be made when the presence of pus is a certainty; but then M. Bernutz is in favour of an artificial opening, as also in the more chronic purulent form.

Dr. West thinking "it safer to leave the emptying the abscess entirely to nature" is certainly mistaken in quoting Bernutz as in agreement with him. Injections into the cyst are highly

dangerous. Leeches to the cervix, when the use of a speculum is not forbidden by excessive inflammatory tenderness, relieve pain far better than by their outward application, or than scarification does. Rest for the genital organs is best obtained by the couch and abdominal belt. The scrofulous diathesis requires special treatment. An hysterical condition often prevails after the inflammatory etages have quite subsided, this must be treated on general principles: hydropathy, medicated waters, and a country life may be of great benefit.

We append an analysis of the eight[1] cases detailed by M. Bernutz, to illustrate his description of the varieties of pelvi-peritonitis. The numbers to the cases correspond with those affixed in the book. We have arranged them in three tables. Table I is "the Pre-history," or general condition of the patient previous to the invasion of the special affection. Table II contains (*a*) "the History," or account given by the patient of the commencement of the attack; and (*b*) "the Examination" by the physician, with the general and local symptoms. Table III gives the progress, termination, and autopsy. The cases should be read continuously, according to the number affixed to each stage.

TABLE I.

THE PRE-HISTORY.					
Case.	Constitution.	General health.	Menstruation.	Pregnancies.	Age on admission.
1	Lymphatic	Fair	Irregular	None	18
2	Good	Good	Regular	One	19
3	Good	Good	Regular	None	22
5	Lymphatic, scrofulous	Hyteria, epilepsy, dyspepsia	Irregular, Dysmenorrhœa, leucorrhœa	One	
6	Lymphatic	Weak lumbar pains	Irregular, leucorrhœa.	One	33
7	Feeble, delicate	Hysteria, dyspepsia	Irregular	None	23
8	Strong	Good	Regular	Now pregnant	19
9	...	Good	Regular	Three	33

[1] There are nine cases detailed, but Case 4 is here omitted, as it is a report of an operation performed for ovariotomy, but the supposed tumour turned out to be the intestines matted together by old pelvi-peritonitis.

Table II.

(*a*) The History.			(*b*) Examination on Admission to Hospital.		
Case.	Precurrent disease.	Symptoms of pelvi-peritonitis.	General appearances and symptoms.	Abdomen.	Vagina.
1	Gonorrhœal vaginitis	Four days, general malaise; pain in bas ventre, increased on defæcation or fatigue	On twelfth day of illness, feverish; suffering; pain in bas ventre, especially left side and on defæcation	Too tender for exploration	Vaginitis; anterior, left and right culs-de-sac filled by a painful tumour; right cul-de-sac free.
2	Syphilitic mercurialisation; scanty menstruation	Two days after menses, rigors; pain in bas ventre and right iliac fossa	On fourth day, face anxious; dorsal decubitus; constipation; pain in bas ventre	Hard swelling along right lateral ligament	Vagina hot; uterus pushed up behind pubis by a round painful tumour, occupying left and posterior culs-de-sac; in right no tumour, but resistance felt.
3	Menses ceased abruptly on a chill	Directly; pain in abdomen and vomiting	On fifth day, dorsal decubitus; sharp pain in bas ventre; slight fever	Lower belly very tender	No tumour.
5	Puerperal pelvic inflammation	Abscess opened per rectum; chronic abdominal distress; hysterical fits brought on by use of uterine sound	Six years later, hectic; phthisis; tubercular diarrhœa	Slight pain on pressure at iliac fossæ	Uterus fixed by adhesions felt in lateral and posterior culs-de-sac.
6	Ulceration of os healed; cervix hypertrophied	Pain in right and left iliac fossæ, without cause while in hospital; fever shiverings	Phthisis	Pain in lower belly on pressure, especially in right side	Uterus fixed in right latero-version; on right side a tumour equal to a hen's egg, extending behind os.
7	Menses arrested by washing	Next day, abdominal pain; uterine colic	On seventh day, face pale, and suffering; constipation.	Pain on pressure, chiefly in left iliac fossa	Uterus anteverted; in right cul-de-sac a small tumour; left cul-de-sac painful, no marked tumour, but resistance.
8	None	Three days pain in lower belly	On fifth day, fatigued look	Fundus uteri tender and rather to right of median line	Uterus three months pregnant, cervix towards left; anterior and right culs-de-sac filled with uterus; posterior free; left partly uterus, at the sides of which were some points of resistance.
9	Criminal instrumental abortion	Four days after, pain in lower belly	On ninth day, prostration; pale; diarrhœa	Too tender for exploration	Ill-defined resistance in all the culs-de-sac.

Table III.

Case.	Progress.		Death.	Autopsy.
1	Seventeenth day, fever and vaginitis less	Tumour less extensive	Pleurisy, empyema a month later	Viscera matted together, and depôts of pus, corresponding to tumour felt in life; no trace of uterine cellulitis.
	Nineteenth day, recrudescence	Tumour unchanged		
2	Seventh day, fever, pain .	Vagina cool; tumour less		Bridles of adhesion tying uterus; Fallopian tubes distended with muco-pus; no perforation; no trace of uterine cellulitis.
	Ninth day, improvement .	Left cul-de-sac, tumour decreased; uterus more *in situ*. Right, pain and swelling as before		
	Thirtieth day, well . . .	Left, tumour gone; bridles of adhesion twist uterus. Right, no pain, some resistance	Variola shortly after	
3	Seventh day, worse; peritonitis general	Tumour found post-cervicem; soft, semifluctuating, tender	General peritonitis	Intestines, uterus and broad ligament matted together, so as to form a cyst out of the so-called Douglas's space, filled with purulent serum; no blood clot; ovaries healthy; Fallopian tubes both distended with creamy pus and pavilions showing inflammatory fringe; uterine cellular tissue healthy.
	Tenth day, worse; abdominal pain more acute	Tumour larger, smooth, not tender, feels per rectum like a hæmatocele		
5	Twentieth day, sharp pain in right iliac fossa	Uterus as before	Phthisis	Peritoneal adhesions between omentum, cæcum, sigmoid flexure, utero- vesico- and recto- culs-de-sac filled with old adhesions; broad ligament thickened by external adhesions, but cellular tissue healthy; ovaries contained crude tubercle, as is found in the testicle.

TABLE III—*continued.*

CASE.	PROGRESS.		DEATH.	AUTOPSY.
6	Fifth day, pains soothed . .	Tumour fills right pelvic cavity; pus ʒj drawn off per rectum with trocar		Adhesions forming depôts of pus; tubercle scattered everywhere; right ovary disorganised; right Fallopian tube filled and expanded by purulent tubercular matter; left the same.
	Sixth day, night sweats; diarrhœa	Tumour again punctured; no pus, but soon after passed some at stool	Phthisis two months later	
	Fortieth day, improvement .	Right cul-de-sac free; uterus tied by adhesions		
7	Twelfth day, metrorrhagia and expulsion of clot relieved pain	Right cul-de-sac freer; tumour smaller. Left cul-de-sac natural	Typhoid fever a month later	Peritoneal adhesions between right broad ligament and intestines, and between uterus and rectum, especially on the right side, matted, amongst which were the ovary and tube; right tube distended with muco-pus; left normal; ovaries healthy.
	Twenty-eighth day, well .	Right cul-de-sac, some bridles of adhesion; ovary painless. Left cul-de-sac free		
8	Seventh day, abortion . .	.....		
	Ninth day, occasional dull pain in iliac fossa	Right cul-de-sac, a small ill-defined resistant swelling. Left cul-de-sac, well marked swelling equal to a hen's egg, painful	Acute atrophy of liver a month later	Marks of old pelvi-peritonitis; pus in left pavilion, and in both Fallopian tubes; nodule of thickened cellular tissue in right broad ligament; uterine cellular tissue healthy.
9	Fifteenth day, increased debility and abdominal pain	Smooth tumour, filling post erior and left culs-de-sac, thrusting uterus forwards	Pyæmia a month later	Adhesions between rectum, uterus, and broad ligament; left tube distended with purulent mucus; tubo-ovarian hypogastric and crural veins blocked by phlebitis.
	Twenty-second day . . .	Uterus in normal position, fixed by adhesions felt post-uterum		

Versions, Flexions, Prolapse.—No condition of the uterus has attracted more attention, and been the subject of a greater variety of treatment, than when it is found out of its supposed normal position. A woman comes for advice, complaining of general malaise, dyspepsia, intestinal irregularity, usually constipation, with, perhaps, frequent desire to micturate, uneasy sensations referred to the womb and adjacent parts, bearing down, pain in the back and lower belly, catamenia irregular and perhaps dysmenorrhœal, leucorrhœa, &c. On examination the uterus is found retroverted or retroflected, or both, or in the opposite position of version or flexion, without any marked disease. The question arises, are the morbid uterine symptoms caused by its apparent abnormal position? By many the answer has been given in the affirmative, and a mechanical treatment been adopted with a view to remedy the "deviation." The conclusion arrived at by M. Goupil is, "that deviations of the uterus, when simple, with the exception of prolapsus and providentia, do not cause any functional disturbance." To prove this he first gives the result of statistical investigations by Huschke, Boullard, Depaul, Cusco, Aran, Richet, and himself, as to the normal position of the uterus, which show that this in the fœtus is ante-flexion, in girls before menstruation the rule continues but exceptions increase; after puberty, ante-flexion and ante-curvature exist in rather more than one half. After pregnancy the axis of the uterus corresponds with that of the pelvic brim.

He then, in order to fix a standard of normal position and proportion, gives a number of measurements of the cervix as to its size and distance from the ostium vaginæ, the depth of the vaginal culs-de-sac, &c. &c.: and, lastly, examines in detail the various versions, flexions, and descents of the uterus, and their connection with the train of morbid symptoms frequently ascribed to their influence.

One great source of error is our ignorance of the occurrence of deviation without uterine distress; for vaginal examination is rarely made until the patient's symptoms openly demand it. M. Goupil, taking advantage of his position at the Lourcine (a "Lock" hospital), examined, by "the touch," every patient that was admitted (229), and thus was led to the conclusion above mentioned.

A retroversion was found in fifty-one cases, of which fourteen were nulliparæ. Of the latter only three presented any morbid symptoms attributable to the version; of these, two had suffered from pelvic peritonitis, and the other came into the hospital for vaginitis, being then free from uterine distress. The uterus, on December 10th, was ante-verted and movable. On Decem-

ber 27th the catamenia appeared, and stopped abruptly in the evening. The next day she complained of uterine disturbance, and pain in the lower belly and groins. The uterus was found in the same position as before, but somewhat larger and heavier. The morbid symptoms gradually abated under appropriate treatment. Ante-version, in some cases, is caused by cicatricial adhesion between the cervix and floor of the vagina; in some by peritoneal utero-vesical adhesions; in many cases the cause is undemonstrable.

We see that this version occurs more frequently in multiparæ, and in them the uterus is also more frequently excessively mobile, changing its position as the patient is in the recumbent or erect posture. When no important lesion is discoverable, as old pelvi-peritonitis, we can easily understand how the uterus which has suffered pregnancy is liable to congestion, shown by uterine catarrh and excessive sensibility; and mobility here provokes pain and distress, which is relieved by external or internal appliances to steady and fix the uterus. It is probable, too, that varices of the broad ligaments and ovarian varicoceles often exist in the class of women (*e. g.* washerwomen) who are subject to venous congestion, suffering from hæmorrhoids, and varicose legs. In some cases the pains complained of must be attributed to neuralgia and hysteria.

Retroversion, says M. Goupil, when uncomplicated, gives rise to neither pain nor any other symptom. It usually occurs after a confinement, and there is almost always some falling of the womb. When it is found accompanied by uterine distress, this is due to some affection of the tissues; and if this be cured the position of the uterus is of no consequence. M. Goupil, however, passes over without notice an important class of cases, where the position of the uterus helps to keep up the affection of its tissue, just as in the case of many inflamed structures, as the breast and testicle, or in œdema of dependent parts, when the position has a tendency to impede circulation, or to constrict the affected part. It is the want of nice discrimination between the case that is benefited by a mechanical support and the case where a foreign body increases the morbid condition of the affected organ, or acts injuriously on the contiguous tissues, that has given rise to the unqualified condemnation of mechanical apparatus, on the one hand, and the malapplication of it on the other. The pessary, as M. Goupil rightly observes when treating of prolapsus, is a mere palliative; but even an intra-uterine stem may, we think, be beneficial by acting as an irritant to the cervix, and causing an increased discharge, thereby unloading the vascular rete and lessening congestion, while it keeps the canal open; and a vaginal pessary that gives indirect support to

the uterus by distending the walls of the vagina, and so drawing on the cervix and tending to elevate the fundus, or directly supports the fundus, may be of much service. But we quite agree with M. Goupil that the forcible redressment of the uterus, and the endeavour to keep the organ in its supposed normal position by mechanism, as though the deviation was the cause and its removal the remedy, is an unscientific treatment, and likely to cause more mischief than the existing disease.

The chapter on latero-versions and flexions contains some ingenious observations on their congenital origin. Practically, they are not of consequence, as they do not of themselves cause morbid symptoms, nor influence existing disease. For this reason, and because the examination of the patient is usually in England only made in the accouchement position, this class of deviations has not been so prominently brought under notice as others.

Simple ante-flexion, like the other flexions, is of itself not productive of morbid symptoms; but inasmuch as the cervical canal is readily diminished in capacity when the mucous membrane is affected, the uterus is more liable to menstrual or leucorrhœal retention, and thus this special conformation predisposes to obstructive dysmenorrhœa. M. Goupil shows, by illustrative cases, that though the flexion is not infrequent, as he found it in 34·78 per cent. of nulliparæ examined, yet in every case in which uterine distress was complained of uterine catarrh or congestion was also present; and when these were cured the uterine symptoms disappeared, although the ante-flexion remained. M. Goupil regards pelvi-peritonitis as the chief cause of uterine disturbance, and urges that there is a special relation between flexion and serous inflammation. He rejects "the purely mechanical theory of constriction, and with it the treatment of incising or dilating the cervix;" but his colleague, M. Bernutz, when treating of menstrual retention, admits that division of the cervix may be of service in some cases of dysmenorrhœa.

M. Goupil does not appear to have dissected any flexed uteri, and makes no mention of the pathological wasting of tissue referred to by Virchow and others. He does not think that flexion is caused by adhesions in the vesico-vaginal cul-de-sac, but that the flexion must have existed previous to the inflammation.

While we think that the limited field in which M. Goupil worked has been utilized by him to great advantage, and that he has proved his point, viz. that simple flexions are not morbid conditions demanding of themselves a cure, but that, where uterine disturbance is coexistent, the cause must be looked for

more deeply than the prominent flexion; more extended observations would have led him to consider how far the original development, frequently an arrested one, may influence disease, and that in some cases operative measures may facilitate the recovery to health, as in the case of congenital phimosis, &c.

Retroflexion, like its converse, is sometimes congenital, and often exists without inducing uterine disturbance; indeed, it is of less consequence than ante-flexion, as dysmenorrhœa is less frequently associated with it. M. Goupil notices that elongation of the cervix is not infrequent, and may give rise to an apparent but not real prolapse. When it occurs in puerperæ, the flexion may have been caused by post-partum inflammation. Constipation, which is an ordinary coincident symptom, is referred by him to adhesions interfering with the action of the gut; for he says that the touch per rectum demonstrates that no sufficient pressure is made by the uterus. It does not seem to us unlikely that both in retro-version and -flexion constipation may act very powerfully, both directly mechanically, and also by the congestion of the hæmorrhoidal vessels consequent on the loaded state of the bowel. Of the important complication with pregnancy M. Goupil does not treat.

Prolapse of the womb is divided by M. Goupil into three forms when it occurs simply, when it is accompanied by elongation of the supra-vaginal or of the infra-vaginal portions of the cervix. The first variety is that usually found in aged women, and it is often consequent on repeated labours.

M. Goupil passes over without much discussion the disputed subject of the mechanism by which prolapse is caused. He cites a case of vesical calculi, which were deposited, after the womb had fallen, in the pouch of the prolapsed bladder, and thinks that sometimes the calculi may be the cause of the vesical prolapse. In the description of the other two varieties of prolapsus, M. Huguier's treatise on elongation of the cervix (Paris, 1860) has been largely drawn upon, and his opinions generally acquiesced in. Hypertrophy of the cervix, when there is no other affection and no real prolapse, is not a cause of functional distress, though this may be readily set up by coitus, &c.; and so the congenital development become a cause of disease, even ending in fatal peritonitis.

M. Goupil brings evidence of elongation of the supra-vaginal cervix in five sisters, all of whom were sterile. He is greatly averse to the use of the sound, and recommends a gum-elastic catheter, the stylet being withdrawn for an inch, if absolutely required to diagnose between elongation of the cervix and prolapse of the fundus.

In the chapter on diagnosis M. Goupil again reiterates his

opinion that the distress accompanying uterine deviations originates in pelvi-peritonitis, or metritis, or congestion, augmented by abnormal mobility of the organ. The abdominal belt and pessaries act by limiting the movements of the womb, the former by pressing down the viscera, the latter by distending the vagina or imparting a new direction to the uterus. He reminds us that the latter must be used with great caution and only after all acute inflammation has subsided, quoting cases where fatal peritonitis has been relighted on the application of a pessary when chronic pelvi-peritonitis was only dormant.

Sundry pessaries are described as Kilian's, Zwanck's, Boser's, &c.; and an apparatus, designed by himself, consisting of an abdominal belt carrying a jointed swan-necked rod, having at the other end an intravaginal cupped stem for the support of the prolapsed uterus. Those interested in this subject should refer to the published description of instruments exhibited by the Obstetrical Society last year (1866). The various operations put in use for contracting the vulva or vagina, or both, episioraphy, perineoraphy, M. Goupil thinks have not proved ultimately successful. The last-named operation, when rupture has occurred at labour, he would perform from the fifth to the eighth day, as, previously, the woman may suffer from the exposure of her person, and later the edges of the wound will require more extensive parings to get a sufficient raw surface.

The ablation of the cervix with the knife for elongation, practised by M. Huguier, is warmly recommended. At the same time, M. Goupil believes that the ascent of the uterus depends chiefly on inflammation of the diminished cervix, together with that of the upper portion of the vagina and the neighbouring parts, morbid adhesions, and general nodular contraction taking place. He details two cases where he found removal of the infra-vaginal portion of the cervix with the ecraseur give great relief, if not absolute cure, and thinks that, when practicable, this mode is preferable to the more extensive operation of Hugnier, being simpler and less dangerous to the patient.

We have to thank Dr. Meadows for the careful arrangement of excellent indices to the subjects treated, and to the bibliography, which add much to the value of the work. The text has been well translated, and though considerably abridged from the original, the material facts and arguments are throughout fairly brought forward; and we think the members of the Sydenham Society will be well satisfied with these volumes.

Review V.

Clinical Surgery in India. By J. Fayrer, M.D., F.R.C.S., and F.R.S. Edin.; Surgeon, Bengal Army; Professor of Surgery in the Medical College; First Surgeon to the Medical College Hospital, Calcutta, &c. London. 1866. 8vo, pp. 774.

Clinical Surgery in India is a title which recommends itself to us, and we welcome with pleasure the book which bears such a name. We know pretty well what is the state of clinical surgery here in our own country; but it is a fresh interest to us to learn what is the state of clinical surgery in our Indian empire. The various classes of our home population, the conditions under which they live, and the diseases that affect them, are all subjects which are tolerably familiar to us; but when we travel to the far East we meet with different conditions of life, different races of people, different forms of disease from those that we are accustomed to; and these cannot fail to arouse our attention and to excite our interest, in the hope that they may throw some light upon the phenomena of disease, and assist us in solving the difficult problems which life and death present.

In this conntry the field is comparatively small, and well supplied with husbandmen. There is hardly a village or a hamlet which does not come under the observation of an intelligent medical man. If a case is allowed to go on getting worse, until it has reached formidable dimensions before it is submitted to a medical man, it is not because there is no advice to be had, but because the patient neglects to avail himself of it. But in India the case must be very different. There the number of regularly qualified medical men is very small compared with the area of the country and the amount of the population; and it may easily happen that a patient is so far removed from advice that he cannot obtain it if he would, and thus it comes to pass that diseases are allowed to run a long course, and morbid growths attain a gigantic size before they are brought under the notice of the medical men. Something of the same kind used to occur in this country up to a recent period; in fact, until the facilities for communication increased on the introduction of steam power. We are often told that the present generation does not see such examples of disease as the last generation had to deal with; and the records of surgery certainly seem to bear out this remark. Now, why is this? No doubt because maladies are brought earlier under the care of a medical

man, and under the regular rules of treatment; and what used to occur in this country until thirty or forty years ago takes place at the present day, and on a much larger scale, in our eastern possessions. But this is not the only feature which gives clinical surgery in India a special interest; not only are the cases of a more neglected and aggravated character than the ones which we see in this country, but in some instances it happens that diseases which are rarely seen at home are quite common in the east, and that our brethren of the Indian medical service are able to give us most important information respecting them. For these reasons Dr. Fayrer's 'Record of Clinical Surgery in India' presents many interesting features, and can hardly fail to be read with pleasure by the profession at home.

Dr. Fayrer opens his volume with an address delivered before the Bengal Branch of the British Medical Association, and closes it with an introductory address to the students of the Calcutta Medical College.

Let us first of all, before we proceed to notice any of the surgical cases detailed, take a glance at these two addresses, for they belong to the same class, and may well be grouped together. They were delivered, we observe, before mixed audiences of Europeans and natives; and they afford a most satisfactory proof of the progress which medical study has made in our eastern possessions; and surely the spread of sound surgical and medical knowledge in a country where nothing but empiricism existed before must be an unmixed good. We are sometimes taunted with our conduct towards the semi-civilized and uncivilized communities, and certainly such taunts are not altogether without foundation. The means by which the European has gained a footing in foreign countries have sometimes been of the most discreditable kind; and the way in which he has introduced his vices, to the manifest injury of the inferior races, has been disgraceful to his morality. No thoughtful man, who reflects upon the way in which we have obtained an entrance into India, to China, or to Japan, can help admitting that such is the case. It is therefore very refreshing to turn to the opposite aspect of the subject, and to contemplate the medical science which we have introduced, and the medical schools which we have planted, and to remember that here at least we have conferred a real blessing upon the native populations with which we have been brought in contact. A better illustration of this could hardly be given than the fact mentioned by Dr. Fayrer, that in the year 1864 no less than 1200 bodies were dissected in the medical school of Calcutta, whereas thirty years before dissection was entirely unknown. This one

fact speaks volumes. It tells us of prejudices that have been broken down, of the flourishing medical school which exists at Calcutta, and of the qualified native doctors who are every year sent forth to carry the blessings of scientific medicine and surgery throughout the length and breadth of our Indian empire.

If we turn now to the body of Dr. Fayrer's volumes, with which we are more immediately concerned, we find that he deals with many of the most important topics in surgery. A glance at the table of contents shows us that we shall here find osteo-myelitis, perineal section, aneurysm, fractures, lithotomy, abscess, elephantiasis, hernia, amputations, tetanus, and a number of other interesting subjects, viewed from an Indian standing-point: and this enumeration of subjects gives but a feeble idea of the contents of the volume before us; for there are many short chapters in it which only occupy a few pages, but which contain cases of great professional interest, and which are very suggestive to the surgeon. Many of these cases have been recorded by the native dressers to the Calcutta Hospital, and it would be difficult to find cases better reported anywhere. The way in which they have been observed and noted would be a credit to any of our metropolitan hospitals; and these reports have been amplified and their value enhanced by Dr. Fayrer's clinical remarks. The subjects which are considered at the greatest length are, osteo-myelitis, hernia and its radical cure, elephantiasis, tetanus, and amputation at the hip-joint; but, besides these, atresia oris, "nævoid elephantiasis," melanosis, and a variety of other subjects are briefly discussed. We have observed that the malignant diseases find but a very small place in this volume. How is this? Is it a mere accident? or is it a significant fact, tending to confirm the opinion which has been expressed by some writers that cancerous diseases are of much less frequent occurrence in the east than they are in the west?

With referenee to osteo-myelitis Dr. Fayrer is of opinion that this subject has not received the attention which it deserves, and he deals with it at some length. He points out how frequently a suppurative inflammation of the bone and the medulla follows amputations and other operations—how often this seems to give rise to pyæmia; and he advocates, as the only rational and effective plan of treatment, amputation at the joint above the seat of disease. These views and this plan of treatment are illustrated by some well-chosen cases, and there can be very little doubt that, as far as it goes, it is a sound and reasonable method of practice. But we cannot help thinking that osteo-myelitis must be a more frequent and a more severe complication of operations in India than it is in this country; and per-

haps this may be the reason why it has not received a larger share of attention from European writers. It is possible that the climate of the East, the hygienic conditions of the hospitals, or the constitutional differences between Asiatics and Europeans, may account in some degree for this. But, however this may be, it is certain that in this and in other portions of Dr. Fayrer's work, we have noticed that the inflammatory process, once kindled, seems to run on with great rapidity and vehemence in the class of patients who were the subjects of his operations.

In endeavouring to produce a radical cure in cases of hernia, Dr. Fayrer has used Wütz̈er's method, and a modification of it devised by himself. The modification is very slight, and consists chiefly of an alteration in the shape of the wooden plug which is employed to retain the invaginated skin; so that the principle of the operation is the same as that of the German one. Both of these methods seem to have yielded very fair results; and, as Dr. Fayrer subjected his patients to severe tests before he reported his cases, we are bound to give due weight and consideration to his statistics. By Wütz̈er's method he reports 12 cured and 7 benefited, out of 22 patients, who were operated on. By his own method he reports 24 cured and 6 benefited, out of 38 patients who were submitted to operation. In no case was there any serious symptom, still less any fatal issue, arising from the attempt to bring about a radical cure of the disease. These figures must be considered satisfactory, as far as they go. They are probably as favorable as those which can be quoted in support of any operation of this class; for it seems tolerably certain that we have not yet found means (if, indeed, we ever shall find means) of effecting a radical cure in all cases of this formidable disease.

One of the most interesting chapters in the volume before us is that which relates to elephantiasis. This is a disease which is rarely seen in this country. An hospital surgeon may, perhaps, meet with two or three cases in the course of a long professional life; but in tropical climates it is endemic, and by no means uncommon. Sometimes the disease attacks the genital organs, sometimes the extremities; but it is seldom that both parts are affected in the same individual. Women are subject to it as well as men; but it appears to have a preference for the latter. The ætiology of it is extremely obscure, and the pathology cannot be said to be thoroughly known and understood. It seems to consist of an hypertrophy of the true skin and the subcutaneous areolar tissue, and even the bones undergo an increase in their size and weight. The elements of the skin become exaggerated, forming a coarse fibrous stroma, the interstices of

which are filled with a gelatinous substance; and this increase of size may go on apparently almost to an unlimited extent, until it kills the patient mechanically by the enormous weight which he has to drag about with him. When the disease affects the scrotum, the fibres of the dartos partake of the hypertrophy to a notable degree. The disease is accompanied by attacks of periodic fever, at which times the tumour is painful, and appears to undergo some increase of bulk, so that the more frequent these febrile attacks are the more rapidly it grows.

"Dr. Allan Webb, who has had much experience of this disease, is of opinion that there are two varieties of it; one due to a peculiar intermitting fever occurring twice in the month, at the lunar changes, called by the natives moon-fever. The other variety has for its origin the syphilitic poison, and appears from two months to two years after infection. The first or simple elephantiasis, generally invades the scrotum in men, the labia in women; and the second, or venereal variety, generally begins in the prepuce in men, and the nymphæ in women. The tumour of simple elephantiasis is commonly smooth: the venereal variety, tuberculated on its outer aspect. The advent of the simple variety is often ushered in with considerable fever, pain, and swelling. The venereal variety is slow, chronic, and more free from pain and fever. In the advanced stages, when the tumours have acquired great size, they appear to increase alike without pain or fever, by simple growth, or increase of their proper substance."—p. 307.

Dr. Fayrer then gives an account of the way in which he has been accustomed to operate upon the tumours formed by scrotal elephantiasis, and states what have been the results of his own operations:—

"Of twenty-eight cases, six have proved fatal; five from pyæmia, and one from exhaustion. In the case of a very large tumour, the operation caused great depression, and, being followed by slight hæmorrhage, death occurred from asthenia within six hours. In all these cases the genital organs were preserved, and so far as I am informed, this is always done here, however large the tumour may be."—p. 320.

The aortic tourniquet, which has lately been found of so much assistance in performing large operations about the lower part of the body, does not seem to have been used by Dr. Fayrer in any of his cases. We should think it would be found a very valuable means of controlling the hæmorrhage, which is often one of the most alarming complications in operating upon these large scrotal tumours.

Another chapter in Dr. Fayrer's work is occupied with the subject of elephantiasis of the leg, and its treatment by ligature

of the femoral artery. This is a plan which has been recommended by some surgeons, and it is worth trying any remedy to cure so fearful a disorder. But the results which it has yielded in Dr. Fayrer's hands are not encouraging. He has only tried it twice; and in the first case death occurred from pyæmia, while in the second the relief obtained was very trifling. When cases of this kind are seen early, a good deal may be done by the use of astringent lotions, bandages, and constitutional treatment; but when they have reached an advanced stage they appear to be very hopeless.

Dr. Fayrer has seen several examples of a peculiar kind of elephantiasis of the scrotum, which he believes has not been described before, and which he proposes to call "nævoid elephantiasis." In these cases the ordinary appearances of elephantiasis are supplemented by a nævoid condition of the vessels, giving the tumour a purple hue and a highly congested aspect. Perhaps this may depend upon purely mechanical causes—upon an obstruction to the venous circulation, leading to a retardation of blood and to a varicose state of the vessels.

Three cases of traumatic tetanus are reported by Dr. Fayrer, all of which recovered. The first was treated by section of the median nerve, as well as by drugs—the second and third were treated by opium-smoking, but also by drugs and ice to the spine. Though, therefore, the results were very satisfactory, they do not enable us to argue much as to the curative treatment of this most formidable disease, for, in each instance, a variety of remedies were employed, and there was nothing very decided in the histories of the cases to show to which of them the recovery of the patient was to be attributed.

We have now noted a sufficient number of points to give our readers an idea of the comprehensive character of this work, and of its clinical value. Surgeons at home will peruse it with pleasure; and those who are in practice abroad ought to admit it to a place on their shelves, for they will often find it of great use to refer to, more particularly in relation to those oriental maladies which are seldom seen by English surgeons, and which are only briefly handled in our treatises on surgery.

We cannot help thinking that the form of Dr. Fayrer's book is unnecessarily bulky. The type is so large, and there is so little of it on each page, that the size of the volume is out of proportion to the matter which it contains; and in these days, when our shelves are already crowded, there is no occasion to add needlessly to the thickness of books. This volume is not the product of an Indian printing-press. It would be more interesting in some respects if it were. It has been printed at home by one of our first publishers, and the illustrations with

which it is adorned are woodcuts made in this country from photographs taken in Calcutta.

Review VI.

Die Krankhaften Geschwülste. Dreissig Vorlesungen gehalten während des Wintersemesters, 1862, 1863, *an der Universität zu Berlin.* Von Rudolph Virchow. III. Band; I. Hälfte.

On Tumours. Thirty Lectures delivered during the Winter Session of 1862, 1863, *in the University of Berlin.* By Rudolph Virchow. Vol. III, Part I, pp. 496. Berlin, 1867.

The unexpected publication of the third volume of this book in two separate parts, of which the first has only as yet appeared, renders expedient a separate notice of each of the two parts. For, first, the material contained in this first part is so rich and extends over so wide a field as to supply of itself ample food for study: secondly, the subject of the cancers, which will, we doubt not, be most fully dealt with by the great cellular pathologist, will be more satisfactorily treated of in a separate review: and, thirdly, it would be impossible to do justice to both parts in one paper without trespassing too much on the space allotted to our subject. There is, certainly, nothing that Virchow touches which he does not adorn; and it is difficult to say whether in reading his writings one admires most his great diligence, his rare gift of pathological observation, or his power of inductive reasoning. The only fault that can be found with his writing in the book before us is, that he is too often apt to repeat himself. This, which in the original delivery of the lectures would be an advantage, becomes a fault in the book.

Lecture XXII treats of *Struma;*—a word used in Germany in quite a different sense to that which attaches to it in England; being there applied generally to what we designate as bronchocele, or the French as *goître,* and not being in any sense employed as a synonym for scrofula. The plan adopted in the classification of the different varieties of bronchocele is one which Virchow loves to employ in dealing with the morbid anatomy of the organs of the body generally—that, namely, of taking the several component tissues of the organ in question, and classifying the diseases of the organ according to the tissue which is principally involved. Thus, regarding the thyroid gland as made up of follicles partitioned off by connective tissue and everywhere permeated by blood-vessels, we have, basing

our classification on an anatomical standpoint, a follicular, a fibrous, and a vascular bronchocele.

A. *The Follicular Struma or Bronchocele.*—The healthy thyroid gland is mapped out by fibrous partitions of three different sizes—large septa, which divide the gland into lobules; medium-sized septa, which subdivide these lobules into lobulets; and very fine septa, which encompass the ultimate follicles. The follicles are not to be considered as isolated or independent sacs, but communicate one with another; so that a lobulet is a cluster of branching and inter-communicating follicles, not an aggregation of separate sacs. Further, the follicles are not lined, as is supposed, by epithelium, but are filled out with round nucleated cells, very like those of lymphatic glands. Now, the bronchocele in question, the commonest form of all, is a follicular hyperplasia, and is not, as many think, constituted by a new and distinct formation of gland-substance in the stroma or connective tissue of the organ. Its construction is the result of the following sequence of changes. The pre-existing cells of the follicles become irritated, undergo division, and multiply. Thus multiplying, they push their way in the form of little tap-shaped offshoots (zapfen) from the follicles into the surrounding soft tissue, and form there, by a process reminding us of gemmation in the lower animals, fresh follicles, which may at a later period be cut off by growth of connective tissue round them and separated from their parent, but which, as he has satisfied himself by repeated microscopical observation, are never distinct new formations. Seeing that this follicular increase may go on indefinitely, the size and rapid enlargement of the gland in certain cases are thus well accounted for. At the same time that this cell-increase progresses, a fluid is being formed, which, by its greater or less consistence, gives more or less firmness to the tumour. The form in which this fluid most often appears is that which has been denominated as *colloid.* It is the opinion of Förster and others that this colloid substance is made out of cells by a process of transformation or metamorphosis which the cells undergo: but this is not exactly the case. Its first origin is, Virchow believes, in a clear hyaline fluid, which is albuminous, akin to the protoplasma, and escapes or transudes from the cells of the follicles. Its subsequent conversion into colloid is effected by a combination of this simple albuminous fluid with soda and salt. In this way is formed an amorphous, homogeneous or finely granular substance, sometimes enclosing cellular or nuclear forms, and chemically composed of albumen, alkali, and salt—a substance which can be artificially made in the laboratory by mixing the serum of blood with dry salt, filtering, and then dropping into the mixture a concentrated solution of soda. It

is met with in two forms, the one soluble in water, the other insoluble in water, hardly soluble in boiling acetic or hydrochloric acid, and becoming hard on the addition of alcohol; this difference in solubility depending on the different proportions of soda and salt which the substance contains. There can, he thinks, be little doubt that, bearing in mind the natural presence in the gland of a fluid rich in albumen, soda, and salt, it is by the meeting of these that colloid is formed in the body just as in the laboratory. It must, however, be remembered that the presence of colloid does not necessarily constitute a bronchocele. Colloid bodies may be found in considerable number in the thyroid gland, both of men and beasts, without any noticeable enlargement of the gland. That which causes the enlargement, the tumour, is the follicular hyperplasia: nor are the contents of these multiplying follicles in all cases colloid: they may be quite fluid, constituting the softer variety of bronchocele ("struma follicularis mollis"). But the typical bronchocele and that which reaches the largest size is the colloid bronchocele. The *cysts* of various sizes, sometimes colossal (Riesenkropf, gigantic bronchocele), that are met with in bronchoceles, are formed by atrophy of the walls of the follicles, from the increasing pressure of their contents, and by the subsequent confluence of many follicles into one. At the same time the colloid softens and is converted into a sticky fluid, rich in albumen, which fills the cyst and which may present various shades of colour from an admixture of blood, a consequence of hæmorrhage into the cyst. This pressure, atrophy, and consequent fusion may thus go on indefinitely till cysts of the largest and most formidable kind show themselves. Such thyroid cysts will sometimes seriously endanger life from the rapidity and extent of the hæmorrhage to which they are liable. They will also, occasionally, inflame and suppurate, thus placing life in jeopardy by bursting into the trachea or pharynx.[1]

B. *The Fibrous Bronchocele,* or "Struma fibrosa," is that in which the connective tissue of the gland is more especially the seat of irritative hyperplastic increase. The follicles here play a most unimportant part, being reduced to mere atrophied remains (as the liver-lobules in cirrhosis), or, in extreme cases, entirely destroyed. This is essentially a chronic variety, often a later change in what has been a follicular bronchocele. The fibrous thickening affects, as a rule, parts only of the gland, giving rise to the presence of very hard knobs or lumps, and is at times of cartilaginous density. As a still later change, lime

[1] See a very interesting case of the kind reported by Mr. Savory in the 'Lancet' of November 24th, 1866.

may be deposited in the connective tissue, and the "struma ossea" results.

C. *The Vascular Bronchocele,* or "Struma vascularis," is that in which the blood-vessels increase in size and number. The thyroid gland, which is naturally very vascular, and subject to considerable variations in its supply of blood, is sometimes the seat of intense vascular hypertrophy; the increase being predominant either in the arteries, large and tortuous clusters of which are seen ramifying over its surface, or in the veins, which, in the form of great varices, permeate the interior of the tumour. Such tumours as these will occasionally prove rapidly fatal by a sudden swelling up of the gland (much in the way that the erectile tumours, to be afterwards described, swell up) and consequent suffocation.[1]

To the above varieties must be added one of extreme rarity, the *Amyloid Bronchocele,* which is, however, occasionally met with. In this, as in other organs affected with amyloid degeneration, the small blood-vessels are the first and principal seat of the change.

The *causes* of bronchocele and of its close ally, Cretinism—for in all districts where cretinism is endemic, goitre is likewise endemic, though the converse does not hold—are the subject of a lengthy discussion, having been specially studied by Virchow in Lower Franconia, in Bavaria. And first, the influence of climate and place as exciting causes being accepted as indisputable, the question follows—Is there anything in the air or water common and peculiar to all districts where goitre is endemic,

[1] The writer of this review was witness of a singular case of this kind that occurred two years ago. A girl, aged 18, presented herself as an hospital out-patient with a large bronchocele, in which both lobes of the gland and the isthmus were involved, and which was very vascular, as indicated by the heaving of the tumour at each pulsation of the arteries. There was no cardiac affection and no prominence of the eyes. She complained of some difficulty of breathing, increased on exertion; but there was no ground for suspecting the danger which was, as the event proved, imminent. One evening, a week after she was first seen, on the occasion of her going out to a dance, she was running up-stairs considerably excited to prepare for the entertainment, when her breathing suddenly became embarrassed, and the tumour began to throb with unusual violence. She was brought down and laid on a sofa by her mother, but the dyspnœa increased, and she died suffocated in about two hours afterwards. The autopsy showed a large and very vascular colloid bronchocele, covering the larynx, extending down the trachea nearly to the arch of the aorta, and lapping round on both sides posteriorly so as almost to embrace the œsophagus. The trachea was flattened by pressure in such a way that its calibre was reduced to less than half its natural size. All the other organs of the body were healthy. It seems quite reasonable to attribute death in this case to swelling up of the vascular tumour, in consequence of excitement, and the complete closure of the already flattened trachea. The case offers a good illustration of the kind of tumour under discussion, and of the way in which life is endangered thereby.

widely scattered as they are? He can return no better answer to this question than Inglis and M'Clelland long ago returned —that the prevalence of limestone formations in goitrous districts is an ascertained fact. Still, Virchow is not satisfied with the opinion expressed by M'Clelland, that the presence of endemic goitre is directly dependent on the use of water impregnated with lime-salts. Lime or magnesia taken into the body in the drinking water can hardly be a direct cause of goitre, because the latter prevails in districts where neither of these substances is present in the water in any but a very small quantity. He hazards a hypothesis, that there is *something* contained in the water, and, possibly, in the vapour of the water dispersed through the air, which acts as a miasma: but what that something is has not yet been discovered. Sojourners in a goitrous district may and do become goitrous while there, and lose their goitres on leaving the district. Many such cases are recorded. Equally undeniable is the influence of local causes in the production of cretinism: and, although cretinism is undoubtedly hereditary, yet the territorial and local influences are much more powerful to produce it than are the hereditary: for Virchow has seen a perfectly well-formed and healthy child born of a cretin; and, again, the same which has been said of goitre may be said of cretinism, that settlers in a cretinous district who have previously borne healthy children will, from the date of their arrival, produce cretins. If to this fact be added another, that cretinism is congenital and never acquired *post natum*, we are driven to seek the active cause of cretinism at some period of intra-uterine life: and what is more natural than to suppose that the same something, the miasma, which is operative in the production of goitre, acts through the blood of the mother on the fœtus *in utero*, and brings about the series of defects which constitute cretinism. The most important of these defects—that in the conformation of the skull—was first thoroughly investigated by Virchow, and explained in an elaborate memoir[1] some years ago. In this he showed that the primary seat of faulty development in the cretin skull is in the base, which is shortened unnaturally from premature synostosis of the occipital with the basi-sphenoid and of the basi- with the pre-sphenoid. The same early synostosis might, he found, be present in other sutures, but the typical defect was in the base. It is to be regarded as the effect of some intra-uterine irritation acting on the sutures; and, seeing that congenital bronchocele is often coincident with congenital cretinism, it is hard to resist the conclusion that the same irritant is active in the production

[1] 'Untersuchungen über die Entwickelung des Schädelgrundes,' &c. Berlin, 1857.

of both abnormities. The "reiz" or irritant, Virchow's darling, is thus worked in here as elsewhere. Whether the imperfect cerebral development in the cretin is a secondary effect of the cranial malformation cannot be asserted; the two, at any rate, constantly coexist. Although a full meed of praise must be awarded to Guggenbühl for his disinterested philanthropy; his scheme for curing cretinism is called a "noble dream." The true cretin cannot be improved; he can only be taken care of. Hence all efforts must be directed towards prevention by improving the sanitary condition of those places where cretinism is endemic.

The singular combination of symptoms which go to make up the disease known everywhere in Germany as "Morbus Basedowii," and to the honour of whose discovery both Basedow and our own Graves may fairly and independently lay claim, is fully entered into. The enlargement of the thyroid gland, the first among the trio of symptoms, is not as a rule so remarkable as in ordinary goitre, the most salient feature being the great size of the blood-vessels, especially the veins, and the rapid changes of size to which the gland is consequently subjected. Neither is there any one special kind of enlargement; for the gland may be simply swollen, or it may be so enlarged as to constitute a bronchocele in any of its varied phases and aspects—colloid, cystic, &c. The heart, as the second of the trio, is generally hypertrophied and dilated, especially in its left ventricle, even though the valves are healthy. Lastly, the prominence of the eyes, or exophthalmia, is pathologically accounted for in several ways—by hypertrophy of the intra-orbital fat, by dilatation of the intra-orbital veins, and by fatty degeneration of the recti muscles (v. Recklinghausen). No one of the trio can be called primary or essential, for any one may be absent; but all the three seem to be rather the common effects of one cause. The presumption that this cause is to be sought for somewhere in the nervous system becomes stronger as pathological investigation progresses; and that which was at first a clever hypothesis, that the sympathetic nerve is at the root of all the mischief, is in a fair way to be confirmed by observation as a fact. In a well-marked case of the kind, recently examined at Berlin, in which hypertrophy of the heart, bronchocele, and exophthalmia were present, Virchow found "very decided enlargement and interstitial thickening of the cervical sympathetic." Hence, although the phenomena of exophthalmic goitre correspond in part only with what paralysis, in part with what irritation of the sympathetic might cause, it is highly probable that disease of this nerve is the cause of all the symptoms.

Hypertrophy of the pituitary body, though, comparatively

speaking, unimportant, deserves a passing mention, from the close structural resemblauce which the anterior and larger half of the body bears to the thyroid, and from their similarity of development; the former being an offset from the pharynx, the latter from the œsophagus. The former, like the latter, is subject to hypertrophy ("struma pituitaria"), and is occasionally found filled with colloid, exactly recalling, and chemically identical with, the colloid in bronchocele; the only difference being that its cells are more prone to fatty degeneration than those of the thyroid gland under the same circumstances. In like manner is recognised a "struma supra-renalis," or hypertrophy of the cortical layer of the supra-renal capsules, which closely resembles in structure the thyroid and pituitary body, and which must be regarded as glandular.

Lecture XXIII.—Turning now from the contemplation of the great group which plays by far the largest part in the history of tumours, and on which our attention has hitherto been exclusively fixed—thc group of connective tissue and lymphatic tumours—we come to the consideration of those tumours whose principle and essential structure is of a kind which physiologically ranks highest among the tissues of the body, and which has received the name of "tissue of animal life"—the tumours, namely, which are made up of muscular, fibre or "myomata," those composed of nerve-tissue, or "neuromata," and those constructed of blood-vessels, or "angiomata."

Myomata or muscular tumours.—A few rare instances where the striated muscular fibre plays the principal part in the formation of the myoma are alluded to; as, for instance, myomata of the heart, of which he has three specimens in his museum, and cases of hypertrophy of the tongue, which are with some hesitation included among tumours, being for the most part congenital defects, but occasionally acquired, and consisting of connective tissue in excess, together with a superabundance of muscular substance not displaced by the hyperplastic connective tissue. In like manner, instances of myomata occurring in muscles of the trunk and limbs have been recorded; but none are well authenticated. The myoma proper is composed of smooth, inorganic, muscular fibre, held together and compacted by a vascular connective tissue; the blood-vessels being sometimes so large and prominent that the tumour has almost a cavernous aspect, and is capable, like the cavernous tumours, of undergoing rapid changes in size. This change of size is aided, too, by the muscular fibre in the tumour which possesses active properties, like those of the organ infested, and will contract from time to time, making the tumour hard, small, and pale. The myoma is the result of an irritant

acting upon some part, more especially the mucous membrane, of the organ in which the tumour is seated, and is at first always an outgrowth from the tissue of the organ. Thus, for instance, in the uterus, where the tumour has often the appearance of discontinuity, and is, in fact, discontinuous, so that Paget speaks of "continuous uterine outgrowths," as distinguished from "discontinuous uterine tumours," careful observation shows that *every myoma is alike an outgrowth in its first development;* the isolation by means of connective tissue which it may subsequently undergo being always a later change in the course of its life. This will be presently again referred to. Beginning with the least important of the myomata, those of the *skin* may be enumerated, especially of the scrotum, where muscular fibres abound; of the *œsophagus,* cardiac end of the *stomach,* and upper end of the small intestine, in which localities they grow from the muscular coat, and either push before them, polypus-like, a layer of mucous membrane, so as to project out into the calibre of the tube, or, in the case of the stomach, tend inwards into the peritoneal cavity as well as outwards. In the *prostate,* Virchow recognises with Thompson two forms of enlargement.—*a.* The muscular enlargement, or myoma, which here especially concerns us, is always partial, in nodules or lobules, never involving the whole of the gland; it has its favourite seat in the posterior and upper part of the gland, whence it sprouts, pushing before it the posterior wall, and projecting into the cavity of the bladder, at whose neck it lies like a great valve, constituting what is wrongly termed the "middle lobe of the gland;" it is also met with in the lateral lobes, where it lies imbedded, single or multiple, and enlarges the lobes by its increase backwards towards the rectum, or inwards towards the prostatic portion of the urethra; it is, lastly, *par excellence,* a disease of old age. *b.* The glandular hypertrophy is, as Pauli has shown, more particularly a disease of earlier life, but does not here concern us. In the *uterus,* a partial hyperplasia of the cervix is met with, which sometimes reaches a considerable size, so as to put on all the external appearances of prolapsus. The body of the uterus, however, maintains its natural position, or only slightly sinks, while the great cervix projects beyond the orifice of the vagina. A hypertrophied cervix of this kind, amputated by Mayer, was examined by Virchow, and found to be made up of soft, hyperplastic, vascular uterine tissue. But the true myoma infests, by preference, the fundus of the organ, where muscular fibres are naturally most abundant, and is here met with in three forms, according to the relations which it holds to the uterine walls:—first, the polypus, which projects into the cavity of the uterus; secondly, the subserous myoma, which projects into the cavity of

the peritoneum; thirdly, the intra-parietal or interstitial myoma. The supposition that certain of these tumours are independent formations in, but not of, the uterine tissue, and originate in a cytoblastema deposited among the proper uterine elements, is quite erroneous, and results from a want of proper attention to the study of their first development. The very first trace of a uterine myoma that can be seen is a slight swelling and hyperplastic increase in one of the closely-interwoven bundles of the uterine muscular fibre, which in a short time becomes so decidedly hypertrophied, that it looks like a small knot in the substance of the uterus. This little knot then pushes its way, gradually increasing, into the surrounding tissue, and soon becomes large enough to be dignified by the name of myoma. Now, many such myomata never lose this connection with the uterus, however large they may grow. The continuity of tissue is clearly traceable with the naked eye. Some, on the contrary, have unmistakably the appearance of distinct tumours, being so isolated by investing capsule from the surrounding uterine substance, that they may be clean shelled out, or else hanging from the uterus by nothing but a fibrous pedicle, in which all traces of muscular continuity with the uterus are lost. In these, Virchow strongly maintains that the isolation or separation of the tumour is in all cases an after-change, dependent on excessive formation of connective tissue, and consequent displacement of muscular fibre round and about the growing myoma. In like manner the blood-vessels which enter abundantly into the continuous myoma become in great part cut off from the discontinuous: and thus are explained the discrepancies so noticeable in the statements of different authors, some of whom have found that the tumours are readily injected from the uterine vessels, others of whom have failed in their attempts at injection. Similarly, as regards operation, it makes all the difference whether a polypus be discontinuous or continuous: and the way in which one obstetrician ignores all danger of hæmorrhage in excising polypi, while another goes to work more warily, may be thus accounted for. The description of the first and second varieties contains nothing particularly worthy of notice. The third, or *intra-parietal*, is not only completely surrounded by muscular substance, but appears as a very part of the uterine wall. The various elongations, contractions, and twistings, which the cavity of the uterus may undergo from the presence of this form of tumour, as well as the different flexions of the uterus itself, are enumerated at length. A remarkable phenomenon is seen in the occasional birth or spontaneous expulsion of the intra-parietal myoma and the polypus. In the case of the former, separation from the uterine wall takes place by a process of sup-

puration or sloughing round the tumour, or by the action of the tumour itself in wearing away the muscular and mucous layers which cover it, and is followed by expnlsion with regular labour-pains.[1]

There is no doubt that the myoma may become much smaller by undergoing a sort of fatty degeneration and shrinking of its substance; but he doubts if, as some assert, it is ever completely absorbed. Such a statement has never been confirmed anatomically, and is based only on clinical observation. In like manner the tumour will sometimes become indurated, of cartilaginous hardness, or even calcified, and so remain stationary. Such a calcified myoma, when intra-parietal, is sometimes a source of great pain and inconvenience, and has even been known to cause death. It has hence been sometimes found necessary to remove the mass, either whole or in fragments, by an operation. Many other peculiar forms or appearances are also assumed by the myoma, according to the predominance of one or other of its component structures, or as a result of particular changes to which it is subject. Thus there is sometimes met with a soft variety, in which an abundant interstitial tissue, containing mucine, is present, so as to give the tumour somewhat of the appearance of a myxoma; or, again, when the muscular fibre is in excess to the exclusion of the connective tissue, we see a red fleshy mass instead of the paler myoma proper; or, again, an unwonted development of blood-vessels,

[1] A very interesting specimen in illustration of this is one that was prepared by Van-der-Kolk, and that is now in the Oxford Pathological Museum. The following is the abbreviated translation of Van-der-Kolk's MS.:—"From a woman, aged 50, who had long suffered from the presence of an abdominal tumour. After she was admitted into the Amsterdam Hospital, I examined her abdomen and found the uterus of such a size that I should have suspected pregnancy, had it not been for the age of the woman and the length of time that she had noticed her tumour (more than a year before admission). I therefore concluded that she had some disease of the uterus, probably a fibrous tumour. After a time she was seized with violent pains, as of labour, and with profuse hæmorrhage from the vagina, which ceased and then shortly recurred again and again, till she died exhausted. An immense fibrous tumour is seen filling out the uterus, whose walls closely encompass the tumour, and are as thick as those of the pregnant uterus at the full period of gestation. The lower half of the tumour is partially separated from the uterine walls: and the hæmorrhages which caused death are thus easily accounted for by the rupture of blood-vessels during the act of separation." The great thickness of the uterine walls is then commented on as the probable cause of the attempt at expulsion; and a comparison is made between this preparation and a similar one which adjoins it, but in which the uterine walls are thin and there has been, consequently, no attempt at separation or expulsion. The writer of this review watched another case in the Necker Hospital, at Paris; that of a woman, who, having been some time under observation with a large tumour in the hypogastric region, the nature of which was doubtful, and having suffered from repeated attacks of hæmorrhage, was one day seized with regular labour-pains and profuse hæmorrhage, and slowly gave birth to a great, soft, vascular myoma. Other cases of the kind are related by Cruveilhier, in his 'Anat. Path.' vol. i, Livraison xi.

especially in the large intra-parietal kind of tumour, will cause the growth to assume a cavernous aspect ("myoma cavernosum") —a form remarkable for the rapid changes of size that it will undergo, and for the difficulties that it will often thus throw in the way of diagnosis; or, lastly, a process of softening and disintegration, starting from the connective tissue, may fill the tumour with what look like cysts filled with fluid contents ("myoma cysticum"). This latter has been denominated "fibro-cystic tumour of the uterus," and has been often mistaken for an ovarian cyst, and punctured. The sacs or cysts are always found to have more or less uterine tissue around them; they sometimes reach an enormous size, and are, like many ovarian cysts, often multilocular. Myomata are occasionally formed *between the layers of the broad ligament.* In this situation they are, in the large majority of cases, dislocated uterine myomata; and though in some instances no connection whatever between them and the uterus or any surrounding organ can be traced, yet, seeing that the ovary and the round ligament are, as well as the uterus, centres from which they may be developed, it is probable that they have had at some period of their lives a connection with one of these three parts. Finally, that which is called "*fibrous tumour of the ovary*" has a near relation with the myoma, in that it often contains muscular fibres small and imperfectly developed. This tumour should, therefore, occupy a place between the fibrous tumour and the myoma, and be called "fibro-myoma." Its intimate structure corresponds exactly with that of the hard uterine myoma, the fibres vastly preponderating over the muscular tissue, and blood-vessels being few. Affecting, as a rule, the free end of the ovary, with which it is continuous, it leaves, for the most part, the remainder of the organ uninvolved and recognisable in connection with the tumour. It is seldom of very large size, ranging from that of a hen's egg to that of a fœtal head. Like the uterine myoma, it will sometimes become cystoid, or will put on some of the characters of a sarcoma, growing to a much larger size, and resulting in what must be called a mixed tumour—"myo-sarcoma."

Lecture XXIV deals with Neuromata or nerve-tumours. All that has been previously written on this subject has received at Virchow's hands a thorough sifting and rearranging; for, on the one hand, a large number of the tumours that have been included by authors in this group are no neuromata at all, but either cancerous tumours in connection with nerves, or myxomata, or gliomata, which spring from and are seated in the perineurium or neurilemma, and have no trace of nerve-tissue in their composition. On the other hand, owing to the extraordinary difficulties which beset the microscopical examination of

these tumours, many real neuromata have been confounded with fibrous and fibro-nucleated tumours. The true criterion, however, is to be sought in the relative quantity of nerve-elements that a given tumour contains. Whenever these are found in a state of hyperplasia, the tumour is a neuroma, and no glioma or myxoma. A neuroma is, then, *a tumour composed essentially of hyperplastic nerve-elements,* with the addition of a certain quantity of connective tissue containing blood-vessels. The word nerve-elements is here used advisedly, in that nerve-cells as well as nerve-fibres may enter into its composition, and we may have a cellular or *ganglionic* as well as a fascicular or *fibrous* neuroma. Its first formation is in most instances exactly identical with the first formation of new nerve-tissue in the repair of a nerve after section, not by simple division of or outgrowth from pre-existing nerve-tissue, but by means of a young, newly-formed granulation-tissue (which, as we have seen in the previous reviews of this book, plays so conspicuous a part in the development of tumours generally), allied to the connective tissue, whose elements are afterwards developed into nerve-tissue. The closeness of the link which connects the tumour under consideration with regenerating nerve-substance is seen in the "*amputation neuroma,*" as good a type as can be brought forward of the *fibrous neuroma* in general. This bane of surgeons, the painful swelling of the nerves in stumps, was only at a comparatively late period found to contain an abundant supply of nerve-fibres in a dense, close-meshed network, prolonged into it from the trunk of the affected nerve. A continuity of the nerve with the tumour is evident in all cases: nowhere is the tumour set or imbedded in the nerve-end as the myoma in the uterus. Both kinds of nerve-fibre, the gelatinous or grey, as well as the tubular or white, are found in the fibrous neuroma—one of the many discoveries in pathology to the credit of which Virchow is justly entitled. Many of the so-called "*painful subcutaneous tumours*" are to be included among the neuromata, especially those which are remarkable for their hardness, which lie loose in the subcutaneous tissue, and vary from the size of a pea to that of a bean. One such tumour examined by Virchow was found to consist almost exclusively of nerve-fibres. They are generally met with on the extremities, are connected with the finest terminal branches of the nerves that ramify there, and are far more common in women than men. They are easily and successfully extirpated. At the same time it must be remembered that all the painful subcutaneous tumours described cannot be regarded as neuromata; for small subcutaneous tumours of any kind, muscular, vascular, &c., will, provided they involve in their growth some one or more nervous branches—and it is

the small, sensitive, cutaneous branches which are particularly open to such impressions—give rise to the same painful symptoms as the true neuromata. As regards the origin of the amputation neuroma, there can be no doubt that the tumour is a direct consequence of irritation. In like manner many of the subcutaneous neuromata can be traced to blows or other injuries, so that the "Reiz" holds sway here as elsewhere. Other kinds there are, however, which are not so readily accounted for, but have a more decidedly constitutional character. Such are the "multiple neuromata," where a single nerve is, throughout the whole of its course, beset with little strings of tumours, like the beads on a rosary, or where many nerves throughout the body are similarly affected. This disease is not only hereditary, but often, also, congenital. It seems to bear some peculiar relation to idiocy and cretinism, in connection with which it is often found present. So general is it in some cases, that even the sympathetic does not escape, but is, like the spinal nerves, swollen with tumours. The above neuromata, the greater part of which are accessible to the surgeon, and of which the amputation neuroma is, speaking generally, the type, resemble on section fibromata or fibro-myomata, being white or yellowish-white, lobular, with a compact fibrous grain, and having occasionally their outer layers superimposed one upon the other in a concentric form like an onion. Before examining them microscopically it is well to adopt Reil's plan of maceration in dilute nitric acid, which clears the nerve-fibres, as it does the muscular fibres in the myomata, of their connective tissue. The nerve-fibres are then seen lying in very tortuous bundles, and forming a dense-meshed, closely interlacing network. Where, as sometimes happens, the tumour is composed entirely of the grey or gelatinous fibres, it is extremely difficult to recognise its real nature, for it appears to be made up of groups of long nuclei imbedded in a firm, fibrillated basis-substance, and bears the closest resemblance to the fibro-nucleated tumour, with which it is almost always confounded. But careful examination shows that these nuclei neither form part of cells nor lie irregularly clustered in a basis substance, but have a regular plan of arrangement in the fibres of which the tumour is composed. Dichotomous division of the primitive nerve-fibres in neuromata is very commonly seen: this, coupled with the manifold divisions of the bundles of fibres, which break up into tufts and interlace in every direction, makes a very Gordian knot of the whole mass. The nerves of common sense are much less often the seat of tumours than the spinal nerves; but the auditory is sometimes so affected. There is, however, no recorded instance of neuroma in the olfactory or optic nerves. Neuro-

mata are, as a rule, local and benign tumours; they behave in their manner of life more like some natural structure of the body than tumours, being small, of very slow growth, and but little subject to degeneration or other changes; nor do they ever manifest infectious properties.

The cellular or ganglionic neuroma has a soft consistence, a grey or greyish-white, in parts reddish, colour, and thus closely resembles the grey or white substance of the brain or spinal cord. It is met with generally in the central nerve organs, where it has very much the character of a simple hypertrophy. Virchow's attention was first called to a formation of the kind in the brain of an idiot, where he noticed small masses of grey substance, from the size of a hemp-seed to that of half a cherry, in the midst of the white substance of the brain, outside and above the corpus striatum and on the floor of the anterior horn of the lateral ventricle. Since then he has met with many similar specimens, generally in the neighbourhood of the lateral ventricles, and more particularly in the brains of lunatics. These little tumours are manifestly congenital, but are nevertheless capable of increase after birth. Their study seems to be as yet in its infancy, but is full of interest. Again, some of the cases of "hernia cerebri congenitalis," or encephalocele, have strong claims to be placed in this category, as being monstrous partial hyperplasiæ of the brain, which, enclosed in their dura and pia mater, are pushed through a hole in the skull. In like manner, some of the sacral and coccygeal tumours are composed of a luxuriant grey nerve-substance. Virchow describes such a case at length, where the mass was continuous with the filum terminale of the cord and contained well-marked grey and white nerve-tissue.

Lecture XXV gives a very full and perfect account of *Angiomata or Vascular Tumours.* — Under this heading are comprised only such tumours as are composed principally or mainly of newly-formed blood-vessels, or of blood-vessels with newly-formed elements in their walls. Hence, no place is here assigned either to tumours composed of extravasated blood, which have already been spoken of under the title of hæmatomata, or to the many kinds of tumour which, at certain periods of their life, become abnormally vascular and show by the side of their proper structure an excessive development of blood-vessels, or to simple dilatations of pre-existing blood-vessels, as aneurisms and varices. At the same time, the difficulty of drawing a line between the angioma proper and the angiectasis, or dilatation of vessels, is at times very great; and the more is this the case the larger the vessels involved. Thus, when a vascular mass occupies a place where capillaries are abundantly present, and where in the place of capillaries we see

groups of spaces containing blood just as in the normal cavernous tissue, we have no hesitation in calling it a vascular tumour: but where it lies among, or near, large trunks, either of arteries or veins, we are often in great doubt whether to regard it simply as a cluster of dilated blood-vessels or to dignify it with the name of angioma. That which he takes as the criterion is the presence of newly-formed tissue in and around the walls of the blood-vessels. Where this is present, the name of angioma may be unhesitatingly given to the growth.

The *Cavernous angioma* is the type of the tumour in question. It is seen on section to be made up of numerous cavities or spaces holding blood and intercommunicating, so that any injected fluid passes from one space to another, and finally flows out into veins for the most part tortuous and dilated. These blood-spaces are seldom round, but rather angular, and are limited by partition-walls (Balken) of very various sizes; some large and thick, being composed of a compact connective tissue with elastic fibres, and, most interesting but not constant, smooth muscular fibres arranged in concentric form round the spaces, containing, also, vasa vasorum that empty themselves, in part at least, into the spaces; others smaller, finer, and more decidedly muscular than the large ones, but like them lined by a tesselated epithelium. Here, then, is a pathological structure which has a perfect physiological prototype in the cavernous tissue of the penis and clitoris, and which, like that tissue, is endowed, though in an inferior degree, with erectile properties. The doctrine of Rokitansky concerning the cavernous tumour—that it is an independent formation, having no communication with the blood-vessels of the body, and manifesting in its relations an exact analogy with ordinary alveolar tumours (as alveolar cancer) in all respects save this, that in its spaces blood-cells are developed instead of cancer-cells—is rudely attacked by Virchow. For, first, he says, injection of these tumours shows unmistakably their connection with the blood-vessels of the body. Very true, answers Rokitansky; but this connection is only established at a later period of their life. But, returns Virchow, this cannot be; for blood corpuscles in a state of early development, that is nucleated, are never found in them, as they would be if independently developed there; and, again, were the blood stagnant in the spaces, one would expect to find something unnatural in its consistence and characters, which is never the case. The truth is, that the cavernous angioma can, from the earliest period of its existence, be injected artificially from the neighbouring arteries, so that the circulation in it is identical with that in the ordinary cavernous tissue. Even in those tumours which have a direct and large communication with veins, small arteries

can, if carefully sought for, be found entering at the periphery. Hence, *the blood is conveyed to all cavernous tumours by means of arteries, circulates through the blood-spaces, and from thence passes out into veins.* The cavernous angioma may be divided into two kinds:—*a. The circumscribed* is small, as a rule, seldom larger than a walnut; round or oval in shape; surrounded by a capsule of greater or less consistence, which is a later formation in the life of the tumour, being a result of irritation, and continuous with the surrounding connective tissue proper to the part. Through this capsule pass the blood-vessels of the tumour, and from it proceed the septa or trabeculæ which bound the blood-spaces. *b. The diffuse* has no limiting capsule, but merges into the surrounding parts, so that it is often hard to say where it begins; it is also naturally larger, and may, indeed, reach a very great size; it is more flattened than the preceding, so as to have less of the appearance of a tumour; it is a spreading, and, in a certain sense, an eating (*fressende*) tumour. The history of the origin of the cavernous angioma is among the most difficult questions of pathology, and is closely linked with a physiological problem equally difficult to solve, the new formation of blood-vessels in general. And first, speaking only pathologically, he cannot endorse the opinion which has, since John Hunter, been generally accepted,—that both blood and blood-vessels are created anew: but he maintains that the vessels only are new formed, and that the blood gradually forces its way into them from pre-existing ones. How then are the new vessels formed? That they originate somehow or other in cells there can be no doubt: but Virchow cannot agree with Neumann and others who think that it is by a series of cells joined by anastomosing processes, into which blood gradually flows. Their development rather commences in this way:—The cells of the connective tissue round and about the vessels become irritated, and undergo the usual hyperplastic increase, so as to form the granulation-tissue, with which we are now so well acquainted. Lying thus closely packed together, they next group themselves so as to form little cylindrical tubes, which are gradually converted into new vessels, and into which the blood from the surrounding vessels forces a passage, distending them, and throwing them into sharp curves and convolutions. As a second stage in the process, wherever the curves of a convoluted cluster of new vessels come in contact with each other, atrophy and breaking down of their walls ensue, and a consequent fusion or blending of many small blood-vessels into one large cavity or blood-space results. *A blood-space in an angioma is, therefore, not a mere passive dilatation of the walls of one pre-existing blood-vessel, but is formed by fusion of many.* Lastly,

the irritant continuing its action, there follows an active hyperplasia and thickening of the walls of the spaces as well as of the veins and arteries in the circumference of the tumour. The cavernous angioma, though believed to be often a congenital defect, is not so in reality. The true nævus, which is congenital, is not a cavernous tumour, but a telangiectasis, or simple dilatation of blood-vessels, and often constitutes the basis out of which the cavernous tumour is afterwards formed by progressive development. The change by which this is effected is often very rapid, a few months even sufficing for its fulfilment: but it may also be slow, not commencing for some years after birth, when a blow or some such mechanical irritant starts the cavernous metamorphosis. The first external evidence of this transformation is seen in the greater prominence of the simple nævus, which is naturally flat, and scarcely projects beyond the surface-level: its colour now becomes brighter, and the formation of the cavernous blood-spaces is indicated by numerous small red points, with which the tumour is dotted over. The surface next becomes uneven, like that of a mulberry, and the whole grows more and more prominent, till it may come to stand out in well-marked relief from the surface. Cases are, however, occasionally met with where, even in advanced periods of life, this same cavernous angioma, in consequence of some irritant acting from without, is formed *de novo* without any congenital nævus to serve as a starting-point.

Cavernous angiomata are either *external* or *internal*. The external are sometimes *superficial*, sometimes *deep-seated*. The *superficial form* takes origin in the skin, and may thence extend to the deeper parts: it affects by preference the head and face and adjacent parts of the neck and throat; all those parts, more especially where in the early development of the embryo fissures existed, and have subsequently, in the course of development, become closed.[1] Virchow maintains that it is along the borders of these fissures, where there is a very rich distribution of blood-vessels, that angiomata are wont to form; a very slight irritant here sufficing for their production. Most common and most important among them stands the auricular angioma, which involves the outer ear, and may thence extend into the temporal region, and down to the angle of the jaw. Next comes the labial, which is often erectile. The so-called Leopold's lip[2] was, according to Gräfe,

[1] For a full account of the branchial or visceral fissures and arches, and the part played by them in the development of the face and external ear, see Kölliker, 'Entwicklungs-Geschichte,' Lect. 24; and Carpenter's 'Human Physiology,' ed. 6, p. 819.

[2] The Emperor Leopold is said to have had a pendulous lip, which, whenever he was in a passion, used to swell up like a turkey-cock's comb in such a manner as to hang down on his chin.

caused by an erectile labial angioma. The naso-frontal, palpebral, buccal, are all to be noted; likewise the angioma of the scalp, which finds its seat of preference alongside of the sutures or about the fontanelles, and which is particularly interesting from the fact that its vessels are often directly continuous with those of the bone, or even with the interior of the cranium, and that its removal is hence not unattended with danger. The *deep-seated angioma* has a deeper, subcutaneous origin; is either "lipogenous," *i. e.* developed in the subcutaneous fat of the head and trunk, where it is generally diffuse and of large size, often spreads to the skin, and is, perhaps, the commonest kind of angioma; or "phlebogenous," *i. e.* in direct or open communication with large venous trunks. But even here the rule already laid down—that the blood enters the tumour by arteries and leaves it by veins—is not violated. The phlebogenous angioma is more often met with on the extremities than on the face, is generally multiple, and has, unlike the lipogenous, a tough limiting capsule. The most important of the deep-seated angiomata are those of the cheeks and orbits. In the latter situation they have often been met with, but the recorded cases require to be carefully sifted, inasmuch as real orbital aneurisms—of the ophthalmic artery and *arteria centralis retinæ*—are often confounded with these tumours. A true muscular angioma is of very rare occurrence, for the muscles when attacked are most often secondarily attacked by the extension of a subcutaneous angioma. Osseous forms of this tumour affect by preference the periphery of bones immediately beneath the periosteum, but are sometimes met with deep-seated in the cancellous tissue. Their history is likewise very difficult to clear up, from the way in which they are confounded with pulsating cancerous and sarcomatous tumours of bone. The natural tendency of the external angiomata is to spread; but they will often remain stationary, and occasionally, though rarely, atrophy spontaneously. The various plans of treatment—by caustic, especially Nussbaum's plan of introducing a fine-pointed, red-hot needle into the body of the tumour, and the galvano-caustic needle; by ligature; by ligature of the main artery that feeds the tumour, now much in disfavour; by excision, or by Chassaignac's "*écrasement linéaire*;" and, lastly, by the injection of coagulating fluids—are next discussed, and the conclusion formed that no plan can be recommended for all cases alike.

The *internal* angioma has only within a comparatively recent time been made a subject of investigation. That in the liver is by far the most common, and may be taken as the type of the tumour in question. It is here met with lying generally just

beneath the capsule, from the size of a cherry to that of a walnut, both diffuse and circumscribed, looking like a dark-blue nodule in the liver-tissue, as if some blood had been extravasated into the part. A closer examination, however, shows that it is composed of a real cavernous tissue, whose spaces are filled with blood; and that it is not an intermediate or adventitious deposit, but is substituted for, and takes the place of, the liver-tissue, beginning in an acinus, and thence gradually extending. It can be injected from the hepatic artery, so that the blood circulates in it according to the law, from the artery through the tumour to the vein, not, as Rokitansky supposes, from the portal vein through the intercalated tumour to the hepatic vein. Its development is identically the same as that of the external angioma, in the hepatic connective tissue, where it forms its blood-spaces in the manner already described. It grows slowly; nor does it in any way interfere with the functions of the organ; and it has not, as Rokitansky believes, any affinities with cancer of the liver. The kidneys and the spleen are similarly, but more rarely, diseased.

The *Angioma simplex,* or Telangiectasis, to which allusion has already been made in speaking of the development of the cavernous angioma, is best studied in the common congenital nævus. This, which is diffuse, to a certain extent erectile, and has for its seat the skin and subjacent tissues, being either superficial or subcutaneous, has scarcely a claim to be ranked among tumours, so flat is it, and so slightly salient. From the very puzzling appearances which microscopical sections of the nævus present,—appearances as of little club-like processes or bladders filled with nuclei, a result of the corkscrew-like twisting of the blood-vessels and the different ways in which they are cut in the section,—the wildest theories have been hazarded as to its true character. It is really made up of a congeries of tortuous blood-vessels, whose walls are hyperplastic and very thick for their size, *and which take the place of the capillaries of the part affected.* Between the blood-vessels is some interstitial connective tissue, with, occasionally, a remnant of fat, hairs, glands, &c., varying in quantity according to the amount of pressure exercised by the blood-vessels and consequent atrophy of the surrounding tissues. The vessels of the cutaneous papillæ will likewise take part in the dilatation and hyperplasia when the tumour is cutaneous, and often become the seat of little saccular enlargements that can be seen with the naked eye, and are apt to bleed as their walls get thinner. An interesting variety of the telangiectasis, in which the venous radicles are involved rather than the capillaries, is the *varicose,* or *venous angioma.* The part of the skin thus affected has to

the naked eye a red punctate appearance, as if spattered with blood, and is found when slightly magnified to be made up of veins, some smaller, some larger, whose walls are thickened and irregularly dilated into a series of saccular pouches. On making a vertical section through the tumour, it is observed that, at a certain depth beneath the surface, these pouches are separated one from the other by some little interval; but nearer the surface, as the rete Malpighii is approached, they become so approximated as to form an almost continuous layer, with nothing but the hair-follicles and sweat-glands, and here and there a thin strip of connective tissue, to keep them apart. This tumour is either congenital, or appears soon after birth as a small red spot, which in some instances spreads rapidly, in others remains stationary or disappears spontaneously. Seeing, however, that this spontaneous cure is not the rule, and that there is a frequent tendency in the simple angioma to become cavernous in the way and manner indicated, Virchow insists on operative interference being necessary in every nævus that shows any signs of increase; for there are no marks by which the tendency to spontaneous disappearance can be prognosticated. After detailing the different plans of treatment in vogue, he concludes by recommending extirpation for the subcutaneous forms, and for those superficial ones of moderate size which are seated on the face and neck: but for the deep-spreading ones, for those which are diffuse, and lie near large blood-vessels, he recommends caustic acupuncture, either with Nussbaum's red-hot needle or with the galvano-caustic apparatus.

In connection with that variety of the simple angioma which infests internal organs, and which is comparatively rare, he takes occasion to give an elaborate history and description of hæmorrhoids generally,—those, namely, of the anus, as also the not uncommon venous dilatations about the neck of the bladder and cervix uteri, sometimes spoken of as vesical and uterine hæmorrhoids. The true internal angioma simplex is seen most often in the central nervous system, more particularly in the neighbourhood of the fourth ventricle, in the pons Varolii and medulla oblongata. Van-der-Kolk's observations on the frequency of this affection in the medulla of epileptics are criticised by Virchow, who asserts that he has often detected telangiectasis in the medulla oblongata of people who have never had epilepsy, while he has failed, as a rule, to find the change in real epileptic cases. It has, he thinks, no positive pathological significance, except that it may in certain cases serve as a starting-point for hæmorrhages. Sections of the medulla or pons affected with the disease show either the veins

or the capillaries dilated in just the same curious varicose way as in the external angiomata.

Certain vascular abnormities are, lastly, appended to the group of vascular tumours and called "spurious angiomata." Thus, all tumours of the softer kind will at times undergo so marked a vascular development, that their blood-vessels usurp the place of the proper tumour elements. This has been seen in the bronchocele and uterine myoma, and is still more prominent in some cerebral gliomata and myxomata. In the same class must be included *the vascular excrescence of the female urethra*, or "vascular tumour of the origin of the meatus urinarius" of Ch. Clarke. This springs from the little prominence which naturally surrounds the orifice of the urethra as a small, bright-red, somewhat granular, very tender tumour which readily bleeds. It has but a very loose, more or less peduncular, attachment to the mucous membrane, and has this analogy with the telangiectasis proper, that a very large number of vessels enter into its composition, which are prolonged up into the tender papillæ of its surface; while it differs from the telangiectasis in this,—that the walls of its vessels are not dilated or thickened. Its basis-substance is a soft mucous or connective tissue, and it is covered over with a layer of tesselated epithelium. It is a truly local disease, and requires a truly local treatment,—ligature, excision, or caustic.

The lecture closes with an account of the *Lymphangioma racemosum*, which is to the lymphatics what angioma is to the blood-vessels,—a tumour composed of dilated and tortuous lymphatics grouped and rolled up together. It is rare, and is at times remarkable from the periodic discharges of lymph which will flow from it.

The last part of this book is now in the press, and is promised to the public in the course of this year, when we shall hope to give a similar analysis of its contents to our readers, and so bring the whole to a conclusion.

Review VII.

1. *Memoir on the Contractile Tissues and on Contractility.* By M. Charles Rouget. M. Brown-Séquard's 'Journal de la Physiologie,' t. vi. Pp. 647—697.
2. *On the Structure and Formation of the Sarcolemma of Striped Muscles in Insects, &c.* By Lionel S. Beale. ('Transactions of the Microscopical Society,' vol. xii.)
3. *On the Development of Striated Muscular Tissue.* By Wilson Fox, M.D. ('Philosophical Transactions,' 1866. P. 101.)
4. *On the Developmental History of the Muscular Tissue of the Heart.* By C. Eckhard. ('Zeitschrift f. rat. Med.,' Bd. xxix, heft i, p. 55, and Henle and Pfeiffer's 'Bericht,' 1866, pp. 50.)
5. *On the Elements of Transversely Striated Muscle.* By C. J. Eberth. ('Archiv. f. Path. Anat. v. Phys.,' Bd. xxxvi, pp. 100.)

The structure of muscular tissue has long been a fertile source of discussion. Nor is this surprising when it is remembered that in all probability the greater part of the appearances presented in a dissected specimen are factitious, or the result of post-mortem changes; and that, in the few cases where the delicacy of the investing membrane of the body in the lower animals permits the muscular tissue to be examined with high microscopic powers during life, it appears almost perfectly transparent, with very faint, if any, traces of transverse or longitudinal striation; so transparent, indeed, that some inquirers have with Kühne contended that the fibres are in their living and active state filled with a homogeneous fluid or semi-fluid substance. One of the last numbers of M. Brown-Séquard's 'Journal of Physiology' contains an important essay on this subject from the pen of the well-known anatomist M. Rouget, which, besides adding several points of interest to our knowledge of the minute structure of muscular tissue, is remarkable, as in some respects returning to the old view of the nature of the fibre advocated by Muys, Raspail, Barry, and others, that it consists of a flattened spiral band, wound in a close spire upon itself, and hence resolving muscular action in great measure into a play of elasticity.

M. Rouget states that, for upwards of ten years past, he has bestowed much labour in the investigation of this subject, and that his attention was first directed to it by the imperfection at

the commencement of that period of our information relative to the distinctive characters of the different forms of the contractile elements. Kölliker's discovery, that the bands of involuntary muscular fibre were essentially constructed of long fusiform cells with staff-shaped nuclei, constituted a great step in advance. Nevertheless, such nuclei are not always demonstrable in tissue presenting evident signs of contractility; and M. Rouget was himself led to the discovery of certain muscles, as those surrounding the vesiculæ seminales, the ovario-tubar muscles, and the proper muscles of the testis by other evidence.

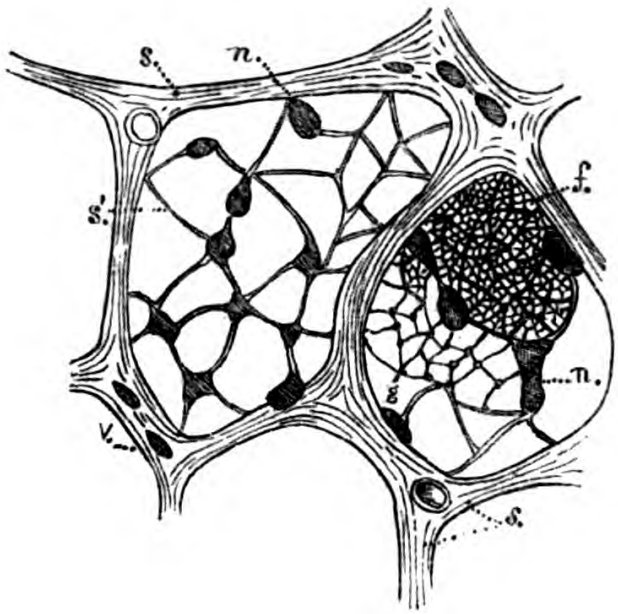
Now, it is a matter of great importance to the physiologist to determine the nature and the mode of organization of the true contractile substance, and it is obvious that the essential attributes of all muscular tissue ought to be met with in those constitutional parts in which-the proper activity of this tissue—contractility—resides. The German observers, relying upon external forms, and preoccupied with the cellular theory, have been unable to discover any other analogy between the elements of striated and those of smooth muscular fibre than that resulting from a supposed cellular origin common to both, whilst they have not sought to explain the cause of any of their numerous points of difference; and in particular in reply to the question, with what condition of organization is contractility combined, they appear to have been satisfied with having found some transversely striated fibre-cells, constituting an intermediate form bridging over the interval between the other two. Is contractility, then, M. Rouget asks, to be considered as necessarily associated with transverse striation? Such cannot be regarded as the solution of the problem, since it is universally admitted that a great number of tissues possessing contractile power are destitute of transverse striæ.

M. Rouget proceeds to describe the general structure of a muscle in the higher animals, its perimysium of connective tissue, from the internal surface of which septa proceed, that, penetrating its substance, divide it into fasciculi, and finally into fibres, details with which every reader is sufficiently familiar. As regards the fibres, he observes that the greater number of histologists (Rollett, Herzig, Bisiadecki) have believed that they could demonstrate their cellular nature and origin, and their entire analogy with the fusiform fibre-cells of involuntary muscular tissue. In the usual mode of describing the structure of muscular tissue, the fibres are always considered as essentially differing from even the smallest fasciculi in the circumstance of possessing a proper investing membrane—the sarcolemma—quite separate and distinct from the connective tissue surrounding and dipping into the substance of the muscle.

Nevertheless, it is well to remember that the sarcolemma is not constantly present. It is therefore not essential to the constitution of muscle, nor to the appropriate performance of its functions. According to the observations of Dr. Beale, it is impossible to demonstrate it in the muscular fibres of the heart or of the tongue. In the case of the frog, there are several localities in which very distinct and narrow elementary fibres may be observed, in which no tubular sarcolemma can be detected; for example, in the small muscles of the eyelids and eyeball, in parts of the mylohyoid of the green tree-frog, and in *young* muscles of the limbs. Perhaps the same statement may be made of the remarkable rod-like muscles described by Dr. Carpenter in his late researches on the Crinoidea. But to proceed with M. Rouget's statement.

In the interior of the tube of sarcolemma, which might represent the membrane of a cell, or several such membranes coalesced, is found the contractile substance, respecting the nature of which opinions vary so widely, the majority, however, regarding it as formed either of fibrillæ or of discs, decomposable into one or two species of contractile particles (sarcous elements). Within the sarcolemma also are found disseminated, cellular elements termed muscle-corpuscles, or nuclei of muscles, which are situated sometimes near the centre, sometimes at the periphery of the contractile substance.

The difficulty that is experienced in many instances in separating fibres into fibrillæ has caused the greater number of observers to consider the latter as artificial products; and amongst the few who do admit their real existence, they are not considered to be true anatomical elements, but intra-cellular formations. It nevertheless may be readily shown, by making transverse sections, that this description is not accurate, and that the fibres are really composed of more delicate elementary parts; and further, that in order to arrive at the true primitive elements of the muscular substance, two orders of constituent groups must be successively set free or detached from one another beyond the artificial limit of the fibre. The best mode of exhibiting this is by softening thin sections of muscles by maceration in caustic ammonia, and then submitting them to examination with a power of 350 diameters. The interior of a primitive fibre is then found to present segments which are again subdivided into polyhedral masses by delicate septa, the whole of which are connected with the internal face of the sarcolemma in the manner represented in the adjoining figure.



Transverse section of two primitive fasciculi from one of the muscles of the thigh of a frog. *s*, sarcolemma; *s'*, septa, emanating from the sarcolemma, and dividing the mass of a fasciculus into segments, whose dimensions are similar to those of the fibres of the higher vertebrata; *f*, still smaller septa dividing the fibres into fibrillæ; *n*, nuclei of the muscle or muscle-corpuscles; *g*, section of the plasmatic canaliculi, which occupy the angles of intersection of the septa, separating the primitive cylinders from one another; *v*, section of capillary vessels.

The surface of the primitive fasciculi (fibres) of voluntary muscle, especially in various articulata, fishes and batrachia, presents obscure longitudinal lines intermediate to the so-called striæ longitudinales when these are present. These lines, which are distant from one another about $\frac{1}{6000}$th of an inch, and in the thickness of which fatty granules are often visible for a variable extent of their length, correspond exactly to the septa which segment the primitive fasciculi into prisms or cylinders contained within the common envelope of the sarcolemma. According to Leydig, every such primitive cylinder represents a metamorphosed primordial muscular cell. They are well marked in the muscles of the lateral line of fishes, where we may easily recognise the primitive fasciculi thus divided into a number of polyhedric or prismatic columns, the fatty deposit in the septa of which confers a peculiar aspect on these muscles, causing them to differ from those of the trunk muscles generally.

The observations made by M. Rouget on the muscles of the lateral line of fishes of the genera perca, salmo, scomber sardella, thynnus, &c., confirm the existence of the primitive cylinders of Leydig, but show that they are more numerous and much smaller than those described by him in the perch; and M. Rouget has not been able to perceive the large lacunar

cavities represented by Leydig in the centre of the primitive cylinders. He has noticed only at the angles of junction of the primitive cylinders obscure starred spots, which correspond to the sections of canaliculi coursing in the interstices of the septa of the primitive cylinders. He has, moreover, observed the same differences of colour, a similar amount of fatty deposit, and a like capacity of disintegration into primitive cylinders in the primitive fasciculi of many other muscles than those of the lateral line; and, what is of still greater importance, he has ascertained that this division of primitive fasciculi into *cylinders*, or rather into primitive prisms, occurs in all the muscles of animal life in all vertebrata, in a manner identical with that which has been described as existing in the muscles of the lateral line of fishes; whilst in the invertebrata the muscular segments, corresponding to the primitive cylinders, present the most varied forms and most diverse modes of aggregation. The conclusion at which M. Rouget has arrived in regard to the intimate constitution of these primitive cylinders differs completely from that of M. Leydig. In lieu of the superimposed disks which, according to this observer, form the primitive cylinders, M. Rouget has everywhere ascertained the presence of fibrillæ grouped to form the primitive cylinders. A primitive fasciculus of the pectoral muscle of a pigeon, for example, examined when perfectly fresh, and without the aid of any reagent, presents, independently of its transverse, a more or less marked longitudinal striation, according to the degree of contraction of the muscle; some fibres always exhibiting it with great distinctness. The longitudinal striæ are of two orders, one (s') separated by intervals of about $\frac{1}{8000}$th of an inch and more or less well marked, are especially characterised by the presence of a series of obscure granules, apparently of the nature of fat, between which may be distinguished the second set, much finer, separated from one another by intervals not exceeding $\frac{1}{25000}$th of an inch (f). When oblique transverse sections are made, it is easy to show—1st, That the longitudinal striæ of the first order correspond to the lines which circumscribe the triangles or polygons seen on transverse sections, and which are sections of the primitive cylinders; 2ndly, that the series of granules correspond to the more dull or obscure points of transverse sections, and to the angles of junction of the prisms or primitive cylinders; and 3rdly, that the fine longitudinal striæ of the second order correspond to the interstices of separation of the several pieces constituting the very fine mosaic which covers the surface of the section of the cylinders, that is to say, to the interstices of the constituent fibrillæ of the contractile substance.

Thus the primitive cylinders are composed of a reunion of still finer fibrillæ into a common group, separated from the neighbouring groups by a line of demarcation corresponding to a proper envelope. This envelope may not, indeed, be always isolable, in consequence of its slight consistence; but its independent existence is sometimes capable of being demonstrated on longitudinal section, and is always indicated on transverse section by a well-defined, dull line. In the fresh state, on transverse section, there may be seen, at the points of intersection of the septa, the orifices of lacunæ of considerable size, the prolongations of which penetrate to a greater or less extent into their interstices.

Each primitive cylinder is bounded in this way at a part of its periphery by canals full of a liquid which doubtless plays an important part in the acts of nutrition. These canals have no other wall than a species of semi-solid plasma, which constitutes the septa of separation of the primitive cylinders. (See *g*, fig., p. 94).

If we now proceed to build up a muscle by synthesis we see, as the first and fundamental constituent, the fibrillæ, forming, by their juxtaposition, the first group—the primitive cylinder. The cylinders, united in one envelope—the sarcolemma—form the primitive fasciculus, or fibre. A number of fibres, included in one and the same sheet of the perimysium internum, represents a secondary fasciculus, from whence the transition is obvious to the binary and quaternary divisions and the entire muscle.

Thus, the same type of organization may be seen perpetually repeating itself in a series of divisions, continually becoming more delicate; and the fibre, or primitive fasciculus, the supposed anatomical element of muscle, is constituted exactly on the same plan as the entire muscle, without other difference than that which results from the delicacy and tenuity of the several parts.

In the next place, M. Rouget proceeds to consider the characters of unstriped muscular tissue, and somewhat sharply criticises the observations of Kölliker, who, he says, no sooner discovers in any organ elongated and fusiform cells with a staff-shaped nucleus near their centre, than the whole question is considered to be settled, and the muscular nature of the organ to be established. No inquiry is made as to the composition or intimate nature of the supposed cell, whether it is homogenous throughout, whether its envelope is distinct from the contained material, or whether the contractile power belongs to the contents or to the envelope. Upon all these questions no interest is felt, nor is any trouble taken to reply to them.

He then refers to the general arrangement of the fibres of

smooth muscular tissue, showing how they form membranes enclosing cavities by interlacing and anastomosing with one another, and being at the same time mingled with much connective tissue rich in elastic fibres. Apart from these peculiarities, the smooth differ from the striated muscular fibres much more in their outward appearance than in their intimate striation. Both forms of contractile substance, in fact, possess this essential feature in common: that they are formed by a group of contractile fibrillæ enclosed in one and the same envelope of connective tissue, into the interior of which the vascular canals never penetrate. The nutrition of the elements contained in the sheath of the primitive fibres (sarcolemma) and in that of the smooth fibres, really depends on a system of canaliculi, of lacunæ, and of nuclei, analogous to that seen in osseous, fibrous, and in other tissues.

The muscular fibres of the heart appear to occupy an intermediate position between the striated and smooth forms. They present the striking peculiarity of interlacing and anastomosing with one another, and although they present well-marked transverse striæ, M. Rouget considers that, upon the whole, they have more affinity with the smooth than with the striated type of muscular tissue; and this opinion is supported by the observations of Weissmann and Gastaldi, who have found that in fishes and reptiles the fibres of the heart can be broken up into fragments, containing nuclei identical with the fibre-cells of organic muscles, without the aid of any reagent. Even in adult birds similar cylindrical fusiform fragments can be detached, which, however, are not to be regarded as fibre-cells, or as proper cellular elements, since they contain numerous nuclei, and may even be further broken up into true fibres.

M. Rouget is of opinion that the balance of evidence is decidedly in favour of the view which holds that the natural tendency of muscular tissue is to split up longitudinally into fibrillæ rather than into discs. The appearance of the latter (he observes) is always associated with marks of violence, or is the result of chemical action, as of hydrochloric acid, whilst that of the former is perfectly natural, their size constant, their outline always defined, and they may be well observed in the muscles of insects when the sarcolemma is deficient, each fibrilla being surrounded by a somewhat thick layer of connective tissue.

The longitudinal striation indicative of the presence of fibrillæ may, indeed, sometimes be imperceptible; but this is only when, in consequence of vigorous contraction, the transverse striæ are brought into strong relief. This is well shown by comparing fibres acted on by weak hydrochloric acid ($\frac{1}{1000}$), and by strong

solution of common salt: in the former case the fibre swelling, and the longitudinal striations being very evident; in the latter, the tissue undergoing contraction, and the transverse striation coming clearly into view and masking the longitudinal. He believes, therefore, from these and other considerations, that the existence of fibrillæ may be shown without the intervention of any manipulation to which the artificial development of these elements can be attributed.

M. Rouget then proceeds to consider the existence of fibrillæ in smooth muscular tissue, a point to which (he remarks) no attention has hitherto been directed. Many of the muscles of the invertebrata, as the adductor muscles of the lamellibranchiata, present the characters of the striated form of muscular tissue in a very well-marked manner; but in many, perhaps even in the greater number, the muscles of animal life present close analogies to the smooth muscular fibres of vertebrata—the fibres being destitute of transverse striation, smooth, homogeneous, and highly refractile. But even here, with high microscopic powers, and in the fresh state, they may clearly be seen to be invested by a delicate, transparent, and elastic membrane, occupying the position of a sarcolemma, and to present finely granular longitudinal striæ, and occasionally an obscure transverse striation, the former being very distinctly brought out by immersion of the fibre for a few hours in water. Such fibres may be obtained from the earthworm.

The smooth muscles of vertebrata may, even with low magnifying powers, be seen to be composed of anastomosing and decussating fibres, accompanied, in a part at least of their course, by nerves and vessels. The finely granular appearance which they present may, with high powers ($\times 600$), be resolved into undulating longitudinal striæ, which are, in fact, fibrillæ analogous to those of voluntary muscular fibre, from which they differ only in their smaller diameter and in their transverse markings, being less regular. When the fasciculus is intact, the direction of the fibrillæ is everywhere parallel to its axis, and they appear continuous throughout its whole length. Besides these striæ, however, oblique lines may be seen traversing the fasciculus, and indicating the boundary of two adjoining muscular fibre-cells, each of which contains in its interior a rounded or elongated staff-shaped nucleus. Nevertheless, a few days' maceration in dilute hydrochloric acid shows that the fibrillæ are perfectly continuous, not only throughout the whole length of the fusiform fibre-cell, but across the boundary line dividing the cells from one another, and therefore throughout the whole length of a muscular band or fasciculus, which thus comes to be equivalent to a primary fasciculus, or fibre, of striated muscle.

Additional evidence of the uninterrupted continuity of these fibres is afforded by the presence of a sarcolemma investing their whole length, by the destruction of which alone it occurs that the fusiform elements—the so-called fibre-cells—separate from one another. It may be urged that the presence of a sarcolemma cannot be demonstrated in the fusiform elements that may sometimes be detached even in the perfectly fresh state, nor in those set at liberty by maceration in alkaline or acid fluids; but in truth such fusiform elements are quite deprived of sarcolemma, in the former case because they have escaped from the sarcolemma, and in the latter (viz. when chemical agents have been employed) because the sheath has been destroyed by the reagent. Thus, though it exists, it is difficult to exhibit the sarcolemma of smooth muscular fibre in the muscles of vertebrated animals, except by indirect means, as by dissolving the sarcolemma, and setting the fusiform elements free, or by dissolving the contractile substance and leaving the investing sheath.

In the invertebrata, on the contrary, it is a comparatively easy task, but in both classes the intimate structure is identical. It is easy to substantiate all the statements made by M. Rouget in the muscular bundles of the snail or of the leech, in which may be seen the mode of union of the fusiform bodies, their obliquely cut surfaces interdigitating with one another by very distinct dentations which establish a complete continuity

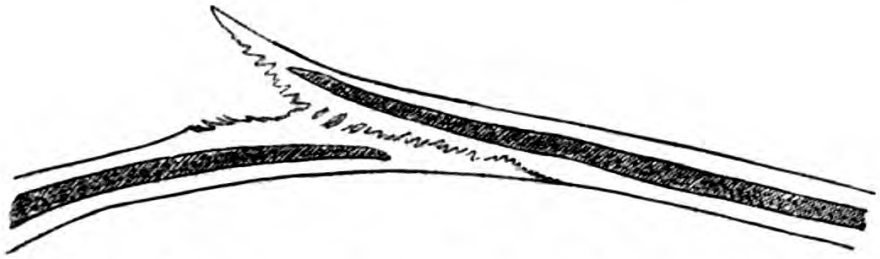


Figure showing the interpenetration and fusion of the extremities of two fusiform fibres from the common leech. At several points the contractile substance appears to pass without interruption from one fibre into the other.

between them, their exact adaptation to one another to form muscular bands, of which the calibre and the form (generally cylindrical) are perfectly uniform throughout the whole length of the muscle; and lastly, the uninterrupted passage of the sarcolemma over the surfaces of union of the fusiform bodies, so as to enclose in a common cavity all the segments of one and the same muscular cylinder.

Addressing himself, then, to the subject of the corpuscles, which are found distributed through the substance of muscle,

M. Rouget denies emphatically that the striated muscles belong to the class of cellular formations. Not only, he says, is the true mode of development of muscle contrary to this view, but it is impossible to conceive a cell which possesses in its interior quite a system of cell formations (muscle-corpuscles) identical in their nature with the connective-tissue-corpuscles. The fibres of striated muscle, with their internal framework of connective tissue, and their proper circulatory system, which he believes to be constituted by the lacunæ, the plasmatic canals, and the muscle corpuscles situated in the thickness of the septa, cannot be connected with a primitive cellular formation except by those who are blinded by preconceived opinion. If this be true for striated, it is also true for unstriped muscular fibre. In these fibres also we find a framework of connective tissue, viz. the sarcolemma investing the bands formed by the smooth fibre and fibrillæ; two systems differing from one another in their origin, as well as in their nature, and never having been constituent together of the same cell.

The great argument in favour of the cell-theory of development in muscle is the presence of nuclei, each of which may be supposed to correspond to a primary cell: but if it be asked, does this nucleus belong properly to the contractile substance of the fibrillæ, the reply is unquestionably that it does not. For if we examine the muscles of the trunk of a leech or snail, it is easy to isolate with the aid of hydrochloric acid muscular cords formed of four or five fusiform segments soldered together. In the interior of each of these segments is a cavity which occupies its whole length, and which is filled by a granular plasma. It is in the centre of this substance that the nucleus is found, and it is to this that it really belongs. This granular mass, with its nucleus, is the apparatus of nutrition of the cell, which is as entirely distinct from the group of fibrillæ surrounding it as the fundamental substance of bone is from the osseous cells and their ramifying canaliculi. The central nucleus of the fusiform cells, and the cavity which contains them, represents exactly in the smooth muscle the nuclei and the plasmatic canaliculi of the primitive fibres of the muscles of animal life.

From the consideration of the structure of the muscles of these and other animals, M. Rouget believes that the fusiform segments of the smooth muscular fibres are nothing else than the divisions of these fibres, a peculiar mode of grouping of the fibrillæ. In the fibres of the striated muscles the fibrillæ are grouped into cylinders, whose length equals that of the muscular cord, and which can be separated laterally from one another. In the smooth muscles the fibrillæ are grouped into segments separable more or less obliquely from one another, and pos-

sessing at their centre plasmatic lacunæ and nuclei, which ordinarily correspond to those at the periphery of the fibres of striated muscles.

Lastly, in reference to the transverse striæ of muscular tissue, he observes that in articulata two sets may be distinctly observed, one of which is much coarser than the other. The coarser and thicker striæ are the expressions of *undulations* on the surface of the fibre, whilst the more delicate correspond to the striations of the fibrillæ; that is, to the so-called sarcous elements. That the coarser striæ are not the collective expressions of the fibrillar markings is shown by the fact that, in the vertebrata, they are two or three times larger than the sarcous elements themselves. He entirely disbelieves the doctrine of Brücke, Rollett, and others, by whom the muscles are supposed to be constructed of disdiaclasts of variable length corresponding to the distance between the adjoining striæ; and he is equally opposed to another view generally entertained, to the effect that the fibrillæ are composed of alternate layers of doubly and singly refracting material, since, were this the case, the appearances presented should always be identical; whereas, as M. Rouget has himself shown, when muscle is examined by means of polarized light, those striæ which present a dark appearance may, with the slightest alteration of the focussing, be instantaneously converted into the transparent striæ, and can undergo identical changes of colour in chromatic polarisation, showing that, in point of fact, there is no difference between the dark and the transparent striæ. He recommends strongly the stereoscopic examination of photographs of muscular fibres, as showing that the transverse striation is entirely owing to wrinklings or undulations of the surface of the fibre, which frequently, by the strong play of their light and shadow, obscure the longitudinal striation that is always revealed on close inspection.



Fibril from a muscle of the wing of an Ateuchus, strongly stretched, whilst still contractile × 700. At the lower part the fibrillar striæ present their normal regularity, but as the fibril is followed to its extremity, broken by the forcible extension to which it has been subjected, the turns of the spire arranged at first vertically are seen to become more and more oblique, and more and more separated from one another, till the helicoid arrangement is very distinctly shown.

Careful examination has convinced him that the contractile fibrillæ of striated muscle is really an elastic helix, of which the spiral turns, separating from or approximating one another during life, determine the state of contraction or repose of the muscular mass.

Mechanical extension can produce an elongation in the living fibre, a partial unrolling of the helix, to which the various forms presented by the fibrillæ are due. After death and the establishment of cadaveric rigidity, the fibrillæ become very fragile and inextensible, maintaining without alteration the approximation of the turns of the spire which existed at the moment of the accession of the rigor mortis.

The fibrillæ of smooth muscle, in lieu of presenting this regular spiral arrangement characteristic of striated fibre, are simply undulating bands; the undulations, however, not extending through the whole thickness of a fibre.

Striated fibres (he concludes his observations by remarking) are elastic apparatuses, resembling spiral springs, whilst smooth muscular fibres are simply elastic, like the fibres of wool or of twisted hair.

Having devoted so much space to the consideration of M. Rouget's observations, we can only here glance at the results obtained by the other able writers whose names appear at the head of this article, and who have been for the most part occupied with the subject of the development of muscle. The investigations of Dr. Beale on the structure and formation of the sarcolemma were chiefly made on insects, and especially on the larva of the silkworm. "In considering," he says, "the development of muscular tissue and other structures connected with it, it must be borne in mind that several tissues of very different nature are undergoing development at the same time, and in very close relation with one another, and that the apparent confusion often observed in specimens is in great measure due to the number of nuclei which take part in the formation of these different textures. Even at a very early period of development of muscular tissue, nuclei of more than one kind can be clearly recognised, and have been figured by some observers. There are at this early period nuclei which take part in the formation of muscular fibres, nuclei concerned in the development of vessels, and nuclei concerned in the development of nerves; and at a later period, in fully formed muscle, other nuclei are found, which lie imbedded in the substance of the sarcolemma, others again belonging to the connective tissue upon its external surface, and, finally, others which lie upon the surface of the contractile tissue, just beneath the surface of the sarcolemma. Hence there can be little doubt that, as Dr. Beale

believes, many of the nuclei seen in connection with the sarcolemma of striped muscle are really the nuclei of vessels and nerves ramifying upon its external surface. He shows that in some instances these vascular and nervous nuclei may be stripped off from the surface of the neurilemma, leaving this membranous tube clear and almost destitute of any nuclei whatever. He observes that the sarcolemma is imperceptible in young muscles; distinct, but thin, in fully formed muscles; thick, and comparatively firm, in old muscles; that it certainly does not result from changes taking place in an expansion of flattened cells covering the surface of the muscle—an undoubted mode of origin of some delicate membranous structures—for no such cells are to be demonstrated during the development of the muscle in any case; and he appears to coincide with the statements of Rouget above given in thinking that the sarcolemma, especially in many of the old muscles of insects, is continuous with the intermuscular connective tissue. His description of the sarcolemma of insects, as seen in the larva of the blowfly, is very remarkable, and his observations as here detailed corroborate his former statements in reference to the *non*-penetration of the sarcolemma by nervous fibres—a point in which it is well known he is at issue with some of the leading German microscopists. The sarcolemma in this insect presents a number of transverse lines, which are situated in the membrane itself, and which, being at nearly the same distance as the transverse striæ of the muscular tissue beneath, has caused them to be overlooked. These transverse markings really consist of the ramifications of fine branches of the trachææ, and crossing the fibre in all directions are numerous fine nerve fibres, which, with very high powers, may be shown to form an anastomosing plexus, or network, over the surface of the sarcolemma, and so intimately adherent to it as to form a part of its substance. He regards the appearance termed by Kühne a "Doyèreschen nervenhugel," or nerve heap of Doyère, and regarded by this anatomist as the point where the nerve-fibre penetrates the sarcolemma, as in reality only the profile view of that part of the muscle-fibre where it is joined by a bundle of nerves, and where a portion of the sarcolemma is drawn out as it were into a cone, though far from terminating here, as Kühne maintains they may, with sufficient care and high magnifying powers ($\frac{1}{2\,5}$th or $\frac{1}{3\,0}$th), be seen to form the anastomosing plexus above described.

Dr. Fox, whose observations were conducted upon the tadpole, chick, sheep, and human embryos at various stages of growth, though he regards the muscles of the tail of the tadpole as offering by far the best material for investigations of this nature,

obtains the following results by the use of high power ($\frac{1}{12}$th and $\frac{1}{25}$th, Powell and Lealand, magnifying from 900—1850 lin. diam.). The earliest forms (he remarks) which indicate any differentiation from the round cells of the embryo are indicated by the appearance of oval bodies, measuring about $\frac{1}{600}$th of an inch in their long diameter, and about $\frac{1}{1200}$th in their short, containing a clear oval nucleus, which is surrounded by pigment granules and glistening scales. He is disposed to regard these bodies as cells, on account of their sharply defined outline, stability, and distinctness, notwithstanding his inability to distinguish an investing membrane surrounding them at the earlier period of their development; and he considers that this view of their nature is supported by the appearance of a cell-wall at a somewhat later period, and also because upon re-examining some of his preparations after a period of twelve months, he has found that in some of the early cells the contents have shrunk, and the outline of a membrane has become quite distinct.

Whether these bodies in their earliest development be cells or not, as they advance they elongate, the nuclei sometimes remaining stationary, at others multiplying by division, and having attained a certain length a change in their structure becomes apparent. "Usually at one side a part appears lighter than the rest, and in this position sometimes a longitudinal, sometimes a transverse striation, makes its appearance;" or both may occur simultaneously. There is no sharp line of demarcation between the altered and unaltered portions, and over the former grains of pigment are seen sparsely scattered. The pigment then gradually diminishes, and at this stage a distinct membrane may be seen bounding the granular portion, and soon after on the clearer side where the striæ are perceptible, conditions of which Dr. Fox gives numerous drawings. As development progresses, the amount of space occupied relatively by the granular portion of the contents of the membranous envelope diminishes, and its place becomes gradually occupied by striated matter. A membrane may still be traced over the whole structure, and the nuclei, which are sometimes numerous, sometimes solitary, are uniformly situated between the membrane and the striated portion, surrounded by a little dimly granular material. Dr. Fox's account of the process of development, both in the tadpole, as shortly given above, and in the chick, which is closely similar, is exceedingly clear and intelligible. He considers that the cell-wall becomes gradually converted into the sarcolemma of the fully formed muscle, and attributes the absence of this membrane in the fibres of the

heart rather to its extreme tenuity rendering it invisible than to its absolute deficiency.

Finally, Dr. Fox is disposed to consider each fibre as a structure representing a series of many potential cells which have never become detached from one another, their division after the multiplication of their nuclei having been prevented by the longitudinal fibrillation, as shown by striation of a portion of their contents, while the sarcolemma would thus represent the united membranes of many cells which have been engaged in the formation of the fibre.

We consider this to be a very fair statement of the case, and, as Dr. Fox himself remarks, it is a view essentially different from that of Schwann, by whom the fibre was represented as formed by the fusion of a series of *pre-existent* and *independent* cell structures.

M. Eckhard, from the results of his observations, some of which were, like those of Dr. Fox, made upon the dorsal muscles of the tadpole, is disposed to believe that, in its earliest stages, muscular tissue consists of nuclei surrounded by protoplasm; after a short space of time the nuclei arrange themselves in series or rows, and the contractile striated substance is developed in and from the protoplasm. The protoplasm of the several nuclei, he says, is so intimately blended and continuous throughout, that the arrangement may be rendered perhaps more intelligible, by saying that, in the first instance, there are cords or long masses of protoplasm in which the nuclei lie imbedded. If some of these masses possess a contour line resembling a cell-wall, it appears to him to be rather a condensation of the external portion of the protoplasm, than a separate structure. The further progress of the protoplasm cylinders containing nuclei, is described by Eckhard in terms essentially similar to those of other observers, only he admits the possibility of the spontaneous origin of the nuclei in the protoplasm without division of previously existing ones. In the case of the walls of the heart in the chick during the second and third days of incubation, they consist of clear vesicular nuclei with one or two well-defined nucleoli which lie imbedded in a finely granular protoplasm. He has never been able to discern any indications of a division of this protoplasm in accordance with Schwann's cell theory, either at this or at a later period. At the end of the third day, however, there appears in the protoplasma a number of fine irregularly coursing and anastomosing fibres. They are usually in close relation with the nuclei, and seem as if they had been formed under their influence. The fibres, when examined in the recent state, are quite soft and compressible, but they can be rendered firm by a short

immersion in a weak solution of bichromate of potash. At this period of development, structures may easily be isolated, bearing considerable resemblance to stellate cells, though it is impossible to demonstrate any investing membrane, whilst an additional circumstance rendering their nature doubtful, is found in their easy destructibility. As soon as the fibres make their appearance, the nuclei begin to degenerate; they become fewer in number and smaller in size in proportion to the increase of the intervening substance and fibres. Whether, in the further development of the muscle, new nuclei are formed or no, has not been ascertained. With the consolidation of the fibres the formation of transverse striæ commences.

Eberth's observations were made upon the muscles of the palps of embryo spiders, and he describes the muscles as consisting of fusiform, uninuclear cells, equalling $\frac{1}{70}$th of an inch in length, and containing a finely granular protoplasm. On these immense cells transverse striation becomes perceptible, if their apparent magnitude be only doubled. Each cell fills the entire space between the origin and the insertion of the muscle. All increase in the thickness of the muscle results from simple growth of the cells, and not from their coalescence; the nuclei multiply by division, which is preceded by an increase in the number of the nuclear corpuscles. In the earlier periods of development the nuclei are arranged in a single row in the axis of the fibre-cell, but at a later period they pass towards the surface.

It will be seen from these observations, as well as those of Forel on the Najadæ, and of Mecznikow on the Planariæ, as compared with those of Lockhart Clarke, Savory, and others, that two opinions are held amongst physiologists respecting the earliest condition in which the contractile tissue exists, some considering that the individual fibres proceed from one or from a group of cells, in the contents of which striation both in the transverse and longitudinal direction soon appears, whilst others maintain that nuclei only are in the first instance present, each of which accumulates around itself a quantity of granular protoplasm matter and pigment matter, in which striation occurs, but which may or may not be invested by a proper cell-wall. It is possible that differences may exist in different species, and it may fairly be stated that, before any definite conclusion can be arrived at, it will be requisite that careful inquiry should be made in a much larger series of animals than have hitherto been under observation.

Review VIII.

Saint Bartholomew's Hospital Reports. Vol. II. Edited by Dr. Edwards and Mr. Callender. 1866. Pp. 264.

Clinical Lectures and Reports by the Medical and Surgical Staff of the London Hospital. With an Appendix on the Recent Epidemic of Cholera. Vol. III. 1866. Pp. 499.

The volume of 'St. Bartholomew's Hospital Reports' contains twenty-six papers, of which the following are abstracts:

I.—*Pathological Anatomy of the Kidney.* By Reginald Southey, M.D. Oxon.—In this paper Dr. Southey treats of the diseases of the kidney as they originate in the primary structures of which the organ is composed, namely, the stroma of areolar tissue, the tubular gland system, the blood-vessels, &c. He divides interstitial disease into *hypertrophy*, or simple increase in quantity of the intercellular elements or substances; *cellular hyperplasy*, or the changes which take their origin from the cells of the connective tissue, the cells multiplying by rapid division of nuclei at an early stage of their development; and *simple fatty degeneration*. The pathological changes commencing in the vascular apparatus are thickening of the walls, which may be simple or amyloid; dilatation of the vessels, which may be simple or degenerative; and obstructions of vessels, such as embolism of arteries, and thrombosis of veins. In reference to the changes in the glandular elements of the kidney, Dr. Southey considers that the urinary tubes do not usually become affected by what is called catarrh, as a primary disturbance, but that a gonorrhœal catarrh of the urethra, or prostatitis, or a vesical catarrh is by far the most common cause of catarrhal changes in the tubuli uriniferi; but he admits that this affection may commence in the glandular tubes proper, when they are exposed to the direct excitation of poisoned blood or too highly stimulating diuretics. An instance of catarrhal change in the kidney beginning in the Malpighian bodies is afforded in fatal cases of cholera. In this disease the blood becomes so thick that it circulates with great difficulty through all the capillaries of the body, and its stagnation in the Malpighian bodies gives rise to the venous congestion observed in the cortical portion of the kidney, and to the ecchymoses which may be observed occasionally in that structure.

II.—*On Congenital Cystic Tumour.* By THOMAS SMITH.—The disease thus named by Mr. Smith is defined by him as a tumour formed of an admixture of cystic and solid substance in varying proportions, the cystic element consisting of one or more circumscribed cavities, with thin walls, and containing serous fluid. Such tumours are liable to be mistaken for fatty growths, for subcutaneous nævi, and even for spina bifida, but in the last case the skin over the tumour is in a discoloured state, and in the others the diagnosis may be made by the introduction of a grooved needle. The disease does not appear to be a fatal one, and is not very serious except from the great bulk which the tumour sometimes attains, and a spontaneous cure has not unfrequently happened. Of all the remedial measures recommended for the treatment of this affection, Mr. Smith prefers the employment of the seton, and he gives the particulars of five cases in which this plan was successfully adopted. He admits that in the hands of other surgeons the treatment by seton has not always been successful, but he thinks that where fatal results have ensued, the setons were too large, and that fatal inflammation or suppuration supervened.

III.—*Practical Observations on Diphtheria.* By W. NEWMAN, M.D. Lond.—The author of this paper believes, in common with most modern physicians, that diphtheria is not so much a local as a constitutional disease, depending on some morbid condition of the blood. He combats the views of those who once believed that diphtheria was an exanthem like scarlet fever, and he points out the diagnostic marks by which the two diseases may be distinguished. He regards diphtheria as a disease in which some morbid material is received into the blood, causing general constitutional disturbance, and being specially marked by what Dr. Newman somewhat erroneously designates the exudation of *lymph* about the mucous membrane lining the throat, pharynx, and upper part of the air passages. This local state, however, like the eruption in scarlatina, is not a constant or necessary attendant of the affection, which may consist only of the constitutional disturbance. Dr. Newman divides diphtheritic affections into the simple and the malignant, the former comprising the laryngeal disease, and the latter the nasal complication, but it is rather questionable whether the malignant form described by Dr. Newman is not to be regarded as scarlatina. The rules of treatment laid down are in accordance with those generally adopted by modern physicians, and consist in the local application of the strong hydrochloric acid with an equal bulk of honey or water, in the internal administra-

tion of wine, and in the use of a stimulating and supporting diet.

IV.—*On the Relation of Phlebitis and Thrombosis to Pyæmia.* By William S. Savory, F.R.S.—After briefly alluding to the exploded idea that pyæmia is due to the absorption of pus from distant parts, and its subsequent deposition in the localities where it is found, Mr. Savory examines the connection existing between pyæmia and phlebitis, a combination which he believes to be rarely observed, as the worst forms of phlebitis often exist without producing pyæmia. The supposed existence of pus in the canal of a vein, the lining membrane of which has poured out lymph, has been shown to be caused by the disintegration of coagula in the veins, such disintegration giving rise to a granular and oily matter which appears puriform to the naked eye. As the result of his inquiries Mr. Savory concludes that thrombosis may exist without any evidence of phlebitis, and that it very often occurs without being followed by pyæmia; that phlebitis may occasionally exist without thrombosis, and often occurs without being followed by pyæmia; that pyæmia often exists without any evidence of thrombosis or phlebitis; and that, therefore, it has not been satisfactorily shown that either phlebitis or thrombosis stands in any special or peculiar manner in relation to pyæmia as cause and effect.

V.—*Case of Intra-cranial Cyst containing Hair; also a Case illustrating the Physiological Action of Iodine.* By William Turner, M.B. Lond., F.R.S.E.—The first case was observed in the cranium of a male child, aged twenty-three months, whose body was being dissected in a medical school. The tumour was of about the size of a French bean, and was situated between the dura mater and the occipital bone. The cyst appeared to belong to the group of tumours designated by Mr. Paget as *cutaneous proliferous cysts.* The second case was one of local iodism, and occurred in a laboratory where an experimental chemist had been exposed for several hours on two successive days to the vapours of iodine and hydriodic acid. The symptoms were irritation of the mucous membrane of the eyes and nose, and occasional frontal pain, but there was no salivation or soreness of the gums. The effects passed off without the adoption of any treatment.

VI.—*Remarks on the Use of the Thermometer in Disease.* By John Southey Warter, M.D. Edin.—In this paper Dr. Warter shows the value of thermometrical observation in the diagnosis of disease, the instrument giving information which

cannot be obtained by other means. The paper is illustrated by a diagram showing the curves of temperature in different diseases, the range being from 94° to 105°. In the diagnosis of typhoid and typhus fevers from other diseases, the thermometer affords valuable aid, and the elevation of temperature in what appears a simple diarrhœa, may announce an attack of typhoid; and, again, the maintenance of a low temperature in a case exhibiting symptoms resembling fever may prove the absence of typhus. Dr. Warter also thinks that the difference of thermometric indications is one of the proofs of the non-identity of typhus and typhoid fevers. In active tuberculosis there is always some elevation of temperature, and the same is the case in pneumonia and acute bronchitis, but in abdominal diseases the thermometer gives no special information. In hysteria the temperature is not raised above the natural standard, and from this circumstance Dr. Warter thinks that valuable information may be obtained in distinguishing that affection from several inflammatory and feverish maladies which in some respects resemble it.

VII.—*On the Treatment of Enlarged Bursa over the Patella.* By William S. Savory, F.R.S.—In this short communication Mr. Savory recommends a mode of treatment which he believes to be the most efficacious yet adopted, namely, to puncture the enlarged bursa with a lancet, to press ont all the contents, and then to subject it to firm pressure by a pad of lint, strapping, aud bandage, so that the walls of the cavity may be everywhere kept in contact, and the sac thus obliterated.

VIII.—*On Gouty and some other Forms of Phlebitis.* By James Paget, F.R.S.—Mr. Paget, in this paper, gives an account of some cases of phlebitis, different from any he has found on record. They are all examples of the so-called adhesive phlebitis, in which inflammation of the coats of a vein is associated with clotting of blood in its canal, but not with suppuration or pyæmia. The disease to which Mr. Paget gives the name of gouty phlebitis is that condition in which phlebitis is associated with ordinary gouty inflammation in the foot or joints, and occurs in persons of marked gouty constitution. It is found more usually in the lower limbs, and affects the superficial rather than the deep veins. Mr. Paget does not consider that active treatment is necessary in the management of gouty phlebitis, the best agent being rest, with the trunk and limbs level. Other forms of phlebitis are described in the paper, one case described being of a very rare kind, in which the disease

extended through large portions of the branches of both the superior and inferior *venæ cavæ*.

IX.—*Case of Congenital Myopia, with a faulty perception of Colours, limited to a small portion of one Retina, of recent origin.* By Bowater J. Vernon.—The subject of this case had always been short-sighted; but after examining the spots on the sun with the aid of a powerful telescope, about four years ago, it would appear that some injury was done to one retina, for after a time he found that he could not distinguish colours so accurately as he had done before. Examination with the ophthalmoscope showed considerable choroidal changes in the fundus of the right eye, and Mr. Vernon considers that a small portion of the retina on that side has lost the power of appreciating tints, while its functional power does not seem to be otherwise impaired.

X.—*Respecting Rupture of the Axillary Artery in reducing Dislocation of the Shoulder-joint.* By George W. Callender.—In this paper Mr. Callender relates some cases in which the axillary artery was accidentally torn, the first case being one which occurred in his own practice at St. Bartholomew's Hospital. The patient was a man, aged 61, who had a dislocation of the head of the humerus. It had been reduced when the accident first happened, but had recurred in consequence of injudicious movements made on the part of the patient and his friends. When he came to the hospital the dislocation was reduced only with very great trouble; and as simple extension had failed, the object was at last obtained by circumduction of the humerus; but immediately after the reduction a swelling was perceived beneath the pectoral muscle, and it resisted all the ordinary means used for its dispersion, till at last it was determined to perform an operation both for the removal of effused blood, which, it was conjectured, had flowed from the rupture of the axillary artery, and for the ligature of the artery itself. The axillary space was accordingly opened, and the coagula and the effused blood were removed, after which the artery was tied in two places and divided between the ligatures. The patient did well for a few days; but he subsequently died suddenly, with symptoms of pulmonary embolism. After relating this case, Mr. Callender refers to other cases of the same accident, thirty-one in number, which are arranged into classes according to the general characters they present. The conclusions drawn from the consideration of all the cases are generally that the axillary artery has been known occasionally to give way from accidental causes; that this rupture is a rare accident; that it has usually occurred during extreme extension, when the head of the bone

has been twisted round in effecting the reduction; that the accident has happened to persons above fifty years of age, the dislocations being old or the artery being diseased; and that, although the occasional occurrence of the accident does not contraindicate the attempt to reduce old dislocations, yet that caution should be observed so as not to overstretch the vessel by circumduction and extreme extension.

XI.—*Remarks on the Rectangular Talipes Equinus of Orthopædic Surgery.* By Holmes Coote.—The condition here described is when the patient walks on the sole of the foot, but cannot raise the foot beyond the right angle to the leg, in consequence of the tense condition of the tendo-Achillis. The inconvenience is not very great in persons who are not obliged to work; but in those who are, treatment becomes absolutely necessary. Mr. Holmes Coote does not believe that the affection is congenital. The treatment consists in removing any cause of excentric irritation, as decayed teeth, irregularities of the menstrual functions, &c.; in giving alterative medicine and employing stimulating liniments; in using steady and continued extension by Scarpa's shoe; but in most cases the division of the tendo-Achilles becomes ultimately necessary.

XII.—*On the Treatment of Irreducible Hernia.* By John Langton.—In opposition to the views of those surgeons who advise that an irreducible hernia should be left in a great measure to itself, or that its reduction should be attempted by absolute rest, abstinence, and the use of evacuants, Mr. Langton advises that certain mechanical means should be used, having for their object the gradual return of the hernia into the abdominal cavity, and that the patient should continue his usual avocation. He divides irreducible hernia into epiplocele, enterocele, and entero-epiplocele, the second being the most rare. He describes the apparatus by which pressure of the tumour is effected, and he states that at the Truss Society the cases are successfully treated in the manner he describes.

XIII.—*Case of Wound of the Right Lumbar Region, involving and laying bare the Kidney; complete Recovery.* By Bowater J. Vernon.—The patient was a boy, aged 14, who was brought to the hospital after having fallen from the wall of a house, at a distance of forty feet, upon a heap of rubbish. On examination a wound was found extending across the spine from above the right iliac crest, and on the right side the erector spinæ was torn through, and in the gap thus formed the lower end of the right kidney protruded, a portion of it as large as a walnut being

fairly exposed. Mr. Paget secured a portion of the integument over the wound, so as to protect the exposed kidney, and the wound was lightly dressed with oiled silk, and frequent but small doses of opium were administered. Urine was discharged from the wound for several weeks; but eventually the wound healed over, and the lad was discharged apparently in perfect health.

XIV. *The Inheritance of Cancer and its relations to Questions concerning the Local or Constitutional origin of the Disease.* By W. Morrant Baker.—In support of the constitutional origin of cancer, Mr. Baker adduces some statistics collected by Mr. Paget, which show that of 103 cases there were forty-five instances (in forty-one families) of direct inheritance from father or mother. As to the results of operation, they seem, on the whole, to confirm the views of those who argue for the constitutional origin of cancer, the number of cures being at present insufficient to support the notion of the local nature of the disease.

XV. *Observations on the Pathology and Treatment of Joint Disease.* By Holmes Coote.—After describing the details of two cases, Mr. Coote observes that of all the structures comprising a joint two only are the subjects of primary inflammation, namely, the synovial membrane and the cancellous tissue of the bone, and the knee is most commonly the seat of the disease; but atrophy of cartilage, elongation of ligaments, or gradual distension of the capsule, Mr. Coote regards as errors of nutrition, not necessarily of inflammatory origin. In one of his cases the disease of the joint appeared to be in an early stage; but in the other it was more advanced, and was complicated with general paralysis. The chief remedial measure to be adopted in such cases is rest, long continued, and unremitting, until the healthy nutrition of the parts has been restored; and among the wealthier classes of society this plan can in most cases be effectually carried out, and when combined with change of air and all necessary accessories it usually suffices to effect an early cure.

XVI. *On the Prejudicial Effect of Inter-articular Pressure in Joint Disease, and the application of continuous Extension by means of a Weight, as a remedy for this condition.* By F. Howard Marsh.—After pointing out the injurious effect of pressure of the surfaces of the bones in cases of diseased joint, Mr. Marsh dwells more especially on the pressure caused by abnormal muscular action; and he shows by a simple experi-

ment which he performed at the Hospital for Sick Children, that when this pressure is removed or lessened a proportionate relief of the severity of the symptoms is obtained. In the case of a child suffering from acute articular disease of the leg, and who was treated only by suspending a weight from the foot of the affected limb, Mr. Marsh found that when the weight was raised, and the muscles were thus allowed to contract on the joint, immediate pain was caused, but was removed on the replacement of the weight. The progress of joint disease being thus proved to be so much influenced by the pressure of the articular surfaces on one another and by muscular action, it follows that one of the great objects of treatment should be to keep the surfaces at all times free from contact and to control the muscles. Mr. Marsh then proceeds to examine the ordinary treatment of diseased joint by splints and bandages; but he argues that the application of the weight possesses all the advantages without the drawbacks of the other plans. The amount of weight which it is proper to apply must depend upon circumstances; but it may be stated generally, that for children between six and nine years old four pounds are appropriate. Mr. Marsh concludes his paper by giving the history of some cases successfully treated by the method which he recommends.

XVII. *Notes on Oxaluria.* By Dyce Duckworth, M.D.—Dr. Duckworth thinks there is sufficient evidence to prove that oxalic acid is a natural constituent of the blood, probably in combination with protein matters. He has lately made some experiments with a view to induce temporary oxaluzia by the ingestion or administration, sometimes of lime-water, and sometimes of oxalic acid. The results showed that by taking from half a grain to two grains of lime with four of liquor calcis, or by taking a grain of oxalic acid in solution, oxalate of lime can be produced in the urine, and detected by its well-known crystals under the microscope. Dr. Duckworth has found (as others have done) that the oxalate of lime occurs very frequently in the urine of hospital patients, and, indeed, he found it to be the rule that convalescents from most acute diseases had oxaluzia for a few days before the various secretions returned to the natural condition. This was especially the case after scarlatina and typhus, typhoïd and rheumatic fevers.

XVIII. *On the Treatment of Acute Pericarditis with Opium.* By Frederic J. Farre, M.D.—During the last three years Dr. Farre has treated in the hospital eleven cases of rheumatic pericarditis, in all of which nearly the same plan was adopted, although in a few the complications which occurred required

the use of some additional remedies. Dr. Farre's practice differs from that of some others, in the omission of mercury in pericarditis, for although he still believes that this metal generally has the power of arresting the effusion of fibrine and of promoting its absorption, he considers that the peculiar nature of pericardial inflammation interferes with this action. But opium tranquillises the heart, and by procuring rest for that organ, it promotes the cure of pericarditis, just as it promotes the cure of peritonitis by tranquillising the intestines, and diminishing their peristaltic action. Dr. Farre employs blisters in pericarditis, not only when effusion has taken place, but in every case as soon as pain is felt in the heart, and he generally finds that they afford the same relief as leeches or cupping. In all the eleven cases recorded by Dr. Farre except one the results were satisfactory. The exception was that of a boy who, during the treatment, died suddenly "in a fit."

XIX. *Surgical Cases, Devon and Exeter Hospital.* By Philip Chilwell Delagarde.—These cases are miscellaneous, having no connection with one another except from their occurrence in the same hospital. They include an example of restoration of the upper eyelid after a burn; restoration of the upper lip after smallpox; resection of the head of the femur for unreduced dislocation into the ischiatic notch; two cases of removal of the breast, and a case (successfully treated) of traumatic tetanus.

XX. *Case of Profuse Venous Hœmorrhage from the left Meatus Auditorius Externus, consequent on a fall upon the back of the head.* By Luther Holden.—The subject of this case, while intoxicated, struck his head with considerable force against a lamp-post, and bled profusely from the left ear, which was consequently plugged with cotton wool by the surgeon who first was called to him. When he was brought to the hospital, the house-surgeon could find no external injury, but on removing the plug, a stream of blood flowed from the ear, and the plug was accordingly re-applied. After a quiet sleep, he was much better, and suffered from no very marked symptoms, except those which might be expected from the loss of blood; and on the twelfth day the plug was removed, when about half an ounce of bloody fluid spurted out. The man remained in the hospital sixty-four days, when he was discharged, apparently well, and he was seen on several subsequent occasions, but suffered no relapse. Mr. Holden considers the case to be without precedent, and he regards the hæmorrhage as being caused by a fracture of the mastoïd process of the temporal bone,

laceration of the lateral sinus passage of the blood through the mastoïd cells into the tympanum, and its escape through the lacerated membrana tympani.

XXI. *Case of Aneurism of the lower part of the Common Iliac, of the External Iliac and Femoral Arteries, successfully treated by Pressure of the Abdominal Aorta.* By Vincent F. Eck.—The subject of this case was an Irishman, who had been treated for aneurism by compression in Dublin and Tralee, but who subsequently came to London, and was admitted into St. Bartholomew's Hospital. It was determined to try again the effect of pressure high up on the common iliac artery and a tourniquet was accordingly placed over the bifurcation of the aorta, in such a manner as to control only the passage of blood through the right common iliac, leaving the left, as far as possible, free. By this plan the pulsation in the tumour was arrested, and although the progress of the cure was delayed by several unfavorable symptoms, the treatment was eventually successful, the size of the swelling being diminished by more than one half, and the pulsation being greatly diminished.

XXII. *Medical and Surgical Landmarks.* By Luther Holden.—In this paper, which, however, does not admit either of analysis or abbreviation, Mr. Holden points out the various lines, eminences, or depressions, on the surface of the body, which indicate the position, course, and relations of the more deeply-seated structures and organs. He remarks that many students, and even those who are good anatomists, sometimes find themselves at a loss to describe on the living body the parts with which they are familiar by dissection, and the present paper is written in order to induce in students the habit of looking at the living body with anatomical eyes, and with eyes, as it were, in their fingers' ends. Mr. Holden successively describes the head, the face, the neck, the chest, and the back, with especial reference to the connection between the external appearances and the relations of the subjacent parts, and his paper is announced to be continued in a subsequent number of the 'Reports.'

XXIII. *Note on the Termination of the Second Case of Poisoning by Mercuric Methide.* By George N. Edwards, M.D.—This case has already been partially published in a former number of the 'Reports,' and the present paper describes the post-mortem examination, the principal appearances observed being effusion of lymph on the left pleural surface, and pneumonic consolidation of the left lung.

XXIV. *On an Operation for the Relief of a Stricture of the Urethra.* By GEORGE W. CALLENDER.—The case described was that of a man who had suffered from narrowing of the urethra, and as all attempts to pass a catheter, although aided by the use of a hot bath and opium, had failed, and the symptoms were becoming most severe, the bladder was punctured above the pubes. This operation gave great relief, but subsequently diffuse inflammation of the scrotum supervened, with formation of matter, and requiring free incisions. This treatment had been adopted in Cornwall, where the man lived, but he was eventually sent to St. Bartholomew's Hospital, when three sinuses were seen in the perinæum leading to the urethra, and the opening above the pubes was occupied by a canula, through which the urine was drawn off. Mr. Callender determined to adopt a plan recommended, but not practised, by John Hunter, for the relief of such a condition, and consisting of the passage of the curved extremity of a canula, from the bladder into the urethra, and then passing another straight canula from the glans down the urethra, so that the two may nearly meet, having the stricture only between them, which is then to be divided by a piercer. Mr. Callender accordingly performed the operation in the manner just indicated, and the result was quite successful, the fistulæ gradually closing, and the urethra admitting the passage of a number eight catheter. Before leaving the hospital, however, it was necessary to relieve the bladder of two calculi, which were removed by the supra-pubic opening, and after this was done, the opening closed.

XXV. *On the Value of Palpation in the Diagnosis of Tubercular Disease of the Lungs.* By GEORGE N. EDWARDS, M.D. —Dr. Edwards, feeling confident that the value of palpation in the diagnosis of tubercular disease of the lungs is not duly estimated, determined to institute a series of observations in which his own diagnosis, arrived at from palpation, was corroborated by other observers, from auscultation and percussion. Dr. Edwards states that it is almost impossible to express in words the difference between the sensation conveyed to the fingers by the portion of the chest over tubercular and that over healthy lung, but perhaps it may be described rather as a want of elasticity than anything else. He then gives a table of fifty cases in which he adopted this method of diagnosis, and in all of them the position of the tubercles was confirmed by the auscultatory phenomena.

XXVI. *Extracts from the Statistical Report of the Hospital for the year* 1865.—The tables here given have been selected for

republication from the 'Annual Report of the Registrars of the Hospital, Dr. Edwards and Dr. Willett.' Attention is particularly requested by the reporters to the tables, which show the cases of disease bred within the wards of the hospital during the year. All the contagious cases, however, are not to be credited to the wards of the hospital, for many cases are admitted, ready charged with fever or erysipelas, which breaks out while the patients are recovering from some comparatively trivial injury.

The Clinical Lectures and Reports by the Medical and Surgical Staff of the London Hospital occupy a volume of 499 pages, and although the articles are not numbered, the following is an analysis of the contents, which are illustrated by several well-executed engravings.

A Case of Ligature of the External Iliac Artery for Femoral Aneurism, with Clinical Remarks. By JOHN ADAMS.—The subject of this case was a fat woman of intemperate habits, who attributed the disease to a kick she had received in the groin. The aneurismal swelling appears to have begun in the femoral artery, where the vessel passes under Poupart's ligaments, but it extended upwards beneath the abdominal walls in the course of the external iliac artery. The ligature was placed round the exterual iliac artery after an incision had been made in the abdomen from the umbilicus to the middle of Poupart's ligament. The pulsation in the tumour was at once arrested, and in about two months she appeared to be nearly well; but after leaving the hospital she died, after two or three attacks of arterial hæmorrhage. No post-mortem examination was allowed. In his remarks on the case, Mr. Adams points out that the fatal hæmorrhage most probably proceeded from the artery below the ligature, and that if such a case were to present itself again, and the patient were likely to die of hæmorrhage, the only plan promising to be successful would be to lay open the tumour, insert the finger into the lower orifice of the artery, and direct an assistant to pass an armed aneurismal needle around the blood-vessel below the finger.

On the Spectrum Analysis in Relation to Chemistry, Pathology, and Medical Jurisprudence. By A. LETHEBY, M.B., M.A., Ph.D., &c. In this paper Dr. Letheby describes the history of spectrum analysis and the different kinds of apparatus by which its phenomena may be exhibited; he also indicates the applications of this discovery to many branches of practical science. Dr. Letheby especially alludes to the use of spectrum

analysis in testing for blood-stains, and as an example of the delicacy of the test and of the time which may elapse after the blood has been drawn before it loses its properties, he states that some blood-stains upon linen which were examined in 1849 had been again examined recently by Mr. Sorby and himself. The blood was altered in character, being changed from *cruorin* into hæmatin, but on applying appropriate tests the presence of blood was manifested.

A Lecture, with Cases, on Diabetes. By Dr. Fraser. In this lecture Dr. Fraser first gives a summary of the principal points in the pathology of diabetes, then he indicates the chief methods of treatment which have been recommended, and he concludes by relating the history of some cases occurring in the practice of the London Hospital. Most of the cases were relieved, though not cured, by the treatment adopted, and Dr. Fraser admits that no remedy hitherto employed, and no plan of diet hitherto suggested, has been uniformly successful.

A Clinical Lecture on Unilateral Herpes. By Jonathan Hutchinson. In introducing the subject of herpes zoster, or common shingles, Mr. Hutchinson remarks that this disease is not a skin-affection in the correct sense of the word, but rather a symptom, displayed by the skin, of irritation of the nerve. In confirmation of this view, he adduces some cases in which the eruption followed the course of cutaneous nerves. Mr. Hutchinson also endorses the opinion of Bateman that shingles commonly follows the regular course of fever, in its eruption, maturation, and decline, within a limited period, like the eruptive fevers. It appears also that the disease very rarely occurs twice in the same person, that it is never contagious, and that it very seldom exists on both sides at once. The dorsal nerves, and especially the third or forth dorsal, are much more frequently affected than any others, the forearm and the legs are rarely affected, but the two sides are liable to the disease almost in an equal proportion, and all ages suffer nearly alike, except early infancy. Mr. Hutchinson's paper is illustrated by a table containing the records of sixty-three cases of herpes zoster.

Three Clinical Lectures delivered during the Session, 1865-66. By C. F. Maunder. These lectures were founded on cases treated in the hospital, the first being an organic stricture, with retention and extravasation of urine; the second on retention of urine; and the third on cases of strangulated hernia.

Notes of Unsuccessful and Successful Cases of Saline Alceholic Injections into the Veins for Relief of Collapse of Malignant Cholera, treated during the Epidemic of 1848-9. By Dr. LITTLE, late Senior Physician to the London Hospital.—This paper was evidently written some years ago, for at the commencement Dr. Little observes that the subject of malignant or Asiatic cholera is at the present moment a matter of no great importance in Great Britain—a remark which could not be applicable to the year 1866. The experiment of injecting saline alcoholic fluids into the veins was adopted by Dr. Little in 1848-9, in consequence of the want of success which had attended all therapeutical measures in cholera during the cholera epidemic of 1832. In resorting to the use of these injections, Dr. Little did not expect to *cure* cholera, but to save some lives which were struggling into reaction, and the cases he adduces appear to prove that in a certain number of instances the introduction of saline and stimulating fluids into the blood was attended with beneficial results. Dr. Little entirely condemns the use of purgatives in cholera, and he warns the profession against their use, but he considers that the operation of injection or transfusion into the veins if performed with due precaution is not of itself dangerous, and that the injection of saline and alcoholic fluids into the circulating system is a powerful means of exciting the heart and the nervous system under circumstances of great depression, such as that seen in the collapse of malignant cholera.

Case of Poisoning by the external use of Belladonna. By R. GOSSET BROWN, M.D. In this case an embrocation containing two drachms of liquor belladonnæ had been employed externally for the relief of hooping-cough, and its use was followed by symptoms of poisoning, including the existence of delusions. On the discontinuance of the use of the belladonna, the delusions disappeared and the hooping-cough in course of time disappeared likewise.

Case of Poisoning by the external use of Belladonna. Under the care of Dr. FRASER.—This case was somewhat similar to the last, but the fact of poisoning by belladonna was only suspected by the symptoms, although it was afterwards fully proved by the production of a bottle labelled as containing extract of belladonna mixed with water, and to be used as a lotion. The patient was a servant, who had applied the lotion to relieve a pain in the breast, and who afterwards exhibited the constitutional symptoms of poisoning. It was suspected that she might have swallowed some of the fluid, but this she strenuously denied.

Two Cases of Acute Suppuration in the Knee-Joint, in which recovery, with free motion, ensued. By ROBERT B. CARTER.—The first of these cases was that of a coal-miner who had received a severe blow upon the knee: the second was that of a young woman, in whom the inflammation of the knee-joint supervened upon child-bearing. In both cases the pus was removed by puncturing the joint, and in both the result was favorable, but the writer of the paper lays great stress upon the necessity of mechanical support, strapping, and bandaging, in the treatment of such cases.

Case in which the Symptoms of a Large Abdominal Aneurism were present and cure resulted. By FREDERICK H. Daly, M.D.—In this case the existence of an aneurism was inferred from the pulsation of the tumour and the existence of a bruit, and the diagnosis was confirmed by Mr. Hutchinson. The treatment consisted in absolute rest, the application of ice, and the administration of acetate of lead internally. After a rather long course of treatment, it was found that the aneurism had disappeared, and Dr. Daly attributed the cure in a great measure to the action of the acetate of lead.

Cases selected from those sent in by Students in Competition for the Hospital Gold Medals of 1865. These cases are, of course, miscellaneous, comprising both diseases and injuries, and they afford a favorable specimen of clinical reporting in the hospital.

A Lithotrity Syringe. By C. F. MAUNDER, F.R.C.S.—The construction of this instrument is figured in an illustration, and it is so formed as to serve the purpose of injecting fluid into the bladder, and at the same time to remove the fragments of the stone which has been crushed. The fluid is injected from an elastic bottle, and the fragments of the stone are received into the fenestrated end of a catheter attached to the bottle.

A Case in which Gastrotomy was performed for Stricture of the Œsophagus. Under the care of Mr. CURLING.—The patient was a sailor, æt. 57, who was treated ineffectually by all ordinary means, and at last Mr. Curling, after consultation with his colleagues, performed the operation of gastrotomy, and the cavity of the stomach was made to communicate with the external wound. Food was introduced by this aperture, and from that time the urgent symptoms were relieved, but the man died thirty-two hours after the operation. On a post-mortem examination, a tight constrictiou of the œsophagus was discovered

about four inches and a half from the stomach. There was also extensive ulceration of the œsophagus.

Marriages of Consanguinity in Relation to Degeneration of Race. By J. Langdon H. Down, M.D.—The object of this paper is to prove by reference to actual results that marriages of consanguinity are not so productive of deterioration of race as is generally believed. Dr. Down gives the history of 20 marriages of cousins producing 138 children, and of these 25, or only a little more than 18 per cent.. were idiots, and he contrasts these results with those of 20 marriages in which there was no consanguinity, and from which alone were produced 145 children, 26 of whom, or 18 per cent., were idiots. Dr. Down attributes many cases of idiocy to injury sustained by the infant at birth in difficult labours, and he thinks that instrumental interference in labour is a cause of idiocy. With regard to consanguinity, he does not attach very much importance to it as a cause of degeneration of race, unless hereditary disease is superadded.

A Lecture on Cases of Cerebral Hæmorrhage. By J. Hughlings Jackson, M.D.—This lecture is founded upon and illustrated by some cases of cerebral hæmorrhage, but it also enters generally into the causes, symptoms, and diagnosis of that affection. Paralysis is a common symptom of cerebral hæmorrhage, but the amount of paralysis depends upon the damage done to the motor tract; and if this part of the brain is but little injured there will be very little paralysis, or it may even pass off. But when the corpus striatum is the seat of the hæmorrhage, as is often the case, there will be marked paralysis, the corpus striatum, thalamus opticus, and crus cerebri, being all parts of the motor tract; while if the mass of the hemisphere above the ventricle is the seat of the effusion, there need be no paralysis at all. Dr. Jackson contends, however, that cerebral hæmorrhage ought not to be regarded as only a local affection, but that it should be considered in connection with the general disease of the arteries throughout the body, and with pre-existing or concomitant morbid conditions in other organs, as the kidneys, liver, heart, &c. Even the examination of the retina by means of the ophthalmoscope affords valuable information in reference to cerebral hæmorrhage, because the condition of the retinal vessels enables the observer to detect tissue changes which may be generally present throughout the system. As cerebral hæmorrhage is not so much a local disease as a local manifestation of a general morbid condition, it follows that special medication of the brain is not likely to be beneficial, and that when recovery from paralysis ensues the result is rather

due to the patient's general condition than to the treatment adopted. When the system is not much impaired recovery may be hoped for; but when there is considerable disease in other viscera the prognosis must be unfavorable.

Observations on an Ethnic Classification of Idiots. By J. Langdon Down, M.D.—In this short paper Dr. Down suggests that a classification of idiots may perhaps be formed by referring them to groups resembling the different varieties of the human race. Thus among the idiots and imbeciles under his own care, at the Earlswood Asylum, and in the out-patient department of the London Hospital, he finds that, together with numerous representations of the great Caucasian family, there are well-marked examples of the Ethiopian, the Malay, and the Mongolian varieties. Dr. Down appears to regard idiocy as a kind of degeneration from the normal standard of physical and intellectual man, and he thinks that this degeneracy furnishes some arguments in favour of the unity of the human species.

Cases of Delirium Tremens, with Clinical Remarks. By Dr. Fraser.—In this article Dr. Fraser relates the particulars of several cases of delirium tremens occurring in the London Hospital, and he makes some practical remarks upon the treatment which he has found most efficacious. He appears to rely chiefly on the use of stimulants and the administration of opium, his own experience showing that the greatest success followed that mode of treatment. He, however, tried the effects of digitalis; but all the cases witnessed by him, in which that drug was tried in the treatment of delirium tremens, were unsuccessful. In reference to the treatment of the disease without stimulants, he has witnessed only a tolerable amount of success, and he gives the number of cases so treated, which have fallen under his own observation, and their results, showing that those cases did best in which a moderate amount of stimulation was resorted to.

A Statistical Report of the Deaths occurring during the year 1865 *amongst Mr. Hutchinson's Patients.* Compiled by Mr. Hutchinson and Mr. Waren Tay.—During the year eighty-one deaths occurred out of 1212 cases, and they are arranged in tables, according to the nature of the diseases or injuries under which the patient was suffering. It appears that "hospital diseases" were very rare during the year, with the exception of pyæmia, of which seventeen persons died. Two died of traumatic tetanus, five of erysipelas, and three of traumatic gangrene.

A fatal Case of Operation for Removal of an Extra-uterine Fœtus. Communicated by Mr. McCarthy.—The patient was a married woman, the mother of four children. The operation was not performed, in consequence of the patient's refusal to undergo it, until the last extremity, and death followed in an hour.

A Case of Acute Symmetrical Carcinoma. Under the care of Dr. Fraser.—The patient was a girl, aged 20, and the carcinomatous deposit was very extensive, consisting of tumours on both sides of the body, with enlargement of nearly all the lymphatic glands. The two mammæ were exactly alike, being enlarged and indurated in all parts. The post-mortem examination confirmed the diagnosis of general cancer.

Observations on the Results which follow the Section of Nerve-trunks, as observed in Surgical Practice. By Jonathan Hutchinson.—These observations are intended to show the results which follow division of the nerves, as regards the nutrition of the part affected and the maintenance of animal heat. Next to loss of sensation, the chief result of section of a nerve is a diminution of temperature, and another result is inflammation, which, however, Mr. Hutchinson thinks is rather *permitted* than *caused* by the state of nutrition induced by the section. None of Mr. Hutchinson's cases lend any material support to the commonly received opinion that nerve-trunks, when cut, are rapidly repaired.

Clinical and Pathological Facts in reference to Injuries of the Spinal Column and its Contents.—This section contains a series of nineteen cases illustrative of injury to the spine, together with a descriptive list of the specimens relating to injuries of the spine in the museum of the London Hospital. The cases of recovery have especially been collected in order to illustrate the important fact that, even in severe cases with permanent local displacement and with paraplegia lasting for some weeks, complete recovery may ensue.

A Clinical Lecture on Dislocations and Fractures of the Spine. By Jonathan Hutchinson.—One of the chief objects which Mr. Hutchinson has in view in this lecture is to furnish conclusive arguments against operative interference in injuries of the spine. He asserts that many cases recover if placed under favorable circumstances and let alone, and that in the fatal cases it has by no means been proved that any benefit would have resulted from operation. The effect, therefore, of such a measure

would have been to increase the patient's sufferings and aggravate the danger. Mr. Hutchinson thinks that permanent compression of the cord or of any part of it is a very rare event, and that although the vertebral column is sometimes suddenly crushed by violence, the bones spring back by their own elasticity, and thus restore the column to its original position. From a consideration of many other circumstances Mr. Hutchinson strongly condemns the practice of operating on the spine with a view of elevating depressed fractures of bone, and among the strong objections to this proceeding are the conversion of a simple into a compound fracture, and the risks of pyæmia and of spinal meningitis.

Note on the Functions of the Optic Thalamus. By J. Hughlings Jackson, M.D.—This short note is written by Dr. Jackson, to correct a statement which he formerly made in reference to the absence of loss of sensation as a symptom of hemiplegia. From a more extended observation he now thinks that sensation is more often and more considerably affected in hemiplegia than we formerly thought it to be.

Notes on Syphilis. By Jonathan Hutchinson.—These notes are founded on several interesting cases of syphilis which have occurred in Mr. Hutchinson's practice. The cases are of a miscellaneous character, some of them showing the resemblance existing between syphilitic induration and cancer, and the mode of making the diagnosis. Mr. Hutchinson adduces some remarkable instances of the beneficial effect of the iodide of potassium in syphilitic indurations, and he observes that in doubtful cases the administration of this salt will generally assist materially in revealing the true nature of the disease.

Detached Notes on Symptoms, Definitions, and Diagnosis. By Jonathan Hutchinson.—These notes are entirely of a miscellaneous character, but they contain some very useful practical suggestions.

The rest of the volume contains a descriptive list of the more important specimens, casts, &c., added to the museum of the London Hospital during the past year (1865), and is arranged by Mr. L. S. Little, the curator of the museum, and illustrated by several wood engravings; a report on the medical cases under treatment in the London Hospital during the year 1865, drawn up by Mr. J. E. Adams, the Medical Registrar; and an appendix containing notes on the Cholera Epidemic of 1866. It is well known that during the late outbreak of cholera in the eastern districts of the metropolis the London Hospital re-

ceived a large number of patients suffering from that disease, and its report on the subject will necessarily attract much professional attention. But it is stated that the notes in the present volume are not intended to interfere with or to supersede the more complete history of the epidemic in the hospital, and which will be published in the next volume of the 'Hospital Reports.' The present notes, however, contain much valuable information, both of a statistical and practical character, and are drawn up by individual members of the hospital staff.

Review IX.

1. *De l'Amaurose liée à la dégénération des Nerfs Optiques dans les cas d'altérations des Hémisphères Cérébraux.* Par M. Lancereaux. Paris, 1864.

On Amaurosis in connection with Degeneration of the Optic Nerves in cases of Alteration in the Cerebral Hemispheres. By M. Lancereaux. Paris.

2. *Etude Ophthalmoscopique sur les Altérations du Nerf Optique et sur les Maladies Cérébrales dont elles dépendent.* Par X. Galezowski, Docteur en Médecine, &c.

3. Ditto. By the same. 'L'Union Médicale,' Nos. 102, 105; et 'Gaz. des Hôpit.,' No. 6. Paris, 1866.

Ophthalmic Study of the Alterations of the Optic Nerve and of the Cerebral Diseases on which they depend. By X. Galezowski, M.D., &c.

4. *Du Diagnostic des Maladies du Système Nerveux par l'Ophthalmoscope.* Par E. Bouchut, Professeur agrégé de la Faculté de Médecine, &c. Avec un Atlas de Vingt-quatre Planches. Paris, 1866.

On Diagnosis of the Maladies of the Nervous System by the aid of the Ophthalmoscope. By E. Bouchut, Professor of the Faculty of Medicine. With an Atlas of Twenty-four Plates. Paris, 1866.

5. *On the Use of the Ophthalmoscope in Cerebral Diseases.* By Dr. J. W. Ogle, 'Med. Times and Gazette,' June 9, 1860.

6. *Cases, mainly of Disease of the Nervous System, in which the Ophthalmoscope was used.* By the same, 'Medical Times and Gazette,' September 28 and following dates, 1867.

7. *Papers on the Value of the Ophthalmoscope to the Physician.* By Dr. J. Hughlings Jackson, 'Royal Lond. Ophth. Hosp. Reports,' 'Med. Times and Gazette,' 'London Hosp. Reports.' Various dates.

8. *Right Hemiplegia: Loss of Speech and Amaurosis.* Paper by Dr. Russell, 'Brit. Med. Journal,' Sept. 8, 1866.
9. *On the Use of the Ophthalmoscope at the Leeds Infirmary.* By Dr. Allbutt and Mr. Pridgin Teale, 'Med. Times and Gazette,' May 11, 1867.

The books and essays whose titles are quoted above have, we think, an interest beyond the results with which they are more immediately concerned. We cannot hide from ourselves that our knowledge of the diseases of the central nervous system has until quite recently been of a very meagre sort, and we may add that our method has been unworthy even of our knowledge. It was naturally to be expected that the diseases of the most complex and inaccessible parts of the body should be the last to benefit by the more vigorous and more philosophical mode of investigation which within the last few years may be said to have changed the face of the medical art. On the other hand, we may well be cheered if we see that by active inquiry and a progressive method we are beginning to make way into the most secret places. It is in the description of the functions and of the disorders of the brain that what has been called the metaphysical habit of thought most tenaciously holds its ground. Where the order of phenomena is most complex and observation most difficult, there our theories most readily escape the test of experiment. Unchecked by direct reference to nature, theories which have a fair aspect, and which are symmetrical and definite, there continue to command assent although elsewhere discredited. No one would indeed now dream of referring the functions of the liver or of the heart to an immaterial principle residing in or about these organs, yet many persons still cling to the opinion that the functions of the brain are something more than the movements and the relations of the cerebral tissues. Hence, they not unnaturally refer diseases of the brain to something more than the abnormal movements of these tissues.

We are tempted, for instance, to give a reality to such a disease as epilepsy apart from the phenomena in which we say that it is seen. We are led to forget that molecular equilibrium may be disturbed to a greater or less degree in the brain as in any other aggregate; and instead of tracing out deviations from health, we satisfy ourselves with naming the morbid state as we see it in its fullest development, and having named it we try to hope that it is explained. We thus begin more or less consciously to use such a word as epilepsy in the sense of a principle of causation, and to forget that it is merely a name given to a more or less uncertain group of irregular movements. Even in

the writings of those who take a clearer view of the value of such names as epilepsy, chorea, and the like, we may often detect a tendency to use such words too much in a pictorial sense. A brilliant sketch of an epileptic state, for instance, is set before the reader, and is presented to him as a "type" or standard, by which he is to regulate his conceptions of all similar states. Certain marked features are held to be necessary to the proper constitution of the "type" and all modes of irregularity of function not presenting such features are held to be what they please, but certainly not epilepsy. They must group themselves after a given fashion, and present certain given characters on pain of being neglected or, at best, recorded as "curiosities." Yet it is in these slighter deviations from the normal order, in spasmodic neuralgias, local tremors, transient suspensions of the senses, and such minor indications of lessened tension, that we shall ultimately find the explanation of the more "typical" forms of disorder. It is not by setting up opposition standards to the standard of health that we shall learn the modes of initiation of morbid changes, but rather by watching the outskirts of health itself.

Before we can comprehend extensive changes, we must familiarise ourselves with slighter ones, and so take with us the clue to the larger mystery. We shall, no doubt, continue to depict the extreme and complete manifestations of disease for clinical ends, yet if we are to discover their origin, we shall have to desert this kind of synthesis for analysis. We must unravel groups of phenomena, and trace each element to its source. We must learn to have a less exclusive admiration for brilliant displays of disease, and to cultivate rather a perception of those many little various errors from healthy order by which nature chiefly seeks to betray herself. A straw may show the way of the wind better than a falling tower. A habit of thus wakefully regarding the minutest variations of the normal state, and of verifying them accurately, is of inestimable value. It is quite the opposite of that other habit of setting up certain morbid standards or lay-figures to which all changes are to be referred. It cannot be too earnestly impressed upon our students that any new facts, however small, if well observed, may lead up, and probably will lead up, to some wider truth of scientific or even of immediately practical importance. But to compare individual instances of disease with conventional standards, is directly to discourage the observation of those lesser phenomena and to teach the student rather to pare them off as far as possible until he can produce his case in trim with accepted models. The baneful influence of this method of case-taking is but too plain in all medical schools. Students are

led to think that facts which seem to them to be accessory are not only unworthy of verification, but are even intrusive, and rather spoil the elegance of their case than otherwise.

We much doubt indeed whether such terms as epilepsy, chorea, &c., will prove ultimately to be valuable as names. Their signification will be found so indefinite as the study of temporary failures of function advances, that we fully expect to see the groups which they profess to designate altogether broken up, and their elements grouped again under higher and more philosophical names having reference to other and wider affinities. We see this process in other names, indeed, already going on. The name "apoplexy," for example, is retained in our nomenclature rather from habit than from any belief in its value; and the term "inflammation," again, hangs on our lips by a very precarious tenure.

The way which is open to us for the discovery of the laws of change in nervous organs must be, to a great extent, therefore, a way of destruction. Nothing is so conducive to a right appreciation of the truth as a right appreciation of the error by which it is surrounded. The successful investigator must bring to test statements and conceptions which have been too long accepted on faith, habit, or good nature. He must look boldly behind certain large words which are now too often the shelter of ignorance, and he must satisfy himself whether they have any definite value or not. When it is seen how much our current language really signifies, and when all technicalities, which took their rise in old and false methods, have been swept out of sight, we shall feel, perhaps, a little bare, but at any rate we shall have open field for new researches. When we have stripped off all our overgrowth of heavy verbiage, we shall see that there is no lack of facts. In our endeavour to verify those which we think we have, we shall continually come across others which no ingenuity of our own could have led us to seek for, but which may turn out to be of the greatest practical value.

Moreover, the steady pursuit of such a method strengthens in the observer a spirit of open-eyed sincerity which answers in the man of science to the catholic sympathy of the greatest artists, and is the true magistery. We have constantly found that the cultivation of such a temper as this is accompanied by the discovery and the use of instruments of greater precision. Both in the history of medicine and of other sciences the introduction of such instruments has always coincided with periods of genuine progress. We are led, therefore, to regard the application of the ophthalmoscope to the diagnosis of nervous

disorders as of very happy augury. Our readers well know the marvellous change which this instrument has produced in the knowledge and method of the oculist. Not only has it cleared up for him many doubts, and has enabled him to recognise certain pathological states which before were beyond his reach, but it has encouraged new habits of accuracy, which are, as it seems to us, also very evident in recent work in those departments of ophthalmic practice where the ophthalmoscope is less needed. Recent inquiries, for example, into the disorders of accommodation, and of the muscular action of the orbit, appear to us to have been conducted in a genuinely scientific spirit, and have led to results whose bearing upon more general laws of nervo-muscular life may turn out to be most important.[1] Whatever, then, may prove to be the practical value of the ophthalmoscope in detecting disease of the brain or spinal cord, it has for us this great charm—that its use must favour a spirit of industrious and accurate observation, and must favour also that wholesome disposition of mind which welcomes any facts, however far away they may seem to be from traditional doctrines or dignified theories. We can scarcely hope that the ophthalmoscope will, in the hands of the physician, ever rank in usefulness with the stethoscope. We confidently believe, however, that as the invention of the stethoscope has been of incalculable advantage to us, not directly only, by revealing changes of tissue during life, which previously could be but roughly guessed at, but also indirectly, by encouraging the study of diseases of the chest; so the ophthalmoscope will help us, not only by the facts it directly reveals, but by stimulating work in the direction of nervous diseases. Nor must it be forgotten that by means of the ophthalmoscope we are for the first time permitted to see the commencement and progress of change in the life of nervous tissue, and to ascertain the modes and times of such change.

This is no slight matter, and if to all these considerations we add, as we shall presently show, that the ophthalmoscope is even already of some use in diagnosis, we shall have made it clear that this instrument must be in the hands of every physician who wishes to speak with authority on the subject of diseases of the nervous system. The great drawback to the rapid introduction of new instruments is the labour required in learning their use. Thus it is that many useful aids to diagnosis—the laryngoscope, the endoscope, the sphygmograph—have a kind of alacrity in sinking out of notice. Every medical school is now bound to teach its students the use of the ophthalmoscope as

[1] *Cf. e.g.* Gräfe, 'Klinische Analyse der Motilitäts-störungen d. Auges,' and the many treatises which have followed it.

carefully as the use of the stethoscope is taught. But it is not easy for physicians who have left the schools, and are engaged in practice, to take up a new instrument which requires much skill in the using. We can assure our readers, however, that a few hours spared for this work are very well spent. We, who have given some little time to familiarise ourselves with the ophthalmoscope, can speak confidently on this point. The new glimpse thus gained of a number of obscure and difficult diseases adds greatly to the interest of study, and we hope to show that the ophthalmic signs of intracranial disease are by no means few or unimportant.

When we have reviewed the results at which MM. Galezowski, Bouchut and Jackson have arrived, the reader will probably agree with us that no records of nervous diseases can henceforth be called complete which do not contain an account of the ophthalmoscopic appearances. It has long been known that indications of changes in the nervous system were to be found in the eye. Motor aberrations, such as contraction or dilatation of one or both pupils, squints, ataxy of the ocular muscles, and imperfect accommodation; disorders of vision, such as photophobia, diplopia, hemiopia, and even amaurosis, have all been recognised as occurring in connection with central disease. It was not possible, however, until the discovery of the ophthalmoscope by Helmholtz to attach any other than a very loose meaning to the word "amaurosis."[1] Suspension of the visual functions is often due to other causes than to disease of the optic nerve or retina, and it is likely that many cases of so-called amaurosis are actually due rather to troubles of accommodation than to any deficient power in the nerve of sight.[2] A minute study of the disorders of motility in and about the eye is quite as important as a study of the variations of the optic nerve itself. A slight droop of the upper eyelid, and an equally slight deviation of the axis of the eye, will reveal the existence of a meningitis to the physician who had previously hoped that he was dealing only with a fever. We are unwillingly obliged, however, now wholly to pass by other symptomatic affections of the eye, in order to give our exclusive attention to the alterations of the optic nerve and retina, considered mainly in their relation to cerebro-spinal disease. It is but very recently that the profession has been made aware that the interior of the eye presents any visible indications of the dis-

[1] Witness the often ill-quoted epigram of Walter, "Amaurosis sei jener Zustand, wo der Kranke nichts sicht, und auch der Arzt nichts."

[2] We are bound to say, however, that M. Bouchut denies that the impairment of vision which may follow diphtheria, for instance, is a disorder of accommodation. He continues to attribute it to defective nutrition of the optic nerve (p. 356).

orders of the nervous system, nor can we say even yet that the great importance of these indications is generally understood.

One very great drawback to the full appreciation of such facts is the unlucky division of cases between the physician and the ophthalmic surgeon. If the disturbance of sight be that which most affects the patient, he goes the round of the ophthalmic hospitals; if, on the contrary, the disturbance of the nervo-muscular functions be uppermost, he falls under the care of physicians, who are naturally prone to overlook any changes of the inner eye. As marked changes may occur at the back of the eye with slight disorder of the visual function, it is not surprising that the physician should overlook one half of the facts, and it as naturally happens, on the other side, that the surgeon's attention is equally limited. While the present absurd division of the profession into operators and non-operators continues, we must be content to urge upon those physicians who take an interest in nervous diseases to frequent the ophthalmic hospitals, where a wealth of material awaits them, of which they have little conception. We are able to assure our medical brethren that they will receive a warm welcome from their surgical allies, who, in their turn, are much interested in the relations of eye affections to more general diseases. Indeed, physicians have little idea how "medical" are the 'Ophthalmic Hospital Reports' and the 'Ophthalmic Review;' and to the medical work of ophthalmic surgeons like Mr. Hart, Mr. Hutchinson, or Mr. Bader in England, and like Gräfe, Liebreich, or Desmarres abroad, physicians are already deeply indebted. We wish we could say that the physicians showed a greater sense of their obligations. The number of physicians who are working with the ophthalmoscope in England may, we believe, be counted upon the fingers of one hand. If we may judge from the elaborate works of Galezowski and Bouchut, it would seem that the same reproach cannot attach to our Continental neighbours, who will, therefore, unless we bestir ourselves, make this large field of observation more especially their own.

If we rightly remember, Dr. John Ogle was the first, or one of the first, physicians to call the attention of the profession in England to the probable results of ophthalmoscopic examination in cases of cerebral disease.

We have referred above to his paper on that subject published about seven years ago in the 'Medical Times.' He then impressed upon our notice the very close relations which exist between the cerebral and the intra-ocular circulation, and he urged that the beautiful vascular structure of the posterior parts of the eye might serve in its variations as an index to the vascular condition of the intracranial organs. Dr. Ogle's remarks,

as he himself said, were more in the nature of anticipations than of conclusions drawn from wide experience; but we think that, in looking rather to the vascular than to the nervous connections of the optic disc and retina, he was right.

To this question we must return. We must now proceed by opening the books before us to give a sketch, necessarily very brief, of the changes in the eye which are known to accompany certain diseases of the brain and of the spinal cord, and certain other diseases of organs more remote. We shall do this most clearly by dividing our matter into two parts. First, we shall point out what symptomatic changes are known to occur in the inner eye. Secondly, we shall endeavour to show with what central or other diseases these changes are found to coincide.

The parts which we have to watch are the optic disc, the retina, the choroïd, and the blood-vessels. The optic disc is liable to simple congestion, and to congestion with effusion within or around it, to inflammation of its sheath, to inflammation in its substance, to anæmia, and, lastly, to atrophy. The retina is liable to fibrinous and fatty exudations or patches, more especially in the course of the vessels, also to hæmorrhages. The choroïd is liable to loss or disturbance of its pigment, also to hæmorrhages. The blood-vessels are liable to many characteristic changes—to diminutions or obliterations, to dilatations, to tortuosities, to pulsations, to varicosities, to blood stases, embolism, and thromboses, and to rupture. The reader will scarcely expect us to enter into minute descriptions of these very various states. We must refer rather to the invaluable atlas of Liebreich and to the excellent chromolithographs attached to the volumes of MM. Galezowski and Bouchut. We shall make a few remarks only on the meaning and causation of these deviations from the normal condition. The great variation which is found even in healthy nerves is one of the chief difficulties experienced by beginners in ophthalmoscopy. Many peculiarities which to the unwary observer appear to be marks of disease are in no way of evil meaning. Not only do we find from time to time such peculiarities as large white patches upon the retina, and white rings or rings of pigment[1] upon the margin of the disc, which varieties may be congenital or may be mere harmless changes, having no special meaning; but we find variations also in the colour and vascularity of the optic nerve, which at times may be puzzling even to a practised observer. There is sometimes room for doubt whether a deeply coloured disc is due only to the complexion of the patient or whether it be due to congestion. A

[1] An excess of pigment is common in old people, but not common in children unless in morbid conditions.

pale disc, again, may be pale from general anæmia or its pallor may be the mark of commencing atrophic change; or in one person some largeness of the vessels and distinctness of the capillaries is a physiological condition, in another it may be due to pathological conditions. To determine the presence of slight congestions in the papillæ is, therefore, not easy, and can be done only by carefully considering all the circumstances of the case, by watching its progress, and by comparing one eye with the other. In the normal state both eyes are, of course, alike, but in morbid states it is rare for both eyes to advance by quite equal degrees. On the other hand, we may take this occasion to say that, if we except embolism of the arteria centralis retinæ, all other symptomatic changes of the optic nerve and its vessels are found more or less equally in both eyes.[1] The diagnosis of the severer congestions is not a matter of much difficulty. Here the changes are too evident for misapprehension, and the differences between the two eyes are generally decided. In these we find the papilla scarcely distinguishable in colour from the retina, and, perhaps, to be traced only by the convergence of the vessels. The veins also tend to become swollen and tortuous, sometimes varicose. The name peri-papillary congestion has been given by Bouchut to that condition in which the centre of the disc remains white, and he justly observes that this peri-papillary congestion is often seen to be wholly or partially confined to one part of the circumference of the disc,[2] with the corresponding district of the retina. As regards the vessels, it will be readily understood that the retardation of the blood in the veins produces in them every degree of change from simple enlargement to varicosity and even to rupture. Ruptures are most frequent in cases of albuminuria, and the blood thus effused degenerates more or less quickly, so that these hæmorrhages appear also as whitish blotches or streaks in the course of the vessels, and are very characteristic of that state of the system in which the small rough kidney is found. There are three morbid

[1] In some rare cases simple atrophy may advance as far as the destruction of sight in one eye before the other eye begins to fail. We have now two such cases under our care. *Vide* also Mr. Hutchinson, 'Ophth. Hosp. Rep.' iv, 235.

[2] We may take this opportunity of saying that these and like changes at the back of the eye are often far better seen with a lens of lower power than those commonly sold with the mirror. A lens of three and a half or four inches focal length acquires a little more skill in the use, but gives a far finer picture of the parts. For daylight examinations the ray from a lamp must be thrown down a blackened tube, the further end of which is padded and fitted to the orbit. Within this tube and at its proper focus point the lens must be fixed, or it may be made to travel upon a second tube within the first. There is no reason why the mirror should be fixed in the upper end of the tube, as is the case in Galezowski's and other daylight ophthalmoscopes. Moreover, the mirrors in these instruments are very inferior to those sold by Weiss and other English makers.

states of the optic nerve which have attracted much attention as being generally connected with central disease. These are known as—1 (*a*), optic neuritis; 1 (*b*), consecutive atrophy; 2, primary, or progressive, atrophy. We shall venture to discuss a little in detail what is meant by optic neuritis, as we conceive that a knowledge of the true nature of this disorder is of the greatest importance to the physician. Unless we know the origin as well as the aspect of the condition called optic neuritis, we cannot rightly know the significance of it. All observers, perhaps, are agreed on the description of that particular change known as optic neuritis, and recognise its coexistence with meningitis of the base of the brain, with tumours, and with large hæmorrhages. The causes of optic neuritis and the conditions of brain with which it occurs have been very carefully studied by Dr. Jackson. In many very readable and instructive essays he has drawn attention to the value of optic neuritis as a symptom, and has repeatedly pointed out how constantly the cerebral diseases which cause it are "coarse" diseases. To this statement we shall have to return. A good description of the appearances in optic neuritis is to be found in a series of papers by Mr. Hutchinson in the fifth volume of the 'Ophthalmic Hospital Reports.' Optic neuritis must, of course, be distinguished from the retino-neuritis of albuminuric patients, and from the retino-choroiditis of syphilis. The history of the case and the limitation of the affection for the most part to the papilla and the converging vessels will be sufficient to settle the diagnosis. Gräfe says optic neuritis is "a condition marked by serous infiltration and prominence of the papilla, and is most commonly due to extra-ocular causes, whether orbitar or cerebral." The disc becomes larger than usual, its edges indistinct,[1] irregular, and puffy, and the infiltration casts a veil over it so as to change its colour into a lilac-grey, and more or less to conceal the vessels as they pass within its margin. The veins increase in size, become tortuous, or even varicose; they darken in colour, and are seen to be gorged with blood; the capillaries also, which in the natural state should be invisible, become evident, and give a mossy or, as Mr. Hutchinson says, a woolly look to the disc. As the walls of the vessels are mostly healthy, the extravasations which we may see in albuminuric cases do not very frequently occur in optic neuritis. Unless the neuritis depend upon orbitar disease, it is always to be seen in both eyes. The pupils are generally dilated, whereas in the earlier stages of simple atrophy they are for the most part contracted. M. Galezowski, who has treated this subject with great accuracy and ability, describes another form, slightly differing

[1] Liebreich, 'Atlas,' fol. xi, figs. 6, 8, and 9.

from the above, which he calls optic peri-neuritis. The papilla is still prominent, but the exudation is confined to its borders, so that its edge is concealed under a veil, the central part appearing more like health. The capillaries in peri-neuritis are developed at the periphery. We are able ourselves to testify to the truth of this distinction. Some investigations of value have been made into the pathology of the nerve in optic neuritis. During the congestive stage it has been found that the optic nerve for more or less of its length is of diminished consistence, and of a reddish or yellowish-grey colour. The sheath is thickened, and Virchow states that this thickening is of an "inflammatory nature."[1] Sometimes the contents of the sheath are seen to be pultaceous; if so, this softening generally extends to the chiasma. It has indeed been more than once seen by Galezowski to extend far beyond the tracts, as far even as the central peduncles. M. Türck[2] states that he has traced the softening up to the corpora geniculata. In one case the corpora quadrigemina were themselves swollen and soft.

The next stage in optic neuritis is marked by a gradual subsidence of the intense vascularity in and about the disc, the infiltrations are absorbed, the nerve whitens, and the capillaries slowly shrivel and vanish. In most cases the central vessels themselves undergo some diminution. The edges of the disc are now distinct, but are deformed, and patches of organized lymph are to be seen about or upon them. This consecutive atrophy is to be clearly distinguished from the primary atrophy which we shall describe hereafter. The present form seldom reaches the pearly whiteness of the other, which shows also even and clean-cut edges, and destroys sight more certainly. Indeed, it is remarkable, in some cases, how little optic neuritis and its results interfere with vision.[3] In them the disorder of the eye is constantly overlooked. Sometimes patients who were more or less blind during the acute stage recover some sight in the subsequent stage. On examination of the injured nerve we find that all tumefaction has disappeared, the nervous fibres are mostly broken up, and there is considerable hypertrophy of the connective tissue. Now, what is it that this so-called optic neuritis means? What is the reason or mode of these somewhat rude changes? It is clearly necessary to know this precisely, if we are to reason from them to the nature of coincident dis-

[1] 'Annales d'Oculistique,' t. liv, Juillet et Août, 1865.

[2] 'Zeitschr. der k. k. Gesellsch, der Aerzte zu Wien,' 1852, p. 118.

[3] We have under our notice two cases of unilateral epileptiform seizures, in both of which there is distinct optic neuritis of both eyes. Both patients can read No. 1 Jäger. Loss of sight is an oculist's, not a physician's, symptom. It may suddenly occur in an eye already under observation, but without any accompanying change in the appearances.

turbances going on in the brain. Is the term "optic neuritis," in short, a correct term; and are we right in calling these phenomena evidences of inflammation? By evidences of inflammation we mean evidences of lesion of the proper structure of the nerve, followed by more or less tumultuous and unsuccessful efforts at repair. If we hold this view we look upon the vascular turgescence as secondary, and consequent upon a demand for the materials of repair. The congestion is not in such case a destructive process, but, in endeavour at least, is constructive. Again, if we hold this view we regard the origin of the mischief to be some lesion of continuity in the nerve-filaments within the skull—a lesion caused by mechanical pressure, or by the propagation of a destructive process from neighbouring tissues. Such a lesion might be established by the encroachment, say, of a tumour upon optic filaments in some part of their length, and in some region of their distribution; or, again, by the propagation, say, of a meningitis to the neurilemma of the optic nerves—an inflammation which would readily penetrate their substance.

Mr. Hutchinson, for instance, considers that—

"The neurilemma is first involved in neuritis, and that its nuclei proliferate. Into its meshes the effusions, solid or fluid, of inflammation take place; and it is owing to the continuity of their structure that the inflammatory process travels from one end of the nerve to the other. Thus, also, the nerve-tubules are subjected to pressure, and their function is suspended" (loc. cit.).

Dr. Jackson, we believe, gives substantially the same interpretation of the phenomena called "optic neuritis." On the Continent a like view is also prevalent, and much pains have been taken to show that the frequency of optic neuritis in connection with tumours of very various position is due to the extensive relations of the optic filaments, and to the connections of the optic centres with other ganglia.[1]

This, which we may call the physiological explanation, has long appeared to us to present great difficulties. Dr. Jackson has shown that optic neuritis occurs with disease in any part of the brain, the only condition being that the disease must be "coarse," that is, a tumour, say, or a large hæmorrhage. We presume, for example, that he would not expect, in such a case, to find limited softening; but if the cause be the "descent" of an

[1] We have recently received some most interesting researches of Gräfe's upon neuro-retinitis, published in the 'Arch. f. Ophth.' xii. 2, s. 114—119. We can now only commend the papers to our readers. The great disadvantage under which oculists work is that eyes do not come under their observation until the late and accidental symptom of amblyopia comes on.

inflammation along the course of optic filaments, what disease would seem more likely than inflammatory softening to initiate such a process? We do, indeed, find that inflammations of the membranes of the base are a common cause of optic neuritis; but is this to be explained by the supposition of a travelling process? We have had under our own care more than one case of cerebral disease in which conditions of the optic disc, not to be distinguished from the slighter forms of so-called "optic neuritis," have remained stationary for many months, giving rise to little disorder of vision. It seems unlikely that molecular disintegration of the optic fibrils sufficient to make an obvious demand upon the vascular supply for repair, or to cause such a degree of stasis, should remain stationary or advance so leisurely. Nor, after comparison of a number of affections of the optic disc, could we be satisfied that in any of these cases the structure of the nerve was *primarily* in fault. We failed to draw any line between simple dilatation of the veins, evidently due to impeded circulation, and other disorders, which, in addition to stasis, presented small or large effusions. We conclude that "optic neuritis" depends not at all upon the nature of the intracranial disease, but upon the amount of resistance which it offers to the circulation. Finally, M. Bouchut likewise concludes that meningitis does not disturb the optic nerve by exciting inflammation in the course of the neurilemma, but by throwing up a dam in the way of the venous blood. We will give his own words (p. 17):

"The blood from the interior parts of the eye, which has served for their nutrition, returns to the venous torrent by the choroïdo-retinian branches of the ophthalmic vein, which pass over the disc up to its centre, and which they cross to penetrate into the nerve. Once in the optic nerve, the venous blood enters the cavernous sinus, thence into the petrous or lateral sinus to gain the jugular vein, which it does easily so long as no obstacle arises to choke the sinuses for more or less of their extent. If such an obstacle arises, which frequently happens in inflammation of the brain or membranes, in tumours, phlebitis, hæmorrhages, chronic hydrocephalus, cerebral congestions, &c., there results a stasis in the veins and capillaries of the disc, retina, or choroïd, which causes various changes at the back of the eye."

These changes he then enumerates, including "fibrinous exudations," and he adds that there are "differences of degree only" between all and any of these; also (p. 29) that "such troubles of the circulation sooner or later cause degenerations of the retina and choroid and atrophy of the optic nerve and disc."

The reader will not fail to see that much depends upon the apparently minute question whether the origin of optic neuritis is to be taken as a sign of molecular instability in the nerve-tracts, or of interference with the cerebral circulation. Shall we continue to talk of "optic neuritis," and please ourselves with calculating the amount of "irritation" "set up" in the brain, or shall we calculate, from optic congestions and effusions, the degree of obstruction which exists to the ebb of the blood? If we are to reason from the eye to the brain, it is well to discover which of the two tracks our minds are to follow.

That the retinal circulation may be a most delicate test of the cerebral, is a hope already, indeed, entertained by several observers. Dr. Jackson has published an important paper upon the retinal circulation as seen during sleep.[1] He desired to find in that "outpost of the cerebral circulation" some evidence of the variations of vascular tension in both health and disease. He has also examined the eyes of patients in epileptic fits. He reports that in one case, at least, the disc paled, the vessels at times even vanishing outright. Curiously enough, they seemed to sympathise with the breath, filling with expiration, and emptying on inspiration. He compares this with the pallor of the face seen at the outset of a fit. Many observations, however, will be needed before we can have any certainty on this matter. Unluckily, M. Bouchut seems to speak of a tumidity of the retinal vessels in epilepsy, which he says persists some days. If, however, he examined any patients during the paroxysm, he has not been careful to say so. That a relaxation of the vessels should follow the spasmodic contraction spoken of by Dr. Jackson is likely enough, and this would seem to support the recent conjecture that an epileptic fit depends upon a spasmodic contraction of the cerebral vessels.[2] The subsequent relaxation would correspond with the period of coma. The difficulty of catching a patient in a fit, and the greater difficulty of then examining his eyes, has prevented us from coming to any conclusion on the subject. That the retinal vessels are very heavily congested during states of sopor and coma is, we think, made clear. M. Bouchut has a most striking chapter upon the retinal phenomena which follow the administration of chloroform. In many cases he watched the effect of the inhalation of this drug upon the retina, and in all he found a very marked injection of the back of the eye, with increase in the number and size of the veins. In some cases he noticed a capillary congestion and effusion, masking the whole of the papilla, and throwing a veil over it. In one case the

[1] 'Royal Lond. Ophthal. Hosp. Reports,' vol. iv, pt. i.

[2] We have ourselves observed in many cases of violent mania that a persistent blush of the disc and neighbouring retina remains for several days.

effects were so marked that M. Cuinier, an experienced observer, could scarcely believe in the reality of what he saw. These congestions interfere little with vision, and last some time after recovery. Effects of the same order were seen also to follow the administration of belladonna and opium.

In these latter cases the capillary circulation is little affected, the papilla seeming unchanged, while the veins are distended. This is curiously in accordance with Dr. Jackson's observations on the state of the eye in natural sleep. He "found the optic disc was whiter, the arteries a little smaller, and the veins thicker than in waking. The veins were thick and almost plum coloured" (loc. cit.). All this is very interesting, and deserves continued attenion. M. Bouchut has succeeded in producing a well-marked "contre-coup" in the optic nerve by purposely wounding the brain. He has sacrificed dogs and rabbits with an assiduity that must be very flattering to those animals, and he gives two drawings of optic mischief successfully induced by causing commotions within their skulls.[1]

Lastly, this industrious physician has determined that at the instant of death the choroid pales and loses all colour, the central artery vanishes, and the veins soon cease to be appreciable.

We must now pass on to consider the second form of atrophy. 2. Simple primary or progressive atrophy is to the oculist the most hopeless of all diseases. Consecutive atrophy is merely the result of the weight of a previous congestion which has crushed the nerve and interfered with its nutrition. In this form the nerve may not be quite killed; it generally is not, and if released it has some chance of recovery. But progressive atrophy is a deliberate death—a process of degeneration from within, mostly ending in utter blindness. This disease must be distinguished from the atrophy with glaucomatous excavation, or with posterior staphyloma, and from the changes in the disc which may accompany pigmentary retinitis and choroiditis. The appearance of this atrophy is very characteristic. The fine capillaries which give the rosy tint of the healthy disc slowly wane, and a dead or pearly white is left. With the failure of nutrition vision also is lost, passing steadily and surely away. The central artery and vein do not necessarily shrink. In consecutive atrophy we do not so often see this dead white, and the edges are not so sharp. The border of the nerve in progressive atrophy is flat and even, the disc being strongly contrasted with the red tissues surrounding it, while the border of a nerve which has been merely crushed uneven. In tion and effusion is, on the contrary, badly defined and by conges-

[1] Dr. Richardson has promised us to try the effects upon the optic-nerve and retina of freezing the various parts of the brain.

the latter case there are often, too, blotches and stains about it, the remains of former effusions, which lessen, to some extent, the contrast between the disc and the retina. It is doubtful whether any active stage is seen at the beginning of this degeneration. Our own impression, from one or two cases, is that a transient flush of congestion—a faint show of resistance, as it were—may be seen at the outset. It is seldom that attention is given to the eye at this time. Progressive atrophy depends nearly always upon some disease of the brain, cerebellum, or spinal cord. Little is known of any chances of recovery from it.[1]

The forms of organic change in the eye which occur with Bright's disease and with syphilis we shall briefly consider hereafter. We are obliged also, from want of space, to omit all discussion of the functional changes of the eye. This we regret, as the phenomena of colour-blindness, and of coloured vision, are very interesting. Dr. Jackson has related some instances of epilepsy with coloured vision, in the 'Medical Times' of June 6th, 1863. We must say a few words, however, on the importance of testing the field of vision. The extent of vision may be registered from time to time by having on slips reduced diagrams of the test-board.[2] To these the outlines found on the board are rapidly transferred, and the slips are then filed with the other records of the case. In progressive cerebro-spinal atrophy we constantly find a diminution of the visual field, which begins at the outer circle, and advances more or less concentrically, mostly preferring, however, the inner and outer sides. Hemiopia, again, which has been so well described by Gräfe, is a most interesting affection; lateral hemiopia is constantly due to cerebral disease, and is curiously accordant with what we know of the decussation of fibres at the chiasma. But the limits of our space, which we may take also to be the exact limit of the reader's patience, compel us to hasten on to the intra-cranial diseases which may cause any of these ocular disturbances. We shall enquire what symptomatic changes in the optic nerve and retina, if any, are found to

[1] Since the above was written we have investigated this question in a large number of cases. In many the atrophy is of a mixed kind; there may be slight effusion in essentially degenerative atrophy. Some few cases, especially in old people, appear to begin by a gradual paling of the disc. By far the greater number begin with a pinkness and vascularity of the disc (red softening). This pinkness after some time yields, first on the inner edge of the reversed image, which whitens, leaving pinkness and vascularity about the opposite edge and neighbouring retina. This part is the last to whiten. It is not until the stage of white-softening is reached that sight begins really to fail. In the red stage the pupils are generally contracted. We are disposed to call this process the real optic neuritis.

[2] *Vide* Mr. Pridgin Teale, 'Med. Times and Gazette,' May 11, 1867.

accompany meningitis, cerebral hæmorrhage, encephalitis, senile softening, hydrocephalus, tumours, epilepsy, insanity, myelitis, locomotor ataxy, fevers, Bright's disease, and syphilis. Of many of these cases we shall be obliged to speak very briefly.

The effects of *meningitis* upon the optic nerve are undoubted, though their frequency and their origin is a matter of some controversy. The statements of MM. Galezowski and Bouchut are curiously at variance. M. Galezowski, who attributes the changes in the optic disc to the inflammatory action which is propagated along the course of the nerve, declares that the discs are unaffected in all cases where the inflammation of the membranes is remote from the optic nerves.[1]

In meningitis of the base he says that these nerves must be almost always involved in the process, wherefore we find in tuberculous meningitis that optic neuritis generally exists. Not so in meningitis confined to the fissure of Sylvius, or upon the convex surface of the brain. In such cases, however severe they may be, he is convinced that the discs preserve their normal aspect. M. Bouchut asserts almost the very contrary of this. He gives a table of fifty-nine cases of meningitis, some tuberculous and some not, and states that obvious changes in the eye were seen in all but two. Of these two, one was of doubtful diagnosis, and the other was only examined once, and that four days before death. He finds in the first period dilatation of the veins of the retina, peri-papillary congestion, and often effusion; in the second period, tortuous veins, stasis, thrombosis, and even rupture of the vessels. These, he says, appear more or less quickly, according to the amount of obstruction to the circulation in the sinuses occasioned by the meningitis, so that in a case where a meningitis was diagnosed M. Bouchut did not find ocular changes on one day, but found them on the next. After death the meningeal veins are seen to be full of liquid or clotted blood, and the sinuses of blood mixed with free or adherent clots. In some cases he has found "a veritable phlebitis" of the sinuses of the dura mater, with obliterations of the passages. The other sinuses of the dura mater are seen sometimes to press upon the cavernous sinus, and so to close it. Thus he fully explains the engorgement of the back of the eye, and the exudation of serosity. M. Bouchut considers, then, that meningitis, wherever found, must always tend mechanically to oppress the venous circulation. He notices that the eye corresponding to the side of the more intense inflammation presents more marked disturbance.

Another proof that these disturbances are due to mechanical

[1] A curiously negative case, of universal meningitis without change in the eye, was recorded by Dr. Jackson in the 'Medical Times' two or three weeks ago.

obstruction he finds in the fact that a dropsical enlargement of the eyeball may sometimes also be ascertained by palpation. This result has been likewise seen to follow a large cerebral hæmorrhage. It is probable that the different views held by MM. Galezowski and Bouchut of the origin of the affections of the optic nerve seen in meningitis may have given a bias to their observing faculties. It is probable, too, that M. Bouchut, being eminent as a children's physician, sees for the most part cases of tubercular meningitis, that is, meningitis of the base. Our own experience is not large enough to enable us to judge between these conflicting statements; but it is large enough to have given us a strong opinion, which leans to the side of M. Bouchut. With his explanation of the cause and mode of this kind of optic trouble, indeed, we entirely agree, as we have said above. M. Bouchut thinks that the changes in the eye often occur early enough to be the first certain signs of the disease.[1]

We ourselves have found great help from them in diagnosing the existence of chronic meningitis. In chronic cases the nutrition of the nerve often suffers severely from the effects of the congestion; primary atrophy is not seldom seen in this disease.

In *cerebral* hæmorrhage,[2] although the disorders of motility in the eye are very important, yet in ordinary cases the optic nerves present few indications of value. When the hæmorrhage, however, is a large one, it tends, by obstruction, to cause stasis and infiltration in and about the discs. This effect is always more complete in the eye corresponding to the side of the clot. Those observers who call it "optic neuritis" attribute it to irritation of optic filaments by the clot, or by the excited tissues around the clot. M. Galezowski goes farther, and makes the astounding statement, founded, seemingly, on a single case, that "where amaurosis supervenes, the apoplexy is always situated in or near the optic ganglia" (p. 126).

Dr. Jackson expressed an opinion some little time ago that when amaurosis occurred with hemiplegia, the hemiplegia would be found on the left side. This is certainly not borne out by our own observations. When a cerebral hæmorrhage has caused a great obstruction to the venous circulation, rupture and hæmorrhage into the retina is sometimes seen. Of course the connection between the two hæmorrhages is accidental. This

[1] This is no doubt true, and its results upon the interpretation of treatment are very cheering. We have notes of several cases of meningitis (suspected from other symptoms, ascertained by the ophthalmoscope) which have entirely recovered. The treatment in these was by cod oil and iodide of iron, not by purging and calomel.

[2] If there be such a thing as "apoplectiform congestion," it is possible that a study of the circulation of the eye may be of great value in such cases. This subject is scarcely ripe enough for discussion.

coexistence of retinal and cerebral apoplexy is often seen in company with the small rough kidney. In these cases the two apoplexies are of like causation, and probably depend upon like degenerations of the walls of the blood-vessels, their concurrence in time being probably quite accidental.

Under the head of *encephalitis* we include those obscure intracranial diseases which depend upon local degenerations of cerebral tissue, are generally chronic in their course, and give rise to partial paralyses and to perversions and loss of general or special sensations. Every physician knows but too well the difficulty of getting complete histories with autopsies in such cases. These partial inflammations not infrequently follow a blow upon the head, or they may depend upon atheromatous disease of the vessels, embolism, or syphilis.[1] We now omit those cases in which the encephalitis is secondary to a hæmorrhage or tumour, and we also omit senile softening and progressive general paralysis. Of course we include those frequent cases in which one or more clots are found in the diseased patch, and which are not causes of the degeneration, but consequences of it. Amaurosis is a not uncommon feature in this disease, as M. Lancereaux has shown. A constant headache, vomiting, or nausea, strabismus, and deafness, are also among its symptoms. The amaurosis probably depends upon the descent of the nervous degeneration along the optic nerves, the atrophy being of the hopeless progressive form, with even edges.[2] Sometimes, when the softening is limited, the amaurosis may for years be the only symptom. It is stated that local encephalitis may be set up about the corpora striata, the thalami, and the corpora geniculata, by the ascent of neuritis from the terminations of the optic nerves, the mischief being established first of all in the eye. If the statement be proved, these facts would support the explanation which is given of the origin of some other diseases of the centres, such, for instance, as the peripheric origin of certain spinal diseases or the encephalitis said to follow some wounds of the frontal nerve. It seems likely, from some observations, that a further study of affections of the eye may enable us to infer from them something of the position of these localized patches of disease.

In *senile softening* there is for the most part an absence of symptomatic changes in the eye; but of course it will be remembered that old persons are very liable to atrophic changes at the back of the eye, independently of any central mischief. At the

[1] Or struma, as Dr. Little has suggested. 'Med. Times and Gaz.,' Oct. 12, 1867.

[2] It would be interesting to know how far the analogy of the white optic-nerve atrophy can be applied to certain forms of deafness—aural amaurosis.

same time all chronic cerebral disease tends more or less to lower the nutrition of the optic centres and nerves, and the arterial disease which leads to senile gangrene of the brain may exist in the optic nerve and retina also.

In the diagnosis of *chronic hydrocephalus* M. Bouchut has pointed out that ophthalmoscopic examination may be of great value. The somewhat large and soft heads of rachitic children do, as we all know, often simulate commencing hydrocephalus. Even so experienced an observer of children's diseases as M. Bouchut states that without the ophthalmoscope the diagnosis may be almost impossible. In rachitis repeated scrutiny has convinced him that the back of the eye remains normal, while in commencing hydrocephalus he always finds there enlarged and numerous vessels and a prominent and suffused disc. As the intracranial pressure increases, the disturbance becomes greater, and ends in destruction of the nerve. It so happened that on the morning of the day on which we now write we were requested to see a case of hydrocephalus. The child, by anxious nursing, had been kept alive until its head had gained an enormous size, and the question of surgical interference arose. We found both discs completely destroyed by consecutive atrophy and large patches of old effusion upon both retinæ. The mother thought her baby was blind, or nearly blind.

The occurrence of amaurosis as a symptom of *tumours* within the cranium has long been known, and many interesting papers have been written upon this subject. Gräfe was one of the first to treat in detail of this amaurosis, and he attributed it exclusively to the pressure of the tumour upon the cavernous sinus. Lancereaux has published several cases, and arrives at the very opposite conclusion to Gräfe, saying that the mischief is due to compression of the nervous matter. It is, indeed, the old story of the gold and silver shield—both authors are right, and both wrong. When the tumour is so placed as to interfere with the ebb of the blood, we find stasis and infiltration in and about the optic disc. In other cases the affection of the optic nerve is due, not to the tumour, but to the encephalitis which surrounds the tumour; then we find that the destructive process passes along the nervous connections, and so leads to atrophy of the disc. Thirdly, atrophy of the discs may be caused by the direct pressure of the tumour upon the optic nerves or centres.[1] It might be expected that in a large proportion of fractures of the base of the skull the optic nerves would suffer from the presence either of some dislocated part or of sanguineous effusion. Such instances are recorded, but are found to be rare. M. Galezowski examined fifty-seven cases of fracture without meeting with

[1] In the two latter cases the atrophy would be of the "simple" kind.

such a symptom. So the ophthalmoscope, unfortunately, cannot help us in obscure cases of this kind. M. Galezowski devotes many pages to a careful discussion of the relations between optic affections and cerebral tumours, and he draws many valuable conclusions from which the position of these latter within the skull may be determined. For these details we must refer the reader to the book itself.

The occurrence of amaurosis in connection with *epilepsy* may be treated at great length or with the brevity which we fear must chiefly distinguish our own treatment of it. If we were to begin by looking upon epilepsy as a symptom, and upon optic disease as a symptom, and were then to discuss the value and meaning of these two symptoms, taken together, as we might discuss the meaning of amaurosis and vomiting, or amaurosis and headache taken together, we should be led into a long discussion. It must be enough for us in this place to say that epilepsy may be a symptom, (1) of some obvious disease of the cerebral organs, of tumour, say, or of meningitis; or (2) it may be what is badly called, "essential epilepsy," that is to say, a manifestation of some periodical change in the function of the cerebral tissues, whether nervous or vascular, not connected with marked static change. Now, it is with epilepsy of the first kind that amaurosis is usually associated. We perhaps never find optic atrophy in connection with "essential epilepsy," while on the other hand it is as common in symptomatic epilepsy, as we have shown, when speaking of amaurosis in connection with tumours, meningitis, hæmorrhages, &c. Those epilepsies which depend upon organic disease are, of course, more or less unilateral according to the position of the diseased tissues, aud Dr. Jackson has repeatedly called our attention to the frequency of optic atrophies in unilateral epilepsy. It seems probable that slight disturbances of the vascularity of the retina occur in ordinary uncomplicated epilepsy, especially if violent or long continued, and these, if carefully observed, may throw some light upon the pathology of this disease.[1] Competent observers still assure us that venous dilatations are to be found in the central ganglia in severe epilepsy.[2]

Under the vague name of *insanity* are comprehended such a number and variety of tissue changes, functional and organic, that we have almost to apologise for the use of such a term. Our readers may, however, wish to know whether the ophthalmoscope is likely to prove of much value to the alienist physician in dealing with so vast a collection of ob-

[1] A simple and ready means of photographing the back of the eye would be an immense help to observers.

[2] Which are, no doubt, vessels in which the frequent repetition of spasm has been succeeded by paralytic dilatation.

scure affections. Upon this point we find that alienists and oculists alike are silent. We shall be glad if, by our own remarks, the attention of both classes of observers may be drawn more particularly to this branch of the subject. If the ophthalmoscope can help forward the study of mental disease, it will be the means of increasing the knowledge of the physician in the highest branch of his high profession. It is not possible for us to give any complete account of the results to which we have been led by a tolerably large experience of the state of the eye in the various classes of the insane. When the reader remembers that a large assemblage of lunatics means a large assemblage of cases of severe cerebral disease, he will be prepared to hear that symptomatic affections of the eye are very frequent in lunatic asylums, and that the ophthalmoscope will no doubt throw much light upon the diagnosis and pathology of the various causes of insanity. Perhaps its value is most evident in the distinction between organic and functional disease. There are very few cases of organic disease, sufficient to disturb the mental functions, which do not cause also changes in the optic disc or retina.[1] Of a large number of cases of mania, for example, of which we have notes, we find that about two thirds present unmistakable affections of the optic nerve. If doubtful cases were taken, the proportion would be still larger. Now, when we compare the cases which present marked eye mischief with those which do not, we find that in almost all of the former there are other symptoms which lead us to suspect organic disease; the rest of the cases being functional disorders, such as hysterical mania, erotomania, and the like. In melancholic patients again, and monomaniacs, where obvious organic disease of the brain is not frequently found, we find in like manner, from our notes, that if we exclude retinal anæmia, which in melancholic patients is often well marked, a small proportion only present any symptoms in the eye. It would take us very long to unravel all our cases of dementia, but, speaking generally, we find in them also that organic disease and eye affections go together. As dementia is often a sign of profound changes in nervous nutrition, so we find that sympathetic affection of the optic nerve is not uncommon in that disease. Simple atrophy of the nerve occurs also in a considerable number of congenital idiots.[2] In general paralysis atrophy of the discs is, we had almost said, invariable. Unluckily, it is not a very early symp-

[1] We need scarcely say that such changes may and do exist without causing much derangement of vision. Indeed it is not possible to estimate degrees of vision in the insane with any accuracy.

[2] Dr. Langdon Down is kind enough to inform us that our experience agrees with his own in this matter, as he has often noticed that amaurosis occurs in a considerable number of idiots.

tom. It becomes unmistakable about the end of the first stage or the beginning of the second, and in a certain number of cases it progresses to complete amaurosis before death. We see here another mark of the nervous waste in which general paralysis consists, though we have not detected in the vessels of the retina any signs of that tortuosity which has been seen in the grey matter in that disease. In *spinal* disease, atrophy of the optic nerve is not uncommon, and it is frequent in that form of it known as *Locomotor ataxy*. It is also observed in some cases of *chronic myelitis* not attended with shooting pains, &c. The causation of atrophy in these cases, which is of the simple progressive kind, is very interesting, and wholly different from its causation in cerebral disease. The atrophy in spinal disease probably depends upon an affection of the great sympathetic, through its communications with the anterior roots of the spinal nerves. These cases must be very interesting to M. Claude Bernard. Amblyopia is often mentioned in connection with lead poisoning, but without recorded change in the optic nerve. We therefore call attention to a case of Dr. Hirschler, of Pesth (quoted in Virchow's 'Jahresbericht' for 1867, p. 447), where he noted "Eine mattgraue Verfärbung und verringerte Transparenz der Papille." The affections of the optic disc and retina, which occur in convalescence from *fevers, diphtheria,* and other profoundly debilitating diseases, need not delay us. They are not very common events, and probably depend only upon profound anæmia of the base of the brain and optic nerves, attended at times, perhaps, with some effusion of serosity. They are generally, but, unfortunately, not always, cured by generous diet and tonics. The mental feebleness which sometimes persists in such convalescents is no doubt a phenomenon of the same order. We are disposed to think that some degree of meningitis has probably existed in the course of fevers which are followed by affections of the optic nerves to any extent. The disorders of the back of the eye seen in Bright's disease and syphilis now only remain to be noticed. We shall not detain the reader by carefully describing these, but we rather refer to the papers of Mr. Bader on these subjects published by him in the 'Ophthalmic Hospital Reports' and in the 'Reports of Guy's Hospital.' In syphilis the choroïd seems to be chiefly in fault, and we see patches of many colours at the back of the eye, some being of a brilliant white, others of darker tints, such as red or brown. In Bright's disease the nutrition of the optic nerve as well as of the retina is profoundly altered. Galezowski has found in these cases atrophic change of the nerves as high as the corpora quadrigemina, and he frequently notes fatty

patches in and about the chiasma. Upon the retina we find extravasations in the course of the vessels, which are slowly effused and pass into degenerative states forming white patches or striations along the margins of the veins. Other patches are probably due to degeneration of the retina itself. The hæmorrhages in such retinæ are very different to the ruder retinal apoplexies of cerebral disease. These latter occur more brusquely, are preceded and accompanied by great vascular dilatations and distortions, and do not congregate along the course of the vessels. In cerebral disease, moreover, the disc is generally the first to show signs of change, while in Bright's disease retinal degenerations are first in order: finally, in cerebral disease, we do not see the fatty patches of degenerated retina.[1] A question has arisen whether these retinal affections are found in all kinds of albumina, or only, as is generally supposed, in connection with that state of tissue of which the small rough kidney is a symptom. A case is reported from the Leeds Infirmary where marked retinal degeneration coexisted with symptoms of the large, smooth kidney, the diagnosis being verified by an autopsy. We understand also that the physicians of that institution have a second case of the same kind under observation.

We have now said enough to show that various and most important indications of disease are to be found in the eye. The remarks which we have made, however, chiefly bear upon the disorders of the optic nerve and retina; when we add to these the disorders of the ciliary region, the lens, the cornea, the conjunctiva, and the orbital apparatus, which we have been obliged to pass by, we shall see that physicians must now be in possession of a vast number of facts which help in the diagnosis of many obscure diseases and morbid states of tissue. As the importance of these facts bears no proportion to their prominence, it is clear that they can no longer be neglected on the score of their minuteness, and that instruction in ophthalmic practice should be given to both medical and surgical students. We have gone at some length into the question of the symptomatic value of disorders of the eye, for we believe, that few physicians are really aware of what has been done for them almost entirely by their surgical brethren. We have necessarily spoken briefly, but not, we hope, vaguely, and we have said, perhaps, enough.[2] Sir Thomas Watson, with great sagacity,

[1] M. Liebreich's Atlas contains admirable plates of Bright's retina. Similar changes have been recorded as occurring (very rarely) in diabetes.

[2] Our wish has been to deal wholly with ascertained facts, and not with speculations. The state of the retina, &c., ought, however, to be carefully noted in all so-called cases of "shock" in railway accidents. One or two suggestive cases have come under our notice. It must be borne in mind that symptomatic changes in the optic nerve are often very slow.

begins his course of lectures on medicine with four lectures on diseases of the eye, his—

'Only motive, however, for beginning with a few of the numerous morbid states to which this little part is liable being this—that we find in the eye more satisfactory and plain illustrations of the general facts and doctrines of pathology . . . . . than in any other single part of the body. 'Here' (to use the words of Dr. Latham), 'here you see almost all diseases in miniature; and, from the peculiar structure of the eye, you see them as through a glass; and you learn many of the little wonderful details in nature of the morbid processes, which but for the observation of them in the eye would not have been known at all."

The words of Sir Thomas Watson and Dr. Latham are daily gaining a weight and a meaning which could be no more than guessed at by their distinguished authors. It would not, indeed, serve any good purpose to exaggerate the value of ophthalmoscopic work to the physician. It would be absurd to pretend that the eye is a window through which the states of the brain may be seen as the workings of the soul might be seen through windows in our bosoms. It is enough to say that mischief or change of state in the eye is not uncommonly coincident with nervous and other diseases. Between these concurrent events there must lie a chain of causation which may turn out to be a series of phenomena of infinite value, and which is already known in many cases to be of high interest. In a word, to end as we began, wherever there are facts to be observed, and wherever we can hope to strengthen inference into certainty, there must we work. No thorough knowledge of the significance of optic changes in cerebral disease, &c., can be attained until we are familiar with their modes. We have just obtained a very interesting and valuable paper on optic neuro-retinitis, by Gräfe ('Arch. f. Ophth.,' xii, 2, s. 114—149) to which we would call the attention of our readers.

PART SECOND.

Bibliographical Record.

ART. I.—*Lectures on Clinical Medicine, delivered at the Hotel Dieu, Paris.* By A. TROUSSEAU, Professor of Clinical Medicine, &c. &c. Translated and Edited, with Notes and Appendices, by F. VICTOR BAZIRE, M.D. 8vo. London, 1867. Parts II and III, completing Vol. I.

THE past year has witnessed the death both of the distinguished author and of the able translator of these most lucid lectures on clinical medicine, which were briefly noticed in this Review for 1866. The science of medicine has, indeed, lost a most conscientious and clear-sighted exponent in Professor Trousseau, whose example and labours have done much in France in the way of introducing and commending to attention the teachings of English pathologists and practitioners, and particularly those of the eminent Dublin physician, the late Dr. Graves. The death of Dr. Bazire is equally to be mourned in the interests of medical science. He had but lately entered on an active professional career, yet what he had already effected augured well for his own prospects, and also for the progress of medicine. The translating and annotating these lectures was his principal undertaking, and the mode in which he executed it is a monument of his care and industry, and of the extent of knowledge he possessed and could bring to bear upon it.

The contents of Part I were remarkable for their comparative novelty, and for illustrating the philosophical and practical acumen of Professor Trousseau.[1] Those of the second and third parts, now before us, though they may have to yield the palm in respect of novelty, are not the less interesting and important to the practitioner. To enumerate them they are—Progressive muscular atrophy; facial paralysis; cross paralysis; infantile convulsions; eclampsia of pregnant and of parturient women; tetanus; chorea; senile trembling and paralysis agitans; cerebral fever and chronic hydrocephalus, and neuralgia in Part II; whilst in Part III are — Cerebral rheumatism; exophthalmic goitre, or Graves's disease; angina pectoris; asthma; hooping-cough, and hydrophobia.

Dr. Bazire's notes and appendices were very copious and of

[1] This Part was noticed in our April number for 1866, p. 111.

great value in the first part; but in the two following, under notice, they are much more sparse and brief. We do not refer to this by way of indicating a defect, for both the subjects of the lectures and Dr. Bazire's special studies afford explanation of their absence. Indeed, annotations to lectures so comprehensive as are those of Trousseau would be only incumbrances, except so far as they could convey original information calculated to give completeness to the subject discussed, or could elucidate obscurities, or otherwise could correct any misapprehension or ignorance of English doctrines or practice displayed by a foreign physician. As an example of notes of the first class referred to, in the shape of addenda of original matter, "the Appendix by the Editor" to the lecture on "Progressive Muscular Atrophy" may be cited. For Trousseau, at the date when his lecture was delivered, appears to have been ignorant of Mr. Lockhart Clarke's important minute researches into the morbid anatomy of the disease; consequently, without the appended review of those researches, the lecture might have been pronounced incomplete.

An examination of the doctrines and teachings of Trousseau cannot here be undertaken; but it may be said of him that he was a very admirable and cautious teacher of pathology, most carefully criticising hypotheses, testing them by the light of his immense practical experience, and, where found valid, illustrating them by cases in language of great fluency and of much grace and clearness. He must also be regarded as a safe practical physician, well versed in British therapeutics; although, indeed, the attention given to the symptomatology and morbid anatomy of the diseases discoursed upon vastly preponderates over that bestowed upon treatment. This may be deemed to have been Trousseau's misfortune rather than his fault, particularly when regard is had to many of the lesions described in the lectures as yet published; for, unluckily, too many of them are of such a nature that, with respect to them, we may well entertain misgivings whether medicines ever can be of much avail. Progressive muscular atrophy seems to belong to this class of maladies, and Trousseau sums up his instruction on its treatment as follows:—"Treatment is unfortunately powerless against this complaint; and if localised Faradisation has, in some cases, been able to arrest its development, the disease has made further progress after a more or less prolonged intermission." On the other hand, however, in the foot-notes Dr. Bazire expressed himself more hopefully of treatment, and could quote other physicians who agreed with him.

In conclusion, we desire strongly to recommend these lectures by Trousseau to all who desire to obtain a satisfactory acquaint-

ance with modern medicine; and we are glad to learn that arrangements have been made to continue their publication in English. We have only to hope that the translation and editing of the remaining lectures will be as satisfactorily carried out as they have hitherto been.

ART. II.—*Circular No. 6, War Department. Surgeon-General's Office,* Washington, November 1, 1865.

Reports on the Extent and Nature of the Materials available for the Preparation of a Medical and Surgical History of the Rebellion, 1865.

THIS work is valuable chiefly in a statistical point of view, and mainly in consequence of the very large number of cases of injury which the terrible experience of the great conflict enables the American surgeons to bring together. It is a work which does great credit to the Surgeon-General's Office from which it has emanated; and although itself only a specimen and a kind of preface to the general medical history of the war which we hope is in preparation, it will itself long form an authentic book of reference both to the military and civil surgeon. Besides the statistical collections, there are many very interesting individual cases, and the book is exceedingly well and very profusely illustrated. We would call especial attention to the photograph of a patient after recovery from a bullet wound which passed from the right side of the front of the belly to the spine (opposite p. 26), and where, with American ingenuity, both the back and the front are shown by photographic lines in front of a large mirror. There are also beautiful illustrations of the various forms which gunshot fractures of the bones assume. But the most important and valuable portions of the report we believe to be the statistical tables of the various operations necessitated by injuries in battle, comprising as they do numbers never before approached, and operations (excision resection, &c.) never before tried on any large scale in military surgery. The medical part of the report, though less novel and we think less valuable (from the circumstances of the case), appears done with the same conscientious care; and the chapters on hospital construction and on the arrangements for the transport and care of wounded soldiers are well worthy of study. It would be useless, we feel, to offer extracts from a work of this kind. We can only conclude by expressing the thanks of the profession in England to the American department, not merely for this laborious and expensive work, but for the great liberality with which the copies have been circulated. We trust that the 'General History,' for which such extensive materials

are proved to exist, is steadily progressing under competent superintendence.

Art. III.—*Del Guanara, Nuovo Alimento Nervoso.* Ricerche Sperimentali del Professore Paolo Mantegazza ('Dagli Annali Univ. de Medicina,' April, 1865). *Milano,* 1865. Pp. 56.

On the Guanara, as Alimentary Substance and Nervous Excitant. Experiments by Professor Paolo Mantegazza. *Milan,* 1865.

The author refers guanara to the class of coffee plants, or those containing caffeine, such as tea, coffee, maté. Of these, according to Stenhouse, maté contains the least amount of caffeine, and guanara more than twice as much as the best tea. The convenience which attaches to it from cold water being employed in its use, and its superior power of excitation, will probably recommend it to notice in proportion as intellectual effort becomes a more general and indispensable ingredient in the business of human life. The plant which yields guanara is the *Paullinia sorbilis* of the genus Paullinia, in the family of *Sapindaceæ,* Jussieu. The fruit is worked up into cylinders of the colour of chocolate, and somewhat of the consistence of pudding, of about 200 grammes in weight; when sweetened and lowered with water, it constitutes an agreeable beverage of pleasant favour.

At Rio Janeiro guanara costs twenty-four francs a kilogramme, and half as much at the place of manufacture, the price being enormously increased in Bolivia and elsewhere at a distance from this centre. In the province of Mato Groso, in Brazil, it the common beverage; but in general it is too expensive for any to enjoy but the well-to-do classes, with whom it is considered excellent as tonic, aphrodisiac, and intellectual excitant. According to a saying in vogue its use is the most costly of all the vices. Used as a medicine, it is considered to be as somewhat astringent and serviceable in the diarrhœa of infants. But, if taken after meals, it has a tendency to disturb digestion, and it is grateful after fatigue, especially during great heats, and peculiarly useful to prolong the midnight vigil.

Fournier introduced it to European notice with exaggerated announcement of its virtues, and many others have bestowed some attention to the subject. The author of this pamphlet having spent a short time in South America, warns the inquirer against any conclusions drawn from specimens not imported direct. The effects of guanara in relieving neuralgia and hemicramia, though unmistakeable, do not appear to be of a permanent character.

Professor Mantegazza has undertaken a series of minute experiments to ascertain the physiological character of this drug. In frogs, like coffee, it produces tetanus, its action being opposed to that of coneine; in the infusoria it does not diminish ciliary movements; in larger animals it seems to create restlessness, wakefulness, spasms, and muscular inability. It kills frogs in a dose of from five centigrammes to half a gramme, the latter proportion being a fourth part of what is used in common beverage by man; altogether its action on frogs is very analogous to that of caffeine. In the human subject it seems to produce, in larger dose, defect of appetite, constipation, and sometimes a minor degree of strangury and urticaria. Its effects on the nervous system, then, would seem to be of a disturbing character, and in this it has some analogies to strychnine; but, like tea and coffee, opium, it may some day force its way into common use and the same general favour which is accorded to it in the western hemisphere.

ART. IV.—*Description of two Instruments for Determining the Time required for Psychical Processes.* By Dr. F. C. DONDERS, F.R.S., Professor of Physiology and Ophthalmology in the University of Utrecht. Translated from the 'Nederlandsch Archief voor Genees en Natuurkunde.' Deel III, Aflevering i, p. 105. By William Daniel Moore, M.D. Dub. et Cantab., M.R.I.A.

THESE instruments were exhibited by me in the sectional meeting of the Society of Utrecht, held on the 16th of October, 1866. The one, which I have called noëmatachograph, serves to determine the duration of more or less complex operations of the mind. The other, to be termed noëmatochometer, defines the shortest possible time for a simple idea.[1]

The noëmatachograph consists of a cylinder, in many respects similar to that of the phonautograph, on which the time is registered by a vibrating tuning-fork. According to the vibrations of the latter is indicated 1° the moment when a stimulus acts, and 2° when the token of perception, the signal, is given.

Various stimuli may be employed, as an opening induction-shock, the opening or closing of a constant current, a spark or a great flash of light, transparent signs illuminated from behind by a strong induction-spark; lastly, a sound, whether of a spring struck by a pin projecting next the cylinder, or of a tuning-fork suddenly set vibrating by a peculiar arrangement, and directly registering these vibrations, or, finally, of the human voice, or any other sound, registered by a phonautograph, or rather by a

[1] At first I named the instruments Noëmatachometer and Noëmatachoscope. I prefer, however, Noëmatachograph and Noëmatachometer, which are here used.

simplified apparatus, consisting of a modified König's stethoscope, covered with elastic membrane and connected by two gum-elastic tubes with two mouth-pieces.

The stimulus can now be acted on according to different signals:—The closing of a current by pressure on a so-called key, whereby an electro-magnet sets a pin in motion (not so suitable on account of the variable retardation); (*b*) the striking of a tuning-fork or the projection of an accent in some experiments, where of many stimuli it is necessarily required to distinguish one; (*c*) the lateral pushing away of a horizontal piece directly connected with a vertical wooden bar, to the upper part of which a small horizontal spring is connected, writing on a cylinder and indicating the moment when the wooden bar is turned, by the lateral pushing away of the horizontal piece, round its axis. If the said horizontal piece be held between two fingers, it can, in connection with a dilemma to be solved, be pushed at will to either left or right.

With the noëmatachograph we can now—

(*a*) Determine the physiological time in impressions on the eye, the ear, and different parts of the skin. The simplest and most accurate signal to give is the vertical wooden bar. Determining the physiological time in irritation on different parts of the skin, we obtain some knowledge of the rapidity of conduction in the nerves, in which we have, however, to take into account both the strength of the stimulus and the route of conduction in the central organ.

(*b*) We can thus investigate how much time is necessary to solve a dilemma, and in connection therewith to give a signal. The signal may then be either conventional or natural; by practice the conventional may approximate to the natural, and thus the influence of practice is studied. As conventional signals serve—1st, turning the wooden bar to the left or to the right, accordingly as the stimulus is received on symmetrical parts of the left or right side, accordingly as red or white light is exhibited, accordingly as the vowels *a* or *o* are seen or heard, &c.; 2nd, closing of the current by pressure, either on the key held in the right or on that in the left hand, such an arrangement being made that when both keys are pressed the current is not closed (Conf. de Jaager, 'De physiologische tijd van psychische processen,' Diss. inaug. Utrecht, 1865). As a natural signal the repetition of the sound of a letter heard is employed, a vowel preceded or not by a blow-consonant. As practised signal the calling out of the sound of a vocal sign suddenly exhibited by an induction-spark. In connection herewith, the influence of practice with the above-mentioned conventional signs may be investigated.

It was proved that the solution of a dilemma and the reaction corresponding thereto requires more time than the simple reaction on a stimulus, and that the difference is much more considerable with conventional than with natural signals, while on the first the influence of practice is more rapidly felt. The difference in two experiments, the one with, the other without the solution of a dilemma, exhibits the time required for the psychical process of distinguishing and distinctive manifestation of the will.

We can, with the noëmatachograph, determine the time required to distingish one out of more than two stimuli, and to answer with a given signal. For this, the repetition of the sound heard (natural signal) and of the announcement of the sound of a suddenly illuminated vocal sign (practised conventional sign) are particularly suitable. Experiments may also be made with conventional signs, without practice, to be given on one of more than two stimuli previously agreed upon.

(*d*) The instrument may be employed to determine what difference of time is necessary to decide which of two stimuli had the priority. For this purpose two springs, with a fifth's difference of sound, are brought by turning, by two projecting pins, into a state of vibration; the distance of these pins can be modified, and thereby the difference of time. In like manner two sparks may be discharged at the side of the cylinder with a difference of time which may be modified at will.

If by comparison of the experiments described under *a* and *b* or *c* it be deduced, as difference of the time found in them, how much time is required for the united double action of distinguishing a stimulus out of two or more and for reacting on the distinction made, we can, from the experiments mentioned under *d*, ascertain how much time an idea or thought alone requires. A defect in these last experiments is, that the cylinder is not every time turned with absolutely equal rapidity, and that consequently, by the distance of the pins or of the breaks which sparks give, we cannot absolutely regulate the difference of time before the experiment, but only after the latter ascertain it from the vibrations of the chronoscope between the two pins. Chiefly for these reasons, and at the same time in order to be able to compare the impressions on two different senses with respect to their priority, I have constructed a second instrument, the noëmatachometer.

The noëmatachometer consists of a prism, which, loaded with a horseshoe, is set free behind a vertical plank by burning a thread, and in its fall, by displacing a cork lever without any noise, opens a current, the spark of which is seen, and a moment before or after loses its horseshoe on two copper bars, the sound

of which blow is heard. As on the falling prism the place where the horseshoe rests, and the pin which moves the lever, are movable, we can, knowing the precise rapidity with which the prism is falling opposite to the opening in the plank, regulate with perfect accuracy how much the blow shall be produced earlier or later than the spark. With the time required to distinguish the priority, I think I have found that necessary for a simple idea. The difference of time required to recognise the stimulus by hearing and by sight is found at the same time by giving priority alternately to one and the other stimulus.

ART. V.—*On the Mode of Action of Strychnia.* By A. INGRAM SPENCE, M.D, Assistant-Physician, Royal Edinburgh Asylum. *Edinburgh,* 1866. Pp. 16.

THE author of this paper, which was read before the Medico-Chirurgical Society of Edinburgh, gives an account of some well devised and seemingly carefully conducted experiments on frogs,—tending to prove,

1. That the mode of action of strychnia is not through the nerves, nor along the course of the blood-vessels, but through the circulating blood; no effect, in any instance, having been produced when the poison was injected into the abdominal cavity, provided the circulation was arrested by the excision of the auricles, or of a portion of the ventricle.

2. That there are nerve-cells possessed of different functions, —some subservient to motion, some to reflex action,—differences seemingly indicated by the phenomena produced by the application of strychnia to the cerebro-spinal axis drained as much as possible of blood.

3. That the effects of the alkaloïd are not in consequence of its vitiating the blood so as to render it incapable of being influenced by oxygen;

4. Nor attributable to a state of hyperæmia of the spinal chord.

5. That little reliance is to be placed in any of the hitherto proposed antidotes of the poison, especially woorara and tobacco, recovery having taken place after chronic poisoning, seemingly as readily, whether either of these or nothing was used.

6. That for medicinal purposes, the best mode of administering strychnia is by the mouth internally; and "in those diseases in which the reflex cells require stimulation, although practically there may be some difficulty in determining the particular cases."

ART. VI.—*On the Constituents of Food, and their Relation to Muscular Work and Animal Heat.* By. F. C. DONDERS, M.D., F.R.S., Professor of Physiology, &c., in the University of Utrecht. *Dublin,* 1866. Pp. 45.

WE hardly need remind our readers of the *questiones vexatæ,* the disputed points involved in the subjects which constitute the title of Professor Donders's paper, as given above. The manner in which he has engaged in their discussion is such as might be expected from his well-earned reputation as an able and careful inquirer.

Some of his conclusions we shall notice, and almost in his own words, or rather those of his learned translator, Dr. W. D. Moore, of Dublin. It is to be understood that the indestructibility of force, the correlation of forces, is a matter taken for granted by the author. Relative to the direct and indirect production of heat, Professor Donders, after having made certain statements, remarks,—

"We may, on the ground of all this, safely assume what may also be more accurately proved by calculation, that the bodily heat is for the most part developed in and through the muscles, principally, as has been said, indirectly, but, as it appears, also directly from chemical action. This last holds good, in fact, for all parts of the body. Everywhere, where there is capillary circulation, is arterial blood changed into venous, oxygen is chemically combined; and if neither elastic tension nor electro-motor action supervenes, we are justified in inferring the direct origin of heat. Indeed, in the high temperature of the blood of the hepatic veins (G. von Liebig and Gavarret), and of the saliva secreted under nervous irritation (Ludwig), we have the direct proofs of development of heat in non-contractile parts. And as in continued muscular work, the circulation of the blood and respiration are more active, and evidently a great quantity of blood is conducted through all the organs, we have to expect everywhere an increase of the direct development of heat: in all irritated parts this increased activity manifests itself, after continued work, in the increase of irritation, in pain and swelling."

Where treating of mechanical work, work accomplished by the muscles, he gives the following sketch of the phenomena connected with their contraction, whilst admitting that the peculiar change of the molecular condition which determines their contraction is still involved in obscurity.

"In normal life the muscle contracts under the influence of the nerves. The action here excited (voluntarily, automatically, or by reflexion), manifestly itself a modification of the electrical phenomena (Du Bois-Reymond), is propagated with tolerably great rapidity (amounting in frogs to nearly nine English feet in the

second—Helmholtz), and, as it seems, with increasing intensity (Pflüger) to the so-called primitive bundles of the muscles, which are to be considered as the terminal organs of the motor nerves. In the condition of rest the muscles have, with very slight tone, persistent elastic tension (Weber), and with consumption of chemical energy by oxidation, an electro-motor action is developed (the cause of the 'resting muscular current' of Du Bois-Reymond), and thus mediate, perhaps, also, immediate heat is produced; the muscular sound, too, appears to be present even in rest. The contraction (thickening with shortening), of the so-called primitive bundles proceeds from points where the nerve fibres are attached with flat expansion mediately or immediately to the muscular substance, and is then propagated to both sides in each fasciculus under the form of nerves, so that a muscular fasciculus is not equally shortened throughout its whole length—in cold-blooded animals with the rapidity of about a metre in the second; at the same time, too, the tone of the muscular sound rises. The shortening does not commence directly upon the arrival of the exalted nervous action; there is a latent period of about $\frac{1}{100}$th of a second (Helmholtz), with the commencement of which (von Bezold) an important phenomenon coincides and announces the approaching contraction; this phenomenon is an instantaneous electrical discharge (Meissner), lasting less than $\frac{1}{1000}$th of a second (von Bezold) comparatively weak, but still, probably, equivalent to that of the electrical organ of fishes."

Relating to the question whether in exercise of the muscles there is any increased expenditure of nitrogenous matter, the conclusion at which the Professor arrives is affirmative, viz. that there is a decided metamorphosis of matter in the organs themselves, an influence which seems to be supported by the results of Dr. Parkes' inquiry "on the elimination of nitrogen by the kidneys and intestines during rest, and exercise on a diet without nitrogen,"[1] though seemingly opposed by some interesting observations of Dr. Verloren quoted by Dr. Donders on bees and their larvæ, the latter feeding on nitrogenous food in a quiescent state, excreting much urine; the former living chiefly on non-nitrogenous food, leading a most active life, and excreting little urine.

As to what food is essential to life in general, the author's inference is that non-nitrogenous matters and nitrogenous are both necessary, and equally necessary for muscular work, and that for extra work a larger proportion of the former is needed.

"The food of man," the subject of the eleventh and last section, which Professor Donders calls "the great question," is carefully considered. The final conclusion is this:

"Muscular work and heat arise in the animal organism, both being derived from the chemical energy as well of non-nitrogenous as of

[1] 'Proceedings of Royal Society,' Jan., 1867.

nitrogenous matters. Of both kinds of food the animal system has need. In the body there exists a certain relation between heat produced and muscular work. By exercise this relation becomes more favorable for muscular work. A liberal supply of albuminous matter tells favorably in the same. The reason of this is probably to be found in the better nourished and firmer condition of the muscles and of the whole body, which is obtained by means of a more highly albuminous diet. The development of man in general appears to attain the highest pitch under the use of a mixed diet."

This slight notice of and few extracts from Professor Donders's paper will lead, we hope, many of our readers to peruse and study it; it will amply repay them. As an example of careful physiological research, we do not know of any other which has recently been brought forward more deserving of attention.

ART. VII.—1. *Physiology at the Farm, in Aid of Rearing and Feeding the Live Stock.* By WILLIAM SALTER, M.D., F.R.S.E., and HENRY STEPHENS, F.R.S.E., &c. *Edinburgh and London,* 1867. Pp. 634.

2. *On Non-nitrogenised Food in a Physiological Point of View.* By the same Authors. 1867. Pp. 26.

OF 'Physiology at the Farm,' judging from those portions of it which we have read, we have formed a very favourable opinion: as a compilation from the best and most recent sources of information, it appears to us well adapted to answer the purpose for which it is designed, viz. to afford that amount and kind of physiological knowledge to the farmer which may enable him to conduct his business on scientific principles, especially the rearing and feeding of live stock.

The value of the volume is enhanced by an ample index, a full glossary, and a list of the works consulted.

Of the pamphlet, the title of which is given above, we have merely to remark that it seems to us a successful reply to certain objections which have been critically made, especially by an anonymous writer in 'The Field,' to Messrs. Salter and Stephens's views of the parts performed in the economy by nitrogenised and non-nitrogenised food.

ART. VIII.—*On the Function of the Blood in Muscular Work.* By C. W. HEATON, F.C.S., &c.[1]

THIS is an ingenious paper in support of the opinion of Mayer that all oxidation takes place in the blood; that therefore all, or nearly all, the force of the body is generated in the blood; that muscle, quoting Mayer's words, "produces

[1] From the 'Philosophical Magazine' for May, 1867.

mechanical effects at the expense of the chemical action expended in its capillary vessels; and further, to use the words of the author, "muscular disintegration, so far from being the cause of muscular work, must rather be regarded as an effect contingent on it."

ART.—IX.—*On State Medicine in Great Britain and Ireland.* By HENRY W. RUMSEY, F.R.C.S., &c. *London,* 1867. Pp. 58.

THIS is a well-reasoned, argumentative paper, highly creditable to its author, and well adapted to answer the purpose for which it was written, that, namely, of calling attention to the very important subject of state medicine, a subject till recently in a manner ignored and sometimes ridiculed, and even now hardly sufficiently appreciated in its several and extensive bearings.

Mr. Rumsey, taking a comprehensive view of this great subject, discusses it under the heads of—1, etiological, comprising registration of mortality and sickness; 2, medico-legal; 3, sanitary, including district organization and professional interests. Under each he first points out the multifarious defects and shortcomings in the existing state of things, and the manifest evils resulting from them. Next, he suggests how they may be corrected so as to accomplish the greatest practicable good, judiciously supporting his statements by reference to high authorities.

In an appendix the discussion is given that followed the reading of his paper, which, we should mention, was delivered as an address (in substance, since enlarged), at the Congress of the British Medical Association, held at Dublin, on the 7th of August, 1867, a discussion in which the speakers generally supported his views, as was shown by the adoption of a series of resolutions. These were the following, and they embody the spirit of the address and the principles mainly advocated in it.

1. "That the Association desires to express its decided approval of the plan proposed by Dr. Farr, namely, the appointment of a registration medical officer in every registration district or group of districts, with medico-legal and sanitary functions, and pledges itself to support that measure as the initiative step to a national organization for the purposes of State medicine."

2. "That the Committee of Council be instructed to direct their early or special attention to the amendment of the sanitary laws, to invite the co-operation for this end of the Council of the National Association for the Promotion of Social Science, and to urge the branches of this Association to promote the same important object by local efforts, by representation to individual members of

Parliament, and, if need be, by deputations to Her Majesty's Government."

3. "That a Committee be appointed[1] . . . . . to collect information, in such a manner as they may think best, on the subjects brought before the Association by Mr. Rumsey; and that the Committee of Council be empowered to make such pecuniary grant as the funds of the Association will permit towards the expenses of this inquiry."

We must not conclude this our brief and imperfect notice of Mr. Rumsey's paper without strongly recommending it to the attention of our readers, and at the same time exhorting them to give as far as they may be able their support to the great objects —national objects—which he has so ably advocated. Let it be kept in mind that it is not reform that is needed, but a new organization altogether, one founded on well-established principles and as much as possible on exact science.

ART. X.—*Giornale Italiano delle Malattie Veneree e delle Malattie della Pelle.* Compilato e diretto dal Dott. G. B. SORESINA. Anno 1866, *Milano.*

Italian Journal on Venereal and Cutaneous Diseases. Edited by G. B. SORESINA. 1866. Published monthly, *Milan.*

THE editor is chief physician to the Sifilicomio at Milan, and the promised staff of contributors comprises the names best known in Italy as interested in syphilography and skin disease. Such are the names of Galligo, Gamberini, Pellizzari, Sperino, and others of no less weight. The journal is in continuation of an appendix, which for some four years past has been advantageously issued in connection with the 'Gazetta Medica Lombarda,' forming an extra sheet to the subscription. The first number of this new issue contains axioms in syphilography by Professor Gamberini, of Bologna, in which, without sacrifice to individual bias, he has acquitted himself in such wise as all may admire. We shall not linger on points disputable.

Professor Dubini, of Milan, describes a curious affection of the scalp, which he terms "wasp nest" (*vespajo*). He has observed this in young country people of the lowest class. It forms one or more round raised circumferences of the diameter of from five to eight centimètres, which pours out pus from countless small fora-

[1] COMMITTEE.

Dr. Acland, F.R.S., *Chairman.*

Dr. Burke.
Dr. Falconer.
Dr. Gairdner.
Mr. Ernest Hart.
Dr. Lankester, F.R.S.
Dr. Mapother.
Dr. J. G. Morgan.
Dr. G. H. Philipson.
Mr. Ransome, M.B.
Dr. Tindal Robertson.
Dr. Rumsey.
Dr. Symonds, F.R.S. Ed.

Dr. A. T. H. Waters.

Dr. A. P. Stewart, *Hon. Secretary.*

mina; these lead to sacculi, which are not independent, but forming in their ensemble a large focus of destruction intersected by filaments of gangrenous cellular tissue, with no induration at its base; all the anatomical elements participate in the ravages of the disease, the cause of which is not known. An extended monograph, by the hand of Dr. Guiseppe Profeta, of Palermo, on constitutional syphilis and its cure, appears in the opening numbers.

ART. XI.—1. *A Handy Book of Meteorology.* By ALEXANDER BUCHAN, M.A., Secretary to the Scottish Meteorological Society. *Edinburgh and London.* 1867. Pp. 204.

2. *Journal of the Scottish Meteorological Society.* Nos. XIV. and XVI.

3. *Meteorological Observations on the Humidity of the Air of Scarborough. With Chapters on Rain, Rain Gauges and Rainfall Investigations, and on the Humidity of the Atmosphere in Relation to Disease.* By C. M. Fox, M.D., &c. *London,* 1867. Pp. 41.

THAT which stands first in our heading is a comprehensive little work; it contains a great amount of information, fully warranting the title it bears, and we think it reliable generally for accuracy of statements. There is no part of meteorology that we find neglected in it. The illustrative woodcuts are numerous, and it has besides many diagrams, tables, and a pretty extensive index.

We shall offer only one extract, and that from the first chapter, the "History and Scope of Meteorology." Adverting to a great neglect in the teaching followed in the schools of this country, the author remarks—

"In the schools of the United States of America metereological observations and the keeping of meteorological registers form a part of the common education of the people. Also in the higher schools of France and some other European countries systematic instruction is communicated on this subject. But in this country few even of the liberally educated classes are able to read from a vernier—are ignorant of the use of the movable cistern of a barometer—have not the elementary knowledge to give an intelligible interpretation of the fluctuations of the barometer as indicative of coming changes of the weather—and when required to send their barometers to a distance for repair, forward them by rail as ordinary parcels, thus almost to a certainty securing their destruction."

The numbers of the 'Journal of the Scottish Meteorological Society' before us contain, as usual, a great amount of valuable observation relating to two quarters of the past year. Of the special articles which it contains, we shall notice only one, that en-

titled "A comparative view of the winter climates of Edinburgh, Jersey, and Mentone;" from which it appears that Mentone is deserving of preference in relation to health, in several particulars; chiefly, however, as warmer, drier, and as having fewer rainy days,—not, however, for uniformity of its winter climate, inasmuch as comparing one year with another, so far as temperature is concerned, it differs but little from Jersey or Edinburgh. One great advantage of Mentone described is that the thermometer there rarely indeed falls to the freezing point; and, next to that, its comparatively small number of rainy days and its large amount of sunshine.

What we have thus stated generally any of our readers specially interested in the subject will find in detail in the pages of this Journal, with tabular statements relative to the monthly range of temperature, the daily range, rainfall, number of days in which rainfalls, and humidity of the air: the last, as indicated by the dry bulb thermometer during three months, being, at Mentone, between 75° and 67°; at Edinburgh, between 92° and 87°; and at Jersey, between 89 and 79°.

In the sixteenth number the article "On the Climate of Jerusalem" is specially interesting, both on account of the locality discussed and the valuable information which it conveys.

Dr. Fox's little work contains a good deal of useful meteorological information, both general and particular; the author is much in favour of the climate of Scarborough, the chief excellence of which appears to be its cool, bracing, summer climate, with a prevalency of westerly and north-westerly winds.

In estimating the hygrometrical state of the atmosphere the author expresses an opinion, which we would suggest his reconsidering, viz. that it accords with the rainfall, without taking into account other conditions—such as have a decidedly modifying effect; for example, the nature of the locality, whether level or hilly,—the quality of the soil, whether clay or gravel, the kind of rain and frequency, whether in heavy showers or slight, whether numerically in excess or deficiency. According to his mode of estimation, how damp ought to be the climate of Sithwaite, in Browndale, where the average yearly fall is about 133 inches; we say about, for we speak from memory; yet we believe its average dryness of climate exceeds that of many other parts of England, where the rainfall is vastly less.

We learn from Dr. Fox's preface that an institution has been established at Scarborough of an humane kind—would that there were more such—"a cottage or village hospital," affording accommodation for three male, and three female patients, dependent on voluntary contributions: he adds that any profits accruing from his publication will be devoted to it.

ART. XII. — *Companion to the New Edition of the British Pharmacopœia, 1867, comparing the strength of the various Preparations with those of the London, Edinburgh, and Dublin, United States, and other Foreign Pharmacopœias, with Practical Hints on Prescribing.* By PETER SQUIRE, F.L.S., Chemist on the Establishment of the Queen, &c. Fifth edition. 1867. Pp. 318.

THE title of this volume sufficiently explains its object; and that the author was correct in supposing that such a work would supply a want experienced by the medical profession and others is proved by the fact of this the fifth edition having been sold off within a fortnight of its publication. In this edition, the recently published British Pharmacopœia is compared not only with the pharmacopœia which previously had been in use in Britain, but also with the principal continental ones, "in the hope that some international spirit may be infused into future editions, and that preparations bearing the same name may be of the same strength in whatever country or language they may be prescribed." We find that the "non-official" preparations are increased in number, and that incompatibles and antidotes to poisonous drugs are added. A very instructive table is prefixed to the work, in which at a glance it can be seen what preparations of the 1867 edition of the Pharmacopœia are new, what were used in the 1864 edition, and what are derived from the London, Edinburgh, and Dublin Pharmacopœias. A second table is given, showing the changes made in the preparations of the three Pharmacopœias.

Among the auxiliary practical information afforded by Mr. Squire are included the weights and measures of the metrical system; the equivalents of English weights to French grammes; and a table of comparison of the Fahrenheit with the Centigrade thermometer. An appendix contains a list and description of articles employed in chemical testing; directions for percolating tinctures; with an enumeration and description of various recent preparations as well official as otherwise, such as the various "granulated preparations," suppositories, medicated pessaries, and bougies.

That indispensable addition to all books of this kind, a copious and accurate index, closes the volume.

We have no hesitation in saying that no medical practitioner can well afford to be without this most helpful book. As it is one of constant reference, we heartily wish that a smaller and more portable edition could be published.

PART THIRD.

Original Communications.

Art. I.

Notes on the Cholera Epidemic of 1865-66 *in Europe and America.* By Gavin Milroy, M.D., F.R.C.P., Vice-president of the Epidemiological Society, &c.

The geographical history of this epidemic visitation is noteworthy on various grounds. The pestilence reached Europe this time from the East by a new channel. On all prior occasions, the northern regions of the Continent were infected for some time before the southern countries or the shores of the Mediterranean came under its influence; now it reached the former from the south, and primarily from Egypt. The transit of the disease, too, from east to west, was certainly much more rapid than it had ever been before, corresponding with the greater frequency and acceleration of intercourse within the last fifteen or twenty years between different lands and peoples. Hitherto, the want of anything like reliable data respecting the chronology, as well as the geography, of the career of this most migratory of pestilences had been much felt by epidemiological students. No attempt had yet been made to form a connected record of the movements and general march of the disease by obtaining authentic information respecting the exact dates of its appearance and spread in the different countries invaded, on the plan that had for some years been carried out, with official governmental aid too, in respect of other and somewhat kindred branches of physical research. Fortunately, something was now done to supply this much desiderated knowledge; and the results obtained, although far from being so accurate or complete as could be wished for, have not been unfruitful of good to science, and will eventually prove of service to the public welfare everywhere by the stimulus given to more systematic observations of similar phenomena in future.

The French Government, generally the foremost in the promotion of scientific inquiries, took steps in the course of the autumn, 1865, to secure the co-operation of the principal European States for the establishment of an international conference, to be held at Constantinople, for the purpose of (*a*) collecting evidence respecting the

history of the outbreak of the pestilence in the summer at Mecca and Medina, and various places along the Red Sea coast of the Arabian peninsula, and its subsequent extension to Egypt, and thence to other lands; and (*b*) discussing the measures of State medicine to be recommended for general adoption, with the view of preventing the recurrence of the like disastrous consequences as had befallen many countries in 1865. To the several reports of this learned body I shall have frequent occasion to refer in the following pages.[1] Nor had the medical profession in this country been behindhand in urging on the work of investigation. Prior, indeed, to the step taken in France, the Epidemiological Society had memorialised the Government to turn to useful account the widespread machinery of the consulates of the British empire, scattered as these are over every part of Europe, or rather of the world, for obtaining the required information.[2] The objects sought for by the Society will be best explained by the following extract from their memorial addressed to the Foreign Secretary in the early part of September:

"Hitherto, the information before the profession respecting the exact course of the development of cholera in the several epidemics which have traversed Europe has been far from being either so correct or so complete as the interests of science demand. A much more full and accurate knowledge of the geographical history of the disease—as it appears in different lands, and under the varying conditions of climate, country, the habits and diet of peoples, &c.—is greatly to be desired. Epidemiological inquiries have to be conducted much in the same way as meteorological inquiries; to be fruitful of good, both must equally rest on accurate data collected in a wide area of observation, and over periods of time more or less extended. What the Board of Trade now does to advance the progress of meteorological science may be done by other departments of the Government to advance the interests of epidemiology.

"On no point is authentic information more needed than as to the exact dates when the pestilence first appears in the different localities attacked over the face of the Continent. Great Britain possesses greater facilities in obtaining such information, from her widespread relations and intercourse, than most other countries. It is respectfully submitted that the object in view might be efficiently attained, through the co-operation of H.M. consuls, if the Secretary of State for Foreign Affairs would be pleased to give instructions to those

[1] The Conference consisted of two diplomates, and of twenty-one medical men, delegates from France, Britain, Belgium, Holland, Denmark, Sweden, Russia, Prussia, Austria, Spain, Portugal, Italy, Papal States, Greece, Turkey, Egypt, and Persia. Their sittings continued for nearly twelve months, and the results of their deliberations are contained in six separate reports, which were issued in the course of last year.

[2] When it is known that the number of British consuls and vice-consuls considerably exceeds 200, it will at once be seen how much good, in respect of such inquiries, may be effected through so many centres of intelligent agency scattered over the world.

gentlemen to record and communicate the most reliable information within their reach in respect of their consulates and the surrounding districts, and if all such information were made available for the benefit of medical science. To the following points the Council of the Society would particularly invite attention:

"1. The exact dates of the earliest recognised or ascertained cases of the disease, whether the cases proved fatal or not.

"2. Did these cases occur among strangers or persons recently arrived in the place?—or among residents who had not been recently away from it?

"3. Had there been any unusual amount of bowel disorders, or other form of sickness, prevalent among the inhabitants prior to the occurrence of these cases?

"4. In what part of the town or village did the first cases occur?—and what part or district suffered most during the visitation?

"5. What is the nearest place where the disease was known to exist at the time of the occurrence of the first cases, or to have existed shortly before such occurrence?

"6. What precautionary measures have been taken by the authorities to avert, or to meet, the visitation?"

Earl Russell promptly gave effect to the recommendation; and the result was that a very large amount of valuable intelligence was procured through the Foreign Office, and to some extent also from the Colonial Office. The admirable digest of this evidence, prepared by the directions of Mr. Simon (all the official reports having been transmitted to the Medical Department of the Privy Council), and published in his annual report of last year, reflects the highest credit on Mr. Radcliffe, the energetic Secretary of the Epidemiological Society. Besides this fruitful source of intelligence, the annual reports of our army and navy now afford much important information respecting epidemic diseases among our soldiers and sailors in various regions of the world, together with occasional notices of the history of these diseases among the civil communities of the localities where our regiments or ships of war happen to be stationed. Nor are the more frequent and fuller memoranda on all epidemiological matters that have, of recent years, been given in our weekly medical journals to be omitted, as affording much assistance to the inquirer. It would be a great boon to accurate research if still greater extension and more systematic precision were bestowed by all medical periodicals on this important branch of professional intelligence. Several of the foreign journals have doubtless been in the habit of adding their quota of information on this head, and I can only plead my want of favorable opportunity for reference to them for not having availed myself of their aid in putting together the following details.

During the first and second quarters of 1865, cholera was widely prevalent, in greater or less force, along the shores of the Indian Ocean, and in many parts of southern Asia, from China to the Red

Sea. There is evidence to show that it existed at Hongkong, at Manilla, and in the island of Borneo; at Singapore and Penang, in the Straits of Malacca; at Bombay, as well as in numerous parts of the Bombay presidency, extending northwards in the direction of Gwalior, and in an easterly direction to Kurrachee; at several points along the coast of Beloochistan and of the Persian Gulf, on to Bassorah and the mouth of the Euphrates; at Muscat on the east coast, and at Makalla and at Aden on the south coast of Arabia; at some points on the southern shores of the Red Sea; and also on the adjacent coast of eastern Africa.

However incomplete our information is respecting the dates of the commencement, and the duration or persistence, of the disease in many of these places, it is nevertheless quite true, as Mr. Radcliffe justly remarks, that "the prevalence of epidemic cholera in the Bombay presidency contemporaneously with the presence of the disease in the south of Persia and Arabia, and its extension into Egypt, and into Asia Minor and southern and western Europe, is a fact of great interest." It is only by pursuing the method of synchronous registration of epidemic diseases over extensive tracts of the earth's surface, that we can reasonably hope ever to arrive at any general truths respecting their mode or modes of development and diffusion. The single fact,—if fact it be, and there appear to be satisfactory grounds for admitting it,—that cholera was certainly prevailing at several points of the Arabian coast to the south and south-east of Jeddah simultaneously with, if not prior to, its earliest appearance there, is obviously of great import in discussing the question as to the origin of the disease in the 'Il Hedjaz,' or land of pilgrimage, in the spring of that year.

That two ships, loaded with pilgrims, chiefly Javanese, suffered severely from cholera shortly before reaching Jeddah in the early part of March is indisputable. They had sailed originally from Singapore, but had touched at Makalla, on the south coast of Arabia, where cholera then existed, and one report stated that the outbreak on board took place after leaving this port. Jeddah, it is said, was free from the disease before the arrival of these pilgrim ships. In the latter part of April, the mortality had acquired such dimensions among the more than ordinarily great number of pilgrims congregated there, that the Egyptian Government sent a medical commission to report on the causes of the dreadful loss of life that had occurred throughout the Hedjaz. Without entering into details, it is sufficient to say that the whole district was festering with putrescency in the midst of masses of human beings, filthy beyond measure, half-starved, and exhausted from excessive excitement and fatigue. Numbers of the pilgrims were infected with the disease on their return from Mecca to Jeddah, when they re-embarked there

on their return home.[1] It is from this point in the history of the epidemic of 1865 that I propose to enter into a more detailed narrative of its movements and geographical dispersion, for the appreciation of which the reader will find a map of the countries visited, lying before him, all but indispensable.

Egypt.—For a twelvemonth at least before the appearance of the cholera, there had been an unusual amount of destitution and suffering among the labouring classes throughout Lower Egypt. The terribly destructive murrain of 1863 and 1864, which had swept off nearly half a million of the cattle, had occasioned almost famine prices for food in every part of the land; and such vast numbers of the carcases had been thrown into the river—forming in some parts a floating bridge from one side to the other—and there left to putrefy, that the atmosphere as well as the water was corrupted for miles around. In the early part of 1865 the misery of the people was extreme, and much sickness, especially low typhoid fever, was generally prevalent. The level of the Nile, too, this season, was lower than it had been for many years, so that the water supply was unusually scanty as well as impure. As the season advanced, the heat set in with extraordinary force, even for Egypt. Nor was the famine and its consequences confined to the land of the Pharaohs; for the whole of the south-eastern districts of the Arabian peninsula were similarly affected from widespread disease among the cattle, as well as from failure of the ordinary crops.

The earliest recognised cases of cholera occurred on May 21st, at Suez, on board a ship (said to have been the first which arrived from Jeddah) with pilgrims on board returning from Mecca. It would seem, however, that no deaths from the disease took place on shore at Suez till a full month later, although in the interval thousands upon thousands of returning pilgrims were disembarked, and had passed through the place on their way to Lower Egypt.

The first fatal case of the pestilence occurred, according to the accounts given, on June 2nd, among some of these fugitives in a crowded encampment on the banks of the Mahmoudie canal, in the outskirts of Alexandria. The heat at the time was excessive, and the waters of the canal were stagnant and offensive. Other attacks and deaths soon followed; but the officers of the Sanitary Intendance

[1] The Conference states, that since 1831, the date of the first known visitation of epidemic cholera in the Hedjaz, the disease reappeared, during the time of the annual pilgrimage, in 1835, 1846, 1847, 1848, 1859, and in each successive year afterwards, although with comparatively little force, down to 1864 inclusive. Whether the district suffered in 1854-55, when the city of Nejed in Central Arabia is known to have been visited, does not appear. The affirmation that all the above outbreaks of the disease followed upon infected arrivals from abroad, rests on very imperfect evidence; and with respect to the epidemic of 1865, it is to be noted that Dr. Goodeve, one of the British commissioners, was not satisfied that its origin could be satisfactorily traced to importation from India.

did not, or would not, admit them to be cases of genuine cholera, and reported them as cases of algide pernicious fever, or of sporadic summer cholerine. Nor was it till the 11th of the month that the true nature of the disease was officially recognised and admitted. That was the date on which foul bills of health were first issued by the foreign consuls in Alexandria.

Before the end of June, the disease had spread not only over Alexandria, but also to numerous districts throughout Lower Egypt, and had even invaded Middle Egypt. It broke out simultaneously, it has been stated, in numerous places distant from each other, and without much, if any, intercommunication; but authentic data on this, as on most other points relating to the topography of the pestilence, are far too defective to merit any confidence. In Alexandria, the epidemic reached its acme in the first week of July. Upwards of 4000 of the poorer inhabitants (few were the victims among the well-conditioned) perished in a population which had been reduced by more than 30,000 fugitives, who fled in all directions from the place. The panic gave rise to many disastrous consequences. Numbers were attacked who might otherwise have escaped; and troops of people flocked on board vessels, which then became so crowded that disease broke out soon after their leaving Alexandria, and were sometimes refused admission into the ports which they sought to enter. Such results used to be common in seasons of the plague, and now the same events are reproduced in epidemics of cholera. The total mortality throughout Egypt, from the beginning of June to the end of September, when the epidemic had generally disappeared, has been set down at somewhat above 61,000 out of an estimated population of 4,841,167. There seems to have been no recondescence of the disease, either during the latter months of 1865 or in 1866.[1]

Malta.—The history of the epidemic there is full of interest, and fortunately the data respecting it are thoroughly reliable. The account of it drawn up by Surgeons Adams and Welch, of the 22nd Regiment,[2] affords ample details, and is illustrated by excellent sketch-plans and statistical tables; altogether, it is a model for an epidemiological report, and reflects great credit on the service.

For a fortnight at least before the appearance of the disease in Alexandria was known to the authorities of Malta, numerous fugitives from Egypt had arrived, and one, if not more, vessels with returning pilgrims had coaled in the port on their way to Tunis.

[1] Egypt suffered from epidemic cholera in 1831, and partially in 1835 and 1837; in 1844 (?), in 1848, in 1850. and in 1855. It has been alleged that, in all these visitations, Cairo was attacked before Alexandria; but the evidence for this statement is wanting. In 1831 the epidemic commenced in July, that of 1865 in June.

[2] 'Statistical, Sanitary, and Medical Reports of the Army Medical Department,' vol. vi, 1866.

It was not till June 14th that quarantine (at first) of seven days was established, and that the lazaret, which had previously been occupied by the military, was made ready for the reception of *détenus*. No special medical officer was appointed to it till the 22nd. Between the 14th and July 5th, upwards of 1500 persons from Alexandria were landed and confined in the lazaret, which, besides being badly ventilated and infested with privy smells, was the scene of "much crowding, discomfort, and wretchedness." The first cases of actual cholera in this building occurred on June 28th, and were received from the "Wyvern," just arrived from Alexandria; but, prior to that date, several cases of choleraic diarrhœa had taken place among the inmates. Already, however, the disease had broken out unmistakably in the immediate neighbourhood, but outside, of the lazaret, and about two hundred yards distant from it, in a number of small houses that were formerly used as a plague hospital, and were at the time inhabited by soldiers' wives and their families. Being surrounded by a high wall considerably above the roofs of the houses, and the privies and drains leading from them being in a very foul condition, the atmosphere of this confined locality was of course most offensive, and the people had frequently complained of the great unwholesomeness of the place. The lazaret, too, was no better; for there, as far back as May 20th, several of the military, who then occupied the building, had been attacked with severe diarrhœa, which the patients themselves attributed to the disgusting effluvia from the latrines.

Diarrhœa had been prevalent for some time among the occupants of the old plague hospital prior to June 20th, the day on which the first fatal case of cholera occurred there. This was in a girl, æt. 8, who died within seven hours from the commencement of the attack. No communication either with the lazaret, or with any of the vessels in quarantine, could be traced. Within the next eight days, six other children in the same locality were attacked, and five of the cases were fatal. As most of the other inmates of the buildings were now suffering from diarrhœa, or gastric malaise of some sort, they were all promptly removed from the locality. It was high time; for five cases of cholera occurred, within a few hours of their removal, among the families of the artillery, who had unfortunately been transferred to an unwholesome district on the opposite side of the quarantine harbour, where the disease speedily spread to some extent; whereas all sickness quickly subsided among the other families who were more favorably located. The subsequent history of the epidemic among the military showed in a most striking manner the influence of the sanitary, or otherwise, condition of the accommodation on the development and progress of the disease. In some barracks there were but few and only scattered cases, or none at all; while in others the attacks were numerous and persistent. The camping out of the

men was invariably attended with good results. There is every reason to believe that had this precaution been generally practised at an earlier period, as Dr. Anderson (the principal medical officer) recommended, there would have been much less sickness and mortality among the troops. The strength of the garrison was 5904. In this force there were 120 men attacked, and of these 87 died. Among the officers, numbering about 100, there was but one attack, and that was fatal. Of 467 women, 50 were attacked, and 35 died; and among 774 children, 26 were attacked, and 19 died.

Among the civil population, the *first* undoubted case occurred on July 1st, in a man living in the outskirts of Valetta; two days before his death he had been at work in the lazaret, where the disease then existed. The case was returned as one of "gastro-enterite," to avoid creating alarm among the population. It does not seem that other cases followed in the locality. The *second* case occurred on the 3rd, in a woman residing in the city, at a distance from the former; the only assignable explanation of her attack was that "she had received, four days prior to her decease, some old clothes as patterns from a merchant's family who had arrived a fortnight back from Alexandria in a vessel with cholera on board." The members of the family, however, seem to have been quite unaffected.

On the 10th it broke out in another direction, in a tavern that was much frequented by the military; and on the same day, in one of the suburbs at a distance, where it was believed to have been brought by persons who had been liberated from the lazaret, after performing quarantine. After this date it spread more or less over the whole capital, but always keeping chiefly to the low-lying and dirty streets. As with the plague in former days, the ground floors, in which the poor live, and which are almost invariably very unwholesome dwellings, suffered infinitely more than the upper stories of houses. Some of the public institutions which had been ravaged in former epidemics were again visited heavily; whilst others, whose site or condition had become improved, nearly or altogether escaped. Three only out of the numerous staff of attendants in all the civil establishments were attacked. Diarrhœa was universally prevalent among all classes after the cholera had manifested itself in the city; and in many cases it was of a severe form, although not proving fatal. Previously, however, there had been no unusual amount of bowel disorders among either the military or civil population during the early summer months. The first half of 1865, as compared with 1864, had a high temperature and a dry state of the air. "While the state of the weather was such as to foster zymotic disease when present, there was nothing in the meteorology in general, nor in the health of the community, to warrant a supposition of the outbreak which followed." The influence of the epidemic was experienced throughout the entire island. Some of the casals or

villages suffered very severely; *e.g.* Zeitun, where typhus fever had been prevailing at the end of 1864 and beginning of 1865. The adjacent small island of Gozo remained exempt till July 21st, when the first case occurred in a man who had come over with the disease upon him from Malta, and in whose family other attacks followed. From this family, as from a centre, the disease, it is stated, spread in different directions. The chief violence of the epidemic in Malta was in August.

The total mortality among the civil population—estimated in 1861 at nearly 18,000—between the beginning of July and the first week in November, when the disease entirely ceased, amounted to 1479 deaths. In Gozo, with an estimated (1861) population of 15,459, there were 253 deaths.

In the Mediterranean fleet, consisting of twenty-three vessels, many of which are always stationed at Malta, and where there is, moreover, a large naval hospital, there were only 7 fatal cases of cholera throughout the year out of a force of 6346 souls. Four of these cases occurred at Malta, and in three different ships. Many of the workmen, however, in the dockyard, which is much infested with foul effluvia, fell victims. The three other cases in the fleet occurred on board one ship when anchored at the mouth of the Danube. Whether many passenger or merchant-ships at Malta, or after leaving the port, suffered much, there is unfortunately no means of determining. This is a great want.[1]

[1] 1. The first visitation of cholera in Malta was not till 1837. The disease had been prevailing throughout Italy in 1835-36, and Sicily had been visited in the latter year, and again in 1837. Strict quarantine was at the time in force against arrivals from Sicily. The earliest cases occurred on June 9th among the inmates of a crowded old poor-house, overlooking the quarantine harbour, and which again suffered severely in 1865. Gozo was not attacked until twenty-seven days after the disease appeared in Valetta. The deaths among the civil population between June and October, when the disease ceased, were 3893; among the garrison (including women and children), averaging 3070, the cases were 315, and the deaths were 78. The Mediterranean fleet suffered considerably. Out of a force of upwards of 7000 souls, there were 38 deaths from cholera, 26 on board ship and 12 in Malta Naval Hospital. The first cases were in June. In some of the ships, the earliest attacks are said to have occurred as they neared the coast, and before entering the harbour or communicating with the shore (*Bryson*).

2. In June, 1850, suspicious endemic cases had occurred at the end of May and beginning of June in some of the worst parts of Valetta. The first authenticated fatal case was on June 9th, in a seaman recently arrived from Susa, on the Tunisian coast, where the disease then existed. Some fugitives from Tunis had landed, it was said, at the beginning of the month. The epidemic continued to the beginning of October. Among the civil population in Malta and Gozo there were 1629 deaths, and 133 among the garrison. In the Mediterranean fleet, with a force of about 6750 souls, there were 118 deaths. In one ship, the "Queen," there were 80 cases, of which 46 were fatal between June 6th and the end of September.

3. In 1854, the first year of the Crimean war, when cholera was so prevalent in England and France, from both of which countries transports, &c., were con-

Gibraltar.—The circumstances connected with the development of the disease there also are extremely interesting; they are fully detailed in an excellent report by Deputy-Inspector Dr. Rutherford, in the same volume of the 'Army Reports,' which contains the account of the Malta epidemic. The history of the Gibraltar visitation affords a seeming proof of the possibility of the pestilence being introduced by a body of apparently healthy men, arriving from an infected locality. The occurrence of the first case, thirteen days after leaving that locality, and of the second case thirteen days after the first, together with one or two similar instances of the same sort, mentioned by Dr. Rutherford, well deserves consideration in connection with the difficult subject of quarantine as a means of defence or protection against its importation. "If the disease can and does remain dormant for fourteen days and upwards, may not an explanation be afforded," he remarks, "of the futility of quarantine laws, which frequently impose three, four, six, or ten days' observation upon vessels having 'health on board,' and which come from so-called 'infected ports.'"

On July 6th, the transport "Orontes," with the second battalion of the 22nd regiment on board, left Malta for Gibraltar, *en route* for Mauritius. The men had been very healthy in their barracks, and were considered free from any choleraic tendency at the time of going on board. Cholera had, however, broken out close to the point of their embarkation, in the Marsa Muscet Harbour. On the 10th they reached Gibraltar, without having had any sickness whatever on board during the voyage, save one trifling case of diarrhœa, which had speedily got well. The crew also had been quite healthy. The troops were immediately camped out on the Neutral Ground. There was then no sickness either in Gibraltar or its neighbourhood; the general health of the garrison and civil population had been, throughout the season, "exceptionally good."[1] Between the 10th and 18th, the men of the battalion continued

tinually arriving, there was a partial outbreak in Valetta (to which city it was confined); about 300 deaths occurred between July and October. No details have ever, I believe, been published.

4. In 1855, there were again several deaths from cholera among the native population of Valetta; no other part of the island suffered. Among the military, there were throughout the year occasional cases of the disease in the hospitals, in consequence of the constant arrival of infected troop-ships bound to or returning from the Crimea.

The total number of deaths from cholera among the military in Malta during the years 1854, 1855, and 1856, did not exceed 128 in all, out of a force which cannot be estimated under 23,000, stationary or passing through. There were, of course, no quarantine restrictions throughout the continuance of the Crimean war. It is much to be regretted that no details are to be had respecting the public health, civil and military, during those eventful years.

[1] There are no means of knowing with accuracy the state of the public health in any part of the southern districts of Spain at this time. Cholera had already

healthy; there had been but one case of diarrhœa, so slight as not to necessitate the man's admission into the hospital. At 9 p.m. of the 18th a private, who had attended evening parade two hours previously, was attacked with vomiting and purging; he died next morning. The whole camp was at once broken up; the men of the right wing, to which the patient had belonged, were at once put on board the "Star of India," which, after forty-eight hours, proceeded to sea, "all being apparently perfectly healthy."

The left wing (the transport for its conveyance having not arrived) was encamped at a considerable distance from the original site. With the exception of two cases of diarrhœa, the corps remained healthy till the 31st, when a man, who had been ailing for a couple of days, and also a woman of the detachment, were attacked; he died the same evening, and she the next day. The troops were straightway embarked in the "Devonport," and, "all being in apparently good health," sailed, after sixty hours' detention, for Mauritius. Both transports reached Mauritius in the first week of October, without a single case of cholera having occurred in either of them during the voyage, and the troops were landed in good health.

On August 3rd, the day after the departure of the 22nd, two cases of cholera occurred in a corporal of the 15th, and his child, living in a cottage outside the fortress on the front facing the Neutral Ground, about a quarter of a mile nearer the Rock than that regiment's camp. Both cases proved fatal. On the 9th, a woman of the Engineers, in a cottage in the same locality, was attacked and died; and early on the 10th, a soldier in the casemate barracks, just inside the walls of the fortress, and about 400 yards from the above cottages, was seized; this case was followed by seven other cases in the same barracks, in the course of that day. The earliest cases among the civil population occurred on the 11th. The epidemic reached its acme at the middle of September, and ceased at the end of October.

The total mortality amounted to about 580. The convicts, although "cut off in a great measure from all intercourse with the other inhabitants," suffered most severely; 57 out of 700 died. Among the military, estimated at 6000, there were 106 fatal cases; and among the civil population, estimated at about 15,000, the deaths were 416. The visitation was, therefore, more fatal than on any former occasion.

appeared on the east coast of the peninsula at Valentia (and probably also at Barcelona), although its existence there was not admitted by the Spanish authorities until the beginning of August. "The utmost difficulty," says Dr. Rutherford, "was experienced in obtaining any information of a reliable nature upon this and similar subjects."

On August 24th, a military cordon was drawn right across the Neutral Ground by Spain, so as to cut off all communication with Gibraltar. Why this step was not taken sooner, does not appear very obvious. It was continued till nearly the end of November. The amount of distress it occasioned to the neighbouring Spanish villages, as well as to Gibraltar, was very great; and the destitution that ensued, upon so many of the people being thrown out of employment, inevitably aggravated the severity of the visitation on both sides of the cordon. On this as on former occasions, this measure of rigour failed in its object. In the second or third week of September, there was a sharp outbreak of cholera in St. Roque, the first Spanish village past the Neutral Ground, and four or five miles distant from the Rock. At this time, it was prevailing severely in Seville, and probably in other places also between that city and St. Roque.

A most interesting episode in the history of the Gibraltar epidemic requires to be noted here, relating to an outbreak in the Atlantic, on board a transport ship which sailed from the bay after the disease had fairly manifested itself on shore.

The 9th Regiment, which had formed part of the garrison during the early period of the epidemic, but had continued quite healthy, was replaced by the 78th Highlanders in the third week of August, and ordered off to the Cape. The left wing embarked on the 19th in the "Windsor Castle," and sailed immediately; she reached her destination with all well. On the 21st, the right wing went on board the "Renown." Next morning, 22nd, one of the men of the regiment, of very intemperate habits, was attacked on board, and quickly succumbed. The ship was at once hauled into the stream; and, as no other case occurred, during the next thirty hours, she then proceeded to sea, having on board 16 officers, 353 men, 28 women, and 65 children. On the 29th and 30th, two children had diarrhœa; both recovered in a few days. On September 3rd, a sergeant, his wife, and child were attacked with dysentery, which lasted upwards of a fortnight. On the 5th, another child of this family, and also a soldier were attacked with cholera; both died, the former on the same day, and the latter on the 10th. Fifteen other seizures, besides a good many cases of dysentery and of diarrhœa, took place during the next ten days, and 12 were fatal. There were three more deaths, two from diarrhœa and one from dysentery. Of the crew, fifty-two in number, two (one being the surgeon of the ship) were attacked with cholera, and died. After September 20th, there was no fresh attack of sickness, and the ship reached the Cape on October 9th, in a healthy state.

No information has appeared, as far as I know, as to the health of the mercantile shipping at Gibraltar during the epidemic. Quarantine against Alexandria and Malta seems to have been established

about the 25th of June. After that date, vessels with foul bills were not admitted. Passengers were detained on board a hulk in the bay, for a week before receiving pratique.[1]

Spain.—It might have been expected that in a country where the most systematic and rigorous quarantine police is maintained throughout the kingdom, and which was duly represented at the Constantinople Conference, as well as at the Paris Conference in 1851, authentic data would have been had respecting the first appearance of the disease on its shores. Yet it seems altogether doubtful whether the earliest cases occurred at Valentia or at Barcelona; no authentic details have ever been published. The disease had certainly appeared in both cities in July. It speedily spread and soon extended to Carthagena and to Murcia, as well as to many places inland.[2] Thousands upon thousands of the inhabitants of the infected places now, as on all former visitations, fled in all directions; and again were cruel attempts made to exclude, by force, the fugitives from towns and districts which the pestilence had not

[1] The first visitation was in 1834. Cholera had prevailed during the spring in the adjacent districts of Spain. The earliest case in Gibraltar was on 23rd of May. During the next three weeks several other cases occurred. In the third week of June the disease began to be epidemic, and it steadily increased till the middle of July. No part of the Rock escaped, not even the Neutral Ground. Several cases occurred among the shipping. The total deaths were 414, viz. 162 among the military, and 252 among the civilians. The strength of the garrison was 3929; the population was then estimated at 17,000.

In 1849 there occurred 17 cases and 5 deaths from cholera among the garrison.

In 1854 there were 24 cases and 12 deaths; and in 1855 there were 99 cases and 62 deaths.

Unfortunately, no account has been published of the mortality in these several years among the civil population.

In 1860 there was, between August 16th and December 14th, a partial prevalence of cholera; 68 cases and 41 deaths occurred among the military, and 126 cases and 49 among the civil population, including convicts. The former were estimated at 6632, the latter at 18,344. Nothing seems to be known as to the origin of this visitation.

[2] According to the Constantinople Conference, the first case at Valencia was on July 8th, in the person of a French trader who had come from Marseilles—whether by sea or by land, it is not stated. The only explanation offered is that "on est d'autant plus fondé à supposer que c'est lui, ou ses bagages qui ont importé le cholera, que les victimes frappés successivement habitaient la mème maison." No details are given as to his previous condition, or to that of the public health in the town. The mortality was excessive; 5000 deaths among a population of—107,000, but reduced by flight to—70,000.

Respecting Barcelona, we are told that "la santé générale était bonne lorsqu' arrive l'escadre Anglaise venant de Malte, où sévissait le cholera" (neither the date nor the health of the fleet mentioned). "On lui en attribue par conséquent l'importation." The earliest cases are said to have occurred about July 22nd. As to Carthagena and Murcia, "on suppose que le cholera a été importé de Valence, en suivant le chemin de fer. L'épidémie se montre d'abord sous forme de cholerine." At Alicante, the disease was introduced by some baggage or merchandise from Marseilles; it first appeared in the house to which the articles had been conveyed. This is the only information given.

yet reached. Madrid in the centre of the kingdom, and Seville in the south-west, were smitten, the one in August and the other in September. Cadiz, the great seaport near Seville, seems to have escaped the infection. At Madrid, diarrhœa, bilious colic, and dysentery had been prevalent for some time previously to the first cases of cholera; the outbreak of the epidemic afterwards was like "an explosion." In three or four days as many as 3000 cases occurred, of which 1000 at least were fatal.[1] The disease, moreover, broke out about the same time in various other places in Castile. Besides the mainland of Spain, two of the Balearic islands were infected. At Palma, in Majorca, the disease appeared in the latter part of August. No explanation of the occurrence has been given, nor has any account of the outbreak of the disease at Port Mahon, in Minorca—the great quarantine station of Spain in the Mediterranean—been made public, as far as I know.

At the end of 1865, the disease was raging in many places in the northern and in the southern provinces of the peninsula. Santander is one of the places mentioned on the one hand, and Seville on the other. Altogether, no country suffered more severely in 1865 than did Spain. Of its forty-nine provinces or departments, thirty-one had suffered more or less severely. Whatever was the period of its first appearance in different places or districts, the chief violence of the visitation was experienced in most of them about the same time, viz. during September.[2] This was the case at Gibraltar also. Very generally, the epidemic had ceased by the first or second week of November. Notwithstanding, perhaps in consequence of, the flight of thousands and tens of thousands from infected towns, the mortality in most of these was very great. Seville lost between two and three thousand, and Madrid upwards of 3000.[3]

Portugal.—It is stated by the Conference that, in the month of July, the cholera was raging in Spain and progressively advancing towards the frontiers of Portugal, which had hitherto remained exempt. At length it appeared at Elvas, a frontier fortified town,

[1] The Conference state that "the origin of the outbreak at Seville has been attributed to some foul linen brought by sailors from Valencia. Madrid received the infection from the same city more directly."

[2] At Seville, the acme was not till the third week in October.

[3] Spain was first visited by the pestilence in 1834; but no detailed history of the visitation has ever, I believe, been published. The southern provinces seem to have suffered before the northern. The loss of life in many of the large towns was very great, and almost every part of the peninsula suffered. In 1848, there was a partial and circumscribed outbreak near the port of Vigo on the north-west coast. The epidemic of 1853–54 prevailed over the whole country, and was of extreme virulence in most parts, chiefly between June and October. The Balearic islands did not entirely escape. In 1855 and in 1856, there was a partial reappearance of the disease; again in 1859, and also in 1860, especially on the east coast.

about the beginning of October, and caused fifty deaths there. A few cases also occurred on the north-west frontier of the kingdom, at Freizo and Cinta Espada. Moreover, a woman and attendant, who had gone from Elvas to Oporto, fell sick in the latter town, and died there. Then a man, who lived on the first floor of the same house was attacked and died; and two children of a family, who occupied the lower part of the dwelling, also sickened, but they recovered. These cases at Oporto were, we are told, rigorously isolated, the effects of the sick were destroyed, and the house was disinfected; and thereupon the danger was stopped.

It would, however, seem that "une influence cholerique" was experienced not only in Lisbon, but in the country generally,—"influence caracterisée par des vomissements et de la diarrhée, quelquefois risiformes, et dans quelques cas accompagnés de crampes, de refroidissement, &c.; mais c'était là toute la manifestation épidémique et sans mortalité." It was rumoured that three or four cases of cholera occurred in Lisbon, but no authentic account has ever appeared.

It is strange, and much to be regretted, that the Portuguese commissioners have given such meager and incomplete information as to the epidemic in their country. How is it that Portugal and Spain are always so unwilling to make public full details of any severe sickness among their people? No countries maintain so vigilant a supervision at all their seaports, so as to be thoroughly aware at all times of the introduction of epidemic diseases by the arrival of shipping from abroad.[1] But nothing is made known.

France.—Although the existence of cholera at Marseilles was not officially admitted until the 23rd July, there can be no reasonable doubt but that the disease had been introduced into the city several weeks previously. As early as June 11th, a steamer which had left Alexandria on the 1st of that month arrived, bringing many passengers, of whom sixty-five were Algerine pilgrims from Mecca. Two of the latter had died on the voyage, and a third died soon after landing, from what was termed dysentery, while others were more or less indisposed. During their stay at Marseilles, these men were lodged under canvas. On the evening of the same day, 11th (the date, it will be remembered, of the official recognition of the cholera at Alexandria), another steamer arrived from Alexandria,

[1] The first cholera epidemic in Portugal occurred in 1833; it commenced in the neighbourhood of Lisbon in April, and soon afterwards broke out in that city, and lasted there till October. It reappeared in 1834, but with less severity. The disease did not reinvade the country till 1855, although in 1853 it existed in one or two of the conterminous provinces of Spain, and in 1854 there was a partial outbreak in the southern province of Algarve. In 1855 the pestilence seemed to have entered Portugal from the Spanish frontiers. Lisbon was not attacked until October; for three months previously, intestinal disorders had been more than usually prevalent. In the summer of 1856, the disease reappeared both in Lisbon and in numerous country districts.

which she had left on the 3rd. During the next fortnight many other steamers from the same port arrived, all landing passengers, who rapidly dispersed at once in different directions. When the disease became epidemic in Marseilles, the old part of the town opposite the Joliette quay seemed to be the chief focus of the infection. In August it spread widely in the departments of the Bouches-du-Rhone, Hérault, and Vaucluse in the south. Almost the whole of the Mediterranean coast of France, from Nice to Perpignan near the foot of the Pyrenees, appears to have been under the influence of the epidemic.

Toulon was attacked about the end of August, and the deaths there to the end of October amounted to nearly 1300. The earliest fatal case near Paris occurred on September 18th at Puteaux, a little village on the Seine, "where extensive dye-works occupy a large number of workmen, and which, for filth and want of sanitary arrangements, is a perfect disgrace to municipal administration." The first deaths in Paris itself were on the 24th, by which time other suburban villages around the metropolis, besides Puteaux, had become infected. The chief violence of the epidemic in and around Paris was in October; the disease did not cease till the second week in 1866. Upwards of 6000 had fallen victims to the scourge.

Besides the places and districts already mentioned, other parts of France suffered in 1865. The two towns of Raon l'Etape and Rambervilliers in the department of the Vosges, and also several places, in nearly the same latitude, in the western departments of Finisterre (particularly Brest), Morbihan, and Côtes du Nord were visited in November or December; or probably earlier, as the disease would seem to have been at Havre in the first or second week of October. Cases had also occurred among the labourers engaged in the Mont Cenis Railway, at the village of Bardonecchio, at the beginning of November. In 1865, as on most former visitations of the pestilence in France, Lyons again remained intact. The comparative immunity of this populous city, situated as it is in the direct line between Marseilles and Paris, is a notable event that has never been satisfactorily accounted for.[1]

[1] France was first visited by the cholera in the spring of 1832. It began in Paris about the middle of March, and prevailed with great severity in April and May. The progress of the disease to the south was slow. Marseilles, Toulon, and other places along the Mediterranean coast were not invaded in the first epidemic until 1834. At Marseilles there was a reappearance of the disease in 1837. The whole country from north to south, suffered from the epidemic of 1849. Bordeaux and some other places were revisited in 1850. Towards the end of 1853, Paris was again invaded; in the following year the epidemic was very widely diffused over most of the departments, and in many places it was extremely fatal. Marseilles, Bordeaux, &c., suffered again in 1855. The chief force of all the epidemics (except of the first) was felt from July to September, and chiefly in July. The island of Corsica suffered severely in the autumn of 1854.

Italy.—It was at Ancona, which has of recent years been in most direct and frequent communication with Alexandria, that the disease first appeared. Quarantine against all arrivals from Egypt, had been established there on the 19th of June, if not sooner. The earliest known case of true cholera occurred in a woman who had arrived from Alexandria on July 3, and had performed quarantine in the lazaret till the 9th, when she was discharged. On the following day, while travelling to Pistoia, she was attacked and died in that town next morning. Whether any cases of the disease had been received into the lazaret prior to this woman leaving it, does not appear.[1] The disease subsequently spread through the city and its outskirts, reaching its acme in the first and second weeks of August, and occasioning upwards of 1300 deaths. What was the condition of the public health in Ancona, prior to the appearance of the cholera in her midst, is unfortunately not known. "Professor Ghinozzi, who made an official investigation of the outbreak, believes that it would have occurred, even if no communication with Alexandria had taken place," Mr. Radcliffe states in his memoir.

In August and September the disease spread to many places, both north and south of Ancona; but with this remarkable peculiarity, that while in Bologna, Modena, Acqui and other places in Piedmont, scattered cases or small groups of cases occurred, nowhere in the northern provinces did the disease become fairly epidemic; whereas in numerous towns in the provinces of Capitanata, Terra di Bari, and Otranto, to the south, it raged with great violence; although there was very much less intercourse with Ancona in this direction, than towards the more busy and populous towns in the north of the peninsula. Whether it extended into Calabria and towards the straits of Messina, does not distinctly appear. The explanation given by the Conference of the much greater diffusion and severity of the epidemic in the southern than in the northern parts of Italy is, that it was due, in respect of the latter, "aux mesures prises pour étouffer les premiers germes." Is this explanation merely conjectural, or does it rest on any ascertained evidence?

Naples was not invaded till the beginning of October; the earliest case in that city was on the 7th. The last case in Naples occurred towards the end of December.

Throughout 1865, Florence seems to have entirely escaped; a few cases, it was reported, had taken place in a village a few miles distant. Neither was Leghorn nor Genoa infected till a later period.

[1] The Conference state that no one in the lazaret had been attacked, and that it may be presumed that the disease was introduced into Ancona by the clothes or effects of passengers who had arrived from Alexandria. The first case is declared to have occurred in a washerwoman, who had taken a quantity of linen belonging to persons who had come from Egypt. 'Le cholera s'est ensuite immédiatement repandu dans presque tous les quartiers." On what evidence these statements rest, the reader is not told.

Whether there was any truth in the rumours that cases had occurred in November, at Civita Vecchia, it is impossible to say; so much concealment is invariably practised in the Papal and other States where quarantine restrictions against foreign ports are most rigorously enforced.

The immunity of Sicily, in 1865, is noteworthy on several accounts, and especially in relation to the alleged efficacy of rigorous quarantine for its exclusion from a country, as cited by the Constantinople Conference, Sardinia and Corsica were equally intact.

There were repeatedly rumours, in the public journals at the time, that cases of cholera had occurred in August of that year at Messina, Catania, and Palermo; but there has been no official or reliable statement one way or the other, nor does it appear that any communication has been received from our consuls in these places. The defensive measures, adopted by the authorities to exclude the disease, amounted to all but a total suspension of direct intercourse; suspected vessels not being allowed even to approach the shore, under threats of being fired into. Next year the tables were turned, and Sicily had then to endure a similar embargo on her commerce with Malta and other Mediterranean ports.[1]

I have thus tried to follow the progress of the pestilence along the Mediterranean in a north-westerly direction, noting the principal places and countries, in that course, which were invaded in the summer of 1865. No mention, it will be observed, has been made of any known extension of the disease from Egypt, due west, to any part either in Barbary, Tunis, or in Morocco, although many of the pilgrims from Mecca were bound for and returned to these countries. Indeed, the only part of the north coast of Africa where the disease occurred that year seems to have been the French province of Algeria, into which it was introduced by direct arrivals from France, but without it ever manifesting any tendency to become epidemic.[2] It will now be necessary to start once more from Alexandria, and take a northerly course, so as to make out as

[1] The northern provinces of Italy were visited for the first time in 1834-35; the central, including the Papal States, in 1835-36; and the southern provinces, including Sicily, in 1836-37. The outbreak in Palermo in 1837—the same year that Malta was first attacked—was of extraordinary severity. The epidemic of 1854 was spread over the whole peninsula; and in 1855, and again in 1856, there were partial recurrences of the pestilence. The island of Sardinia suffered in 1855; it seems to have previously escaped.

[2] In the latter part of 1849 the coast of Barbary, including the towns of Tunis, Oran, and Algiers, suffered from cholera. Whether there had been an earlier visitation, is not known. In 1850 there was again a wide prevalence of the disease there, while it was raging in Egypt; and in 1851 a partial recurrence of it in some parts of the North African coast. In 1854 Algiers was infected, probably by arrivals from France; and there were also that year numerous sporadic cases in Tripoli. In 1856 the coast of Morocco was suffering from the disease, at the time when Madeira and also one of the Cape de Verde islands were first invaded by the pestilence.

well as we can—after briefly noticing the visitations of the pestilence at two or three of the principal places on the coasts of Syria and Asia Minor—how it reached and spread through the eastern and central parts of Europe.

Jaffa.—The earliest case here is said to have occurred on July 1st, and the disease to have prevailed in greatest force in the third week of that month. Some dismal disasters occurred on board one or two vessels crowded with refugees from Alexandria, which sought admission to the port, and, being refused leave to enter, were forced to return to Egypt.

Beyrout.—From June 17 to July 25, upwards of 3000 persons from Alexandria were sent into the lazaret. The crowding was excessive, and the consequence was that the *détenus* became violent, and broke through the restraint. But the disease had already appeared in the town, where the first case occurred,, in a man who had had no communication with the lazaret or its inmates; and the second case was, on July 3rd, in an abbé, who had just been liberated from the lazaret after a quarantine there of ten days. The chief mortality was in August and September. More than half of the inhabitants fled to the mountains. The season was a very sickly one; "such has been the general unhealthiness," wrote the British Consul, "of the present summer in Beyrout, that hardly a single person who remained in town escaped a serious attack, either of cholera or fever; and the latter disease is still (Oct. 21) prevailing to a great extent. Even in the mountains, there is more than an ordinary amount of sickness."

Cyprus.—From June 24 to July 18, there were 1200 persons detained in the lazaret at Lurnaca. The first case of cholera occurred, on July 7, in a coffee-house keeper, in whose house several persons after completing their quarantine were lodged. From him, it is asserted, the disease spread to the town, and thence over the island. No further information is given by the Conference.

Smyrna.—The first vessel with a foul bill from Alexandria arrived on June 23, and she landed one cholera patient at the lazaret; but several arrivals from Alexandria had already come in and received pratique, having nothing suspected on board, and having moreover completed their five days of voyage without any sickness on board since leaving port. The earliest case of cholera in the town occurred, on June 24, in an Armenian woman, who does not appear to have had anything to do with the lazaret, and whose sickness could not be traced. The second case occurred, on the 29th, in a woman who had nursed the former patient. The epidemic reached its acme in the last week of July and first week of

August. Out of a population, reduced by flight, of 100,000, about 2500 perished. Prior to the arrival of the infected shipping, the health of Smyrna is stated by the Conference to have been "parfaite." The sufferings among the poorer inhabitants "were greatly aggravated by extreme privation, in consequence of an almost entire cessation of labour. Employers had fled from the town, and business came to a standstill during the progress of the epidemic."[1]

Constantinople.—With respect to the public health of the city prior to June 28, nothing had indicated, it is stated, the approach of any epidemic sickness. In the want of all mortuary registration, this point, however, must always be more or less questionable. On the day mentioned, a frigate, which had left Alexandria five days previously, arrived, and landed at the Marine Hospital 12 of her crew—1 afflicted with confirmed cholera, and 11 with cholerine. Two men had also died of cholera between the Dardanelles and Constantinople, and their bodies had been buried at sea. There had been much diarrhœa among her crew during the voyage from Egypt. This government ship was at once admitted to pratique; and this, too, notwithstanding that it was perfectly well known that cholera had broken out in the port of departure. Moreover, there must have been several, probably many, arrivals from Alexandria prior to this frigate. The Porte, it is to be remembered, professes to have a regular quarantine code and system, in compliance with the requirements of other countries. On the 30th, nine fresh cases were landed from the frigate; and then, having been furnished with a fresh crew, she was sent to a quarantine station at the mouth of the Black Sea! Within three or four days, some of the workmen engaged in a barrack immediately adjoining the Marine Hospital were attacked, as well as other men on board a vessel which was moored close alongside. At the beginning of the second week in July, the disease had appeared outside of the arsenal, and soon afterwards it had spread over the entire city. It subsequently extended to the villages along both sides of the Bosphorus and around the Sea of Marmora. The greatest mortality in Constantinople was during the first two weeks of August. The epidemic continued to nearly the end of September. The mortality among a population of 800,000 has been stated by some at 12,000, by others at 15,000.

In reference to the pestilence in Constantinople, the Conference take occasion to remark that the most insanitary localities in a town sometimes escape, comparatively or altogether, during an epidemic visitation; and they quote, in illustration, the case of the bagnio

[1] Syria and Palestine seem to have been first visited by cholera in 1830 or 1831, and to have suffered also in 1837, in 1847-48, and in 1854-55; but our information respecting the medical history of these countries is extremely imperfect and uncertain.

(within the precincts of the arsenal) which suffered but little in comparison with the adjacent barracks of the soldiers and sailors. The worst hygienic conditions are said to exist in the bagnio, in which were confined 700 galley slaves, of whom 500 were daily sent out, two usually chained together, to be employed on the public works. They remained exempt until near the end of the epidemic, when, at length, one of the guards was attacked, and soon afterwards 15 of the prisoners. Of these cases, 7 were fatal. This was the entire loss. On the other hand, among the soldiers and sailors in the arsenal, the deaths amonnted to 11 per cent. of their whole force. No explanation of the marked difference is offered. It would require to know all particulars as to the mode of life of these two sets of men, and as to the site and condition of the buildings they occupied, as well as respecting the frequency and amount of their exposure to a morbific or infected atmosphere, before hazarding any opinion. At Gibraltar it has been seen that the convicts suffered more severely than any other section of the population.[1]

There were, of course, during the prevalence of cholera in Constantinople, continual departures therefrom of vessels in different directions—some through the Dardanelles for places in the Ægean Sea or Mediterranean, and others by the Bosphorus for ports in the Black Sea. Let us first take the latter course. At Therapia, on the European shore of the Bosphorus, near the entrance into the Black Sea, there was a sudden outbreak on the night of the 31st July; it lasted for a week, and was very destructive. Notwithstanding numerous infected arrivals from Constantinople at Bourgas and at Varna, on the west shores of the Euxine, and a good many sick persons were landed at their lazarets (the quarantine was generally for three days only), the disease showed no tendency to spread. One fatal case occurred at Bourgas in a sailor after being discharged from the lazaret. It was at Sulina, situated near the entrance to the delta of the Danube, that the earliest manifestation of the disease in this region occurred; this was at the beginning of August.

According to Dr. Jellinck, the medical officer of the Navigation Hospital there, the arrival of a steam transport, which had lost two men on the voyage from Constantinople, was "the signal for the outbreak of the epidemic" in the place. Although the cholera was

[1] Constantinople experienced its first visitation in 1831. The second visitation commenced in the latter part of 1847, and continued for a great portion of 1848, both in that city and throughout most parts of the Ottoman dominions. In 1854–55, during the Crimean War, there were but few districts of Turkey in Europe that remained altogether exempt. Constantinople, of course, suffered; but at no time did the disease prevail there with epidemic violence, notwithstanding the constant arrivals of sick transports and other infected vessels from the seat of war, as well as from Marseilles and other ports in the Mediterranean where the disease existed.

chiefly confined to the poorer classes, "every one was more or less attacked with a certain malaise, characterised by sensitiveness in the region of the stomach, loss of appetite, and, above all, a sparing secretion of reddish urine." Within two or three days of its appearance at Sulina, cases began to occur not only in several places along the course of the Danube, but also on the west coast of the Black Sea to the south of Sulina, and especially at Kustendjie, between that town and Varna, and memorable, it may be remembered, for the terrible explosion of the pestilence among a French body of troops in 1854.

Before proceeding westward along the course of the Danube, let us see how the southern provinces of *Russia* bordering on the Black Sea fared about this time. Notwithstanding that an official report has been published by the Russian Government of the epidemic, it is difficult, from the imperfect and confused data given, to trace its development and progress. At the great commercial port of Odessa, which has so much intercourse with Constantinople, cases of epidemic cholera do not seem to have been received into, or to have occurred in, the lazaret till the first or second week of August. The earliest case among the townspeople took place in a customhouse officer on the 17th of that month; most of the subsequent cases were limited to one or two districts, the rest of the town suffering but little; the visitation was altogether very much less severe than in former epidemics, although the general health previously was certainly unfavorable. The mortality during the early months of the year had been much above the average, and in the summer months it had greatly increased, in consequence chiefly of intestinal affections, which caused between 600 and 700 deaths in June, July, and August.

About the same time that cholera appeared at Odessa, it manifested itself in the village of Borchi, in Podolia, upwards of seventy miles to the north of Odessa. The persons first attacked there were some German labourers, who, with their families, had arrived from Galatz, which they left on August 4th, *viâ* Odessa. All appeared to be quite healthy when they reached Borchi on the (July 26, O. S.) 7th of August, except an infant which had diarrhœa, and died three days afterwards. From this date cholera began to break out among the inhabitants, attacking with especial violence the newly-arrived strangers; only one, out of eight of them who were seized, recovered. The mother of the child first affected did not sicken until the 18th; she died two days afterwards, or ten days after her child. The disease subsequently spread to different localities in the neighbourhood. Great stress has been laid upon this outbreak at Borchi as affording indubitable evidence of the introduction of the disease into a healthy locality by the arrival of strangers from an infected place—that place in the present instance being confidently asserted to have been

Galatz. Statements are conflicting as to the date of the earliest manifestation of the disease at Galatz; it is doubtful whether it existed there so soon as August 4. But whether it did or not, the strangers came last from Odessa, where the disease was certainly present, at least in the lazaret, in the first week of that month. Unfortunately, no authentic information has been given as to the previous health of the districts intervening between that city and the village of Borchi, or of Borchi itself.

During September, cholera appears to have been widely diffused throughout the province of Podolia. Subsequently it spread to Kiev to the northward; but, before this province became affected, the disease appeared at Kerch on the eastern coast of the Crimea.[1] In October it was at Taganrog, at the northern extremity of the Sea of Azof; and in November it was heard of in the province of Volhynia, to the north of Kiev, and bordering on the southern provinces of Poland. "In almost every place," states the official Russian account, "before the appearance of the cholera, the prodromata of the disease, especially diarrhœa, were observed." Towards the end of 1865, the disease continued to exist in various places in the south-west provinces of the empire, and also in the Caucasian provinces as far south as the frontiers of Persia. A few fatal cases occurred, during December, in St. Petersburg; but no decided outbreak occurred there till the following June.[2]

Returning now to the delta of the Danube, it is to be observed

[1] From the report of the Conference, it would seem that the disease had appeared at the eastern end of the Black Sea in the coast towns of Soukhum and Poti, at the beginning of September, if not sooner, and that it had penetrated inland to Kutais about the middle of last month. It was introduced, says the report, into Tiflis, the capital of Georgia, by a Frenchman and his wife who had arrived there, a week later, from Marseilles by the way of Poti and Kutais. They both fell sick, but recovered; still it was believed that they imported the disease, "car les diarrhées qui y regnent habituellement en été ont revêtu depuis leur arrivée la forme cholerique." At Sinope and Samsoun, on the south coast of the Black Sea, although numerous infected arrivals from Constantinople entered these ports, but very few cases occurred. Trebizond, on the same coast, but further eastward, suffered more severely.

[2] Odessa and other Russian ports in the Black Sea were first invaded by cholera in the autumn of 1830, about the same as Moscow. Other parts of Russia in Europe became the seats of the pestilence in the course of that and of the following year. The next visitation was in the summer and early autumn of 1847; it lasted in different parts of the empire through 1848. In 1852 there were many irregular outbreaks in the northern provinces, and also in various parts of Poland. Again, in 1853, there was a considerable prevalence of the disease in the northern and central provinces. In the early part of 1854 it existed in Bessarabia and other districts near the Danube, which were soon to become the theatre of war. As the year advanced, Odessa, Varna, and other places on the Black Sea—Turkish as well as Russian—appear to have been the seat of the choleraic infection before the arrival of the allied fleets there. Throughout 1855, the disease existed in almost every part where large bodies of traops were assembled. In 1858, and again in 1859, some of the northern Russian ports, as Helsingfors, Riga, &c. suffered more or less severely from cholera.

that, after the outbreak at Sulina, many of the towns on the banks of the river—as Tultcha, Galatz, Rutschuk, Widin, &c.—became infected between the early part of August and the middle of September. The disease had penetrated too into numerous places in the surrounding districts, and among others to Bucharest, the capital of Wallachia. All the attempts made to exclude the scourge were, Dr. Jellinek remarks, fruitless, and the measures resorted to for the purpose only served to increase the distresses of the poor:—"At Sulina we were obliged to endure the inconvenience of a complete exclusion, commerce was checked, the navigation suffered enormously, every ship was taxed to no inconsiderable extent for health-guards, &c.; and the same thing was repeated, with the same want of success, at Tultcha, Galatz, and Ibraila, whilst the epidemic advanced constantly, and attacked places situated in the interior of the river-bordering cauntries."

From the following observations of Major Stokes, R.E., the British Commissioner in the Danube, it seems that the disease did not penetrate westward into Austria by this way; or, at least, its course in this direction could not be traced:

"At Orsova, the frontier town of Austria on the Danube, the quarantine, established for a short time, was removed upon the earnest remonstrance of my Austrian colleague on the Commission. Although the cholera visited every Turkish town where the quarantine was strictly enforced, to within a few miles of Orsova, that place remained quite free from the disease. The passenger traffic through Orsova, between the East and Vienna, is very conciderable, and yet no instance occurred of cholera being imported from the many pest-smitten towns."

Central Europe.—It has just been seen that the pestilence had, in the month of August, spread up along the course of the Danube from its mouth, and had penetrated into many places in the Danubian principalities; but, as far as our imperfect information goes, it would seem that it had not extended in *that* direction into the Austrian dominious. Orsova, the frontier town on the river, at least remained unaffected; nor had any cases occurred in Pesth, Buda, or Vienna. In the last week of August the disease, however, manifested itself in the town of Altenburg in *Saxony*, twenty-four miles south of Leipzig, and the outbreak there is believed to have been caused by direct importation either from the infected districts of the Danube, or from the shores of the Black Sea. The circumstances were these. A woman, with her infant, twenty-one months old, had left Odessa on August 15, and, travelling by the Danube steamer, had reached Altenburg on the 24th of that month, both being then in apparently good health. It is not stated at what towns on the Danube the steamer by which she came from Odessa

had touched, nor at what place on the river the woman had been landed, to proceed on her way to Saxony. The other passengers and the crew of the vessel are supposed to have been throughout free from any sickness. The woman put up at her sister's house, situated in a most unhealthy locality in Altenburg, and which was itself very unwholesome and impure. The infant was seen by a physician, in consequence of it suffering from diarrhœa, on the 27th, three days after arrival. The mother at this time seemed to be quite well; but, in the course of that evening, she sickened, and next day (28th) all the symptoms of malignant cholera appeared; and she died on the 29th. On the evening of that day her sister was attacked, and the attack proved fatal on the 30th. The infant (who had been previously removed to another house) sank from exhaustion on the 31st. None of the other inmates in the house where the infant died were affected. It was from the other house (No. 678 in the Kunstgasse) where the mother and her sister died that the disease "manifestly spread" to other parts of the town. In the course of September, it had extended to several of the neighbouring villages, as Rasephas, Werdau, &c. The sanitary condition of Altenburg is stated to be very bad; the death-rate, in ordinary years, is high for a town of its population, which amounts to about 18,000. In 1864 it was higher than usual; and in 1865 it was higher still, independently of the deaths from cholera. In 1860-63, inclusive, the deaths averaged 27 per 1000 of the inhabitants; in 1864 the ratio was 29 per 1000; and in 1865 it rose to 35 per 1000, without taking into account the 91 deaths from cholera between the end of August and beginning of December. For three months prior to the occurrence of any cases of that disease, there had been very great mortality,—most probably from intestinal diseases, as neither fever, nor other recognised epidemic malady was prevalent. The part of the town where the Kunstgasse is situated lies low, and had been inundated, in the spring, from the overflowing of an adjacent pool; and, in front of No. 678, runs a stagnant fetid ditch, into which all sorts of household impurities were thrown. The heat in July and August was unusually great.[1]

The sanitary condition of the other places affected was also very defective, and their ordinary death-rate high. In Werdau, with a population of between ten and eleven thousand, where the death-rate had for some years averaged 33 per 1000, 1865 was an unusually sickly year; the mortality, exclusive of 261 deaths from cholera, between September 17 and December 11, largely exceeded the ordinary ratio. In August "there was a tendency to diarrhœa and cholerine." The first case of cholera there was in a person who had come from Altenburg. A few cases occurred in Leipzig, but the disease manifested no tendency to become epidemic, nor indeed

[1] 'Die indische Cholera in Sachsen in 1865,' von Dr. Gunther, 1866.

in any other place in Germany, northward of Altenburg in latitude 51°, during 1865. In November it is believed to have existed to a partial extent in some places on the frontiers of Saxony and Bavaria; and there was a rumour that several cases had occurred at Nuremberg. Whether any choleraic manifestations had manifested themselves in the lands intermediate between these frontiers and the Vosges districts of France, which, as has been already seen, were partially infected in the autumn, I am unable to say. Besides North Germany, Hanover, Holland, and Belgium seem to have been unaffected by any distiuct traces of the disease this year. We shall, therefore, turn southward and endeavour to make out what had been taking place in the southern provinces of Austria, and in some adjacent regions which have not hitherto been noticed.

Austria.—Notwithstanding the very frequent intercourse of Trieste with Alexandria, it was not till the end of September that any cases occurred there, and even then not in Trieste itself, but in an adjacent village.

The Conference state that the first three cases occurred on September 28; these were followed by two other cases in Prosecco, a village about eight or nine thousand yards from Trieste. Thence the disease seems to have advanced into the town; the cases there were almost all single and isolated, except in three houses where several deaths took place under one roof. Of eighty-three attacks in all, between September 28 and November 19, sixty were fatal. Five deaths occurred at the inland village of Optchina, near Trieste, and a few cases also at the village of Maggia on the coast, only about six or seven miles distant.

Although the earliest cases of cholera at or near Trieste were not till the end of September, diarrhœa had been very prevalent in the town during July, and several of the cases were of a decidedly choleraic type; but none proved fatal. In August, and also in September, diarrhœa continued to be common among the inhabitants. The Conference, admitting that the development of the cholera at the end of September could not be traced to any particular infected arrival or arrivals about that time, consider that the previous diarrhœa and cholerine prevailing in Trieste might be owing to the admission of the many fugitives from Alexandria, who flocked to Trieste and stayed there. "N'a-t-on pas le droit de rapporter des phénomènes choleriques de Trieste à l'émigration venue de l'Egypte au mois de Juin? Nous le pensons, mais nous manquons de preuves suffisantes pour l'affirmer." The difficulty is to account for the non-occurrence of the fully-developed disease during the very season that it almost invariably prevails throughout Europe, and when all the adjuvant causes of its genesis and

growth are most active, and for the retardation of the event till so advanced a period of the year.

The number of persons detained in quarantine at Trieste, between June 18 and February 7, 1866, was no less than 11,108. A woman, arrived from Alexandria on August 4, was attacked (in the lazaret ?) four days afterwards; and a man, arrived from Ancona on August 24, was attacked within a few hours after landing. It is not stated whether either case was fatal. Between August 7 and October 20, a death occurred in three different vessels while performing quarantine in the harbour.

The disease does not seem, as far as we know, to have extended from Trieste to any place, either on the Venitian or on the Dalmatian coast. The only place on the Albanian coast of which any mention has been made, in connection with the pestilence, is Vallona, nearly opposite to Brindisi on the Italian coast, where an Austrian steamer, which left Alexandria on August 7, arrived on the 12th, and landed 406 passengers, 5 of whom were moribund from cholera. The passengers were landed on an island in the harbour, and kept in quarantine for ten days; only one death occurred among the number, and the town remained perfectly healthy. The port of Durazzo, thirty miles to the northward, also escaped, although several svessels from infected places, especially from Ancona, had arrived there during the season.

The western coast of Turkey and the whole of Greece appear to have remained exempt throughout 1865. But at one or two points on the eastern coast, there was a partial development of the disease, in consequence of their more direct and frequent communication with Constantinople and with the town of Dardanelles, which had become infected about the middle of July, and at which is one of the principal quarantine stations in the Turkish dominions.[1] At Salonica, upwards of 4000 persons, chiefly from Constantinople and Smyrna, were, in the course of the season, detained in the lazaret, which was often excessively crowded. The total number of deaths from cholera among the *détenus* amounted to 122. Very few cases occurred in the town itself; the first was in a man, shortly after being quarantined for fourteen days. Two other persons in the same house were attacked, but the disease did not spread. Notwithstanding this immunity of Salonica itself, several of the adjacent villages suffered considerably, in consequence, it was believed, of persons, who had performed their quarantine, resorting thither. Nearly the same thing happened at the port of Volo, situated to the south of Salonica. Rather more than twenty fatal

[1] The quarantine at the Dardanelles commenced on June 29th, the day after the appearance of the disease at Constantinople. Within the next five weeks, more than 2000 persons were sent into the lazaret, which was utterly insufficient to accommodate them. Fifteen deaths occurred among the *détenus*.

cases occurred in the lazaret between July 26 and August 10; but only two attacks, one being fatal, took place in the town; both occurred in officials of the lazaret. Several of the adjacent villages, however, suffered more severely. Whether it was from one of these villages that the inland town of Larissa, situated to the north of Volo, contracted the infection at a later period of the year; and also how and when the large town of Monastir, nearly in the centre of the country, and intermediate between Salonica and Durazzo, became first infected; are points on which I fear we must be content to remain in ignorance. All the information which the Conference appears to have been able to obtain is this: "Larissa, as well as the whole of Thessaly had enjoyed perfect health until the end of November. At that time there arrived from the neighbouring province of Monastir, and notably from Florina, thirty miles distant, where cholera existed, from three to four hundred Bulgarians to be engaged in different occupations during the winter. It was then that the disease appeared at Larissa. Most of the attacked were among the Bulgarians who had come from an infected district; the rest of the cases were among persons living near to the immigrants. The disease ceased with the flight of these strangers."[1]

From the shores of the Mediterranean and from the Continent, we now pass to our own country, which supplies an interesting page, or rather portion of a page, in the history of the epidemic.

Great Britain.—Notwithstanding the incessant intercourse, both by sea and land, with all the countries ravaged by the pestilence, and although no restrictive measures to bar the enemy out were adopted at any part of the coast, the all but complete immunity it enjoyed in 1865 is a very notable epidemiological event. Contrast in this respect the fate of Spain, which is the great exclusionist Power in the present day, and the fact becomes striking indeed. The only point on our shores where the disease manifested itself was at a port on the south coast, and that the very one which is in most direct and rapid communication with Egypt, as well as with

[1] As to previous visitations of cholera on the Dalmatian and Albanian coasts, and on the opposite or Ægean coast of the Turkish peninsula, our information is most scanty. Even in respect of Trieste and other Austrian ports in the Adriatic, very little unfortunately is known. The first visitation at Trieste was in 1835, when Lombardy and Venetia were invaded. In the following year there appears to have been a removal of the epidemic, and the Dalmatian coast was attacked. Whether, and to what extent, it spread into the neighbouring provinces under Turkish rule, we are quite ignorant. In 1848 and 1849 the southern parts of the Austrian dominions appear to have suffered, and Trieste probably did not escape. In 1854, and also in 1855, scarcely any part of the empire seems to have escaped the wide-spread and most destructive visitation of these years. It is known that, in 1855, the towns of Volo and Larissa were attacked by the pestilence; beyond this, nothing can be said. (*Vide* 'Parliamentary Returns on Quarantine,' August, 1860.)

Malta and Gibraltar, viz. Southampton; its latitude is nearly 51°. This in itself is an important fact in the history of the present epidemic, marking as it does a signal difference from the course of the former visitations of the disease, which always first appeared at some point on our eastern shores, those namely that are in most frequent and direct intercommunication with the northern half of Europe. During the summer months, two or three cases of cholera had occurred among the passengers on board one or two of the numerous fleet of the Peninsular and Oriental steamers on the voyage from Alexandria to Malta; and it is also beyond dispute that in several of the vessels, on arriving at Southampton, some of the crew were, or had been immediately before arrival, affected with diarrhœa. On the whole, however, there was marvellously little sickness in these fine and roomy vessels throughout the whole season; and it is also to be noted that not a single instance of any thing like choleraic illness is known to have occurred among any of the passengers, or among any of the crews or of their families, after landing at Southampton. The earliest cases of cholera there were certainly not among them; but they occurred in individuals who had had no direct or traceable communication—as far as a strict examination by an accomplished inquirer could discover—either with the steamers, or with any person or any thing that had been on board of them. About the middle of August, a suspicious attack took place in a woman engaged in one of the shops in Southampton; but, as she recovered, doubts were entertained as to the real nature of the illness. It was not till about the end of the third, or the beginning of the fourth, week in September that the earliest undoubted cases of malignant cholera were met with; and they occurred nearly simultaneously in three distinct and separated localities, and in persons unconnected, and having no communication, with each other. All these persons were in humble life, and all were living under what must be considered to be unfavorable if not decidedly unwholesome, household conditions. This was true also of nearly all the subsequent cases which occurred in and around Southampton, with the exception of two or three instances at most, one of these latter being that of the medical officer of health, in whom bodily exhaustion and mental anxiety seemed to have had much to do in the induction of the fatal attack. Of thirty-one cases, fifteen of which were fatal, in Southampton proper, almost all occurred "in the lowest, dampest, and most crowded parts" of the district—a district which had been ravaged in the epidemic of 1849. With respect to the origin of the outbreak, Mr. Simon most justly remarks that the report of Professor Parkes' "peculiarly exact inquiry into all the circumstances connected with the beginnings of the epidemic, and into the relations of the cases to one another" affords "a useful illustration of the extreme difficulty

which in all such matters there is in proving or disproving contagional relations."

With the exception of Southampton, none of the other commercial ports of the kingdom, not even those which have much intercourse with the Levant and the Mediterranean, as London and Liverpool, appear to have manifested any indications of threatened or actual choleraic sickness among their shipping, or on shore, throughout the entire season. Neither did any case occur at any of our great naval ports, or among any vessel of war which may have arrived from the Mediterranean. Notwithstanding, too, the incessant intercommunication with Paris and other infected places in France, no evil consequences followed. The only other spot in England, besides Southampton, where the pestilence manifested itself in 1865 was in a farmhouse at the village of Theydon Bois, in Essex. The circumstances connected with this circumscribed little outbreak, as recorded by Mr. Radcliffe in an official report to the Privy Council, are certainly of extreme interest in the history of this mysterious disease. The farmer and his wife had gone to Weymouth on September 8, for change of air; he had for some time been suffering at home from gastric disorder, which his medical attendant considered was partly due to the impure quality of the water used in the house. On the 23rd, he was seized with diarrhœa, sickness, and cramps, which continued more or less the next day, and left him still unwell on the 25th, when they both returned to Theydon Bois, passing on their way through the railway station at Southampton, but without going out of it. During the journey, the wife began to be affected with intestinal disorder; her symptoms became aggravated soon after reaching home, the diarrhœa increasing, and eventually lapsing into cholera, from the secondary fever of which she died on October 11. But ere this, no fewer than ten other persons, either members of the family or persons in attendance upon them, had been attacked, and five or six of them had died. Two were attacked on September 30th, one on October 2nd, one on 3rd, two on 5th, three on 6th, one on 10th. Of these, the farmer himself, who had suffered at Weymouth, and had ever since had relaxed bowels, was attacked on October 6th, and died in fifteen hours after seizure.

That the use of polluted drinking water — polluted by the dangerous defilement of soakage from the water-closet—by the household of this farmhouse had much to do with the production and the virulent character of this formidable, although circumscribed, outbreak, in many at least of the persons attacked, is in accord with other well-examined observations of a similar nature, and cannot but be accepted. This conclusion obviously suggests a most important practical lesson of hygienic and prophylactic medicine. That there were other causal elements of mischief at work at

the same time, and other channels, besides the drinking water, whereby the morbific poison was communicated to the attendants, may also be fairly drawn from the history of this curious incident. The really knotty point is how to account for the first case, that of the wife. There had been no evidences or traces whatever of a choleraic character or significance observed at Weymouth, either before or during her sojourn there; nor were there any after she left. Cholera had, indeed, just begun to manifest its presence in Southampton, when they passed through the station on their way to London; but unless the atmosphere of that town be supposed to have already become the vehicle of floating morbific germs, at a distance, too, from the localities where the first cases of the disease had occurred, it is difficult to imagine that the disease was contracted there. Still, this supposition is far from being inadmissible; nor is the development of the disease in the first case in this history at all so puzzling or so mysterious as in some other well-known instances in which a solitary attack occurred in a district in which the disease was not present at the time, and under circumstances, too, which precluded the possibility of exposure, of even the slightest kind, to infection. Few, however, will be disposed to go so far, on one point at least, as the Constantinople Conference, when they assert that "it would be difficult to find a more conclusive example of cholera contracted in one infected locality (Southampton), and imported into a healthy spot where the disease spread exclusively to persons who were in more or less direct relations with the sick." With this case, the history of the visitation of the disease in England, in 1865, comes to a close. We must now cross the Atlantic, and follow it to two points, far apart from each other, on the shores of the New World.[1]

New York.—The steamer "Atlantic" sailed from London on October 10, with twenty-eight cabin and twelve steerage passen-

[1] Great Britain was first invaded in October, 1831; the earliest cases occurred on the east coast; London was not infected until February, 1832. There was a partial recandescence in some parts of England in 1834; and in 1837 there were two isolated outbreaks, one on board the "Dreadnought" Hospital Ship, in the Thames, and the other in the House of Industry at Coventry, that town itself remaining free. The second general visitation began in October, 1848, the first cases again being observed on the east coast; the great prevalence of the epidemic occurred in this country, as on the Continent, in 1849. In 1850 there were some partial outbreaks in Ireland. The third visitation commenced in August, 1853; some of the earliest cases occurred in London. Newcastle was visited with extreme violence in September. In 1854 the disease prevailed as an epidemic. In the autumn of 1859 two or three partial and isolated outbreaks occurred; one at Wick, on the north-east of Scotland; another at Glass Houghton, a small village in the West Riding of Yorkshire; and another, on a small scale, at the coast-guard station on the Itchin river at Southampton, described in Dr. Parkes' report in the 'Eighth Report of the Medical Officer of the Privy Council.'

gers for Havre, where she remained one day and received twenty-four additional cabin, and 540 steerage passengers. The latter came chiefly from localities in South Germany and in Eastern France. Almost all of them had passed through Paris, which was then infected, on their way to Havre. The presence of the disease in that port was not known, and had, at least, not been recognised by the authorities, at the time of the sailing of this emigrant vessel. Later in the year, various places on the coast of Normandy, including Havre, were certainly infected. Some of the emigrants, while there, were taken ill, and one woman died; the cause of her death was not published. The ship left the port with a clean bill of health, on the 12th, and reached New York on November 3rd. There had been sixty cases of cholera, and fifteen deaths, during the passage. The first death had been in a child on the very day after leaving Havre. All the cases and deaths had occurred among the steerage passengers; not one of the cabin passengers or of the crew had suffered. The Atlantic was kept in strict isolation at the quarantine station below New York; forty-two fresh cases and eight deaths, all among the steerage passengers, occurred during the detention. The disease did not extend beyond the infected ship. A quarantine of five days' observation was thenceforth enforced at New York on all arrivals, without exception, from London, Southampton, Havre, and all Mediterranean ports; if any case of cholera had occurred during the voyage, the vessel was, moreover, to be detained until all the passengers were removed from her, and she was thoroughly ventilated and fumigated. The immunity of the City of New York, in 1865, is quoted by the Conference as a signal proof, among other evidences, of the success of quarantine isolation as a safeguard against the extension of the disease. The late season of the year may probably have had something to do with the non-extension of the disease at this time; for next year, in spite of the same restrictive precautions, the enemy found its way into the city, and became widely spread over the country. At no other point on the seaboard of the United States, was there any manifestation of cholera in 1865. We must go far south to one of the islands in the Mexican Gulf to find the only other spot in the Western Hemisphere where it found a lodgement in the course of that year.[1]

[1] Epidemic cholera first reached the New World in 1832; about midsummer of that year it seems to have appeared at New York, as well as at Quebec and Montreal. It spread over nearly the whole extent of the United States before the end of the year: in 1833 Mexico was attacked. In 1834 there was a partial reappearance in the United States and in Canada. Nova Scotia and New Brunswick were visited for the first time in that year. In 1836 Mexico and Central America were invaded. For the next twelve years the pestilence was absent from the New World. In the latter part of 1848 occurred the singular event of an outbreak on board two emigrant ships, last from Havre (which was said to be unaffected at the time of their departure); in one on the sixth day, and in the

West Indies.—On the 22nd of October, 1865, cholera broke out at Point-à-Pitre, the principal port of Guadaloupe, one of the two West India Colonies of France, and situated in latitude 16° N., about the centre of the Windward Islands. It subsequently spread to the town of Basseterre, and over the entire island, and proved extremely fatal. The adjacent islet of Marie-Galante, a dependency of Guadaloupe, also became infected. The origin of the disease has been attributed to the arrival, on October 9th, of a vessel, the "Virginie," from Marseilles, which she left on September 3rd. There had been no sickness, it is stated, among the crew, fifteen in number, during the voyage of five weeks; and there were no passengers on board. The first appearance of the disease in Guadaloupe occurred fourteen days after the arrival of the ship, and when she had commenced to discharge her cargo, which consisted of "matieres alimentaires."[1] It was then regarded as a pernicious algide fever; "il règne à la Pointe-à-Pitre," writes the Governor, on November 5, "une maladie qui a quelques apparences du cholera, mais qui d'après tous les hommes compétents est une fièvre paludéenne, la fièvre pernicieuse algide. Elle est attribuée exclusivement aux miasmes qui se dégagent des marais avoisinant la ville, miasmes developpés extraordinairement par la persistance exceptionelle des pluies et la hauteur présente des marées." Ere long,

other on the twenty-seventh day, after leaving Europe. "The circumstances attending the nearly simultaneous appearance of the disease in two vessels traversing the Atlantic, and about a thousand miles apart, are among the most curious on record in the history of epidemic cholera. The disease did not extend beyond the quarantine station on Staten Island at New York, after the arrival of the infected ship there; but at New Orleans it seems to have spread not only in the hospital, but also in the city generally, although it did not exist at the time in any other part of the United States." ('British and Foreign Medico-Chirurgical Review,' October, 1865, p. 444.) The city of New York was not attacked till the following midsummer, when the disease was already widely spread over the country. In 1850 the disease was present in Mexico, and also in some of the northern regions of South America; in 1851, and again in 1852, there was a partial reappearance of it in Canada and in the United States. Towards the end of 1853 it was present in New York and in New Orleans, besides various other places in the country; and in 1854 it was more widely diffused over the whole continent. The island of Newfoundland was affected for the first time that year. In 1857 the disease prevailed in Central America, reaching in the course of that year to the Pacific shores of that region.

[1] The Constantinople Conference state that it has been suspected that it was not the "Virginie" from Marseilles, but a vessel, "Sainte Marie," which left Bordeaux on September 15, and reached Guadaloupe on October 20, that imported the disease. Cholera did not exist in Bordeaux at the date of departure; but it was alleged that some of the crew had come from Marseilles; also, that the earliest cases in Guadaloupe occurred in washerwomen, who had washed the clothes of the crew of the "Sainte Marie." Both these statements were afterwards disproved. "Whatever may have been the channel of importation, it is not the less true—and this is the capital fact—that the cholera broke out at Guadaloupe only after the arrival of a vessel from an infected country."

Several vessels from Marseilles had previously arrived at Martinique, St. Thomas, and Cayenne; but without any traces of cholera being imported into any of those colonies.

all doubts as to the nature of the malady ceased. The epidemic continued in Guadaloupe till the following spring or early summer. Upwards of 10,000 deaths, it has been said, occurred among a population of 149,000.

In the second or third week of November, five men from Marie Galante landed at Dominica; two were ill with cholera at the time, and one of these men died ten, and the other twenty, hours after landing. A strict isolation of the place where the men abode was maintained, and no other cases occurred. None of the other West India islands, nor any place throughout the whole Mexican Gulf, manifested any traces of infection in 1865. It was not till the following year that any extension of the disease in this region of the world occurred.[1]

In another article I hope to follow up the preceding narrative of the leading events in 1865 by a sketch of the geographical history of the epidemic in 1866-67. Without seeking at present to draw any general conclusions respecting the apparent laws of the development and spread of the disease in different lands, or as to the results of those measures of medical police which are mainly trusted to in most countries for its exclusion and arrest, I would only remark that all must perceive, from what has been already stated, how scanty and imperfect our authentic information really is in regard of the origin and movements of the pestilence, in very many of the places where it appeared in 1865. Often it is impossible to determine the date of its first manifestations, and the steps of its early progress; and yet the accurate knowledge of these very points must be the foundation of all sound etiological reasoning. There is more than one cause for this common source of difficulty. Besides the general indifference on the part of governing authorities everywhere about matters of public health, there is a universal unwillingness to acknowledge the existence of any distemper, the open recognition

[1] The history of the course of epidemic cholera in the West Indian archipelago presents many points of interest. Cuba was invaded as early as 1833, and it probably continued to be infested with the disease for two or three years subsequently. The next visitation there is supposed to have been in 1848–49. None of the other West India islands suffered until the end of 1850, when Jamaica was attacked for the first time. The rest of the group, including all the Windward and Leeward Islands, and also the Bahamas, remained exempt for the next two or three years, when (with the exception of Antigua and possibly of two or three others) most of them were smitten. Cuba had for several years never been entirely free. 1854 was the year of the widest extension of the epidemic; together with many other islands, Guadaloupe suffered that year. In 1855 the Spanish island of Porto Rico was attacked for the first time. The disease was also to some extent in St. Kitt's and in Jamaica during the spring and summer. In 1856 Porto Rico continued to suffer; and the islands of St. Thomas andof Curaçoa, as well as British Guiana, were attacked. The disease lingered in Guiana in 1857 and also in 1858. The West India Islands seem to have been exempt during these years; nor, as far as I am aware, was there any recurrence of the pestilence in them until 1865. Our knowledge however of epidemiological phenomena in that region is far too scanty to warrant any confident assertion on this head.

of which carries with it many serious restraints, inconveniences, and losses to the affected community. So notorious is this reluctance in some countries of Europe—whatever be the motive or motives of their conduct—that no one looks for any faithful intelligence respecting the first appearance of an unusual sickness in their midst; *e. g.* in Spain, Portugal, Papal States, &c. The readiness, too, with which medical men are prone to accept and make use of evidence, however loose and meagre, when it seems to accord with the views which they have adopted, adds not a little to the other difficulties encountered in exploring a confessedly obscure branch of scientific inquiry; and it is much to be regretted that so voluminous a public document as the Report of the late International Conference is anything but free from this blemish. Until the exercise of a far stricter 'logic of facts' be our invariable rule of conduct in the investigation of epidemiological problems, but little progress can be expected to be made in their real solution.

ART. II.

On Hæmorrhage from Waxy or Amyloïd Degeneration. By T. GRAINGER STEWART, M.D., F.R.S.E., Pathologist and Extra Physician to the Royal Infirmary; Physician to the Royal Hospital for Sick Children; Lecturer on General Pathology, Edinburgh.

FOR some years past I have noticed that hæmorrhage from the stomach and intestine occurs in cases of waxy or amyloïd degeneration, and that independently of ulceration of the mucous membrane. I have thus been led to look into the literature of the subject, and inquire among professional friends as to their observations. The results of these inquiries are the following:

My colleague, Dr. Sanders,[1] showed in 1852 that, "in a well-marked example of waxy spleen with transparent Malpighian bodies, a great number of these were found filled with blood recently extravasated, giving the fresh section a peculiar dark-spotted appearance. The effusion was limited to the Malpighian bodies, and preserved their shape. No extravasation occurred elsewhere in the spleen or other organs."

Dr. Wilson Fox[2] recorded in this journal a case of purpura, with waxy degeneration. The patient was a man aged 33, who, in

[1] 'Proceedings of the Physiological Society of Edinburgh,' 1852.
[2] 'British and Foreign Medico-Chirurgical Review,' Oct., 1865, p. 480.

November, 1864, contracted syphilis, which was followed by constitutional symptoms, and was treated by means of mercury and iodide of potassium. Early in May, 1865, a painful purple rash appeared on the inside of the thighs, and in the middle of the month a similar rash appeared on the face. On admission to University College Hospital he was weak, feverish, irritable; there were numerous patches of extravasated blood on the skin of different parts of the body. The gums were coated with a reddish sordes, and the blood contained an excess of white corpuscles. A few days later large vesicles filled with discoloured serum were seen in various parts, and portions of skin assumed a dark purple hue. A soft blowing murmur was heard over the heart, loudest at the base. Although under appropriate treatment, the tendency to purpura diminished, the strength gradually became exhausted, and he died a week after admission. During this time the urine was acid, contained no albumen nor any trace of blood. On *post-mortem examination* numerous points of extravasation were found in the skin, the muscles, and the subserous and submucous tissues. Close to, but not at those points, amyloïd degeneration of the small vessels was found, and the muscles themselves in certain parts presented the same character. There were some other points not, however, essential to this paper. In commenting upon this most interesting case, Dr. Wilson Fox remarks, as to the question of the relationship of the diseased capillaries and the hæmorrhage, as follows:—"A direct association of the two changes will probably be considered doubtful by many who know that lardaceous degeneration of the tissues is rarely, if ever, associated with hæmorrhage; and, further, that the change in the parenchyma of organs thus affected, and also in mucous membranes is often preceded by a similar change in the small vessels. The evidence as it stands at present is decidedly against such a theory of causation, and the following hypotheses can only be stated as queries:—1. May the lardaceous degeneration which we know chiefly as a chronic disease occur occasionally in a more acute form; and in this manner so rapidly alter the elasticity of the vessels before their diminished calibre can have retarded the flow of blood in the part that rupture and hæmorrhage ensue?

"2. Is it possible that this lardaceous or waxy change, occurring only in tracts of tissue, may throw such a strain upon the collateral capillary circulation of tissues around, that adjacent but comparatively unaffected capillaries give way?

"3. Is it possible that the waxy change in the capillaries may pass, as it often does in other tissues (liver, kidney, muscles), into a softer and more granular condition, which, when affecting the coats of vessels, may lead to their rupture in the same manner as it causes that of the voluntary muscles?"

M. Hayem,[1] in an elaborate paper on the amyloïd degeneration of the intestine, remarks that the principal symptoms produced are diarrhœa and hæmorrhage. After referring to the former, which, as is well known, is generally present, he states that he has met with the latter in two cases, both of which had reached the second stage, viz. that of ulceration, or erosion of the mucous surface; and he referred the hæmorrhage to rupture of the vessels surrounding the follicles.

Dr. Inches, of St. John's, N.B., informed me that, while acting as resident-physician to the Charity Hospital in New York, he observed in many cases of constitutional syphilis that dysenteric diarrhœa appeared in the later stage of the disease, but unaccompanied by the characteristics of inflammatory dysentery.

Dr. Warburton Begbie informed me that he has observed hæmorrhage from the kidneys occur in a case of waxy degeneration of these organs, and that he was inclined to ascribe the hæmorrhage to the degeneration, but had not been able to satisfy himself upon the point.

It thus appears that hæmorrhage has been observed accompanying the waxy degeneration in the *spleen*, in the *skin*, in *mucous and serous membranes*, in the *substance of muscles*, in the *mucous membrane of the intestine*, and perhaps in the *kidney*.

With regard to the *spleen*, my own observations amply confirm those of Dr. Sanders, and they show besides that hæmorrhage more extensive, and not confined to Malpighian bodies occasionally occurs round affected vessels. Such hæmorrhages are met with both recent and of old standing. I have seen them forming fawn-coloured spots of a quarter of an inch in diameter, distributed in considerable numbers throughout the organ.

With regard to hæmorrhage from mucous and serous surfaces, and into skin and muscle, Dr. Wilson Fox's observation remains, so far as I know, unique, and it appears to me better not to attempt to found much upon it at present.

The hæmorrhage from the kidneys observed by Dr. Begbie I have not seen during life, and only now and then have observed traces of more or less altered blood in the renal tubules. I pass by this subject also, merely commending it to the attention of the pathologist and the physician, and proceed to consider the hæmorrhage from the stomach and intestine. In doing so I shall first narrate a few illustrative examples, and afterwards indicate the conclusions to which these and other cases have led me.

CASE 1.—M. A. J—, æt. 30, was a wandering beggar, had had syphilis, and said that she did not remember ever to have been strong and healthy. She was admitted to the Royal Infirmary on

[1] 'Comptes Rendus de la Société de Biologie,' 1866. 'Gazette Médicale,' 6, 1866. 'Biennial Report of New Syd. Soc.'

January 21, 1866. She had not menstruated for several years, and her weakness had been increasing up to the time of her admission. She complained of cough. The physical signs in the chest were not very distinct, but the symptoms of phthisis were well marked. The urine was rather copious, of sp. gr. 1014, of a light amber colour, and contained much albumen, with a few finely granular tubecasts. She had much diarrhœa; the motions, at first watery, were ultimately of a black, tarry colour; this was referred to the presence of blood in the fæces. She died exhausted on February 14th.

Autopsy.—The body was emaciated. There were traces of syphilitic ulcers in the vagina. Both *lungs* contained a considerable amount of tubercular (or perhaps syphilitic) deposit, little at base or apex, much in the middle part. The *pleuræ* were adherent. The *heart* was natural. The *liver* was large and waxy; both cells and vessels affected. It contained no syphilitic cicatrices or deposits. There were remnants of an hydatid cyst. The *spleen* was connected to neighbouring organs by many fibrous adhesions. Its vessels, but not its Malpighian bodies, were waxy. The kidneys were in the third stage of the waxy degeneration. The *uterus* and bladder were natural. The *intestines* were extremely waxy. The epithelium remained firmly attached to the surface of the villi, was markedly translucent, and on the application of iodine assumed the characteristic reddish colour. The small arteries were also waxy. The mucous membrane of the bowel was coated in many parts, both in the small and large intestines, with a layer of brownish-red matter, which adhered in some parts loosely, in some firmly, to the surface, and which, though mostly on the free surface, was here and there to be seen within the membrane, particularly in the villi. This matter was ascertained in some parts to consist of altered blood, and nowhere did it exhibit any reaction with iodine. There was no ulcer, nor trace of ulceration in the bowel.

Commentary.—In this case there was along with the symptoms of waxy kidney a copious diarrhœa, at length distinctly bloody. At the post-mortem examination no explanation was found of the one or the other, excepting the waxy degeneration, while the traces of recent hæmorrhage from the degenerated surface and in its substance were remarkably distinct.

Case 2.—T. B—, æt. 33, a carter, was admitted to the Royal Infirmary, under my own care, March 1, 1867. Had been a man of intemperate habits, and affected with syphilis. About two months before admission had an attack of diarrhœa, which gradually subsided. From increasing weakness he was obliged to give up work in the middle of January.

On *admission,* he had considerable fever, passed large quantities of slightly albuminous urine, often tinged with bile. He frequently

vomited coffee-ground matters, and had very severe diarrhœa, always of a black, tarry colour, sometimes interspersed with blood, occasionally even clots; he had repeated attacks of aphthous ulceration of mouth and throat which yielded to treatment, but the hæmorrhage and diarrhœa gradually wore him out, and he died exhausted, May 22nd.

Autopsy.—The body was much emaciated. The heart was natural. The pleuræ were not adherent, but about the middle of the right there was some recent lymph. Throughout both there were nodules of various sizes, from that of a cherrystone to that of a walnut. They were about eight in number, and most abundant in the upper half, though not specially towards the apices. They were opaque and cheesy in the centre, exhibited no traces of softening. The margins were more translucent, and of a darker colour. Microscopically they were found to consist of fatty and granular matter, with small cells or nuclei. The bronchi were natural. There was no peritonitis nor ascites. The *liver* was enlarged, and extremely waxy; it weighed 8 lbs. 11 oz. In the centre of the lobules there was a good deal of yellow pigment in the cells. The greater part of the lobule was waxy, and there was very little fatty degeneration. The *spleen* was enlarged; it weighed 1 lb. 6 oz. Its smaller arteries and Malpighian bodies were waxy. Into many of them hæmorrhage had taken place. Throughout its substance there were further numerous white tubercle-like nodules, some single, smaller than a millet-seed, others compound, and forming masses of the size of a raisin. Successive stages were recognised, and the smaller were found to be formed by the deposit of whitish matter within the malpighian bodies. This matter was composed of cells or nuclei similar to those seen in the lung. The *kidneys* were enlarged in the second stage of the waxy form of Bright's disease, with considerable fatty degeneration of the epithelium of some of the tubules. The *stomach* was waxy. The villi and arteries of the small intestine were also waxy. The large intestine contained slight traces of old ulcers, and was throughout in an extreme state of waxy degeneration. The upper part of the large and some portion of the small intestine were coated with a layer of reddish-brown or fawn-coloured matter, which adhered at some parts firmly, at some loosely to the surface. The brain was somewhat atrophied, otherwise natural.

Commentary.—In this case the gastro-intestinal symptoms were very severe, but at the post-mortem examination no lesion of the tract was found, excepting the advanced waxy degeneration. The recently effused blood forming a layer on the surface of the membrane showed that the hæmorrhage had not taken place from any individual point, but from a great part of the tract at once. There were traces of old ulcers—but only traces—in no way fitted to account

for the hæmorrhage. One of the singular features of the case was the marked fever which existed throughout.

Case 3.—E. H—, hawker, æt. 26, was admitted to the Royal Infirmary on the 15th December, 1866. Three weeks before admission he had had an attack of vomiting and purging; the vomited matter and motions were black. On examination there were signs of pleurisy, with feeble respiration. Heart was natural. Urine could not be obtained for examination. She complained of pain in the epigastrium about ten minutes after taking food, occasionally vomited blood, and passed dark blood and tarry matter by stool. She had previously had one or two fits. These recurred occasionally from December 16th to 18th. Bloody vomiting and purging continued throughout. She died on December 21st.

Autopsy.—The body was emaciated. The skull cap was natural. The brain was somewhat œdematous. The heart was natural. The lungs were partially adherent. At other parts the surface was toughened with a thin layer of lymph. The lungs were œdematous. The liver was waxy. The spleen was also waxy. Many of the Malpighian bodies contained extravasated blood. The kidneys were intensely waxy, small in size, the degeneration far advanced. There was no trace of ulceration in the stomach or intestine, but throughout their whole extent there was advanced waxy degeneration, and the surface of the membrane was coated with reddish-brown matter, apparently altered blood.

Commentary.—The vomiting and purging were in this case so severe as to suggest to the physicians in attendance the idea of irritant poisoning. The post-mortem examination fully cleared up the case, and showed it to be identical with the others here recorded. As her kidneys were in an advanced stage of the waxy form of Bright's disease, it is apparent that the fits were uræmic. And there was little doubt from the history that the poor girl had been the subject of constitutional syphilis.

Case 4.—A. M—, a shoemaker, has been under my observation as a case of waxy liver, spleen, and kidneys, since 1859. He has at times been affected with diarrhœa and vomiting, occasionally bloody. The first time that such an attack occurred was in February, 1861. During the year which followed he occasionally passed by stool blood red and altered, and his bowels were very frequently loose. After a time these symptoms disappeared, but in 1864 I find a note that on several occasions he had intense diarrhœa, sometimes bloody, and that he vomited bloody matters. On September 22, 1865, he was seized with vomiting of bile and clotted blood, and he passed black tarry matter by stool. Soon again his bowels became constipated, and his general health improved. When I last saw him he was

considerably better, had not had hæmorrhage from the bowels or stomach for many months.

Commentary.—Of the existence of the waxy degeneration in this man there can be no doubt; but we cannot positively say that the intestinal tract has been affected. The diarrhœa and hæmorrhage, however, so closely resembled that which occurred in association with that lesion in other cases, that it appears to me very reasonable, in the absence of evidence of any other cause, to ascribe it to this.

The conclusions which seem warranted by the facts I have observed in connection with this subject are—

1. That hæmorrhage is not a very infrequent consequence of the waxy or amyloïd degeneration of vessels.
2. That, next to the spleen, the intestinal tract is the most common seat of such hæmorrhage.
3. That the hæmorrhage occurs independently of any visible ulcerative process.
4. That it probably depends upon rupture of the capillaries at the affected parts.
5. That waxy or amyloïd degeneration of the liver does not of itself suffice to induce hæmorrhage from the bowels.
6. That the hæmorrhage occurs in cases in which the liver is free from waxy degeneration.
7. That the occurrence of hæmorrhage increases the danger of the patient. But,
8. That sometimes it comes and goes for years without markedly depressing the vital powers.

In regard to treatment, I may add that, so far as I have yet seen, the diarrhœa and hæmorrhage appear to be better controlled by sedative and astringent enemata than by any other means.

Art. III.

Miscellaneous Contributions to the Study of Pathology. By John W. Ogle, M.D., Physician and Lecturer on Pathology, St. George's Hospital.

Having from time to time during the last two or three years collected material from our hospital books for clinical and pathological lectures, I propose in this series to place on record some of the cases from that source which have furnished me with a basis for my lectures.[1] I shall also incorporate with them a few other cases which have come under my own notice bearing on the subject in hand, and append allusions to any cases from other quarters which may appear specially illustrative of it. The instances of chorea which I have placed in Chapter the *First* I had already prepared and intended to have supplied (now nearly a year ago) to this Review, but postponed them on ascertaining that my friend Dr. Tuckwell, of Oxford, was engaged upon the observations which, in connection with the interesting case of fatal maniacal chorea, were published in the number for October last.[2] I propose to add, by way of short notes upon the individual cases, such observations as each one may suggest, and at the end of the chapter comment upon them as a whole.

CHAPTER I.

Remarks on Chorea Sancti Viti, including the History, Course, and Termination of Sixteen Fatal Cases, and also certain details of Out-patient and other Cases which were not fatal.

Case 1.—*Chorea; pregnancy; fibrinous deposits on the heart's valves.*

Anne G—, æt. 23, pregnant, was admitted July 21st, 1841, with chorea, which had been brought on by a fright. She was confined. No further particulars are recorded, except that she died August 30th.

Post-mortem examination.—Cranium.—Pia mater much congested, especially over the cerebellum; brain much congested; its ventricles of natural size, containing only a slight amount of fluid.

Spinal cord healthy; intra-vertebral veins very congested. Whole of brain and spinal cord rather softened, but this probably owing to great heat of temperature.

[1] The cases which I have prepared for this series are cases of chorea, of fatal tetanus, and of fatal poisoning.

[2] I shall append to this chapter the details of a chronic but severe case of maniacal chorea in a pregnant unmarried girl, which not long ago came under my care at the hospital.

Thorax.—Heart's walls softened; *the tricuspid valve had, on its segments, several soft fibrinous granulations, easily removable.*

Abdomen.—The right kidney was wanting, but the corresponding supra-renal capsule was in its natural position; the bladder had only one urethral aperture; the uterus was contracted to the size of a fœtus' head.

Remarks.—As points worthy of notice in the history of this case, I would draw attention to the pregnant condition of the patient, and to the fright which she experienced; both being circumstances generally acknowledged as frequently instrumental in the causation of choreic affections. Amongst the anatomical characters presented after death worthy of consideration were the congestion of the nervous centres, and the condition of the heart's valves. The softening of the spinal cord need not be looked upon as other than a result of post-mortem change. The absence of the right kidney, though of course without any possible connection with the disease which the patient suffered from, is a fact worthy of notice[1] (149).

CASE 2.—*Chorea; congestion of the brain; unusual amount of fæcal accumulation in and adherent to the intestines.*

Emma L—, a maid-servant, æt. 17, was admitted November 16th, 1842, with violent chorea, which had been coming on gradually for the previous fortnight. The catamenia had been absent since August, but then was scanty. She had not been frightened and no cause of the disease could be given. The pulse was quick and the tongue coated, and thirst was complained of. She had had no medicine excepting some purgative pills. Two three-grain doses of calomel, followed by a dose of senna, were given, and a warm bath ordered. As on the next day the bowels had not been opened, the calomel and senna were repeated, also the warm bath. Two days after admission the pulse was more feeble and quick. She was quieter, though she had had no sleep, and been very violent in the night. A large-sized evacuation had followed the enema. The choreic movements rather quickly ceased, and she became comatose, and died in the middle of the following night.

Post-mortem examination.—Cranium.—Great congestion of the vessels of the brain existed; there was slight serous effusion at the base of the brain, and the outer parts of the brain were much darker than usual; the bloody puncta in the white parts were much more numerous than natural; ventricles of natural size. No other morbid appearance.

Spinal canal.—Congestion of the posterior vertebral veins existed; and slight effusion of serum in the theca vertebralis; the substance of the spinal cord was congested. No other morbid appearance.

Thorax.—The right side of the heart was gorged with blood, and

[1] We have the history of several cases in our hospital records, in which absence or malformation of a kidney existed.

slight hypertrophy of the left ventricle existed; the lungs were adherent to the chest walls. No valvular disease.

Abdomen.—The small intestines from the jejunum to the ileo-cæcal valve were filled with fæces, very tenacious, and in many parts so adherent to the bowel as only to be removed with much difficulty; the large bowel also was filled with fæcal matter; the lining of the cæcum and ascending colon very congested; the peritoneum everywhere was very congested; the uterus and ovaries were *unusually large,** the former very congested, as also the vagina; the ovaria containing several cysts.

Remarks.—In this case, which followed a very rapid course, there appears to have been no history of fright or of rheumatism; neither were the heart's valves found after death to have been affected. Amongst the noticeable post-mortem appearances are the congestion of the brain and spinal cord; the remarkable loading of the small bowel with fæcal matter, unusually adherent as it was to its walls; also the loading of the large bowel, which was congested; also the congestion of the peritoneum and of the uterine organs (75).

CASE 3.—*Chorea; diseased clavicle; fibrinous deposits on the heart's valves; fæces adherent to the colon.*

Mary K—, æt. 15, was admitted November 6th, 1844. She had enjoyed good health until twelve years of age, when before one of the catamenial periods she was attacked by chorea, commencing gradually and becoming severe, at first affecting one side chiefly, then becoming general. The movements ceased during the night. She was often drowsy, and felt pain across the forehead. The abdominal organs appeared to be natural. She got well in two months by taking tonics, purgatives, and sedatives. About two months afterwards she had a *second* severe attack, preceded by drowsiness, and recovered under the same remedies. The catamenia then appeared, were regular for eight months, and the girl enjoyed good health. Afterwards menstruation became irregular, and finally ceased; and after three months the involuntary movements returned.

She came into hospital with slight chorea, which increased, coming on in paroxysms, leaving great exhaustion. She died, quite worn out, November 24th. Before death she complained of pain like rheumatism about the left wrist and the right side of the chest.

Post-mortem examination.—Cranium.—The brain was wet, otherwise it was natural.

Spinal canal.—The veins of the cord were much congested, otherwise the cord was quite natural.

Thorax.—The clavicle was denuded of periosteum, having an abscess under the pectoral muscles in connection with it; the lungs were condensed posteriorly; *fringes of fibrine-coagulum were found on the auricular side of the mitral valve curtains.*

Abdomen.—Much light-coloured fæces were found adherent to

* Much larger than in those who have borne children.

the inner surface of the colon, otherwise the abdominal contents were natural; the generative organs were vascular.

Remarks.—In this case the recurrence of the malady three times (with distinct intervals) is to be noticed; the two first attacks, at any rate, appearing to have some definitive relation to the uterine functions; also the headache and tendency to drowsiness, and after death the congestion of the spinal cord; also the condition of the heart's valves. The abscess about the clavicle appears to have been unnoticed during life (258).

CASE. 4.—*Chorea; congestion of the brain; fibrinous deposits on the heart's valves.*

Mary H—, æt 26, a married woman with two children, the youngest being æt. 4, was admitted January 8th, 1845. She had complained of pains in the head since her last confinement; shortly afterwards she had twitchings and jactitations of the left side, generally not severe, but sometimes so sudden as "to take her off her legs." The movements were worse when the headache was bad, and also worse when recumbent. She had had rheumatic fever two months previously and recovered, and about ten days afterwards she was suddenly thrown down in the park by sudden jactitations on the right side of her body. These then gradually affected the other side of the body and increased.

Some days before admission she had had no sleep, and had dysphagia. For a long period she had had hæmorrhage for a week at a time every fortnight.

When admitted the face was flushed and hot; jactitations were violent all over the body equally, and she could hardly speak or swallow. She was quite sensible, and complained of pain in the head; the pupils acted readily; the pulse was frequent, but almost imperceptible. The tongue was coated; the bowels open.

Fetid gums were ordered, and ordinary diet and porter given.

On the day following pain in the head was very bad. Calomel and opium were given every four hours, and a turpentine enema administered; the head was shaved and ice applied. The bowels acted twice after the injection. She slept in the night a quarter of an hour, and then the jactitations ceased; they again came on when she awoke. The calomel and opium were repeated.

On the 10th the pulse was 140; she slept in the night, and on the following morning (the 11th) she was noticed to be drowsy. The calomel and opium were omitted; she became exhausted, and the pulse much slower and weak. She sank and died the same day.

Post-mortem examination.— *Cranium.*—The scalp vessels were gorged with blood, as also the meningeal veins. The cerebral membranes were healthy. The grey substance of the brain was dark, and the puncta large and numerous. The pons Varolii and medulla oblongata were very congested. Their substance was firm.

Thorax.—The lungs were congested posteriorly. *Slight fibrinous deposit existed round the mitral orifice of the heart on the auricular surface.*

Abdomen.—The uterus was large and hard, and its cervix could hardly be cut, but no scirrhous deposit was met with. The neck and lips of the uterus were much, but superficially, ulcerated. Extravasated blood existed in the ovaries, in cysts.

The other organs were healthy.

Remarks.—Notice in this case the pains in the head, to which treatment was directed, the existence of dysphagia, and the previous existence of rheumatic fever. After death the congestion of the nervous centres (the spinal cord unfortunately being not examined), the state of the heart's valves, and the condition of the uterine organs are noticeable (10).

CASE 5.—*Chorea; areolar tissue inflammation and erysipelas; abscess of the mediastinum, and empyema.*

Anne M—, æt. 17, was admitted October 15th, 1845. Six or seven months previously she had had a fright, which deprived her of movement or speech for a quarter of an hour, and afterwards she had symptoms of chorea, with twitching of the muscles of the face and upper limbs. Catamenia absent ever since. She had ascarides. There had been no previous attack of chorea.

On admission the face was flushed, the movements very troublesome; the heart's sounds were natural, but its action was quick; breathing natural but hurried.

Iron and purgatives were given, and morphia subsequently to procure sleep.

A swelling existed on one of the wrist-joints from frequent movements, and there was soreness of the back and limbs. The symptoms of chorea were almost instantly relieved by a water-bed following a warm bath, but she complained of a "pricking pain" at the heart, and a loud bruit came on *with both cardiac sounds*—at the apex loudest with the first sound, loudest at the base and downwards towards the aortic valves with the second sound.

Calomel and opium, and afterwards quinia and belladonna, were administered.

October 31st.—It was noted that the chorea had almost ceased, the chest symptoms increasing. Dyspnœa was oppressive; there was short cough, and expectoration; the pulse was irregular and quick; the fingers almost constantly flexed, thumbs drawn into the palms.

November 3rd.—So weak as to require stimulants.

5th.—The heart's bruit had *disappeared,* but the left side of the chest was dull, and not rising on inspiration. She became worse and dyspnœa increased.

7th.—Erysipelas of the ankle set in, and she became weaker until

she died; a slight return of chorea came on two days before death, which occurred November 12th.

Post-mortem examination.—Sloughs on the surface, and erysipelas.

Thorax.—An abscess was found in the anterior mediastinum, and pus in the left pleural sac. The lungs were compressed, and without air. The heart was healthy in all respects.

Cranium.—The brain was natural.

Spinal column.—Much fluid existed in the arachnoïd cavity of the spinal cord; otherwise the cord was natural. A small abscess existed in connection with an intervertebral cartilage just below the diaphragm.

Remarks.—Notice in this case the fright as the assigned cause, and absence of catamenia since the commencement of the attack. The abscess of the mediastinum and the empyema were probably of pyæmic origin, and connected with the bed-sores. Unfortunately, the wrist-joints were not examined after death. The *disappearance* of the cardiac murmurs must not be disregarded (261).

CASE 6.—*Chorea; liability to rheumatic fever; old pericarditis; fibrinous deposit on the heart's valves. Softening of the spinal cord.*

George S—, æt. 19, was admitted June 27th, 1850, unable to stand or walk. It was stated that he returned from work on the 20th complaining of pains in the knees, which had since then swelled. He had had several attacks of rheumatic fever since he was twelve years old. On the 24th involuntary movements of the hands and legs had begun, and had increased ever since. On admission the movements were very decided, but not very frequent or severe, and there was a vacant and painful expression of face. The heart's action was excited and its sounds nowhere very distinct; a well-marked bruit existed at the point where the apex was felt beating. The urine was very loaded, bowels relaxed, tongue whitish. He was ordered half a grain of tartar emetic every four hours, under which the movements became much controlled. He put out his tongue without much difficulty, but the painful, almost sardonic, countenance continued. On the evening of the 30th he became more restless, and at times delirious; he answered questions with more difficulty, and the choreic movements became more frequent. He had to be placed on a water-bed to prevent the evil effects of friction. Calomel and opium were given, but he became worse, and would at times almost jerk himself out of bed. For two days he was passing his evacuations involuntarily. He quickly emaciated, and sank and died July 4th.

Post-mortem examination.—Cranium.—The sinuses of the dura mater and the cerebral and meningeal vessels were full of blood. The brain was tolerably firm throughout, but very congested, the "puncta vasculosa" being very large and many. The ventricles were nearly empty.

Spinal canal.—The spinal veins were very distended with blood. The whole spinal cord was rather softer and more moist than natural, and opposite the third or fourth upper dorsal vertebræ it was completely broken down and almost diffluent.

Thorax.—The pericardium was universally and firmly adherent. The left ventricle of the heart was firmly contracted; its other cavities contained small coagula. *The margin of the left auriculo-ventricular opening was fringed with a row of beads of firm fibrine.* The other valves were healthy. Both lungs were loaded with blood, and their bases contained patches of hæmorrhage.

Abdomen.—The various organs were natural.

Remarks.—Observe the tendency to rheumatic fever, and the existence of the cardiac bruit, also the delirium. Among after-death appearances the softening of the spinal cord, the state of the heart's valves and of the pericardium, and the hæmorrhage into the lung are to be noticed (113).

CASE 7.—*Chorea; apparent softening of portions of the spinal cord.*

Mary W—, æt. 17, was admitted with chorea November 24th, 1855. She was emaciated, and had never menstruated. She had been quite well until five or six days previously, when she experienced slight jerkings of the limbs, which gradually increased in frequency and severity. There was no history of any fright, and she had never had any "fits." Her complexion was flushed. The tongue was moist and fissured. The pulse was full and soft, and the skin warm. At times the jerking was absent for a period of the day, but returned at night. She was perfectly rational. Morphia at night was prescribed, and four grains of sulphate of zinc every six hours, which was subsequently increased. Two days after admission she was talking incoherently and in a hysterical manner, and she refused to take medicines. She became exhausted by the constant jactitations, and chloroform was exhibited, which speedily acted, and for a time quieted her; but the movements again returned, and the chloroform was again required.

At 10 a.m. on the 28th she became stertorous and the breathing hurried; absence of all movements ensued, and she sank and died in two hours.

Post-mortem examination.—Cranium.—The bones were natural, and the brain and its membranes were quite healthy.

Spinal column.—The bones were natural; the central parts of the dorsal and the upper parts of the cervical portions of the cord appeared to be somewhat softer than they ought to be; otherwise nothing of note was found.

Thorax.—The heart and lungs were healthy.

All the other parts of the body were natural.

Remarks.—In this case there is no mention of fright as a supposed cause. The catamenia were defective. The case illustrates

the relationship of the affection to, or its coincidence with, hysteria, and to a certain degree the periodicity which pertains in some instances. The sudden stertor which came on, and after death the softening of the spinal cord, are to be observed; also that the brain was natural (309).

CASE 8.—*Chorea; abscesses beneath the integument.*

Mary A. R—, æt. 7, was admitted with chorea, October 10th, 1860. She was a delicate-looking child, and very irritable, and had always been considered nervous and excitable.

Three weeks before admission she had been pushed into a ditch and greatly frightened. She remained greatly excited, and ten days afterwards she became affected by choreic movements in the limbs of both sides; the speech also became embarrassed. The bowels had been confined. The tongue was furred. The sounds and impulse of the heart were natural. An enema was administered, and antimonial wine with nitrate of potash given in solution, and ordinary diet prescribed.

At the end of about a week nausea and vomiting were produced, and the spasmodic movements were less violent. Sulphate of zinc and valerian were subsequently given, but apparently without advantage; to this sulphate of iron was added. Friction of the hands had been so great that the skin was to a great degree rubbed off, and the hands had to be fastened down. Subsequently the choreic movements were constant and no sleep was procured. Opium and antimony were given every four hours; later on an abscess was formed under the integuments of the chest, near the shoulder. This was opened by means of poultices. Wine and bark were ordered.

At the beginning of November redness of one heel was observed, and an abscess at that place eventually formed. The abscess on the thorax also discharged blood, and she became very low, with sordes on the lips. She sank and died November 6th, the choreic movements having continued to the last.

Post-mortem examination.—Cranium and spinal column.—The brain and its membranes, as also the spinal cord and its coverings, were natural.

Thorax and abdomen.—There was a large cavity over the pectoralis muscle, extending into the axilla from the clavicle to the seventh rib. The lungs were very void of blood. The heart was natural. The abdominal organs were natural.

An abscess also existed over the fibula, near the ankle-joint.

All the tissues of the body were very pale.

Remarks.—In this case a history of fright is given. The abscesses under the integuments are to be noticed. The nervous centres were natural (295).

CASE 9.—*Chorea; death after coma and convulsions, following an attack of scarlet (?) fever; plugging of the carotid artery by fibrine.*

Edith S—, æt. 11, was admitted into the hospital October 23rd,

1861, with slight chorea, affecting chiefly the *left* side (of three weeks' standing), which was said to have followed a quarrel in which she was engaged. Her general health was good; but her father had been subject to epilepsy, and had died of aneurysm. The bowels were much loaded, and she was purged and treated by generous diet and stimulants. After a time fever and sore throat (? scarlet fever) came on, but without any eruption on the surface, and was attended by an albuminous state of the urine. An epileptic attack came on, and death shortly followed (Nov. 29th).

Post-mortem examination.—Cranium.—The brain was anæmic; there was no excess of ventricular fluid. The carotid artery in the cavernous sinus, on the left side, as far as the origin of the ophthalmic artery, was full of firm fibrinous coagulum.

Neck and thorax.—The heart and other organs were natural, except that the trachea was lined by soft, fibrinous exudation, the heart's cavities being full of yellow blood-coagulum; an abscess existed in the neck about the cervical glands.

Abdomen.—The kidneys were large, congested, and dripping with blood.

Remarks.—Whether the plugging of the carotid artery in this case was the result of embolism is uncertain. Possibly some fibrinous deposit may have existed on the heart's valves or lining, and been overlooked; or it may have once existed during life, and been removed before death[1] (288).

CASE 10.—*Chorea following scarlet* (?) *fever; congestion of the brain; fibrinous deposits on the heart's valves; recent pericarditis.*

Ann H—, æt. 9, was admitted March 5th, 1862. She had had chorea two years previously, following a fright, which quite yielded to treatment; and she went on well until November, in 1861, when she had what was called *scarlet* fever, and since then had had pains in the limbs and ankles, which had latterly been worse. Ten days before admission the chorea again came on, preventing sleep for several nights; when admitted the tongue was coated, and the pulse 76; urine turbid and scanty; a loud systolic bruit existed at the apex of the heart; the choreic movements were most severe, and she ground her teeth loudly; if the movements ceased at all she would often scream.

Purgatives, iod. of potass., bark, and morphia at night, were ordered.

No improvement occurred, and on the 7th she passed no urine; on the 8th one sixteenth of a grain of strychnia was given every six hours, and during that and the next day some diminution of convulsions occurred, but bed-sores owing to friction began to form. She became very low, and wine had to be given with quinine, in

[1] This case has been related in connection with the plugging of the carotid vessel in the number of this Review for October, 1865 (see page 499).

addition to morphia at night. The strychnia was omitted. The movements became less as she became weaker, and she died March 14th.

Post-mortem examination.—Thorax.—The lower parts of one lung were hepatized. *The inner surface of the mitral valve flaps was beaded with recent blood-stained fibrine.* Slight indications of recent pericarditis existed.

Abdomen.—The kidneys were vascular; other organs natural.

Cranium.—The vessels on the surface and in the substance of the brain were very full of blood; the brain othewise natural.

Spinal cord.—Flakes of red coagulum were adherent to the side of the spinal dura mater (supposed to be of post-mortem origin), and the neighbouring veins very full of blood. The inside of the dura mater was of a dull red colour, but quite smooth and shining; the pia mater and cord itself were natural.[1] Numbers of small recent blood clots were met with beneath the periosteum covering the central parts of the bodies of all the dorsal vertebræ, and were seen on removing the spinal cord.

Remarks.—Notice the history of a previous attack of chorea from fright, the existence of so-called scarlet fever (? rheumatic), followed by pains in the limbs, preceding this, the second attack. Notice also the cardiac bruit, and after death the condition of the heart's valves, the fulness of the cerebral veins, the blood coagulum adherent to the dura mater and beneath the periosteum of the vertebræ. The spinal cord itself and brain were natural (71).

CASE 11.—*Maniacal chorea; epileptic attacks. Fibrinous deposits on heart's valves.*

Mary A. M—, æt. 20, and a married woman, was admitted June 14th, 1862. She was a barmaid, and had had rheumatic fever in the winter previous, and had been ailing subsequently. She had also had two "fits" since. For five days before admission she had had chorea, and for three days but little sleep. When admitted she was in an excited state, and in something like an hysterical condition, in addition to the chorea. She was treated with zinc and valerian and iron. These movements could for a time be partially controlled by suitable stimulants. On the day following she became decidedly maniacal; but after taking several quarter-grain doses of tartar emetic, from which she vomited, she became quieter. On the next day she was again sensible, but the choreic movements continued. In the evening she had an epileptic attack, and again became violent. She soon sank, and died June 17th.

Post-mortem examination.—Cranium.—The cerebral veins were full of blood, and the grey matter of the brain very dark and containing many puncta.

[1] This case has been related at length in the 'Lancet,' May 17th, 1862; see p. 515.

Spinal column.—The cord was very vascular on its surface and in the substance of its grey matter, but was otherwise natural.

Thorax.—Much recent fibrine existed, fringing the mitral valve flaps of the heart, which were also much thickened. The other organs were natural.

Abdomen.—In the ovaries were several cysts containing blood. The cervix of the uterus was congested, and presented an appearance thought to be from ulceration: Fallopian tubes containing pus-like fluid.

Remarks.—In the life history of this case notice the attacks of an epileptic character which had existed previously, and which recurred shortly before death; also the hysteria-like condition in which at one time she was. As points of pathological anatomy, the congestion of the brain, the congestion of the uterus and cysts of the ovary, as also the state of the heart's valves, are to be regarded (164).

CASE 12.—*Chorea; nervous centres congested, fibrinous deposits on the heart's valves.*

Jane G—, æt. 16, was admitted May 27th, 1864, having been suffering from chorea three weeks, attributed to a fright. The catamenia were absent two months, and during that time she had complained of rheumatic pains and had some redness of the joints. On admission she was very thin, having been but imperfectly fed, owing to the chorea. Articulation was impossible; respiration very rapid, and loud râles existed in the bronchi. Wine and nourishment, and morphia with tartar emetic, were ordered. The muscular movements became more extreme, and she died in the evening of the day of admission.

Post-mortem examination.—Cranium.—The veins on the surface of the brain were full of blood, and the brain-substance very congested.

Spinal cord.—The vessels of the cord and its membranes were very congested. On section the grey matter of the cord was darker than usual, and covered with points of blood.

Thorax.—The right lung was partly hepatized. *Recent fibrinous beads existed on the mitral and aortic valve flaps of the heart, which was otherwise natural.*

Abdomen.—The spleen contained white specks of matter like tubercles; the kidneys were congested.

Remarks.—Notice the fright mentioned as the assignable cause, and after death the congestion of the nervous centres, and the state of the heart's valves (132).

CASE 13.—*Chorea; congestion of nervous centres.*

Mary C—, a well-grown girl, æt. 15, was admitted June 30th, 1863, with violent choreic convulsions, affecting chiefly the upper limbs. These movements could for a time be partially controlled by placing the arms over the chest, and when she was steadfastly gazed at in the eyes. The tongue was much affected, and she could only speak

in a monosyllabic cry, which could not always be understood. The power of swallowing was pretty good. Her expression was anxious, and her eyes often suffused with tears. The pupils were natural; the heart's sounds and movements were natural.

It appeared that, seven months previously, she had lived in a hard place, and was awakened often by shouting into her ears. This had much frightened her, and she left her situation, but had ever since been subject to twitchings of the muscles, and was by others considered "very nervous." The catamenia had appeared seven months back, and only once since, and then only very scantily.

No good arose from the use of sulphate of iron and zinc with sulphuric acid, and she was then ordered half a grain of tartar emetic in a morphia draught every four hours. Sleep came upon her at times, but never lasted long. The urine passed freely. Wine was given and the medicine continued.

On the 3rd a very restless night was reported, and the pulse was 150, and weak.

The movements only ceased a short time before death, July 4th.

Post-mortem examination.—The body and limbs were well nourished and healthy looking; excoriations of the skin over the gluteal regions and ankles existed.

Cranium.—The white substance of the brain contained many puncta, and the large blood-vessels in the ventricles were very distended; the corpora striata and optic thalami were natural.

The pons Varolii was very full of blood, giving a pink colour to the tissue, chiefly the anterior parts. The medulla oblongata was of a pink colour.

The cerebral dura mater was congested.

Spinal cord.—This was very vascular, and particularly the grey matter, and the vessels of the pia mater were large and full of blood.

Thorax.—The heart's cavities were uncontracted; its walls blood-stained, and the contained blood very fluid, otherwise nothing was noticeable in connection with it.

Abdomen.—The os uteri and vagina were bathed with pus, and showed evidences of mechanical irritation, the os uteri being also very open. The uterus and appendages were very full of blood; other organs natural.

Remarks.—Observe in this case the peculiar and exceptional manner in which the chorea movements were under voluntary control, as also that "fright" was the supposed cause of the attack; after death mark the congestion of the nervous centres, and the extreme irritation of the urinary organs (167).

CASE 14.—*Chorea; altered state of the spinal cord; fibrinous deposits on the heart's valves.*

Leopold L—, æt. 11, was admitted July 13th, 1864; he had been

an in-patient with chorea, but was discharged, still suffering to some degree. The symptoms never left him, and in three weeks he returned (the disease having lasted three months, and no cause having been ascertained for it). The whole body, which was well nourished, was affected with the movements. After the use of sulphate of zinc and iron the movements became less marked, the appetite continuing fair. He subsequently relapsed, and strychnia was given (gr. $\frac{1}{16}$th up to $\frac{1}{12}$th) along with iron; still he became worse, began to emaciate, and arsenic was substituted for the other medicine. The surface of the body was frequently torn with the boy's nails, and the tongue often bitten. The lips became very parched and deeply and remarkably cracked and fissured, and the motions passed involuntarily. The severity of the convulsions prevented his being lifted out of bed, and in consequence a "water-bed" was resorted to. There appeared to be also great excitability and passionateness of temper, and to some degree the paroxysms could be controlled by speaking sharply to him. He had at last to be tied down, so great were the struggling and kicking; and the hair of the back of the head became worn off. The mouth and tongue became deeply ulcerated. Belladonna and other remedies were tried in vain. He sank and died from exhaustion, retaining consciousness to the last.

Post-mortem examination.—Cranium and spinal column.—The surface and also the other parts of the brain were generally injected. The ventricles were natural. The veins within the spinal column were very distended with blood, as well those lining the spinal cavity as those of the dura mater and those covering the spinal cord itself. On section the cord did not at first present any unnatural appearance; but on minute examination portions of the grey matter were of a duller and more yellow colour than natural, and this was chiefly so towards the upper part of the cord.

Thorax.—The right pleura contained a few adhesions. The left ventricle of the heart was contracted. *Upon the inner edge of the mitral valve was a line of soft beads of fibrine, easily detached.*

The kidneys were much congested; the other abdominal organs were natural.[1]

Remarks.—The congestion of the brain, the diseased state of the spinal cord, and the condition of the heart's valves are to be noticed in this case (249).

CASE 15.—*Maniacal chorea, pregnancy, intestinal worms, congestion, and softening of nervous centres, fibrinous granulations on heart's valves.*

Harriet S—, æt. 17, a general servant, was admitted under my care, April 24th of the past year (1867), with well-marked but not severe

[1] This case was related by myself in the 'Transactions of the Pathological Society,' vol. xvii, p. 421: and the fissured state of the lips, illustrated by a woodcut.



The accompanying woodcut illustrates the fissured condition of the lips described in the history of the 14th fatal case (*see page* 220), for the use of which I have to thank the Council of the Pathological Society.

Saint Vitus's dance, affecting the whole body, which she had suffered from since about Christmas. The catamenia had been absent three months, but before that had been regular; she had never had rheumatism. She had had measles the previous summer. She was reported also to have vomited worms of the size and shape of earth worms. She was very violent in temper, and whilst in the hospital showed this considerably. The abdomen was very large, and evidently contained a pregnant uterus; this was confirmed by the fulness of the mammæ, and the well-marked dark colour of the areolæ of their nipples, which were found to exist. The face was rather flushed, and the patient was evidently greatly distressed in mind about her pregnancy. The heart's action was quickened and irritable, and a systolic bruit existed. The pulse was regular, but feeble. The urine was free from albumen and sugar. Bowels confined; the pupils were *not* quite of equal size, but acted tolerably well to the light. Calomel and jalap were at once given, and subsequently the mistura ferri co. with valerian thrice daily, and one third of a grain of the extract of cannabis indica ordered every night. In the course of the evening of the 29th it was found requisite to give her morphia, as she had become more violent, and as this increased, in the middle of the night she had a quarter of a grain of acetate of morphia, and one sixtieth of a grain of sulphate of atropine injected subcutaneously. She had to have the jacket applied. The violence of the choreic movements continued unabated, and sordes were formed on the lips and tongue; she also screamed much and was evidently highly delirious. The injection was repeated May 1st, and at 4 p.m. the same day she vomited a lumbricus. She became more furious and maniacal, and more exhausted, and died in the evening, twenty-four hours after the disease had become so much worse.

Post-mortem examination.—The body generally was well nourished, the surface generally congested.

Cranium.—The cranial bones were natural; the cerebral membranes were much congested; the brain itself was "wet," and pitted on the surface; the "puncta vasculosa" being increased, and giving to the brain generally a pink hue. No fluid existed in the ventricles, and, moreover, the central parts of the brain were much softened, and easily broken down by water falling upon it. The veins at the base were much congested.

Spinal column.—The vertebræ were natural. The spinal cord was hardened in chromic acid solution, and subsequently examined *microscopically* by Mr. Lockhart Clarke, who reported upon it as follows:—In the cervical and lumbar portions of the spinal cord no appreciable alteration of structure was discovered; but in the lower part of the dorsal region, at the ninth dorsal nerves, the anterior columns were swollen, and formed a convex protuberance of considerable size. In a transverse section of the cord carried through this part, and examined under the microscope, it was very evident that extensive morbid changes had been going on, the white sub-

stance had been softened, and was now very friable under the action of chromic acid. In two or three places there were circumscribed effusions of blood, surrounded by granular exudations, which had probably occurred before the effusions.

Thorax.—The left lung was very greatly gorged with blood in patches—it however floated in water. No tubercular deposit existed. The bronchial tubes were congested, and contained much mucus; the lower lobe of the *right* lung was in the same state. The left ventricle of the heart was contracted and empty, the right one partially contracted, and containing a decolourised clot. The structure of the heart was firm; the mitral valve-flaps were slightly thickened, and on the auricular surface of the orifice some *beads of soft fibrinous deposits of recent origin and easily removeable existed;* the other valves were natural.

Abdomen.—The liver was congested; a small fibrinous deposit existed in its right lobe, which was slightly fatty; the spleen was soft. Both kidneys were coarse, and congested, and mottled. The intestines were natural with exception of containing one ascaris lumbricoïdes in the duodenum. The uterus contained a fœtus of about four months' period.

Remarks.—In this case we have the very unusual conjunction of four conditions which are separately apt to be looked upon as having a close connection with chorea, viz., the presence of intestinal worms, the pregnant condition, the anxious state of mind consequent on the concealed pregnancy, and fourthly, the heart-affection. The case passed through a very rapid course, and its complication with mania is worthy of note. The absence of rheumatic history is to be regarded. Amongst the pathological conditions ascertained after death the congestion of the nervous centres and the condition of the heart's valves are particularly noticeable (118).

CASE 16.—*Chorea; sudden congestion of the lungs; effusion into the pericardium; fibrinous granulations on the heart's valves.*

Mary A. G—, æt. 12, was admitted under my care, October 3rd of the past year (1867), with slight chorea of about six weeks' duration. She was pale and anæmic, but it was affirmed that she had never been laid up with rheumatism. A very decided rather loud and rough cardiac bruit existed, attending both the systole and diastole, and heard both at the base and apex; not particularly conducted along the large vessels.

Auscultation showed nothing unnatural about the lungs.

She was at first treated by steel in various forms, and frequently purged, and santonine was twice given in hopes of evacuating any lumbrici. She was going on much the same, when dyspnœa came on suddenly December 3rd, and the right lung became full of moist sounds. She was confined to bed, and small doses of morphia and antimony were given every four hours. On the day afterwards she

had greatly improved, and was in all respects much better. The antimony was continued.

She went on improving until the 20th, when vomiting came on, and the dyspnœa and the heart's action and the pulse were greatly increased, the cardiac bruit being much intensified. Congestion of the lungs set in, and she suddenly died early on the 26th.

Post-mortem examination.—Cranium.—The bones were natural. The cerebral membranes were natural, but the brain itself was "wet" and anæmic; otherwise it was natural. The large vessels at its base contained much dark, only very slightly decolourised and well-adherent blood-clot.

Spinal column.—The vertebræ were natural. The spinal cord was placed in a solutiou of chromic acid for future examination. I have later on to give the results.

Thorax.—The lungs were very loaded with serum and somewhat solidified. *The pericardium was quite full of clear serum.* The left ventricle of the heart was contracted and empty, the right one dilated and full. Around the margin of the mitral valve orifice on the auricular surface a *number of beads of soft recent fibrine were found adherent, forming a distinct ring round the edge of the orifice.* A similar ring of fibrinous beads was met with around the *right auriculo-ventricular aperture.* Similar deposits were also found on the *surface of the endocardium* in several parts. The structure of the heart was natural.

Abdomen.—The liver was fatty and nutmeggy, and greatly congested; the spleen was natural; the kidneys congested.

Remarks.—In this case observe the absence of rheumatic history, the condition of the heart as ascertained during life and after death, the suddenness of attack of lung symptoms, the unexpected death. It is noticeable that the brain showed no signs of congestion (305).

Reviewing the above sixteen cases, I will now proceed to indicate certain points, suggested by their consideration, connected with that form of chorea[1] of which they are illustrations.

First of all as regards the SEX of these cases. It is generally acknowledged that chorea much more affects the female than the male sex.[2] This will be amply exemplified by the details of the cases of non-fatal chorea contained in the tables given later on; but among the above-detailed fatal cases this preponderance in favour of the female sex is remarkable, inasmuch as, out of the sixteen cases, we have no less than fourteen that were females. It is interesting to find that the late Dr. Bright observed that the *acute* form more affected females than males. Trousseau observes that the *rare* instances of chorea affecting persons after the age of puberty have almost exclusively occurred in women.

[1] I shall have the opportunity of describing one or two cases later on of other forms of chorea (not the St. Weit's dance proper) which have come under my notice.

[2] In Dr. Bright's experience males were more affected by chronic chorea than e males.

As to AGE, these fatal cases occurred in individuals presenting, on an average, a greater advance of life than is generally given for all cases (including fatal and non-fatal) of this variety of chorea, as we shall see in connection with the table of my out-patient choreic cases; for out of the sixteen fatal ones only two were under the age of ten (viz., Cases 8 and 10, which were respectively 7 and 10 years of age), whilst three were of the age of 20 and upwards (viz., Cases 1, 4, and 11), the rest being intermediate—two being aged 11, one aged 12, two aged 15, one aged 16, three aged 17, and one aged 19. The extent to which age, sex, and other so-termed predisposing causes may favour attacks of chorea, will be more fully alluded to when my non-fatal cases of chorea shall have been given in an ensuing Number.

As regards the LENGTH OF TIME during which the patients had suffered from the affection before it proved fatal, it will be found that of those whose history contains information on this point, this period was, on the whole, a short one; for though in the case of one (viz., No. 13) it was possibly seven months, in another (No. 5) six or seven months, in two others (No. 14 and 15) three months, in another (No. 8) six weeks, in another (No. 16) nine weeks, in two others (Nos. 10 and 12) three weeks, in No. 2 two weeks; yet in No. 6 it was only ten days, in Nos. 7 and 10 only ten days, and in No. 11 only eight days.

As regards the fact of the patients having suffered from PREVIOUS ATTACKS of chorea or not, in only three cases have we mention of this—viz., in Case 3, in which two previous attacks occurred; in Case 10, in which one previous attack had existed; and in Case 14, wherein a relapse was suffered while the patient was in the hospital. Speaking of this well-known tendency to relapse, Romberg quotes a case in which a girl aged 9 had nine relapses, with intervals of about one year.

The details of my cases are not sufficiently explicit to show which parts of the body were, in various instances, chiefly affected.

Respecting so-called important COMPLICATIONS of the affection, it will be seen that in Cases 3 and 4 headache and drowsiness had been suffered. (Of course, I exclude in such complications the headache, &c., which might attend the effects of opiates and other remedies, and which might also result from exhaustion, pain, want of sleep, &c.) In one case (No. 11) epileptic attacks had existed; in one case (No. 9) chorea and convulsions followed an attack of scarlet fever; in two cases (7 and 11) hysteria-like symptoms; and in Case 6 delirium existed. In this latter case, also, the sphincters were mentioned as having been affected.[1] In Cases 11 and 15 (one a married woman, aged 20; the other aged 15) mania existed. It

[1] Jules Simon observes that in chorea the sphincters may be also affected, or rather that the fæcal matter is propelled by the contractions of the abdominal and visceral muscles. This would appear to be so at any rate in those cases in which there is inability to retain the urine, a somewhat rare occurrence.

may here be worthy of mention that authors speak of a connection between chorea and other so-called neuroses. For example, Dr. Theophilus Thompson, in his article on this disease in 'Tweedies' Library of Medicine,' alludes to chorea as being, at puberty, superseded by hysteria, and this by neuralgia, seeming to depend on a similar condition of the nervous system; he also refers to chorea as inducing fatuity, epilepsy, or hemiplegia. Dr. Bright thought an analogy could be traced between chorea and other diseases of the nervous system, marked by general irritability, and remarks, "Thus, I am induced to point out a connection in this respect between chorea, hysteria, and the delirium of drunkards." Again—"In chorea that part of the nervous system which ministers to voluntary motion is chiefly affected; whilst in hysteria the nerves on which organic life and involuntary matters depend are principally irritated; and in the delirium which takes place in drunkards those portions of the brain which are particularly associated with the manifestations of thought and reason are labouring under disease." Thompson speaks of "choreic movements being mistaken for drunkenness." It is interesting to find that Youatt speaks of chorea in the dog as terminating in epilepsy, or palsy, or paralysis-agitans. Todd closely associated chorea with certain epileptic phenomena, for he was of opinion that the actual state of the nerves and nervous centres, upon which choreic hemiplegia depends, was very analogous to that which exists in the so-termed epileptic hemiplegia.

As regards the SECONDARY AFFECTIONS which supervened in the fatal cases, we have two cases (viz., 5 and 8) in which so-termed phlegmonous or erysipelatous inflammation existed. In one of these there was empyema also.

With reference to the oft-mooted question as to what links may be supposed to exist in the chain of causation of that perversion or disorder of the muscles secondarily and of the nerves primarily,[1] which results in the condition termed chorea, it may be worth while to consider how much light and instruction these fatal cases tend to afford. The histories of many show that some disturbance of the generative system existed, for in five cases (Nos. 3, 5, 7, 12, and 13) the catamenia were defective, and in two cases (1 and 15) pregnancy existed.[2] Now, it is well known that irritation of the genito-urinary system has been often looked upon as an exciting cause of the malady. Out of the six cases which Dr. Bright had known to end unfavorably, in one "the most unequivocal evidence of extreme uterine irritation was found after death;" in a second one (at the

[1] Not of the MOTOR nerves alone, of course, as it is well known that the sensory nerves are oft-times also affected, as proved by the anæsthesia and sometimes hyperæsthesia which exists.

[2] Later on I shall be able to quote one or two cases of non-fatal chorea, in which pregnancy existed, one being that of a woman lately under Dr. Page's care at the hospital.

Manchester Infirmary) the patient was four months advanced in pregnancy; and in two others the patients were of an age "when uterine irritation is most likely to exist." Bright assumed that it was probable that the uterus was in many cases "the source of that general irritation which so strongly marks chorea, inasmuch as many cases were connected with irregularities in the menstrual discharge, or with amennorhœa."

Romberg says that "the occurrence of chorea before the first supervention of the catamenia, or during amenorrhœa, or even during pregnancy, proves that the uterine system may be the source of the irritation;" and quotes three cases of the kind which came under his own notice, in all of which pregnancy existed. In one case the woman became pregnant a second time, and again had chorea. He observes that "the chorea generally commences at about the third or fourth month of pregnancy; it rarely occurs earlier, and then less frequently during the latter months." He quotes cases bearing on the question from Dr. Lever's paper "On Disorder of the Nervous System associated with Pregnancy and Parturition."[1] He remarks that it is quite exceptional to find chorea occurring after delivery, whether at the full period or premature. I find, however, a case recorded by Spiegelberg in which chorea came on in the latter half of pregnancy.[2] Dr. Levick, of America, in 1862, recorded three cases of chorea associated with pregnancy, and described uterine irritation as one of the causes of the disease. Quite recently Gubler and Dumont have recorded a very severe case of chorea in a woman five months pregnant, who was cured in eight days by large doses of bromide of potassium.[3]

Trousseau, speaking of pregnancy in connection with chorea, states that the disease is owing merely to the chlorosis which so frequently attends pregnancy.

Again, as regards MENTAL EMOTION OR ALARM being influential in exciting or determining the choreic state, it will be seen that out of the sixteen cases there are eight in which fright or other emotion was supposed to have contributed to its production (viz. Cases 1, 5, 8, 9, 10, 12, 13, and 15); in others, it was either denied or not ascertained to have occurred. Some observers are inclined to protest against the idea that fright is nearly so adequate a cause of the affection as is generally imagined, but there can be no doubt of this being frequently the case, and almost every author who writes on the subject supports the supposition by authentic cases. One of the most positive and remarkable cases of this kind is quoted by Dr. Bright. It was that of a child, aged 9, who, having got well of an attack of chorea, was sleeping with his father. The father had an attack of apoplexy, which so frightened the child that "FROM

[1] 'Guy's Hospital Reports,' second series, vol. v and vol. vi.
[2] Quoted in the 'Sydenham Society's Year-Book,' 1859, p. 389.
[3] See 'Bulletin de Thérap.,' 1865-8, p. 178.

THAT TIME the chorea returned." Mayo, in his 'Outlines of Human Physiology,' p. 170, relates the case of a woman who, during pregnancy, was greatly frightened; the alarm induced chorea in the fœtus. The child grew up, but always remained choreic.

As respects the history of RHEUMATISM or rheumatic symptoms having existed, we have mention of it doubtfully in Cases 3 and 10, but decidedly in Cases 4, 6, 11, and 12; in the last instance, the rheumatic symptoms came on during the absence of the catamenia.[1] Presumably also, in Cases 1, 9, 14, and 15, rheumatism may have existed, as after death it was found (to be noticed hereafter) that cardiac affection existed. In Case 16 particular inquiry was made, and a complete denial of any previous rheumatism given, although the heart was obviously recognised as being diseased during life, and found to be so after death. At the present day we in England almost unanimously connect chorea and rheumatism together (whatever may be the mode of connection); this, no doubt, is mainly owing to the researches of Bright and Todd, following those of Bouillaud; still, there are those who have only found them to be at times coincident. I shall speak of this again when reviewing my series of non-fatal cases. In the mean time I may state that Romberg, a high authority on all nervous diseases, says that the rheumatic disposition was rarely traceable in the cases which he has observed. He, however, noted cases of chorea as being greatly affected by climate and weather, being always worse in winter; and mentions that the disease occurs more frequently in the southern than the northern climates. Peacock found that in 14 cases of chorea rheumatic or cardiac symptoms had existed in 5, but states that this proportion is probably too large. Trousseau says, that of all predisposing pathological states, rheumatism is the most marked and the least questionable: and one of the most recent French writers looks upon chorea as a manifestation in the rheumatic diathesis.

As regards the PATHOLOGICAL ANATOMY presented by the various fatal cases, we find that congestion (more or less complete) of the nervous centres (brain or spinal cord, or both), was met with in six cases (viz. 3, 4, 10, 12, 14, and 15), whilst in Case 7 there was actual softening of the spinal cord, and in Case 14 the spinal cord was otherwise affected. In Case 15 there was softening of certain parts of the brain.[2]

[1] It is interesting to find that Dr. Todd established a connection betwen rheumatic fever and deranged *uterine* secretion. He stated that some of the most severe cases of rheumatic fever he had ever seen followed dysmenorrhœa. He observes, "It would seem as if, in these cases, the uterus were but imperfectly evacuated, and its contents becoming decomposed and getting into the circulation, produced a morbid state of the blood, which gives rise to the symptoms under which the patient labours, and requires for its cure the elimination of the unhealthy material by the various emunctories—a state similar and analogous to pyæmia."

[2] With reference to such lesions in connection with chorea and chorea-like symptoms, it will be not uninteresting briefly to quote such cases as have been pre-

In Cases 2, 3, 4, 10, and 13, there were proofs of congestion and other graver lesions of the genital system; in Cases 1 and 16 (as before noticed) pregnancy existed. In Case 2 the peritoneum was greatly congested, and in Cases 2 and 3 the condition of the intestines was remarkable, inasmuch as they contained fæcal matter which was in a peculiar and exceptional manner adherent to the walls of the bowel.

Coming now to the state of the HEART, it was found that out of these sixteen cases IN NO LESS THAN TEN CASES there existed more or less fibrinous deposit or granulations upon some portion of the heart's valves or lining membrane, viz. in all Cases excepting 2, 5, 7, 8, and 13; in Case 6 old pericarditis existed, and in Case 10 we have decided evidence of recent pericarditis having existed, although in this case we have no mention of a cardiac 'to-and-fro' murmur having been ob-

sented to our London Pathological Society. Thus, at page 16 of vol. v is a case of chorea following a fit, related by Dr. Halé, in which chronic disease of the cerebral dura mater was found. In a second case, which came on immediately after a fright, related by Dr. Goodfellow (see vol. xiii, p. 19), extensive softening of the brain and spinal cord was met with. In a third case, related by Dr. Broadbent, at p. 246 of the same volume, a tumour was found arising from the centre of the spinal cord. Romberg quotes seven fatal cases in which similar organic lesions were met with after death. They are as follows:—Case 1 was quoted from Dr. Hughes' digest of 100 cases of chorea (see 'Guy's Hospital Reports,' 1846). Here the fornix and the surface of the third cerebral ventricle were softened. An OPAQUE GRANULAR DEPOSIT also existed on one of the SEMILUNAR VALVES of the heart. Case 2 was that of Dr. Bright's, already quoted. Case 3 was related by Frerichs. In this case the choreic movements existed DURING SLEEP.[1] After death the medulla oblongata was found pressed upon by an enlarged odontoïd process. Case 4 was from Cruveilhier, and was combined with paralysis. Softening of the occipital cerebral convolutions and atrophy and degeneration of the spinal cord were found. The remaining cases were from Romberg's own practice. In one case, aged 76, chorea had existed since she was six years old. Softening of the crura-cerebri and atrophy of the brain were met with. In Case 6 the central parts of the brain and corpora quadrigemina, and in Case 7 softening of the spinal cord, were found. Dr. Peacock (see number of this Review for Oct., 1863) records the fatal case of a boy, aged 11, who died in a comotose state six days after admission into the hospital with chorea, which had been observed one month. After death the arachnoïd membrane, on the surface of the hemispheres, was found opaque, and much serum existed beneath it and in the ventricles. The spinal cord was not examined. The pericardium and heart were healthy, except that two of the aortic valve folds were congenitally united. Recently Mr. Hine has recorded, in the 'Medical Times and Gazette,' August 5, 1865, the case of a pregnant woman who had chorea, apparently caused by emotion, in whom softening of the spinal cord was found. Dr. Aitken, in a case of chorea, found ('Glasgow Med. Journal,' vol. i.) that the sp. gr. of the corpus striatum and optic thalamus was decidedly greater on one side than on the other. Dr. Chambers, in his 'Lectures,' pp. 361 and 369, mentions that in three fatal cases of chorea he found after death that the nervous system was perfectly healthy. In a fourth fatal case tubercles were found in the spinal cord. Skoda, speaking of softening of the septum lucidum and fornix, sometimes found in fatal cases of chorea, suggests that an EXUDATION in the spinal cord or in the brain is the immediate cause of the disease ('Canstatt's Jahrb.,' vol. iii, p. 57). I propose to examine the records of all fatal choreic cases which I can find, to ascertain in what proportion organic lesions exist.

[1] Marshall Hall observed that sometimes the movements continued during sleep if dreaming existed; and Youatt noticed that in the dog if the sleep was disturbed choreic movements might continue.

served during life.[1] It is noticeable that in several of these cases in which after death fibrinous deposit on the heart's valves existed, we have no record of the occurrence of any valvular murmur whatever during life. It is worthy of comment that in several of those cases in which, after death, fibrinous deposits on the heart's valves, &c., were discovered, we have no record of the existence of any valvular murmurs whatever before death; indeed, only in Cases 9, 15, and 16, does such a record exist. In Case 5 we have a distinct notice of a double valvular bruit at the base of the heart having existed and having subsequently disappeared;[2] in this case we have no mention of any fibrinous deposit on, or other affection of, the heart's valves. In Case 16 the pericardium was found to be distended with serum, and possibly this caused the patient's death. This sequel in cases of chorea is, of course, of uncommon occurrence. It is, however, mentioned by Dr. T. Thompson, in his article above quoted, that in chorea serous effusions into the arachnoïd cavity and into the PERICARDIUM may come on.

Concerning the presence of the fibrinous granulations or fringes so often met with in the heart's valves in these cases, the readers of the case of maniacal chorea described by Dr. Tuckwell in this Review (to which I have alluded at page 208) will remember that that gentleman drew marked and renewed attention to the probable existence of this phenomenon in the majority of cases of fatal chorea; also to the fact that softening of the brain or spinal cord frequently was found in such cases, and will remember that he supposed that the softening of the nerve centres often resulted from the plugging up of the cerebral and spinal arteries, and accounted—as would irritation of the same parts from a similar cause—for the chorea. Dr. Kirkes had, in 1863, pointed out that when chorea and acute rheumatism are associated the connection really was between chorea and valvular disease of the heart; and Dr. Tuckwell shows that Dr. Kirkes had been the first to indicate that chorea "was the result of irritation produced in the nerve centres by fine molecular particles of fibrine which are set free from an inflamed endocardium, and washed by the blood-current into the capillaries of those centres." Dr. Kirkes, with

[1] I lately had a most interesting instance of the rapid way in which pericardial friction sounds may come on. The patient was brought into the hospital for rheumatic fever, and was examined very closely. The heart's action was increased, but, though carefully listened for, no bruit, exo- or endo-cardial, could be detected. In two hours afterwards a positive and distinct friction sound was heard all over the base of the heart. That this suddenly occurring pericarditis may be swiftly fatal also is shown by a case of chorea, related by Dr. T. K. Chambers in his 'Lectures,' p. 173, in which loud friction sound came on in the course of the day, and the patient died of pericarditis in the evening.

[2] Such disappearance of cardial murmurs in chorea might take place if the bruit was resulting from that condition called anæmic, or from some irregularity (of choreic origin) of muscular or tendinous fibres controlling the movements of the heart's valves or the exit of the apertures of valves, or even, in some cases, where owing to recent fibrinous deposits connected with them, such bodies being liable to be washed off by the blood stream.

other observers, had noticed the occurrence of softening of the nerve centres in this affection, but erroneously thought that all such were cases of pale or white softening, and did not attribute it to embolism of large vessels, as does Tuckwell, but rather to "the imperfect nutrition of the nervous centres, or the unhealthy state of blood which affords the development of the chorea."

It will be seen, on reading Dr. Kirkes' paper, that he does not, in forming this view, repudiate the influence assigned to supposed exciting or outward causes; for he remarks that, owing to this assumed defective nutrition of nerve centres, they become unnaturally capable of being affected and excited by what would, in a state of health, prove to be but ordinary impressions; and with this tendency they are liable additionally to be affected by blood rendered irritating by rheumatic affections or by disease of the heart's valves. With the above views of Kirkes and Tuckwell in mind, the large proportion of cases which I have recorded, in which the heart's valves are affected, will prove, I think, of considerable interest. Still, for my own part, I am not at present prepared to give adhesion to a necessary connection between even the grave and fatal cases of chorea and embolism, whether the embolism consist in plugging up of large, tangible vessels, or in the circulation of minute atoms of fibrine within the minute capillaries of the nervous structures giving rise to "IRRITATION;" although, on the whole, I incline to think the latter supposition is, perhaps, the more tenable.

I venture to throw out some considerations, as a contribution to the question, to which I have been led by thinking over the subject.

In the first place, either view necessitates the division of all true choreic cases, not merely into those that are and those that are not fatal, but into those that depend upon embolism and those which do not; although in each kind of case the phenomena be not only so alike, but so identical, that until death it would be impossible to predicate of any one instance to which category it pertained.

Dr. Todd had suggested that the choreic cases of adult life, and more advanced ages, might not be due to the same morbid condition "as that which gives rise to the ordinary choreic convulsions of early life." Dr. Tuckwell suggests that, possibly, the causation of the chorea in fatal cases may be different from that of the non-fatal ones; that, in fact, there may be a centric and an excentric chorea; but I think he seems inclined to suppose, though he leaves it an open question,[1] that in all kinds of chorea we have the de-

[1] He says, "We have not as yet sufficient evidence to justify the conclusion that embolism is a direct cause of severe chorea, but we have enough to warrant the strong suspicion that such may be the case, and to fix the attention of medical men on the heart and blood-vessels in the future examination of all fatal cases." Dr. Tuckwell will, I hope, excuse my quoting from a letter which he wrote to me some months ago on the subject. He observed:

"I was glad to find in the post-mortem you made in your fatal case of chorea [the case referred to at foot-note of page 220] that the mitral valve was studded with beads of soft fibrine. I have a notion that, if the valves of the heart are

position of fibrine on the heart and valves, which, being removed and transported, produces the cerebral or spinal embolism which is the cause of the affection. Certainly, as both he and Kirkes suggested,[1] inquiry led to the finding of this deposit in a very large per-centage of fatal cases, and very careful inquiry, instituted WITH THE OBJECT OF FINDING SUCH, may lead to their discovery in a still larger proportion. Still, even if they were met with in ALL cases, something more, I would with deference submit, would be required to warrant the inference being inevitable that the essential cause of chorea was embolism; and for the following reasons:— Supposing that chorea were owing to the presence of MOLECULAR fibrinous material in the blood, circulating in all directions and parts, as fibrine would do in this form of mechanical subdivision, I would ask how we could find an explanation of the fact that chorea (under conditions operating so generally) is so frequently unsymmetrical and one-sided as it is, or even confined, it may be, to certain muscles or series of muscles. Should we not of necessity get other and graver motor symptoms than merely defective harmony of associated movements? I suppose that the "ONE-SIDED" or mere local effect from such a MECHANICAL cause would be considered as being not at all analogous to those similarly partial effects produced by certain chemical alterations of the blood (such as we have often in cases of uræmia, in rheumatic, neuralgic, miasmatic, and other blood-poisons strictly so called), in which the supposed materies morbi has what may be termed an affinity for certain parts or tissues, or in which, so to say, such tissues appear to ATTRACT the baneful elements.

Again, when by experiment fibrine, in a minutely divided state, or any other finely powdered substance, is made to circulate in the blood-current, do we meet with results at all comparable with the symptoms

carefully examined in all fatal cases of chorea, similar, though sometimes very delicate, beads will be found. If you should open a body in which this appearance is not present, will you kindly tell me? I am sure that the appearance is sometimes overlooked in these cases in the eagerness of the pathologist to find something in the spinal cord. I think I told you of a case I saw in the Hôtel Dieu, where the heart was opened as usual, and put aside as *healthy;* and when the spinal cord was sent to Robin for examination to supply Trousseau with material for a clinical lecture, a German student, who was present and poking about among the *débris* as only Germans who wear spectacles can poke, routed out the heart, and found that, when examined minutely, the mitral valve was fringed on both flaps with very fine and delicate beads of fibrine. This was shown to Trousseau, but he took no notice of it, dilating on a supposed enlargement of the capillaries of the spinal cord which had been found. Again, a woman in the fourth month of pregnancy died with bad chorea in the Vienna Hospital, and was brought down to Rokitansky. His assistant, who made the post-mortem, dilated on the pregnancy as the cause of chorea, and took no notice of the condition of the cusps of the aortic valve, which were *covered with abundant, very delicate, beads of fibrine.*" These are obviously the two cases which he quotes in his paper to which I allude.

[1] Kirkes had prophesied, as quoted by Tuckwell, "that future experience will still more positively demonstrate that an affection of the left valves of the heart, with the presence of granular vegetations upon them, is an almost an invariable attendant upon chorea, *under whatever circumstances the chorea may be developed.*" The italics are my own.

of chorea? If, also, the chorea were the result of cerebral or spinal capillary embolism, surely we ought always, in fatal cases, even when such ulterior stages as suppuration and abscess are not arrived at, to encounter lesions (stasis, congestion, or other appearances met with in that condition which goes by the name of *secondary* deposit, the result of mechanical impediment) which, if they existed in such delicate tissues as those of brain or medulla, would be at once apparent. Then, if they existed at all, they would most likely, according to some, be in the neighbourhood of those parts which Dr. Todd pointed out as probably constituting the centre of volition and the centre of emotion. Where we have reason in other cases to suspect capillary embolism, have we not rather the symptoms, and also the post-mortem appearances, of pyæmia or of gangrene? I cannot call to mind a single instance of acknowledged capillary embolism attended by phenomena which could even suggest chorea. Then, again, supposing chorea to be caused by plugging of the larger cerebral or spinal vessels, how rarely in those cases in which such a state is determined to have existed, producing softening, did chorea-like symptoms arise; and how rarely have such symptoms been mentioned in cases of softening of nervous structures of any description or arising from any cause[1] (though, of course, convulsive action may have existed). How rarely, again, do choreic symptoms accompany rheumatism, a condition in which fibrinous deposits on the heart's valves so often exist. Moreover, under such a supposition as the above, how should we be able to account for that sudden occurrence of the disease as a result of mental emotion, which undoubtedly often exists, or, what is perhaps more to the purpose, for its frequently sudden disappearance or cessation,[2] or for the good effects at times found to attend the use of certain remedial measures? Will it ever happen that watching the effects of remedies of whose action physiologically we know something will give a clue as to the part of the cerebro-spinal axis affected in chorea, if, indeed, any one part is specially concerned in chorea? The chorea ought (under the above supposition), taking an average of cases, to be found mainly affecting one side in correspondence with the frequency with which embolism occurs on one side. Perhaps investigation may prove this to be so.

Again, it might be asked, if there was merely a mechanical cause

[1] Dr. Tuckwell quotes from Dr. Todd to show that cases of softening of the brain are sometimes attended by movements so choreic as to be mistaken for real chorea.

[2] Many cases might be quoted illustrating the rapid removal of the affection. A remarkable instance is mentioned by Skoda of severe and general chorea being cured in *five* days by tartar emetic and cold douches to the head. Dr. Guy, of King's College, observes:—"One of the worst cases of chorea which I have seen, and which combined constant restlessness and grotesque action of the muscles with mental incoherence, was cured within *ten* days by aperient medicines only." A very severe case of a form of chorea, of which I have notes—that of a young man in Derbyshire—took its leave during the time the patient was being carried to the infirmary.

(which, of course, would be constant in operation), such as embolism, why should the movements be so decidedly and universally interrupted during quiet sleep? Or why should certain peculiarities as to age or sex be considered as predisposing influences? Recognising the frequent existence of these fibrinous deposits or granulations on the heart's valves in chorea, I should be much inclined to look upon these post-mortem appearances rather as results of some antecedent general condition of the blood, common also to the choreic condition. It is very freely recognised that this affection is frequently, in some way or other, connected with that condition of blood which obtains in what we call anæmia,[1] or that existing in rheumatic constitutions. In both of these states, we know that the fibrine of the blood is much in excess[2] (as also it is in pregnancy, another condition looked upon as obnoxious to chorea), and in these states we know that the fibrine (with which the blood is surcharged) is very prone to be readily precipitated, either owing to its superabundance or from other obscure and acquired properties (possibly also from some interference with the relation of the fibrine and the other constituents of the blood) upon the heart's walls or valves.[3] May not this hyperinosis be the explanation of the coincidence alluded to? In most cases the deposit is probably very slight, and in many cases so slight as to require search for it. May it not infrequently be that it is often only formed in quite the dying state? Speculation might suggest that the fibrinous deposits arise from some interference with the degree of solubility of the fibrine, induced by the presence of some unwonted elements within the blood (some result of tissue metamorphosis), produced by the excessive muscular action and other functional disturbance which exists in the choreic state, thus being not in any way related to this state as a cause, but as a consequence,

POSTCRIPT.—For the following notes of a highly interesting case of chorea, successfully treated by the oil of male fern, I am indebted to my friend, Dr. Giles, of Deptford. It illustrates well quick recovery under the use of remedies.

"*Case of acute chorea, caused by the presence of a tapeworm, and successfully treated by the oil of male fern.*

"I was requested to see the following patient by one of the surgeons of the Pimlico Dispensary, during his absence in the country. He described it to me as a complication of rheumatism, chorea, and worms, and said that the only remedy that seemed to do any good was atropine, which he had given in gradually increasing doses. She had been under his care for about a month.

[1] Some authorities look upon rheumatism as causing anæmia.

[2] Andral, giving 3 as the average relative proportion of fibrine to 1000 parts of healthy blood, states that the variation in disease ranges from 1 up to 10½ per 1000. In cases of anæmia he gives the proportion of fibrine as 3·5, and in rheumatism as 10 per 1000.

[3] I do not speak of the condition of the heart's valves alluded to as being the result of endocarditis.

"Ellen L—, æt. 9, residing in Pimlico, was first seen by me on 29th September, 1863. She was evidently suffering from acute chorea; had had no sleep for four days and nights; there was constant irregular spasmodic action of the whole body and face; she was never still for a moment (continually working). A bed-sore had formed over the sacrum the size of the palm of the hands, and the elbows were much chafed. She from time to time uttered a feeble whine, and wore a pitiable look of distress; her consciousness was perfect. The tongue was dry and brown, and sordes had accumulated on the lips. The pulse was exceedingly rapid and feeble. The pupils were moderately dilated. She had taken no nourishment, except a little wine and beef-tea, for some days. She seemed rapidly sinking. The mother told me she had been in the habit of passing portions of tapeworm for the last three months, and that large pieces had come away while under treatment; she had never seen the head. I saw by the patient's letter that scammony and calomel had been the medicine used. Thinking all these nervous symptoms might proceed from the intestinal irritation, I resolved to try a full dose of male fern. The mother was at first unwilling to have any change made in the medicine (morphia) which had last been prescribed, thinking the case hopeless, but at length yielded. I prescribed Ol. Filicis Maris ʒj, ex Mistura Acaciæ ʒiss, to be taken immediately, and to be followed in six hours by Ol. Ricini ʒss.

"On visiting her the following morning, I found the child asleep, quite free from any convulsive movement. The mother told me the draught had acted freely four hours after taking, that the child turned very pale and faint, and she thought she was dying. She however gave her some wine, which revived her, and in the course of a few minutes she was fast asleep and quite quiet, with the exception of occasional twitching. She slept for two hours; on waking she took some beef tea, and then slept again. When she awoke the convulsive movements commenced again, though in a greatly mitigated degree. About seven yards of tapeworm were collected, and the head with the four suctorial discs found. The castor oil had not been given.

"The subsequent history is simple. She continued to improve daily, the mouth and lips cleaning. The bed-sore gradually healed under the use of nitric acid lotion. In a few days all convulsive movements had ceased, and in ten days she was able to leave her bed. The medicine prescribed was bark and ammonia, generous diet, and a little wine at first. On the 16th of September I took my leave of her, she having been able on the previous day to leave the house. During her convalescence I examined her heart several times, and always found a distinct mitral murmur.

"I have lately seen her mother, and she tells me her daughter has enjoyed good health ever since, and has seen no more tapeworms."

(*To be continued.*)

PART FOURTH.

Chronicle of Medical Science.

(CHIEFLY FOREIGN AND CONTEMPORARY.)

CHRONICLE OF PHYSIOLOGY.

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BLOOD CIRCULATION.

1. *Del Globulimetro, nuovo strumento per determinare rapidamente la quantita dei globetti rossi del sangue.* P. MANTEGGAZZA (Milano, 1865, 8vo, 2 pl.)
2. *Researches into the nature of Hæmatoidin.* F. HOLM. ('Moleschott's Untersuchungen,' Band x, 1867, p. 447.)
3. *On the Movement of the Blood in the Veins.* H. JACOBSON. ('Reichert's Archiv,' 1867, p. 224.)

MANTEGAZZA suggests a new kind of instrument to determine quickly, with some approach to accuracy, the proportion of corpuscles in a given specimen of blood. Ordinary human blood has remarkable absorptive powers for light, and a very thin layer of it accordingly, when held against the light, appears opaque. M. Mantegazza's instrument consists of a small glass cell, the sides of which are separated from one another to such a distance that when the blood, diluted with a certain proportion of a solution of carbonate of soda, is introduced into it, the flame of a candle placed behind it is just rendered invisible. This is the 0 point, and corresponds to the number 5,625,000 corpuscles in one cubic millimètre,[1] which is the highest proportion of corpuscles yet met with in plethora. Now, it is obvious that the fewer the corpuscles the more transparent will the blood become; and the diminution in the number of the corpuscles can be approximately ascertained by placing between the observer and the candle one or more plates of tinted glass, so that the candle is still kept just invisible, the thickness of each plate corresponding to a known diminution. In proportion to the number of plates which are required to be added will be the deficiency of corpuscles. The plates are so tinted that each one that is required to be added to keep the candle invisible corresponds to a diminution of

[1] A millimètre corresponds to one twenty-fifth of an English inch.

about 125,000 corpuscles in the same bulk of blood. About thirty of these plates are supplied with the instrument, or, which is more convenient for practical purposes, a disc with a series of five or more holes, in each of which in succession additional plates are placed, is made to revolve at will before the blood column, so that the number can be read off with tolerable facility. Mantegazza finds the mean number of corpuscles to be for men about 5,000,000, and for women 4,500,000, the extremes being 5,625,000 in plethora, and only 225,000 in extreme anæmia.

2. M. Holm observes that there are certain points of similarity between hæmatoidin and the principal colouring matter of the bile, termed by Städeln bilirubin, which have led some to think that they are identical, though they are really two quite different substances. In order to prove this he examined the colouring matter of several specimens of human bile and of gall-stones, whilst he obtained hæmatoidin, in the first instance, from the cicatrices left in apoplectic hæmorrhages of the brain, and subsequently from the corpora lutea of the cow. In procuring it from the latter he rubbed down the whole corpus luteum with ground glass into a pulp, and treated it with chloroform. The fluid was filtered, and the golden-yellow fluid left to evaporate spontaneously. The crystals of hæmatoidin appeared after a few days as microscopical tabular crystals with three acute angles, one side of which was sometimes convex. By the union of the bases of two of these deltoid crystals rhombic tablets were formed, or by the union of four a star with four rays. At other times, by the rounding off of the angles, elliptical or even staff-shaped crystals were developed. The crystals are amongst the most beautiful objects in organic chemistry. By transmitted light they appeared red, by reflected they presented a metallic surface of a cantharides-green colour. Hæmatoidin is very easily soluble in chloroform, forming a golden-yellow solution. It is also readily soluble in bisulphide of carbon and in absolute ether. It is insoluble in alcohol and in water, in ammonia, solution of soda, diluted mineral acids, and dilute acetic acids; but it dissolves in warm acetic acid, and if to this solution a little nitric acid be added it assumes a blue colour. The differences between bilirubin and hæmatoidin are well marked, and may be briefly here enumerated. Bilirubin possesses the properties of a weak acid uniting with bases, whilst hæmatoidin is apparently an indifferent substance. Bilirubin is insoluble in ether, hæmatoidin easily soluble; on the contrary, in the alkalies bilirubin is easily soluble, whilst hæmatoidin is insoluble. Lastly, if a solution of bilirubin in chloroform be shaken up with ammonia or soda it will be entirely abstracted from the chloroform, which will remain colourless, the alkaline fluid becoming yellow. Hæmatoidin, on the contrary, is not withdrawn from the solution in chloroform by alkalies, and the chloroform solution consequently remains coloured.

In a paper which immediately succeeds the above, M. Stadeler shows that the colouring matter of the yolk of the egg is closely allied to hæmatoidin in its nature.

3. Jacobson has employed a peculiarly constructed nozzle adapted to an ordinary manometer, and originally constructed by Ludwig and Spendler. The animals experimented upon were sheep, and the instrument was introduced into the *subclavian vein.* The degree of pressure found to be exerted in the veins during normal respiration, and reduced to the mercurial column for more easy comparison with other hæmodynamic researches, was as follows:

In the left innominate vein	— 0·1 mm. of mercury.	
„ right jugular „	+ 0·2 „	Close to the origin of the innominate vein.
„ right subclavian „	— 0·1 „	
„ left jugular „	— 0·1 „	
„ left subclavian „	— 0·6 „	
a brachial vein opening into the last-named	— 1 „	
In the external facial vein	+ 3 „	
„ internal facial „	+ 5·2 „	
„ brachial vein	+ 4·1 „	
In a branch of the same	+ 9 „	
In the crural vein .	+11·4 „	

In a dog, in a state of narcosis from the administration of opium, and who breathed with difficulty and unnatural frequency, the pressure in the right innominate vein was found to be +1·5 mm. of mercury. The pressure of the blood was always found to be materially increased on muscular exertion being made. No respiratory influence when this was normal could be observed in veins lying at some distance from the heart. Thus it was scarcely perceptible, and not constant in the crural, brachial, and facial veins. It first became apparent in the jugular and subclavian veins, when it amounted *in toto* to about 0·9 per sq. mm.; so that in inspiration the pressure sank about 0·3 mm., whilst in expiration it rose about 0·6 mm. With local compression the pressure diminished in the central part of the vein, but remained positive in the extremities, whilst it was negative in the cervical veins. Thus in the internal facial vein it fell from + 5 per sq. mm. to + 3·6 — in the external vein from + to 1·9. In the subclavian vein from 0 to — 5 per sq. mm. with quiet inspiration, and rose to —3·5 in expiration. In the jugular vein from 0 to — 3 mm. in inspiration, and — 1 per sq. mm. in expiration. Nearly equal negative values occurred in forced respiration when the blood-current was uninterrupted.

Digestion.

1. *On the Active Participation of the Stomach in the act of Vomiting.* Moritz Schiff. ('Moleschott's Untersuchungen.' Band x. 1867. Pp. 353.)
2. *On the Absorption of Food in the Small Intestine.* Ludwig Letzerich. ('Virchow's Archiv f. Path. Med.' Band. xxxix. 1867. Pp. 435.)
3. *On the so-called Vacuolæ, or Cells resembling a Port Wine-glass, of the Small Intestine.* J. Sachs. ('Virchow's Archiv,' xxxix Pp. 493.)

1. M. Schiff commences his observations by an historical review of the various opinions that have been held upon this subject. It has, he says, been customary to make Majendie express himself much more strongly in reference to his well-known experiment of substituting a bladder for the stomach of a dog than any warrant can be found for in his works. All that he really says is (1) That the stomach does not appear in all instances to contract in the act of vomiting; and (2) That the pressure of the abdominal walls appears to be sufficient to effect vomiting.

M. Schiff has exhumed a review of a work by Tantini contained in an early volume of Froriep's 'Notizen,' in which the important observation was made by the Italian investigator that no vomiting can be induced in Majendie's experiment unless the cardiac portion of the œsophagus is also cut away; for if this remains, its contraction is sufficient to prevent the evacuation of the contents of the stomach from occurring, and that in such cases, besides the pressure of the abdominal walls, some other agent must be in operation to effect vomiting. Budge, in 1840, maintained that the act of vomiting was effected partly by the pressure of the diaphragm and abdominal parietes, and partly by the active contraction of the stomach, which last may in some instances act *per se*, the pyloric portion in particular acting with great energy, and propelling the contents of the stomach with great force towards the cardiac orifice, which last during the act of vomiting remains patent.

Rühle, in 1847, considered that the stomach should be examined as far as possible in its natural position, and under these circumstances believed that the only movement observable in the stomach during the act of vomiting was the drawing up of the cardiac extremity against the diaphragm, which was probably effected by the contraction of the longitudinal fibres of the œsophagus.

He suggested and carried out an experiment with a view of determining what the amount of force was with which the stomach expelled its contents that was followed by remarkable results. It consisted in fastening into the empty and exposed stomach a manometer, and then injecting some emetic into the veins. When he examined the fluctuations of the manometer during the act of vomiting, he met with the unexpected result that at the instant of the ejection of the contents, the pressure, instead of rising, fell. Rühle attributes this to the sudden yielding or opening of the previously contracted cardiac orifice, permitting the passage of the contents which had before been compressed by the gastric parietes, but he considers that under ordinary circumstances the actual evacuation is effected by the pressure of the abdominal parietes, which from other experiments he was led to conclude, is more than sufficient to overcome the resistance of the cardia. Valentin thought it could better be explained on the Bernouilli and Venturis theorem of the origination of negative pressure in rapidly flowing fluids.

M. Schiff, from his experiments, has also arrived at the conclusion in accordance with the observations of Rühle, that an opening of the cardiac orifice takes place in the act of vomiting, which is effected

by an active muscular contraction, and that such act is indispensable for the performance of vomiting; and he dissents from Rühle's opinions, believing that the pressure of the abdominal wall and of the diaphragm is insufficient to overcome the resistance of the cardia and of the lower part of the œsophagus. He admits that movements even of an active kind are often visible in the muscular fibres of the stomach just before and after vomiting, but considers that they are wholly uninfluential in producing this act.

M. Schiff thus describes the constant appearances seen in dogs which had been etherized, and to which, after the stomach had been exposed by a crucial incision, tartar emetic and ipecacuanha had been administered after recovery from the ether. After a few deeper inspirations than usual, a very full respiration was taken; the diaphragm descended a little; the lower ribs were forcibly drawn in when the dog stretched its neck; the left half of the stomach was drawn up, its volume diminished a little, and this stood in direct relation to the amount of gas present in the stomach, and a noise like that of a strong eructation was produced in the throat.

Immediately after this eructation the left half of the stomach again descended, and expiration followed. When movements of the stomach were already present, they were generally intensified; but if the stomach was already quiescent before the period of vomiting commenced, weak peristatic movements occurred, though occasionally it remained perfectly quiescent. During the act of vomiting, especially soon after the ingestion of food, a considerably increased quantity of bile is discharged, in dogs, into the duodenum; but very little, if any of the food is squeezed through the pyloric aperture.

It is not to be concluded that the movements of the stomach are wholly unessential or inoperative in the act of vomiting, since there are various circumstances under which violent efforts are made, the diaphragm being fixed and the abdominal parietes strongly contracting, yet in which no evacuation of the gastric contents occurs. In such cases the obstacle to the discharge would seem to be in the maintenance of the closure of the cardia, and investigations are therefore required to determine whether at the instant of vomiting the active participation of the stomach does not consist in effecting that of opening the cardia, which is essential to the act. Schiff proposed to himself to determine this point, and in order to do so made gastric fistulæ on the left side of the abdomen in dogs, sufficiently large to enable two fingers to be introduced. After recovery from the operation had resulted for some weeks, M. Schiff began to introduce the fingers for a few minutes several times a day. It was found that the cardiac orifice was uniformly closed, and presented considerable resistance to the entering finger, and that if it even penetrated, the fibres tightly grasped it.

After accustoming the animals to these proceedings for some time a moderate meal was allowed, and shortly after a few grains of ipecacuanha, or of tartar emetic, or both, were administered to it, and the fingers were quickly introduced through the fistulous orifice. The usual swallowing movements which precede the act of vomiting

were then felt to occur, and it was observed that any portions of meat which the animal was made to swallow at this time were conveyed with great rapidity through the cervical portion of the œsophagus, but only slowly through the thoracic portion, at the lower part of which it might even be brought to rest for a short time. When, however, it had once entered, as it were, the grasp of the cardiac sphincter, its motion was again accelerated after the swallowing movements had continued for some time, one finger being still kept just in the cardiac orifice, whilst the other touched the smaller curvature. The usual full inspiration took place, which appeared to depress the smaller curvature much more than the cardiac orifice, which, if anything, rather rose in the opposite direction. Then an instant before the contraction of the abdominal walls occurred, the contraction of the cardiac sphincter was perceived to disappear suddenly and completely, and the finger passed without opposition into the lower thoracic portion of the œsophagus. Immediately succeeding this opening the abdominal parietes contracted, and the gases and solid or fluid contents of the stomach rushed past the finger to be discharged by the mouth. In cases where several acts of vomiting rapidly succeeded one another the cardiac orifice remained permanently dilated. It would hence appear that the opening of the cardia is effected by the contraction of a definite set of muscular fibres, since it precedes the pressure of the abdominal walls. These muscular fibres can only be the longitudinal fibres of the lower part of the œsophagus, which, having arrived at the stomach, spread themselves in all directions obliquely over its surface. But M. Schiff considered it requisite to ascertain whether the act here described was one of actual vigorous muscular contraction, or whether the opening of the cardia were not the result of a negation of muscular effort produced in a reflectorial manner.

In order to ascertain this point, three methods suggested themselves. First, direct section of the muscular fibres in question, though there was here danger of too seriously damaging the structure of the stomach, or even of perforating its walls. Secondly, of dividing the nerves supplying the muscle, but for this a precise knowledge of the nerves and their distribution was requisite. A third method still remained, which consisted essentially in paralysing a portion of the muscle without actual separation of the outer and inner coats of the stomach. This was effected by drawing the cardiac extremity of the stomach in dogs of from one to three months' old through an opening in the abdominal walls. A piece of wood (Walze) was placed in front, and a tight ligature tied around and just below the cardia, so that the posterior fibres were smashed. This in no way seriously affects the aninal, who again begins to eat and drink on recovering from the chloroform. If now the emetic be administered, efforts at vomiting are made, but *no evacuation* of the contents of the stomach occurs. This experiment, then, may be regarded as the converse of that performed by Majendie. In both experiments the presence of the abdominal parietes and diaphragm was maintained, but in the experiment of Majendie the whole stomach was removed

with the cardia, and vomiting occurred. In M. Schiff's experiment the whole stomach was preserved, yet vomiting was rendered impossible. It is thus apparent that in the stomach there is an antagonist to the active efforts of vomiting, not an agent assisting or furthering those efforts, and it is evident that it must be the antagonist of this antagonist which is destroyed by the ligature. It is clear also that the cessation of the cardiac contraction during vomiting is not due to a mere relaxation of the circular muscle induced by any reflex nervous influence. It may, however, be said that the ligature may have destroyed certain nerves distributed to the lower part of the œsophagus and muscles around the cardiac orifice, but a sufficient answer to this is found in the fact that the whole of the gastric portion of the sympathetic may be destroyed by the ablation of the *ganglion cæliacum* without affecting the act of vomiting, whilst as regards the vagus, in the mode in which the experiment is performed by Schiff, these fibres are not interfered with.

M. Schiff now endeavoured to ascertain what were the effects of division of the vagi in the neck, and also of division of the œsophageal branches. He found that although during the first few hours (seven or eight) the preponderating condition was one of contraction of the cardiac orifice of the stomach, and the lower part of the œsophagus immediately adjoining it, hindering the entrance of the morsel of food swallowed into the stomach, yet that this alternated with periods of partial or general relaxation of the sphincter, and that after the lapse of some days the cardiac orifice remained moderately or slightly contracted, easily yielding to the pressure of the finger introduced through a gastric fistula. He remarked also that the movements of the stomach were materially modified, becoming irregular. Vomiting, though not common, may yet occur, under favourable circumstances, after division of the vagi, and is then essentially accomplished by the contraction of the abdominal muscles aided by the fixation of the diaphragm. From other experiments he is inclined to believe that the accessory fibres contained in the vagus are those which are the really potential ones in affecting the movements observed. After the ablation of the accessorius, however, imperfect though violent efforts at vomiting were witnessed, showing as M. Schiff observes, that one of the most important functions of the nervous system is the co-ordination and harmonious adaptation of numerous movements, each individually capable of being called into play by other means.

2. In the thirty-seventh volume of Virchow's 'Archiv' (1866), a paper appeared by M. Letzerich, in which he endeavoured to show the mode in which the absorption of fats was effected. He believed that he had been able to distinguish two kinds of cells on the free or intestinal surface of the villi. One of these was the ordinary columnar epithelial cell with closed extremities; the other consisted of a spherical, pear-, or spindle-like body, the free extremity of which turned towards the cavity of the intestine, was wide open, whilst the attached end was tapering, penetrated the basement membrane, and he felt certain discharged its contents into a kind of plexus with

structureless walls, the wide meshes of which lying in the connective tissue of the villus, surrounded, and was in direct continuity with the central lacteal. These special absorbent organs appeared to be much fewer in number than the proper epithelial cells between which they were interspersed. He was able easily to discern fat molecules in their interior, especially in hedgehogs; but he never found any oleaginous particles in the true epithelial cells, except under abnormal conditions, as where an excessive quantity of fat was forced into the animal's stomach. In the present paper, M. Letzerich states that he has substantiated his former observations, and recommends the following proceeding to be adopted in order to show the proper organs of absorption that he has described. A considerable quantity of well-washed mutton or beef is given to a hedgehog for a meal, two or three hours after which it is killed. A small portion of the duodenum, after half an hour's exposure to the air of a warm room, is immersed in a solution of two drops of concentrated solution of chromic acid to one ounce of water, which prevents the contraction of the villi. After the lapse of from twenty-four to thirty hours, fine sections may readily be made with a razor, and examined with the aid of a little glycerine and water. In all cases the interior of the resorptive organs may be seen filled with fat molecules which, travelling through them, enter the plexus and may be traced to the lacteals. But if lean meat or pure albumen have been administered to the animal, then the resorptive organs appear as strongly refractile bodies, to which, when hardened, if a little solution of carmine in ammonia be added, an instantaneous colouration of their contents takes place, indicating the presence of albumen, whilst the surrounding cylindrical epithelial cells undergo no change. As regards these micro-chemical relations, the resorptive organs resist the action of alkalies for a much longer period than the cylinder-epithelial cells, and whilst the latter soon disappear in a solution of bichromate of potash, the former may be discerned after the lapse of several months.

3. M. Sachs observes that under the superintendence of M. Chrzonszczewsky he has long been engaged in the study of the structural arrangements for absorption in the small intestine, and has, therefore, had occasion carefully to test the truth of the above statements of M. Letzerich. He gives them an unqualified opposition. He considers the beaker-cells or vacuolæ to be altogether artificial products, resulting from the action of the chromic acid or nitrate of silver, etc., on the delicate epithelial cells of the villi, for although the vacuolæ as described by Letzerich are, indeed, sometimes visible, yet in such cases the surrounding epithelial cells are scarcely perceptible, are remarkably altered in form, and their nuclei have almost entirely disappeared. The plexus into which the resorptive organs were said by M. Letzerich to open was never discovered even with the utmost care by M. Sachs.

NERVOUS SYSTEM.

1. *On the Sensitiveness of the Spinal Cord to Electrical excitation.* HERMANN ENGELKEN. ('Reichert und Dubois Reymond's Archiv,' 1867, p. 198.)
2. *On the Cilio-spinal Centre described by M. Budge.* DR. E. SALKOWSKI. ('Henle und Pfeuffer's Zeit. f. rat. Med.,' bd. xxix, 1867, p. 167.)
3. *On the Supposed Anastomosis between the Geniculate Swelling of the Facial and the Lesser Superficial Petrosal Nerve.* E. BISCHOFF. ('Henle und Pfeuffer's Zeits.,' xxix, p. 161.)
4. *On Ciliary Movement.* ALEX. STUART. (Idem, p. 288.)

Engelken's experiments were undertaken in conjunction with Prof. Fick to determine the truth of the assertion made by v. Deen and others that the strands of the spinal cord were insensible to all stimuli except those of a purely organic nature. Now, v. Deen grounded his statements upon the circumstance that mechanical irritation as well as electrical when applied to the anterior strands of the spinal cord excited no muscular contraction. But it may be remarked in opposition to this that mechanical irritation is not of a measurable character, and it is conceivable that violent injury to the nerve structure may prove only a feeble stimulus. As a proof reference may be made to the well-known experiments of Fontana who long ago showed that rapid division of the sciatic or instantaneous destruction of it with the blow of a hammer, frequently produced little or no excitation of the nerve as indicated by muscular contraction. Moreover, it is quite intelligible that even weak irritation of a mechanical nature applied to the anterior columns may not occasion muscular contraction, since it is probable that such irritation must traverse a large number of ganglion cells, and be thus diffused through many fibres, whence its effects become almost imperceptible. And it may be observed also that it is quite possible that inhibitory fibres of the spinal cord may be simultaneously called into play with the proper motor fibres. In order that decisive results should be obtained Engelken considers that the electrical stimulus should alone be employed since this only is (thanks to the modern improved methods of research) exactly measurable, and can be applied with all degrees of strength.

Engelken then gives the details of various experiments made upon frogs, one of them being a repetition of v. Deen's own experiment, on which he chiefly relied for the establishment of his statement, and from which it appears that the electrical currents employed by v. Deen and Guttmann were much too feeble to produce any effect. The results at which Engelken has arrived are—1, that the anterior columns of the spinal cord are just as excitable as any other nerve fibres; and 2, that the same is true for the posterior columns.

As regards the grey substance of the spinal cord no experiments could be made on account of the smallness of the spinal cord in frogs, and therefore the question of its unexcitability by inorganic stimuli must be considered as yet doubtful.

2. We have only space to give the general result at which M. Salkowski has arrived after performing numerous experiments upon rabbits. He states as the result of his inquiries that the vaso-motor nerves of the ear and the nerves that are subservient to the dilatation of the pupil, take origin in rabbits above the level of the atlas, and therefore in all probability from the medulla oblongata; course backwards without decussating in the spinal cord, and emerge generally through the anterior roots of the seventh and eight cervical, and first and second dorsal nerves, in order to enter the cervical sympathetic. He has been unable to determine whether a part of the fibres issuing from the medulla oblongata, reach the sympathetic by communicating with the hypoglossal, as stated by Bridge to occur in rabbits and frogs.

3. Dr. Bischoff states that he has made thirty-six special dissections with a view of determining whether the lesser superficial petrosal nerve communicates with the geniculate ganglion of the portio dura, and that in no one instance has he been able to discover any such connection. The small nerve forms a loop and comes into close topographical relation with the seventh, but does not actually combine with it. A small branch of communication sometimes passes between the lesser and the great superficial petrosal nerves, and a small artery sometimes runs between the lesser petrosal and the seventh, which he believes may have been taken for the supposed communication. A minute gangliform enlargement exists on the most convex part of the loop formed by the lesser petrosal.

4. Stuart commences his paper by remarking that the general tendency of recent observations upon the nature of ciliary movement, has been to assimilate and identify it with ordinary muscular movement. During a late sojourn in Naples, the opportunity occurred to him of observing well-marked ciliary motion, in the case of the larvæ of various species of gasteropoda, as the eolis and flabellina, in which the cells are of large size and cylindrical form, and contain one, two, or more strongly-refractile nuclei. The number of cilia on each cell varies from six to eight; they are 0·014 millimètre in length, and present a flattened form, and indications of transverse striation. Besides the nuclei the cells contain a pale granular material, which by careful adaptation of the light can be distinctly seen to present striæ running parallel with the longitudinal axis of the cell. The striæ he believes are certainly not due to foldings of the cell wall, but appear as columns isolated from one another by a little fluid. They are about forty to sixty in number in each cell. That these elements are of a muscular nature, M. Stuart considers is rendered evident by observing the movements of the nucleus, which may be seen to be drawn hither and thither according to the action of the different strands to the extent of one fourth of the whole length of the cell. Moreover, the movements of the nucleus stand in close relation with those of the cilia, ceasing when they cease, and recommencing with their recurrence. The striæ, like muscular tissue in general, became much more distinctly defined on immersion in a solution of one per cent. of chromic acid. M. Stuart agrees with Dr.

Kistiakowsky ('Sitz. d. Wien. Acad.,' bd. 51, 1865, p. 263), that both constant and interrupted electrical currents act as irritants to ciliary movement; the opposite results obtained by earlier experimenters being due to the employment of improperly-constructed apparatus which occasioned the destruction of the cells. It is probable that in chemical composition the contents of the cells essentially consist of an albuminate of soda, since all movement, as has long been known, is stopped by the action of acids. Thus, a solution of one per cent. of acetic acid arrests the ciliary movement entirely in from one to two minutes; a solution of one per cent. of nitric acid, in from two to three minutes; of phosphoric acid in from three to four minutes; and of oxalic in from four to five minutes. On the other hand, if the acid have not been applied for too long a time, the activity of the cell may be restored by the addition of an alkali.

The alkalis, and especially soda, act as strong stimulants to ciliary motion. Concentrated solution of sugar stops all action as soon as it has endosmosed through the cell wall, or rather, as soon as it has withdrawn a certain proportion of water from the cell contents, consequently, in about from four to eight minutes. In these researches, therefore, M. Stuart believes he has been able to demonstrate that the spontaneous ciliary movement of the cells of the larvæ of the opistho-branchiata is due to the presence of contractile threads in their interior, which are probably in direct relation with the cilia.

Deglutition.

Dr. Moura.—*On the Act of Deglutition.* (With three plates, in Robins' 'Journal de l'Anatomie.' 1867. P. 157.)

After describing the various organs implicated in the act of deglutition as the velum palati, isthmus faucium, the tongue, pharynx, and œsophagus, M. Moura gives the following account of the acts of deglutition, which he divides into two parts as observed with the laryngoscope: 1. *The disposition of the food on the floor of the mouth.* The food boluses prepared by mastication and impregnated with saliva, are insensibly carried towards the base of the tongue into the glosso-epiglottidean fossettes and over the whole extent of the external face of the epiglottis. They are maintained in this position as though resting on a kind of floor or floating bridge, limited or arther interrupted behind by the free border of the epiglottis, and by the hyo- or pharyngeo-epiglottidean folds placed on each side of the space in which they are contained. An urgent desire to swallow is then experienced, and causes the act to be completed, but sometimes the desire can be restrained. If the aliment be very soft it overflows the hyo-epiglottidean folds, and even the free border of the epiglottis. Some portions can descend in the anterior part of the pharyngeal channels, or float about the orifice of the cavity of the larynx, in the fashion of glaçons suspended from the ceilings of houses. In exciting the act of deglutition gently and with great precaution, the larynx begins to rise, the vocal cords approximate, then meet and close the glottis. The summits of the arytenoid car-

tilages follow the same movements, and are carried forwards and upwards. The inferior part of the epiglottis undergoes an inflexion behind and forms a projection (the bourrelet of Czermak), which fills up anteriorly the interval comprised between the two sub-glottic folds and the summits of the two arytenoids. In the meanwhile, the velum palati raises itself and becomes applied against the pharynx. The isthmus of the fauces is elongated and slightly retracted. The uvula is directed forwards instead of being pendent and vertical. The base of the tongue now commences its movement of ascent; it carries with it the free portion of the epiglottis with the aliments which are brought successively into view. The second act now begins.

2. *The disposition of the several parts of the pharyngo-epiglottic orifice into which the alimentary substances, whether solid or fluid, penetrate.*

The pharynx contracts, becomes elevated, and retracts in its turn; it comes into contact with the borders of the epiglottis at the instant that its contraction becomes energetic and anterior in point of time to the period when the tongue swollen and raised towards the palatal arch entirely conceals the bottom of the throat. There may then be seen lying across the retracted isthmus, the middle of the superior border of the epiglottis turned forwards, and taking the form of a semicylindrical groove which is completed by the pharynx and in which the bolus lies. Continuing its ascent the base of the tongue now raises the uvula, applies itself to the pillars of the fauces, and prevents further observation of the passage of the food.

As regards the deglutition of liquids, on using a black liquid such as ink, he has observed that the parts tinted are the whole of the mouth, the velum palati, uvula, the pillars of the fauces, the external surface of the epiglottis, the pharynx, the posterior surfaces of the cricoid and arytenoid cartilages. On the contrary, the vestibule of the larynx to within a very small distance of the edge of the epiglottis, and the whole extent of the anterior or laryngeal part of the lateral grooves, preserved their natural colour. A slight noise accompanies the brisk cessation of the pharyngo-laryngeal contractions, and coincides with the descent, or, more correctly, with the detachment of these organs from one another. This noise proves that air enters the pharynx with a certain degree of force to fill the vacuum produced by the descent of the food, and by the energetic contractions of the posterior fauces.

Dr. Moura describes very minutely the different forms of epiglottis which present themselves to laryngoscopic examination, of which he makes no less than five, namely, 1, The omega form; 2, The horseshoe; 3, The semicircular; 4, The arc; and 5, The truncated cone.

REPORT ON MATERIA MEDICA AND THERAPEUTICS.

By Robert Hunter Semple, M.D.,
Member of the Royal College of Physicians, Physician to the Eastern Dispensary, London.

I. *On the Application of Iodoform to the Treatment of Cancer of the Uterus, and Diseases of the Bladder and the Prostate.* By M. Demarquay.—After describing the properties and mode of preparation of iodoform, and referring to the therapeutical use of this substance in England, M. Demarquay gives the results of his own experience of it as a local application. He has employed it in cancer of the uterus and in diseases of the bladder and prostate. He has applied it in the form of suppository with cacao butter, which is to be placed in the rectum in the case of diseases of the bladder or prostate, or in the vagina, in contact with the diseased mass, in the case of carcinoma or epithelioma of the uterus. A plug of cotton, placed at the entrance of the vagina, will prevent the substance from running out. When the cancer has formed a cavity, the remedy must be placed in the midst of it, in order that the diseased structure may be well exposed to its action. Patients affected with inflammation of the prostate and the neck of the bladder reported themselves as somewhat improved by this plan of treatment, but M. Demarquay does not consider the results as altogether satisfactory. In cases, however, of ulcerated cancer of the neck of the womb, the improvement has been more decided. The application of iodoform has relieved pain, without disturbing the organic functions, and the improvement has continued as long as this agent was employed. The same improvement was observed in some cases of ulcerated cancer of the rectum, but M. Demarquay observes that, in certain instances of inflamed uterine cancer, the suppositories produced so much pain that they were necessarily discontinued. The iodoform is, therefore, not applicable in all cases, but in suitable conditions it is very useful, being very superior to opium as a local sedative, the iodine it contains producing its constitutional effects, while the organic functions, and especially the digestive, are undisturbed.—*Bulletin Général de Thérapeutique*, May 15, 1867.

II. *A Severe Case of the Hæmorrhagic Diathesis, treated by large Doses of Wine.*—A woman who generally enjoyed good health had her gums softened and ulcerated to such a degree that the teeth were denuded to their whole extent. From the mouth there flowed incessantly a thick sheet of saliva, quite red with blood, in the midst of which there oozed out from time to time several semifluid and blackish clots. The mouth was almost entirely filled with semicoagulated blood, which appeared under the form of divided streams as soon as the jaws were separated. The tongue was covered with a thick clot, and if it was wiped the blood was immediately seen to

flow from it in little drops. At intervals there was a well-marked difficulty of breathing, and some paroxysms of coughing supervened, and the patient threw up mucus reddened with blood and even mixed with blackish clots .The body and the limbs were dotted with bluish spots, and the legs and thighs were sprinkled with spots of purpura. This condition lasted a fortnight, during which a variety of remedies had been employed in vain, and the patient was in a state of great exhaustion. Under these circumstances, M. Faure, recollecting what he knew of the effects of intoxication in animals which had been subjected, for experimental purposes, to the action of alcohol, resolved to plunge the patient into a state of drunkenness, and to keep her in it for a prolonged period. He, therefore, ordered some old Bordeaux wine, and gave her several glasses, one after another, and directed a glass to be given every quarter of an hour. In the evening she was intoxicated, but, nevertheless, the treatment was continued all night. The next morning, the hæmorrhage was entirely arrested, and it has never since appeared; and the cough, the oppression, and the sleeplessness, which had so long distressed her, all ceased. It is also worthy of remark, that from this time no more spots of ecchymosis were produced, and those which existed were absorbed in a few days.—*L'Evènement Médical, and Bulletin Général de Thérapeutique*, March 30, 1867.

III. *On the Distinctive Characters of the Bromide and Iodide of Potassium.* By M. Bonnefon.—The price of the bromide of potassium being rather high, this salt is often adulterated with iodide of potassium, which is much cheaper, and hence it happens, as the therapeutical powers of each are very different, that failures in treatment are sometimes erroneously attributed to the bromide, although the want of success is really due to the faulty method of preparing it. As the bromide and iodide of potassium are isomorphous, and are both white, it is impossible to distinguish them by their appearance, and there is no easy test by which the presence of iodide of potassium in the bromide may be at once detected. The following, however, are the characters by which the two salts may be distinguished: The bromide has a salt and rather acid taste, the iodide an acid, pungent, and metallic taste. The action of air on the bromide is but slight, but on the iodide it is more marked; for, by means of its oxygen, it displaces a portion of the iodine and communicates to the salt a slightly yellowish tinge, and causes it also to smell of iodine. The bromide is very soluble in water, but sparingly so in alcohol, the iodide is very soluble in both. With nitrate of silver the bromide of potassium gives a yellowish-white precipitate, and with a salt of lead a white one; but iodide of potassium gives with nitrate of silver a white precipitate, and with a salt of lead a yellow one. Corrosive sublimate produces no result with a solution of bromide of potassium, but it gives a red precipitate with the iodide. Bromine decomposes the iodide of potassium, but iodine produces no effect upon the bromide. In order to ascertain whether the bromide of potassium contains any

iodide of potassium, a small quantity of the suspected salt should be dissolved in water to which some starch has been previously added, and then a few drops of nitric acid should be employed, when a blue colour will be produced owing to the formation of iodide of starch.—*Bulletin Général de Thérapeutique*, Feb. 15, 1867.

IV. *On the Therapeutic Effects of the Bromide of Potassium.* By James Begbie, M.D., Edinburgh.—Dr. Begbie does not refer, in this paper, to the alterative, absorbent and deobstruent properties of the bromide of potassium, which have all been recorded, but to its efficacy in some forms of disease in which it has only recently been employed. Dr. Begbie regards the bromide as a valuable calmative and hypnotic, and has known it to procure repose in cases where opium and other narcotics have failed, or where they have succeeded only at the expense of sickness, vomiting, headache, and other unpleasant consequences. In the sleeplessness occurring during convalescence from fever, or at the termination of acute diseases, or after the performance of surgical operations, the bromide is a safe and efficacious remedy, given in doses of twenty to thirty grains in water, every night and morning, for some days or weeks. In nervous affections, arising from overtaxed brain, and characterised by headache, want of sleep, breathlessness, giddiness, &c., the bromide of potassium has been successfully employed. Dr. Begbie also confirms the opinion, now generally entertained, of the efficacy of the bromide in the treatment of epilepsy; and, although he does not consider it an infallible remedy in this disease, he believes that the paroxysms are often warded off, or their violence mitigated by its use, which should, however, be continued for a prolonged period. In the treatment of acute mania and delirium tremens, for which opium, antimony, aconite, digitalis, and other powerful drugs have been employed, Dr. Begbie proposes to substitute the bromide, which he believes to be a safer and not less efficacious medicine, and he gives a few cases in which it has proved beneficial. In several affections of the larynx and bronchi, which are believed to be of cerebral origin, or at least are connected with some derangement of the nervous centres, such as hooping-cough, laryngismus stridulus, and spasmodic asthma, the bromide of potassium has been found by Dr. Begbie to possess powers not inferior to any of the narcotic remedies in general use. In diabetes, which has been attributed, with considerable force of argument, to derangement or irritation of the nervous centres, Dr. Begbie believes that the use of the bromide is fairly indicated, and that it may produce satisfactory results. He relates four cases, in three of which the bromide was successfully employed, and he states that Sir James Simpson has also treated a case with the same remedy and with entire success. Even in cholera, Dr. Begbie recommends a trial of the bromide, on the ground that the phenomena of this disease, in its early stages at least, point to its intimate connection with derangement of the ganglionic system of nerves. The remedy has been tried in the Leith Cholera Hospital and the Edinburgh Cholera Hospital, and although it cannot be considered as an antidote to the poison of cholera, Dr.

Begbie states that it has certainly stripped the disease of some of its terrors, especially by allaying irritation of the nervous system, and relaxing spasm of the muscular fibres. Dr. Begbie concludes his paper by suggesting the use of the bromide as a sedative in certain stages of fever, and in exophthalmic goitre.—*Edinburgh Medical Journal*, December, 1866.

V. *On the Eucalyptus Globulus as a Febrifuge.* By Dr. Ullersperger, of Munich.—The *Eucalyptus globulus* is a tree of considerable size growing in New Holland, belonging to the order of Myrtaceæ, and having a hard wood which is used in ship-building. It is stated that, in Barcelona and the neighbourhood, an infusion of the leaves, used like tea, has been given with the greatest success in fevers. Several intermittents were also cured, among which was a double tertian, and another case in which quinine had been given without effect. The favourable results were manifested after the first dose; and while quinine, given in the increase of the fever, only aggravated the symptoms, the eucalyptus on the other hand, taken under the same circumstances, did not aggravate, but diminished its violence. According to Salarich, who describes the tree in the 'Espanna Medica,' the eucalyptus grows in temperate as well as in hot climates, but not in cold ones. Besides its use in intermittent fevers, Salarich recommends it as the best anodyne in nervous headache and in other pains of the head, which are not exactly of a periodical type.—*Schmidt's Jahrbücher der Gesammten Medicin*, December 10, 1866.

VI. *On the Use of Permanganate of Potash in the Treatment of Carbuncle.* By Dr. T. L. Leavitt.—As the local use of permanganate of potash was found very beneficial, during the last year of the American war, in the treatment of sloughing ulcers, phlegmonous erysipelas, and hospital gangrene, Dr. Leavitt conceived that its peculiar remedial properties would prove equally successful in carbuncle, arising, as it does, from a depressed vitality and a morbid condition of the blood. He gives the history of three cases in which the permanganate was successfully employed, and it would appear that this remedy succeeded when other means had failed. In one of the cases, after a crucial incision had been made into the carbuncle without any relief, the application of a strong solution of the permanganate (3 gr. to ʒj) was followed by rapid relief of the symptoms—true pus took the place of the previous sanious discharges, the pain subsided, and the fever disappeared; and after continuing this application for a few days longer the slough separated and the wound healed. In another of the cases the local application of the permanganate was almost the sole measure resorted to, as only a slight incision was made into the tumour, and the carbuncle disappeared entirely in three days, although on a previous occasion the patient had suffered from a series of carbuncles which lasted a whole winter. Dr. Leavitt has found the permanganate equally beneficial in the treatment of chronic ulcers, and he relates a case, of many years' duration, which yielded to the remedial powers of this preparation. —*American Journal of Medical Science*, January, 1867.

VII. *Successful Treatment of a Case of Traumatic Tetanus by the direct application of Infusion of Tobacco.* By J. B. Junor, of Peebles.—The case was that of a girl nine years old, whose leg had been severely injured by a large cope-stone falling on it, and causing a lacerated and contused wound of the calf of the leg, extending from immediately below the knee to beyond the ankle, and laying bare the posterior tibial artery in the whole of its length. During the progress of the case symptoms of tetanus became manifest, and soon became perfectly developed, the rigidity extending over the whole of the body, and the paroxysms becoming very frequent and severe. Chlorodyne was given internally, and a belladonna lotion was applied to the wound; but these measures produced only a temporary alleviation of the symptoms, and on the sixth day after the appearance of tetanus Mr. Junor applied to the wound stupes of an infusion of Cavendish tobacco, half an ounce to a pint of water. Within two or three hours after the application of the tobacco there was a great improvement, all the rigid muscles became to a considerable extent relaxed, the mouth could be opened about half an inch, the paroxysms were less severe and frequent, and a good deal of sleep was obtained. On leaving off the tobacco lotions the paroxysms returned, but on reapplying them relief again ensued, and the same result was observed on a subsequent occasion when the use of the tobacco was suspended. At last, about two months after the commencement of the treatment, the wound healed, the tetanic symptoms entirely ceased, and the patient recovered.—*Edinburgh Medical Journal*, February, 1867.

VIII. *On the Use of Bromide of Potassium in Acute and Chronic Affections of the Testis.* By Dr. Bedford Brown, of Washington.—Bromine possesses remarkable sedative powers over the nervous system without inducing the serious effects resulting from more powerful narcotics, and therefore it is specially adapted to the treatment of the diseases of organs having such varied and extensive nervous communications as the testis. Dr. Brown states that an experience of nearly ten years convinces him that it has a very decided specific effect in diseases of the entire genito-urinary system. In affections of the testis, and of the generative organs generally, there is a remarkable association of sympathy, not only between themselves and their varied relationships, but with the entire spinal cord and brain, and the prompt action of bromine on these two great nervous centres accounts in some measure for its sedative influence when used in disease of the generative organs. In urethral strictures attended with undue irritation of the bladder and its neck and enlargement of the prostate gland, bromine is a valuable remedy, and in consequence of its success in these affections Dr. Brown determined to test its powers in organic diseases of the testis. It was employed in the three principal forms of serious disease of this organ—namely, acute inflammation, chronic enlargement, and scirrhous hardness. He gives the particulars of three cases as illustrative of the efficacy of the bromide of potassium in the three conditions alluded to the first case (which is the most remarkable)

being one in which there was scirrhous hardness of both organs, with great increase of size and weight, and in which a perfect cure ensued after the use of the bromide for four months, in doses of ten to twenty grains three times a day.—*American Journal of the Medical Sciences*, July, 1867.

IX. *On the Successful Employment of Bromide of Potassium in Hooping-Cough.* By Dr. de Beaufort.—Dr. de Beaufort has observed, in the course of his practice, that the use of bromine was attended with very good effect in the treatment of hooping-cough, and he anticipated such a result. For, according to his view, the principal symptomatic phenomenon which distinguishes hooping-cough from a simple catarrh, is the exaltation of sensibility in the laryngeal mucous membrane, especially towards the upper orifice of the larynx. This hyperæsthesia excites, by reflex action, the convulsive cough and the contraction of the larynx, and consequently a medicine like the bromide of potassium, which exerts such a remarkable anæsthetic action ought to arrest the principal symptoms of hooping-cough, and to reduce the disease to its catarrhal element. The bromide, in the hands of Dr. de Beaufort, rapidly produced the desired effect, and in twenty cases, taken at different periods of the disease, laryngeal spasm was found to disappear in five days on the average, and the disease was converted into a bronchial catarrh. The patients, however, were not cured, but their condition was altered; there was no more anxiety or vomiting, the appetite was improved, the nutrition was better, and the strength was increased. Such a rapid result was very satisfactory, but Dr. de Beaufort desired to complete the cure, and he therefore endeavoured to find some other medicinal agent, which might effect, in combination with the bromide, what the latter was insufficient to accomplish alone. The substances which he found most efficacious were *aconite* and the *balsam of Tolu*, and he publishes a formula in which the syrup of balsam of Tolu, bromide of potassium, and an alcoholic preparation of aconite are combined together. By the aid of these three remedies he has seen hooping-cough cured in twelve days on the average.—*Bulletin Général de Thérapeutique*, May 30, 1867.

X. *On the Employment of Hydrochlorate of Ammonia in the Treatment of Catarrhal Affections, as an Adjunct to the Sulphate of Quinia.* By Dr. Marrotte, Physician to the Hôpital de le Pitié, Paris —By the term *catarrhal affections*, Dr. Marrotte indicates a number of epidemic complaints which have lately prevailed in Paris, and which include several forms of fever and of pulmonary inflammation, generally assuming a periodic type. These affections were often of long continuance, but they never assumed a malignant form, and their habitual seat was the mucous membrane of the throat, the bronchi, and the intestines. Pleurisy sometimes supervened, and also neuralgia, which latter attacked most commonly the face, but occasionally the trunk and the pelvis: and pneumonia and rheumatism were also among the sequelæ. Two characters appear to Dr. Marrotte to belong to the epidemic he describes, namely, the distinctness of the paroxysms, and the inflammatory excitement of

the mucous membrane. At the commencement of the epidemic, Dr. Marrotte found mild remedies sufficient for the treatment, such as rest in bed and warm drinks, to which he added, according to circumstances, some acetate of ammonia or Dover's powder, and even pleurisy yielded to the same treatment. But when neuralgia supervened, he employed sulphate of quinia, in large doses, namely, from one gramme (about fifteen grains) to a gramme and a half, as recommended by Trousseau. But when the cases were accompanied by feverish symptoms of an acute character, the quinia often failed, and Dr. Marrotte was induced to try the effect of hydrochlorate of ammonia, in consequence of having witnessed its efficacy in marsh fevers. When the cases were slight the paroxysms of fever, and especially the neuralgic attacks, were arrested on the first or second day, though in more severe cases, two, three, or four days were required for the cure, but the improvement was considerable on the first, and especially on the second day. The doses of the salt, which were necessary to cut short the paroxysms, varied from two to four and five grammes a day. It was administered in quantities of half a gramme to a gramme, at intervals of three to four hours, in such a manner that the last portion should be taken two or three hours before the anticipated approach of the paroxysm. Dr. Marrotte considers that the facts collected by him prove that, in the present constitutional epidemic, the hydrochlorate of ammonia may become a useful adjuvant to the sulphate of quinia in the treatment of the affections he describes.—*Bulletin Général de Thérapeutique*, May 15, 1867.

XI. *On the Treatment of Pulmonary Phthisis by the Vapour Bath (vaporarium).*—Professor Trousseau, during the latter years of his attendance at the Hôtel Dieu, as physician to that hospital, conceived the idea of treating phthisical patients by making them live permanently in a warm and moist atmosphere; and he was led to this idea by observing that in flax-spinning establishments, where a warm and moist air is required, the number of phthisical patients is relatively limited. An apparatus contrived to carry out this mode of treatment was fitted up in a ward of the Hôtel Dieu; but unfortunately the experiments were not continued for a sufficiently long period to test its efficacy, and the only treatise bearing upon this mode of treatment has emanated from a provincial French physician, Dr. Henrot, of Rheims. In the year 1864 Dr. Trousseau was consulted by a manufacturer of Rheims on the illness of his daughter, who was suffering from a pulmonary affection. Dr. Trousseau suggested that if the patient had a steam-engine, and could be placed in a workshop full of a warm and moist air analogous to the atmosphere in the flax-spinning establishments, she would experience great relief. He added that the small number of consumptive patients in the flax-spinning factories had been observed, and that he himself had seen benefit derived from this treatment in the case of a spinner living near Paris. The advice of Dr. Trousseau was carried out at Rheims by the patient's ordinary medical attendant,

who constructed for her a room, into which steam was made to pass. The result was so successful that the same means were employed in other cases. The *vaporarium* is a room filled with steam, in which the patient always remains. To obtain a moist and warm atmosphere two methods are employed. In the one, used in establishments where there is a steam-engine, a pipe conveying the steam is passed into the room, and this pipe is plunged into the bottom of a trough containing water, the trough being so constructed that the steam in traversing it may be mixed with a great quantity of water, and that the evaporation may be considerable. The second plan consists in arranging, in the patient's room, a pipe leading from a gas-reservoir, and terminated by an apparatus like that employed in kitchens where the stoves are heated by gas. Over this pipe a metallic vessel is placed filled with water; and by lighting the gas the water is made to boil. and afterwards to disperse its steam into the room. The latter arrangement is the less convenient, and the more expensive of the two. Several cases are recorded by Dr. Gallier and Dr. Henrot, in which this treatment was successfully adopted for phthisical patients in whom the physical signs of pulmonary disease were well marked. It is stated, as the results of the treatment, that three confirmed cases of phthisis were cured, that two cases of obstinate cough were improved, that one case of croup was rapidly cured, and one of œdema of the glottis, which had resisted all other means employed, was cured in a few hours. In some cases, however, when the treatment was commenced too late, the treatment was unsuccessful. Although the number of cases is still too small to justify any positive conclusion, it may be understood that the steam chamber may act beneficially in many cases, and may be substituted, especially in the winter, for a residence in southern countries and maritime regions.—*Bulletin Général de Thérapeutique*, July 30, 1867.

REPORT ON TOXICOLOGY, FORENSIC MEDICINE, AND HYGIÈNE.

By Benjamin W. Richardson, M.D., F.R.S.

I.—Toxicology.

Researches on Thallium.—The action of thallium has been carefully studied by Dr. William Marmé. The author traces out the effects of thallium on various classes of animals, as on reptiles, birds, and mammals. He maintains that small doses of the various preparations can be tolerated for a short time, but the poison is cumulative in its effects: the organism never accustoms itself to the poison. In large doses after a time thallium takes effect on the stomach and intestines, as do also its salts, such as the iodide and sulphide, but in the latter the effects are more sudden. When the very soluble preparations of thallium are introduced into the system of frogs

by subcutaneous injection, lethal symptoms are induced by 0·03 to 0·06 of a gramme; in birds, by 0·04 to 0·16 of a gramme; in dogs, 0·15 of a gramme; in rabbits, 0·04 to 0·06. When the same preparations are introduced by the stomach the doses differ: then 0·5 to 1·0 of a gramme is required to produce effects on dogs and cats, 0·5 for rabbits: for mice, 0·5 milligrammes. For injection directly into the blood by the vessels doses scarcely smaller are required than when the injection is simply subcutaneous; for as the quantity of water for solution in the latter case must be greater, the diffusion of the poison is relatively expedited. Symptoms of poison are never so rapidly evinced from the thallium compounds as from the active compounds of mercury. After continued administration of small doses of the thallium salts the appetite is impaired, there is pain in the bowels, vomiting, diarrhœa and hæmorrhage, free salivation and wasting. To these symptoms may be added feebleness, difficulty of respiration, and weakness of the circulation. Anomalous muscular action has also been observed, viz. tremor, and want of co-ordination of movement. Animals thoroughly affected can neither walk nor stand with security: they stretch out their fore limbs as if under chorea, *i.e.* without any distinct object or intention. These latter symptoms often occur even when the animal takes its ordinary quantity of food they do not therefore necessarily depend on disturbance or interference with the digestive power. As the poisoning becomes general, conjunctivitis is a frequent symptom, attended with a free secretion of mucus, and probably also with disturbance of vision, although the ophthalmoscope does not discover any peculiarity in the retina, the lens, or the iris.

The further effects of the poison show themselves, according to the post-mortem appearances, in the form of small effusions of blood and pneumonic infiltration of the lungs; to these are added an intense congestion of the vessels of the intestines of the large and of the small vessels alike, especially of the vessels of the mesentery and of the stomach. In the pericardial cavity in the higher animals, when the poison has been long continued, there is always a large increase of the pericardial fluid, and upon the cardiac surface are often found hæmorrhagic effusions of various degrees. Fatty degeneration is rarely met with.

Thallium salts, which are soluble, seem to find their way into all the organs, and their elimination out of the system is chiefly by the excretion from the kidneys, although all the excretory surfaces serve to some extent as outlets. Very much later the salts are found in the contents of the intestinal canal.

As the salts are found in the urine and in biliary secretions equally after the operation of subcutaneous injection, it must be inferred that they are thrown into the intestines by the bile, to be reabsorbed in the alimentary canal, and this especially as the salts are very soluble in alkaline solutions. The rapidity of absorption of those thallium compounds which act on the body is great; the salts can be detected in the urine in from three to five minutes. In the milk

of the goat the poison was detected in seventeen hours, after the subcutaneous injection of so small a dose as 0·050 of a gramme. In the lachrymal, salival, buccal, tracheal, and stomach fluids, and in vomited fluids, thallium has also been discovered after its subcutaneous introduction into the body. When metallic thallium is given by the stomach, its elimination begins somewhat suddenly, and when the administration is continued in small doses, for a time the presence of the poison can be discovered in the urine so long as three weeks after the last dose. The author does not appear to have any antidote for the effects of thallium. There is no known eliminative agent; alkaline solutions of soda may be taken if given early, and may be followed by briskly-acting emetics and purgatives.

Marmé concludes his paper by describing the mode of detecting thallium by means of spectrum analysis, and suggests that certain officinal metallic medicines may be bearers of the substance.—*Nachr. v. d. k. Ges. d. Wissensch. zu Göttingen, Nr.* 20, *Aug.* 14*th*, 1867; *und* '*Schmidt's Jahrbücher*,' *Nr.* 9, 1867.

Sublimation of the Alkaloids.—Dr. Guy has continued his researches on the sublimation of the alkaloids, and his papers now may be considered as completed for the first stage of his interesting researches. Speaking of the vegetable alkaloids, Dr. Guy states that they undergo visible changes of form and colour when heated, from which changes arsenious acid is wholly free; and it is but reasonable to suppose that the vapour disengaged from those substances while these changes are going forward, should itself undergo changes of composition affecting the character of the sublimates. This natural expectation is fully justified by experiences of those alkaloids which, like strychnine and morphine, yield crystalline sublimates. If we take strychnine as the type of this class, and conduct the process of sublimation with care and caution, applying at first a moderate heat, and increasing it by degrees, we ought to obtain a series of sublimates of distinct crystalline formation, both before and after the melting of the alkaloid; then a few colourless sublimates without crystals; and, last of all, a series of yellow or yellowish-brown sublimates, evidently discoloured with empyreumatic matter, and the effect of a sort of destructive distillation. If the process be narrowly watched we shall observe that, so long as the vapour is colourless, it deposits itself as a mist, in which by degrees snow-white spots, often circular in shape, and often coalescing into larger spots, develop themselves, which spots are of crystalline formation. But if, when the mist appears, and before the spots show themselves, we withdraw the disc of glass, we obtain sublimates of the second order. Now, if we examine these three orders of sublimates by the microscope, the first is found to have a distinct crystalline texture; the second, to consist of circular colourless drops packed close together, rarely coalescing, and maintaining their separate character for weeks and months together, or from the first forming a continuous waving pattern with well-preserved interspaces: the third, also, of drops or waving patterns, but tinged more or less deeply of the colour with

which burning paper stains the fingers. This description is equally true of morphine, except that the crystalline form rarely shows itself before the alkaloid melts.

Dr. Guy proposes to call these three varieties of sublimate—the *crystalline*, the *watery* or *watered*, and the *smoked*.

Helwig, though he recognises the discoloration of the last-formed sublimates of strychnine and morphine, does not appear to have taken any notice of the watery variety. He seems to assume that the thicker stains of strychnine and morphine, in which, be it recollected, he does not recognise any crystalline formation, are the only ones worthy of attention; and to these alone does he apply his reagents. The watery and the smoked varieties seem to have been disregarded or rejected. But when we are dealing with substances which undergo in the heating such changes of form and colour, and when we call to mind that arsenious acid, which undergoes no such changes, does not always yield a crystalline sublimate, it is easy to understand how important it may become to turn to good account those sublimates of the alkaloids which do not assume a crystalline texture. And when we further recollect that many of the alkaloids yield no other sublimates than those which come under the description of *watery*, *watered*, or *smoked*, we must be still more anxious to try the effect of reagents upon those varieties, as giving a chance of discovering some certain means of diagnosis.

To the smoked sublimates the attention of the author was forcibly drawn very early in this investigation by the extraordinary size and brilliancy of the crystals instantly formed in a smoked sublimate of morphine treated with a solution of bichromate of potash—a result due in part, if not wholly, to the action of the distilled water itself. The discovery of this very curious and striking reaction with the smoked sublimate of morphia led him to select that alkaloid as an illustration of the sort of results which we may expect to obtain with the alkaloids and analogous active principles. The questions which must suggest themselves to the practical man equally with the philosophical inquirer are these:—1. What proportion of the sublimates of an alkaloid yielding crystalline forms may be expected to assume this character? 2. Do the reagents which produce characteristic effects on the crystalline sublimates affect equally, or similarly, or in any other characteristic manner, those sublimates, whether watery or smoked, which are wholly destitute of crystalline forms? These two questions are fully answered in an account of a series of experiments with morphine.

After obtaining eighty characteristic sublimates, the author arranged them in three classes, according as they contained crystalline forms, consisted of watery patterns, or were smoked. He then selected, for careful experiment and comparison, one specimen from each group, and applied to them distilled water as a reagent. He repeated this experiment with distilled water, and then adopted precisely the same procedure with dilute hydrochloric acid, solution of carbazotic acid, solution of bichromate of potash, and solution of nitro-prusside of sodium, successively, his object being to ascertain

whether the reagents which produce effects striking and characteristic with crystalline sublimates affect the two classes of non-crystalline sublimates in the same way, or in any other characteristic manner.

The following reactions supply the answer to this question:

1. Distilled Water—
   a. *Crystalline sublimate.*—Immediate solution. The dry spot shows small crystals and crystalloids.
   b. *Watery sublimate.*—Immediate development of small sparkling crystals, visible in dry spot.
   c. *Smoked sublimate.*—Immediate development on the smoky drops, and in the interspaces of large winged crystals and rosettes; further development in course of time: crystals permanent in dry spot.

2. Distilled Water, second experiment—
   a. *Crystalline sublimate.* — Immediate formation of crystals springing from the crystalline pattern at all points.
   b. *Watery sublimate.*—Large rosettes immediately developed.
   c. *Smoked sublimate.*—Immediate development of large winged crystals marked with radiating lines, and bearing a curious resemblance to insects of the order of the dragon-fly.

3. Dilute Hydrochloric Acid ($\frac{1}{20}$).
   a. *Crystalline sublimate.*—Immediate solution of sublimate; and on drying bundles of needles and prisms, chiefly at borders of crust, with numerous cubical crystals scattered over the centre.
   b. *Watery sublimate.*—Immediate solution; and, on drying, one small and one large bundle and numerous cubical crystals, as above.
   c. *Smoked sublimate.*—No immediate effect; but, after a time, separation of layers and detachment of large irregular fragments. In dry spot no bundles, but numerous cubic crystals, as above.

4. Carbazotic Acid ($\frac{1}{250}$).
   a. *Crystalline sublimate.*—Immediate thickening of liquid as seen by the naked eye; colour yellow by reflected, black by transmitted light. Crystalline spots slowly dissolved. Thick scum on surface of liquid, with floating bundles of crystals. Crystals also on glass, like scattered petals of flowers. In dry spot crystals still visible, and at margin of spot thick dark masses of coalesced discs.
   b. *Watery sublimate.*—Immediate thickening of liquid with abundant dark scum, and black granules formed instantaneously in the globules. No crystals. In dry spot the globules retain their shape, but are mottled.
   c. *Smoked sublimate*, with large oily globules. Immediate thickening of fluid, and development of dark spots, discs,

and lines in globules. A few bright crystalline bundles spring from some of the globules. Here and there bright stars. In dry spot the globules retain their shape; but their tint varies, some having a golden hue, some being marked with black streaks and ridges. Dark masses at margin; but no crystals except those of the precipitant.

5. Bichromate of Potash ($\frac{1}{100}$).
   a. *Crytalline sublimate.*—The crystalline figure quickly dissolved, mossy forms float on the surface, and brilliant crystals (stars, rosettes, and winged crystals, finely veined) spring up. Crystals permanent in dry spot.
   b. *Watery sublimate* (watered pattern and drops).—Instantaneous development of innumerable brilliant crystals, consisting of rosettes, winged crystals, and patterns of which the elements are discs and prisms. Some crystals float on the surface. Crystals remain in dry spot.
   c. *Smoked sublimate* (large coarse specimen).—Instantaneous solution, and immediate formation of groups of crystals of immense size and rare beauty, like fine brilliants closely set, or beautiful feathers springing from a centre, and in some places, at the end of some member of a group, a fan-like layer of fine radiating lines covering a considerable surface, and at the borders of these again fine bold crystals. Some of the feathery crystals (part of a group) fill the whole diameter of the field; also detached solid crystals of many forms, among which are seen four- and six-sided prisms. Many of the crystals may be fitly compared to smoked diamonds. Crystals permanent in dry spot.

6. Nitro-prusside of Sodium ($\frac{1}{100}$).
   a. *Crystalline sublimate.*—Immediate mossy scum, large rosettes springing from the crystalline patterns and elsewhere. These patterns gradually dissolved. In dry spot traces of the sublimate undissolved. Coarse crystals consisting of ovoid plates, some projecting vertically from the glass.
   b. *Watery sublimate.*—Instantaneous formation of many crystals, thin and disc-shaped, on radiating lines. Mossy scum. In dry spot numerous circular spots made up of discs, and the crystalline form of the nitro-prusside mottled and obscured by them.
   c. *Smoked sublimate.*—Instantaneous development of innumerable brilliant crystals (rosettes, winged crystals, and scissor-shaped) on the smoked globules. The crystals everywhere very distinct, with dark defined borders. In dry spot the smoked globules full of coarse dark crystals, and innumerable small crystals scattered over the field; also some crystalline forms, as in *b*.

It is thus clear that in the case of morphine, and probably in the

case of other alkaloids which yield crystalline sublimates, very strongly marked and apparently characteristic reactions are obtained with both the watery and smoked varieties of sublimate. Hence if, in any case, we fail of obtaining the crystalline sublimate which we desire as being most characteristic, we may still interrogate the watery or smoked deposit with an excellent chance of getting a marked reaction.

It will, indeed, have been observed that the finest crystalline forms spring, in four cases out of six, out of the smoked sublimates; and though the other two forms yield results remarkable for rapidity and brilliancy, they are equalled in these qualities, and greatly surpassed in the element of size, by the smoked variety. Of its reactions it is no exaggeration to say that, in the size and brilliancy of the crystals and the rapidity of their formation, they surpass every chemical reaction of which the author has had experience. Whether these reactions of the several varieties of sublimate of morphine and strychnine and the other alkaloids will prove as practically useful as they are strikingly novel and beautiful, is a question which must be reserved for solution. It will also be necessary to ascertain, by repeated experiments, whether they are constant, frequent, or exceptional.

One result, bearing directly on the practical application of the test of sublimation obtained in reference to morphine, is in confirmation of a similar result in the case of strychnine. By exposing first a strong, and then a weaker solution of acetate of morphine to the vapour of ammonia, Dr. Guy obtained a score of small crystalline spots, each of which, without exception, yielded its snow-white crystalline sublimate and a carbonaceous residue. The less soluble acetate of strychnine, treated in the same manner, gave also its crystalline spots and its snow-white spotted sublimates, leaving a residue of crystals, from which, doubtless, other sublimates might have been procured.

From these experiments with morphine and strychnine, therefore, we learn what similar experiments with spots of strychnine from solution in benzole had already taught, that spots deposited from solutions of these alkaloids yield more certain and satisfactory results than small fractions of a grain of the commercial alkaloids. The method of sublimation for simplicity of procedure, delicacy, and uniformity, will not suffer by comparison with any of our approved methods of qualitative analysis.—*Pharmaceutical Journal* for July, August, and September, 1867.

Microscopic Detection of the Alkaloids.—Dr. Leonard Sedgwick takes a different view from Dr. Guy of the value of sublimation as a means of recognition of the alkaloids. He advances the following objections to the process. The alkaloid may be destroyed; for all such bodies—indeed, all organic crystallizable bodies—are decomposable by heat, and some of the latter at not very high temperatures. The alkaloid may be lost, for, when reduced to vapour, some escapes through the chinks and crevices of the apparatus required; and as in toxicological researches the quantities are usually small, this loss

might be of much importance. Then, although there is no difficulty in getting a sublimate of some kind, he contends that the same alkaloid will sublime in very different forms under slightly different conditions, and thus that no reliance can be placed on the shape of the crystal or deposit as a mode of diagnosis; and he mentions that he has in his possession sublimates of very different alkaloids having identically the same forms. He instances likenesses between strychnine and santonine, codeine and santonine, and morphine and picrotoxine. The typical forms of each of these when obtained from the pure alkaloid and under the same general conditions are distinct and uniform, perfectly definite crystals of each alkaloid being obtainable; but the imperfect forms, those described by Dr. Guy, and which would be by far the commonest productions in toxicological investigations, resemble each other in a wonderful manner; and he concludes that the physical conditions under which the substance is sublimed has as much influence on the appearance of the sublimate as its chemical constitution. Among the physical conditions which most materially modify the form and appearance of the sublimate, and which even determine the occurrence of perfect and distinct crystals on the one hand, and an amorphous granular mass on the other—with any number of intervening forms—Sedgwick mentions the longer or shorter period during which the process is carried on, the comparative purity of the alkaloid, the nature of the substance with which it may be mixed, the greater or less amount of heat which is applied, and the warmth or comparative coolness of the surface on which the sublimate is received. These matters are not entirely under control, and are not to be measured.

If then, as he contends, the form and shape of the sublimate is not under all circumstances distinctive of the alkaloid from which it is derived, is there any advantage to be obtained from this process in the convenience of application of chemical tests, and is there any diagnostic value in the results? In answering this question, he remarks that the manner in which chemical tests act is twofold—by altering or producing colour, and by throwing down or dissolving a deposit. Colour tests, he observes, are objectionable for the microscope; for just as much as you magnify the object, in so much do you diminish the intensity of the colour: the processes tend to mutual destruction. Deposits are of two kinds; amorphous and crystalline. The former are clearly not to be relied on; an amorphous deposit is only an amorphous deposit, from whatever solution it may be obtained. We are limited, then, he says, to the production of a crystalline deposit; and in order that this may be useful, it must be easily and always obtained, and uniform in appearance. Crystalline tests do not develop their distinctive shapes unless both the alkaloid and the test are in solution.

Why then sublime to redissolve; why apply heat with some risk of destruction of the substance experimented on to get a sublimate dry, which must be dissolved before crystallization can be obtained, when the same result can be arrived at without any sublimation and without any heat? He attaches great diagnostic value to the forma-

tion of crystals under the microscope, and without depreciating the worth of the carbozotates, the chromates, &c., speaks of the iodo-sulphates as presenting striking forms, and easy of production. The remarkable form of iodo-sulphate of quinine and its bearing under polarized light led him in this direction. Iodo-sulphates of most of the alkaloids have been formed previously as chemical curiosities, but he is not aware that advantage has ever been taken of their peculiarities by the toxicologist for the detection of minute quantities of poisons. One advantage of the iodo-sulphates is that by a heat much below that which would decompose the organic base, the iodine may be driven off, and the suspected substance be left available for further and different tests. Sedgwick proposes the following as the mode to be followed, pending further experiments.

After reduction to a small compass, the suspected substance is to be treated with alcohol and dilute sulphuric acid, which will convert the alkaloid into a sulphate, and will dissolve it. A drop of this liquid is then to be placed on a microscopic slide, and a minute drop of alcoholic solution of iodine near it. Tilting the slide, the solutions are made to run together; when this is accomplished, which will require a few seconds, as there is at first mutual repulsion, the combined liquids are made to run over the slide by alterations of position; and whatever will run off is allowed to drop on to another slide, which is to be treated in the same way; and, in like manner, a third, if there be any fluid to run on to it. In a very short time crystals will form, which may be easily recognised under the microscope by their shape and also by their colour, which is usually red, or reddish brown. The polariscope is a great aid in distinguishing them. He says that it is impossible to give any description in words of the different crystals, that engravings only can give a correct idea of them; but he speaks of the iodo-sulphate of morphia as a reddish-brown rosette-shaped crystal, the iodo-sulphate of strychnine as a filiform star, and the iodo-sulphate of atropine as a bright red hexagonal plate, splitting into perfect triangles. In short, the iodo-sulphates of the different alkaloids are remarkably distinct in form, and to be recognised with great ease and certainty.—*Transactions of the St. Andrew's Graduates' Association*, 1867.

On Poisoning by Phosphorus.—Dr. J. Pestel reports a case of poisoning by phosphorus. A man thirty years of age was brought into the Hospital of La Châtre on the 10th of December, 1866. The patient on the 6th of December, about an hour after he had taken some soup from the hands of his wife, left his home to go to his work. On his way he was taken ill with sharp pains in his stomach, and excessive vomiting. Those who saw him at this time affirmed afterwards that there exhaled from his mouth and from what he vomited a white thick vapour. When received, four days later, into the hospital he was still in the same degree of pain in the epigastrium, the pain being increased by pressure. The abdomen was retracted, the sclerotic was yellow, there was a jaundiced condition of the skin, except in the face, which was congested. The eyes were much

sunken, but the pupils contracted under the influence of light; the tongue was large and moist, the features were contracted, and the countenance had an air of stupidity. There was free respiration, the surface of the skin was dry, the heat being moderate; thirst was excessive, the pulse was 84 per minute, the intelligence was intact. He was treated with leeches on the epigastrium, with gum-water, with calcined magnesia in milk as drinks, and with laxative lavements. On the following day the patient was in intolerable pain, the body was cold and the limbs were blue (cyanosed). He died about ten in the morning. The post-mortem was made by Dr. Pestel in conjunction with Dr. Auroux twenty-four hours after death. The cadaveric rigidity was marked. The lungs were congested, and there were pleuritic adhesions; the pericardium contained a teaspoonful of sero-sanguinolent fluid; the heart was healthy: the aorta contained venous-coloured blood. The liver was very remarkable, it was yellow in colour (chamois colour), and marbled: the surface was smooth: the section of the organ was not granular, but was throughout of uniform yellow tint: in size, consistency, and weight the organ was natural. The spleen, the pancreas, and the kidneys appeared healthy; the peritoneum was also healthy, and free of adhesions. The mucous membrane from the lips to the stomach was coloured yellow but was intact. The stomach was ecchymosed, and near the pylorus there was a superficial gangrenous spot. In the small intestine about two meters and fifty centimetres from the pylorus were two perforations opposite each other, one of these was small, only large enough to admit the head of a pin, the other was about half a centimetre in diameter. Near these the mucous membrane was reduced to a pultaceous mass.

The man himself had accused his wife of poisoning him with dog-bane (*colchique*), but the liver, the digestive tube, and the fluids it contained having been examined by MM. Tardieu and Roussin, these experts came to a different conclusion. They found, besides fatty degeneration of the liver, a large accumulation in the contents of the intestines, of ammonio-magnesian phosphate, with small fragments of deposited sulphur, some artificial ultramarine blue, and a little chip of white wood covered with sulphur; in a word, all the chemical constituents of a lucifer match minus the phosphorus. They were led thus to affirm that the man had died from phosphorus derived from lucifer matches, an affirmation which the confession of the wife afterwards verified in a startling manner.

M. Pestel adds to his report a word of caution. He says that if MM. Tardieu and Roussin did not find phosphorus in the parts which were submitted to their examination (as appears to have been the case) the fault rests with himself in that he plunged the structures destined for analysis into alcohol, not knowing at the time that the smallest quantity of alcohol would prevent phosphorus from burning with its characteristic green flame in the apparatus of Mitscherlich.—*L'Union Medicale*, August 22nd, 1867.

Calabar Bean as an Antidote to Strychnia.—Dr. Thomas R. Fraser, of Edinburgh, has published an admirable essay on the calabar bean. He first shows that the substance, when injected into the tissues of a living animal, finds its way into the stomach as to an excretory outlet, in this respect resembling in action antimony and arsenic, which, administered in whatever way, are eliminated, in part, through the digestive system. He has investigated the action of the poison in relation to the functions of various organs, but the part of his work which is to us of most interest is that in which he dwells on the bean as an antidote to strychnia. The subject of opposing physiological action is, he observes, a favorite one with many writers on poisons, and "antagonistic effects" have been largely discussed, as might be expected from their interest and practical applications. Nicotia, aconitia, and curare, have been proposed as counter-agents to strychnia, and atropia has been proposed as one to morphia. Calabar bean has been pointed out by the author and others as an opponent in action to strychnia; and, as with curare, its application in the treatment of tetanus has been recommended. Dr. Fraser believes that no other drug so directly diminishes reflex action, and is, therefore, so likely to be employed with advantage in tetanus, as the Calabar bean. Curare opposes spasm by paralysing motor nerves, nicotia by destroying muscular contractility, but Calabar bean attacks (if we may use the word) the spinal cord, which is necessarily implicated as the centre of every diastaltic action. There seems to be no reason why it should not always prove a certain cure in traumatic tetanus. Its success in strychnia poisoning will probably depend on the quantity, in relation to the case, that has been administered, or this poison—strychnia—may be considered to have two fatal doses; a smaller, where death is caused by asphyxia or exhaustion, and a larger, where, even if the tendency to death by asphyxia or exhaustion be averted, death will certainly occur by the special action of the poison on the histological structures which it attacks. Calabar bean may be employed with advantage, Dr. Fraser thinks, in the case where a small dose of strychnia has been made to produce its effects. Calabar bean (or, as it is now more learnedly called, *physostigma*) has also lately been proposed as a physiological antidote for atropia poisoning; and Kleinwächter has had the courage to employ it for this purpose, principally on the ground of its "anti-mydriatic" property. Dr. Fraser proves that the two substances, Calabar bean and atropia, appear to act in opposite modes on the ganglionic system of blood-vessels; but the nature of their effects on the cerebro-spinal system is such as to make it irrational to anticipate any success in their employment as counter-agents.—*Transactions of the Royal Society of Edinburgh, vol. xxiv*, 1867.

Nitrite of Amyl as an Antidote to Strychnia.—We have ourselves been recently inquiring as to the power of nitrite of amyl as an antidote to strychnia. Our researches have been confined to frogs. A frog weighing 590 grains, having been treated with the $\frac{1}{80}$th of a

grain of strychnia injected by solution into the dorsal sac, was placed under a bell-jar having a capacity of 300 cubic inches, at a temperature of 60° Fahr. In a brief time acute tetanic action was developed. Then one grain of nitrite of amyl was taken up on a piece of bibulous paper, and put under the bell-jar with the tetanic animal. In a few minutes the tetanic action entirely ceased, and when the animal was touched there was no spasm. An electric current from a single Grove cell also failed to excite any action. The animal, indeed, seemed to be dead. In this state it was left for several hours under the bell-jar, a little water being poured around it. Nine hours afterwards, on being touched, it showed once more all the evidences of life, and the tetanic convulsion was again in full vigour. The dose of nitrite of amyl was now repeated as before, and with precisely the same effect. In this manner the action of the strychnia was neutralized from time to time for so long a period as five days; and indeed, it was not easy to tell the precise time of the death. The death was clearly caused by the antidote, as it was a continuance of the cataleptic sleep. The limbs remained flaccid until the tissues commenced to decompose. In a second experiment, so soon as the strychnia was injected, the animal, also a frog, was put into a jar, in which the vapour of nitrite of amyl was diffused in the proportion of one grain and a half through 300 cubic inches of air. The action of the nitrite in producing a relaxed condition of the muscles was such that all the symptoms of strychnia were delayed. After an hour the frog was taken from the jar, and was exposed to the air at 60° in a saucer holding a little water. In six hours the symptoms of strychnine tetanus began to show themselves, and were soon fully developed. They were quickly subdued by the further administration of the nitrite, and the nitrite being administered with more minute care the animal recovered. In a third experiment the dose of strychnia was increased to the 60th of a grain, and when the tetanus was quite developed the nitrite was applied in vapour, as in the first experiment. The results were the same. In two other experiments the nitrite was injected under the skin, and with similar results to those which followed inhalation. From all our experiments we infer that nitrite of amyl is a direct physiological antagonist to strychnia in frogs, and as it is less permanent in its action than a solid substance, and as it may be given by inhalation as well as by injection, it may prove to be an antidote of much value both in strychnia poisoning, and in tetanus from a wound.

II. Summary.

On Earth Sewage. By Inspector-General Hare.—Medical Times and Gazette, Dec. 20th, 1867.

A short paper on Moule's system of earth sewage, and on the practice of the system in India. The author maintains that the system of earth closets must in time supersede the water-closet altogether. He

has invented a seat for the closet which allows the solid excreta to be carried away without mixing with the urine, a separation which is essential to the proper working of the earth system. This effected, not more dry earth than the weight of the excreted matter itself is sufficient for the purpose of deodorization, which is, in fact, a process of drying.

It will be remembered that some years ago Dr. Thudichum persisted on the fact—an original fact, by the way and exclusively his own—that no system of sewage could be complete, or even reasonable, that did not commence by a separation of the fluid from the solid excreta. Dr. Thudichum also invented a plan for carrying out his suggestion, which is virtually the same as the plan actually carried out, in India, by Inspector-General Hare.

Cases and Observations relating to Obstetrical Pathology and Infanticide. By John A. Liddell, M.D., of New York. '*New York Medical Journal,*' *July and August*, 1867.

Death from Chloroform on its Third Administration. By H. A. Dubois, M.D., U.S. Army. Ibid.

On Colchicia. By John M. Maisch. '*American Journal of Pharmacy and Pharmaceutical Journal*' *for November*, 1867.

[A short, useful essay on the nature of colchicia, and the chemical tests for it. The author looks on colchicia as an alkaloid, the salts of which are soluble in water, but are decomposed with the formamation of colchiciene, on keeping them in solution as well as on evaporating them.]

The case of Henry Gabites; a Medico-Legal Study. By John Kitching, M.D. '*The Journal of Mental Science,*' *July*, 1867.

[A thougthful review of the career and character of Gabites, establishing his insanity, in the scientific meaning of the term, beyond dispute.]

REPORT ON MIDWIFERY.

By Robert Barnes, M.D., F.R.C.P.,

Obstetric Physician to St. Thomas's Hospital; Examiner in Midwifery to the Royal College of Surgeons.

I. The Non-Pregnant State.

1. *Absence of Vagina; Voluminous Swelling formed by Retention of Menstrual Blood; Operation; Death.* By Dr. Gosselin.
2. *A Case of Coccyodynia Cured by Operation.* By Dr. George Kidd.

1. A girl, aged 18, had felt for two years acute pains in the abdomen, sacrum, and hips, in exacerbations lasting from three to eight days. No blood ever escaped. A tumour found reaching above the umbilicus, and filling the iliac fossa. On either side was a tumour, hard, moveable. These were diagnosed as uterus and Fallopian tubes distended. No vaginal opening could be discovered. The catheter in bladder was felt by finger in rectum. Severe colic pains set in. An artificial vagina was made; a large quantity of thick chocolate-fluid was emptied. Later purulent and fetid fluid issued; hectic; and the patient died on the fifth day. The abdominal cavity held a large quantity of chocolate-coloured fluid; the omentum was thickened, united by old adhesions to the uterus; recent peritonitis. Both tubes and ovaries were adherent; on both sides the inner half of the tubes was thickened, the orifice obliterated, The inner part of the outer half of the tube was thinned, and had on the right side two, on the right one opening through which the fluid had escaped into the abdominal cavity. The three openings were found in spots where old adhesions with the omentum existed, and the sinking of the emptying uterus probably gave rise to stretching of the adhesions and rending of the tubes.—*Gaz. des Hosp.*, May, 1867.

2. Dr. Kidd cites the account of the affection given by Simpson, Scanzoni, and West. His own case is as follows: He attended a young lady in her first labour. She had a very long and unyielding perinæum. When she began to move about she had great pains in the coccyx; it was greatest in sitting down and rising up. After much unavailing treatment, Dr. K. resorted to subcutaneous incision. He introduced a narrow, long-bladed tenotome at the point of the coccyx, close to the right side, to above the part found tender on pressure. He then cut from behind forwards, keeping close to the bone, dividing all the tissues on that side: he then carried the knife round the apex, cutting all the fibres attached there, then passing it up the left side, divided the tissues in the same way. Only a few drops of blood escaped. The relief gained was complete.—*Dub. Q. Jour. of Med. Sc.*, Nov., 1867.

II. Pregnancy.

1. *On the Structure of the Placenta.* By Dr. P. Jassinsky, of Charkow. ('Virchow's Archiv,' 1867.)
2. *Diffuse Myxoma of the Ovum Membranes.* By Dr. Eberth.
3. *The Treatment of Early Abortion.* By Dr. John A. Byrne.
4. *Case of Early Abortion; Retention of Placenta; Phlebitis.* By Dr. Gogarty.
5. *On Fever Complicated with Pregnancy.* By Henry Kennedy, M.B.
6. *Two Cases of Abdominal Typhus in Advanced Pregnancy.* By Dr. Wallichs.
7. *On the Reciprocal Influence of Pregnancy, Labour, and Childbed on Malarial Infection.* By Dr. Ritter.
8. *A Case of Extra-Uterine Pregnancy.* By Dr. Fisk. (It terminated fatally; the dissection is related ('Berliner Klin. Wochns.,' April, 1867).
9. *Note on Uterine Metrology.* Dr. Matthews Duncan. ('Edinb. Med. Journ.,' Sept., 1867.)

1. *The conclusions of Dr. Jassinsky are*—1. There are thick villi, which are modifications of the uterine glands.

2. In woman, as in other animals, the chorion-villi grow into the uterine glands.

3. In the placenta are found immediately after birth two kinds of villi: (*a*) free, ordinary chorion-villi, and (*b*) complex villi, that is, villi contained in the uterine glands.

4. The free villi consist of a simple layer of flat epithelium, and of a simple structureless membrana propria.

5. The complex villi consist of two structureless membranes and two epithelial layers, of which the outer one consists of cylindrical epithelium, the inner one of flat epithelium.

6. The number of complex villi is much smaller than that of the simple.

7. Not all the uterine glands are occupied by chorion villi; many of them remain free.

8. In mature placentæ, all the glands, the free, as well as those to which villi have grown, show a marked fatty degeneration.

9. From the histological aspect the tissues of the maternal portion of the placenta belongs to the epithelioid tissues.—*Virchow's Archiv*, 1867.

2. *Dr. Eberth's paper.*—The specimen came from a healthy woman. The membranes were much thickened. On the chorion were numerous fluctuating flat elevations from the size of a pea to that of a bean. Fresh incisions through membranes showed between chorion and amnion a gelatinous mass resembling Wharton's fluid. This gave the reaction of mucin, and traces of albumen. Here and there ran fine fibrils of connective tissue between the membranes. The substance also held numerous spindle and star-shaped cells, with one or multiple nuclei. Amnion and chorion were very tough, the

intermediate layer had entirely disappeared; and the myxomatous growth did not belong to this but to the membranes themselves.—*Virchow's Archiv*, May, 1867.

Pregnancy Complicated with Sub-acute Peritonitis (*Dr. Ringland*) A pluripara had peritonitis begining in the second month of pregnancy; the abdomen enlarged enormously. At the end of four months dyspepsia and cough came on, and the abdominal pain was more acute. Fluctuation was distinct over the entire abdomen; the uterus could not be felt; urine slightly albuminous; pulse 120. Labour set in three weeks before term. Some relief was felt, but the size of the abdomen was not sensibly lessened. About twenty-our hours after labour she felt a sudden rushing away of a large quantity of fluid. It came from the vagina; the abdominal tumour subsided, and the uterus could be then felt. She recovered. Three weeks after labour a large quantity of fluid again collected in the abdomen and was again discharged by the vagina. This was repeated four times. It is conjectured that the channel of escape was the Fallopian tube.—*Dubl. Q. Jour. of Med. Sc.*, August, 1867.

3. Dr. Byrne cites the doctrines of various authors on the questions of using instruments to remove the remains of the ovum, or the fingers or plugging. He is in favour of plugging first, then of removing the placenta by one or two fingers. He thinks the only case warranting the use of an instrument is that of the ovum lying loose in the uterus.—*Ibid.*, Nov., 1867.

4. *Dr. Gogarty's Case.*—The patient aborted in the third month. The embryo was expelled, but not the secundines. On the fourth day clotting took place in the veins of the left leg, attended by sudden fainting. The escape of the placenta was looked for, but was not detected. Dr. G. advocates the use of Dr. Bond's placental forceps for removal of retained and adherent débris in abortion.—*Ibid.*, Nov., 1867.

5. Dr. Henry Kennedy contributes a number of observations in illustration of this important subject. The form of the fever is not always clearly indicated. Dr. Kennedy makes the following remarks:—The occurrence of fever with pregnancy can scarcely be looked upon as a very serious affection to the mother. The mortality is very small. He thinks abortion is sometimes critical—the fever declining with great rapidity. When the child is retained, the fever runs its usual length. The fever which attacks pregnant women is rarely typhus, the cases where spots appear being exceptional. When typhus or typhoid attacks, the case is the more serious. The treatment should not be modified on account of pregnancy.—*Ibid.*

6. Dr. Wallichs, practising in Neumunster, observed an epidemic of abdominal typhus, during which about 100 persons were affected; amongst them two women, in advanced pregnancy, were seized on successive days. Dr. W. remarks that observations of this kind are very rare (and the reporter would add that information as to the reaction between pregnancy and zymotics is very scanty). His first

case was that of a woman eight months pregnant. Diarrhœa: temp. in morning 39° C.; in evening 40°; pulse 120; bronchial-catarrh; roseoloid exanthema; delirium were the symptoms. Acting on the theory of Bartels and Brand, that the danger in fever depends on the increase of temperature, and fearing lest the plan adopted to reduce the temperature by wrapping in wet sheets might excite uterine contractions, he applied wet cloths to the spine. This diminished the heat, and was followed by sleep. She did well for three weeks, when there was a slight relapse. A healthy girl was born at term; and puerpery was gone through without accident. The second case was that of a woman seized in her seventh month. The fever was intense. Wet cloths were applied whenever the temperature rose to 40° C. At the end of three weeks the temperature fell somewhat. Then a strong rigor occurred, and was followed by a temperature above 40°C. This was repeated in a few hours. These were the forerunners of labour, which set in and ended in birth of a living girl. Severe bronchial catarrh and fever delayed recovery, which, however, was ultimately attained. In an appendix, Dr. W. cites a memoir by Dr. Kaminsky, who submits that the death of the fœtus *in utero* is not due to typhus alone, but principally to the great increase of temperature that attends febrile diseases. He observed restlessness of the fœtus, and increase in the frequency of its heart-beat whenever the temperature rose above 40°C.—that the heart-beat ceased at 42° to 43°·5″. The children were often expelled the day after death. K. also observed that metrorrhagia was more frequent during the first half of gestation, and the mortality much greater than in the latter half.—*Mon. f. Geburtsk.*, Oct., 1867.

7. Dr. Ritter concludes that pregnant women enjoy no immunity from ague. That infection does not dispose to abortion. Large doses of quinine during pregnancy were not useful. Labour arrests the periodical attacks, as the author observed four times. He observed fourteen cases during childbed. In two cases malaria infection occurred during the first week; six times during the second; three times during the third week. The form of the affection was always acute. Childbed seems to be a very powerful influence in causing a relapse to acute form of very feeble traces of chronic affection.—*Virchow's Archiv,* 1867.

III. Labour.

1. *Cases Illustrative of the Use of the Forceps.* By Dr. A. B. Steele.
2. *On Face-Labours.* By Dr. Winkel.
3. *A Peculiar Method of Extracting the Head in Breech and Foot Presentations.* By Dr. Gosselin.
4. *A Peculiar Case in Obstetric Practice.* By Dr. W. Bryce.
5. *On Labour in Shoulder Presentation.* By Prof. Lazzati.
6. *On the Treatment of Prolapsed Funis.* By Dr. K. F. I. Birnbaum.
7. *Postural Treatment of Prolapsus of the Funis.* By J. G. Wilson, M.D. (Glasgow Med. Journ., 1867.)

8. *Cases of Injury to Bones and Joints in Parturition.* Dr. MATTHEWS DUNCAN.
9. *Live-born Twins of apparently Different Stages of Maturity.* By Dr. C. MARTIN.
10. *Observations on Cephalotripsy.* By Prof. CHIARA.

1. Dr. Steele's cases illustrate the advantages of timely resort to the forceps. One case shows that it is not necessary to wait for full dilatation of the cervix. One illustrates the application to a face presentation. The head was just beginning to engage in the hollow of the sacrum; the blades were applied over the sides of the posterior part of the head; by a lever action, with scarcely any downward traction, Mr. Steele caused the occiput to sweep the curve of the sacrum; the chin at the same time ascended behind the pubis, and delivery was soon effected.—*Liverpool Med. and Surg. Reports*, 1867.

2. Dr. Winkel has collected a statistical group of 376 cases of face-labour. He draws the following conclusions as to the causes. Face presentations rarely happen through one cause alone, but almost always through the combined action of two or three simultaneously disposing factors. The most frequent combination is, pelvic narrowing, a large child, scanty liquor amnii; another is pendulous belly with pelvic narrowing.—*Mon. f. Geburtsk.*, July, 1867.

3. This is Dr. Goschler's method. After the shoulders are born the child's body is laid upon the operator's left fore-arm, and grasped with the right hand on the neck as high as possible. No more tractions are made than if the forceps were applied. The left hand, with the child resting upon it, must follow the movements of the right hand in a straight line, so that during the rotations the spinal column shall at no point suffer movement, much less bending. Through this plan the author attains the twofold end:—1. Protection of spine and medulla from stretching or injury; 2. To increase considerably the force of the movement of the head in the pelvic cavity; since acting through the length of the lever (the child's body) it is multiplied.—*Wien Med. Presse*, 1867.

4. Dr. Bryce's case was one in which a very large renal cyst complicated pregnancy, suggesting, on examination, the complication of an extra-uterine gestation with uterine gestation. Inflammation supervened, and death took place shortly after birth of an uterine fœtus.—*Edinb. Med. Journ.*, Nov., 1867.

5. In an admirable memoir on shoulder-presentation, Lazzati illustrates the following propositions: That, wheresoever possible, attempt should be made to correct this presentation, *i. e.* to restore the head, as rendering spontaneous delivery possible. That corrections may be attempted with prospect of success, either during the end of gestation or at the beginning of labour, by external compression or manipulations when the head of the fœtus is to be brought over the inferior segment of the uterus. That, in labour somewhat advanced, or when attempt at correction fails, it is better to bring down the nates practising turning by the feet. That Nature sometimes completes

labour by the shoulder by herself, the modes being, (*a*) spontaneous cephalic and podalic *version;* (*b*) spontaneous cephalic and podalic *evolution.* That spontaneous version by the feet is a true natural substitution of the pelvic region for that of the shoulder, brought about whilst the fœtus is still entirely in the uterine cavity, and above the brim of the pelvis. That spontaneous evolution is the true natural labour by the shoulder, which is accomplished, things being favorable, under the laws and mechanism governing the passage of all other parts through the pelvic canal. That as to spontaneous version we may substitute artificial version by the feet whilst the fœtus is free, so when the shoulder has descended deeply into the cavity, if spontaneous evolution cannot be effected, labour may be completed by artificial evolution. That artificial evolution is always fatal to the child, and somewhat dangerous to the mother.—*Annali Universali di Medicina, Milan,* October, 1867.

6. Dr. Birnbaum gives an historical *résumé* of the plan of replacing the cord by putting the woman in the knee-elbow position. He quotes Deventer, 1701; John Mowbray, 1724; Henry Bracken, 1737, and others, as having recommended this practice; and more lately V. Ritgen (1848). As a pupil of Ritgen's, B. says he has often practised this method. He says—When a loop of funis is still high in the cervical canal, and the cervix scarcely admits the examining finger, it may be that the knee and elbow-position is useful; but when the loop has once passed through the os uteri, whether head, trunk, or foot present, it will be vain to expect any good from this position. He remembers no case where manual aid was not also necessary, in addition to the knee-elbow or side position to replace the cord, or to extract the child.—*Mon. f. Geburtsk.*, Oct., 1867.

8. *Death from Pulmonary Embolism.*—Case 1. A primipara had been three days in labour. A large hard head was impacted in a small pelvis. Large forceps could not deliver. Craniotomy was resorted to. Two weeks afterwards there were extensive vaginal sloughs. The patieut died on the thirty-seventh after delivery of pulmonary embolism. She had a fit resembling epilepsy, the pulse became imperceptible, breathing laboured, face pale; death very rapid. Both pulmonary arteries contained large decolorised clots. The right common iliac vein contained a partially decolorised clot, which extended as far as the vena cava, into which its end projected. Vesico-vaginal fistula; sloughy openings between the bladder and cellular tissues of the pelvis. The promontory of the sacrum anteriorly denuded to area of a sixpence. At this part a lamina of the upper articular surface of the first bone of the sacrum was separated from the rest of the bone, and adherent to the fibro-cartilage.

2. *Abscess of the Symphysis.*—A secundipara had a difficult labour terminated by forceps. Urine afterwards passed involuntarily. She had not been able to use her legs in walking three weeks after labour. A fissure was found along the top side the whole extent of the urethra; a probe could be passed three inches behind the symphysis

pubis. The symphysis could be felt and heard to move. Three days later the finger could be passed into the pubic joint. Much pus was discharged. The inter-articular cartilages and some pieces of bone were subsequently discharged. Three months after delivery the woman regained her walking powers. Dr. Duncan says the forceps were unskilfully applied. He has no doubt the injury was inflicted by the instrument, on the lower border of the symphysis pubis.

3. *Injury of right frontal* (?) *bone of child.*—A woman was delivered of a large child by long forceps. The brim was contracted. On the fourteenth day the child showed a round excavated sore above and in front of the right ear, where the point of the blade had impinged. A minute sequestrum of bone was discharged.—*Edin. Med. Jour.*, Oct., 1867.

9. A woman was delivered at about seven months of gestation of twins. The placentæ were united, one common chorion enclosed the embyos. There was, however, an amniotic septum, giving each its own sac. One child weighed 344 grammes, and measured 17 centimetres from breech to skull; the other weighed 920 grammes, and measured 23 centimetres. Both looked healthy, and made inspiratory efforts, but soon died.—*Mon. f. Geburtsk.*, July, 1867.

10. In a case related, the conjugate diameter was only 54 millim. ($2\frac{1}{8}$-in.). Having baptized the fœtus by injection, perforation was performed by Blot's instrument. Cerebral matter escaped, yet auscultation revealed cardiac action four hours afterwards, and fœtal movements were also felt. Depaul's cephalotribe was then applied. Traction made by instrument ended by slipping off. Repeated crushings were made, and attempts to turn. These did not succeed. The professor thinks version should not be attempted when the conjugate diameter is below 60 millim. ($2\frac{1}{3}$-in.) After attempts at delivery by the sharp and blunt hooks, another crushing was effected with the cephalotribe, and the patient was left till the next morning, about seven hours. By this time uterine action had driven the broken-up head well into the brim. Another crushing was made, but the instrument quickly slipped on trying traction. The head was at last extracted, partly by forceps, partly by hand. The shoulders resisted the most powerful manual tractions. A strong cord was then passed round the neck, and attached to Joulin's *appareil à tractions*. By this means in a few minutes the body was delivered. The patient did well.—*Pamphlet, Turin*, 1867.

The following memoirs were read at the Dublin meeting of the British Medical Association, and have been since published in the 'British Medical Journal.'

Lectures on Obstetric Operations: the Forceps. By Robert Barnes, M.D. (Med. Times and Gaz., vol. ii, 1867.)

On the Cephalotribe. By George H. Kidd, M.D., Sir James Simpson, J. Braxton Hicks, M.D., and John Ringland, M.D.

A Clinical Discussion on the Cæsarean Section, and its claims as an operation of Selection. By ROBERT GREENHALGH, M.D.

IV. THE NEW-BORN INFANT.

1. *A Case of Successful Treatment of Apparent Death of a New-born Child by Transfusion.* By Dr. BENEKE.
2. *On an Apparatus for Catheterization of the Air-passages, and for Dilatation in New-born Asphyxiated Children.* By Dr. LÖWENHARDT.

1. A child delivered by turning, in eighth month, was born asphyxiated; its breathing and heart-beat had ceased about fifteen minutes. Five quarters of an ounce of well-defibrinated and warm blood was injected by a glass syringe into the vein of the umbilicus. Breathing and pulsation ensued; but the ill-developed child died in nine hours No thrombi were found anywhere. The brain was anæmic.—*Berlin Klin. Wchns.*, 1867.)

2. Dr. L. prefaces that a number of examinations of dead children in whom fruitless attempts at resuscitation had been made, taught him that what prevented the access of air was the accumulation of mucus, blood, and other fluids in the larynx and air-tubes, the result of premature efforts to respire. He further calls attention to a sure sign of life—it is the existence of pulsation in the fœtal part of the umbilical cord, which may be discovered when every other sign of life is gone. To feel this pulsation in the umbilical vessels the insertion of the cord must be seized between finger and thumb rather deeply, and in such a manner that the volar surface of the hand lays gently on the child's belly over the region of the liver. In no case, says Löwenhardt, in which this beat was not felt has the child recovered. He then describes his apparatus. It consists of a pump and a fine india-rubber tube ten inches long, with catheter openings at the end. This tube is inserted by the aid of a fine stilet into the trachea in the following way:—an assistant with thumb and finger presses the neck above the larynx, closing the œsophagus, whilst the operator depresses the tongue with his forefinger and slips in the tube. This tube is then attached to the aspirating pump, which is used to draw out the obstructing fluids; then air is gently introduced. —*Mon. f. Geburtsk.*, 1867.

CHRONICLE OF MICROLOGY.

By J. F. Streatfeild, F.R.C.S.,

Assistant-Surgeon to the Royal London Ophthalmic Hospital, and Ophthalmic Surgeon to University College Hospital, &c.

Part I.—Physiological Micrology

Coloured Blood-corpuscles of the Vertebrata.—Mr. Gulliver, in answer to a recent paper of Professor Rolleston's, on the subject of a nucleated appearance of these corpuscles in the case of the two-toed sloth, says—"Further observations are required to prove how far such phenomena may be due either to a solution and displacement of the colouring matter from commencing putrefaction, or to an irregular refraction of and interference in the tissue by disfigured and discoloured parts of these decaying corpuscles. As it does not appear that the so-called nuclei were subjected to chemical examination, we are left in doubt as to their real character. Coloured corpuscles, apparently nucleated, are not uncommon in mammalia, but never regularly more than one or two of such nucleated corpuscles to a hundred of the characteristic non-nucleated corpuscles; and so scanty are the irregular ones as to render a chemical examination of them a matter of difficulty.

"In the coloured corpuscle of most pyrenæmata this nucleus is more or less rounded in form, and an ellipse of variable proportions; it is not only insoluble in water and in acetic acid, but is actually made more distinct under the action of this acid. When a single or thin layer of these coloured blood-cells is dried on an object-plate, their nuclei, so far from being rendered invisible by the moisture of the breath, are more clearly brought into view after we have breathed upon this stratum of coloured corpuscles; and so little are the nuclei prone to putrefaction, that they continue apparent long after the coloured and pale cells and other forms in the blood have been destroyed by this process. The chemical characters of the nuclei of the blood-discs of pyrenæmata and the lymph-globules of apyrenæmata and birds are identical, excepting some curious minor points.

"Of oviparous vertebrates, if we look at the fresh-coloured corpuscles swimming in the liquor sanguinis on an object-plate, a few of them may show their nuclei, and more not so. Add some water to this blood, and the majority of the cells will exhibit their nuclei. Treat another drop of the same blood with acetic acid, and the mass of the cells will disclose their nuclei beautifully. Dry a fresh and very thin layer of the like blood on an object-plate, when some few nuclei may be visible; then breathe upon it, and the cells will soon be seen to be regularly nucleated, and perhaps some of the nuclei more or less tinged by displaced colouring matter. Finally, set a separate sample of this blood aside until the form of the cells has been destroyed by incipient putrefaction, when the nuclei will dis-

tinctly remain the chief morphological objects visible in the field; and thus these vertebrates belong to the pyrenæmata.

"Next repeat each of these experiments on the coloured corpuscles of man and mammalia. The results, as far as regards nucleation, will be plainly in the negative; and thus these vertebrates belong to the apyrenæmata.

"It used to be argued, both in Britain and on the Continent, that the comparative minuteness of the blood-discs of man and mammalia was the cause that the still smaller nuclei escaped detection. But, after my discovery of the large size of the coloured corpuscles of the great ant-eater, two-toed sloth, and capybara, I searched them in vain for nuclei, when the results proved in this respect as completely negative as those obtained from other apyrenæmata, including cetacea, marsupialia, and monotremata; while in certain birds with the coloured corpuscles, but a shade larger, and some rather smaller, than many of the coloured corpuscles of the ant-eater, the nuclei were always very plainly seen; nor could I ever find that either the large circular coloured corpuscles of the elephant or the smaller oval ones of the camels, afford any exception to the non-nucleated character of the coloured corpuscles of mammalia.

"In reality, the coloured corpuscle of apyrenæmata is quite a peculiar body, without a known equivalent or homologue, as a preponderating organism in the blood, among any of the lower classes of the vertebrate sub-kingdom."—*Journal of Anatomy and Physiology*, Nov., 1867, p. 1.

Peripheral Termination of Motor Nerves.—M. Trinchese, professor of the Genoa University, has drawn the following conclusions:

"1. In all the animals in which he has been able to investigate the subject, a special organ, the *motor plate*, at the end of the *cylinder axis*, has been found.

"2. The following is the manner in which the nervous element is united with the muscular fasciculus:

"When the muscular fasciculus is provided with sarcolemma and the nervous element with a sheath, this blends with the envelope of the primitive muscular fasciculus at the point at which the nervous element meets with the muscular fasciculus. At the same point, or a little before, the medullary substance stops, whilst the *cylinder axis* goes on and enters the motor plate.

"3. The motor plate is placed beneath the sarcolemma. It appears generally as a cone, of which the summit is directed to the side of the nerve-tube, whilst the base rests on the primitive muscular fibres.

"4. This plate is formed of two superposed and quite distinct layers, especially in those animals which have large plates—the torpedo, for instance. The upper layer is of a granular substance; the lower is perfectly homogeneous, and is probably only an expansion of the cylinder axis.

"5. In the substance of the granular layer of the plate is found, in the torpedo, a system of canals, in which the cylinder axis ramifies

as a large-meshed network. These canals are bounded by a sheath which forms their walls.

"6. When the muscular fasciculi have a central canal the granular substance of the plate is prolonged into the granular substance contained in this canal.

"7. In animals provided only with smooth muscular fibres the cylinder axis traverses the granular substance of the plate dividing into two filaments which have pointed ends at the two extremities of the contractile element.

"8. Altogether it appears that each primitive muscular fasciculus shows one motor plate only. In this one or many nervous elements, proceeding from the subdivision of the same nervous tube, may end.

"9. The diameter of the motor plate increases in proportion with the size of the primitive muscular fasciculus."—*Journal de l'Anatomie et de la Physiologie*, Sept. and Oct., 1867, p. 498.

Connective Tissue of the Human Eyelids.—Professor Stieda remarks, in the first place, that Henle has in the same—that is to say, in the tarsal conjunctiva—described blind-intestinal-like glands, which were unclothed by a regular cylinder epithelium, whilst the free surface of the conjunctiva has a statified pavement epithelium. He finds, moreover, also that the different histologists are not quite of the same opinion concerning the nature of the epithelium of the connective tissue.

On perpendicular section of the properly hardened eyelid the tarsal conjunctiva forms a strip 0·124—0·166 mm. broad, which at its free edge is limited by a tolerably straight-drawn outline, from which it may be concluded that the mucous coat has here no kind of irregularity, but is even. In the mucous coat one distinguishes plainly the connective tissue ground layer and the epithelium. The connective tissue ground layer has the appearance of a net-like connective substance with interspersed lymphoid elements (Henle's conglobate gland substance), and is, in the most superficial layer, changed into a homogeneous elastic membrane, which is limited by a slightly woolly contour. But the connective tissue ground layer of the mucous membrane becomes interrupted in sections made perpendicularly or obliquely, which extend soon more or less deeply towards the tarsal tissue. Besides there are found in the tissue holes or spaces of a roundish shape, or extended lengthways. These incisions and the spaces are distinguished by their epithelial covering. Whilst on the free surface three to five layers of cells of 0·007—0·011 mm. lie one upon another (the outermost flatter, the undermost rounder), the covering shows, both in the incisions and also in the spaces, a very regular cylinder epithelium, mostly only a single layer of distinctly nucleated cells of 0·02 mm. high and 0·01 mm. broad. The flat epithelium is seen in the incisions abruptly to change into the cylinder epithelium; but now, whilst the perpendicular sections of that incision gives a representation which in cross section a blind intestinal-like gland calls to mind, Stieda, by horizontal sections of

palpebral conjunctiva, is led to another view; that is to say, he finds roundish or irregularly formed masses of the connective tissue ground-layer of the connective coat edged about with cylinder epithelium, or about it, otherwise to be expressed, he finds the tissue of the mucous coat traversed by numerous canals anastomosing with each other, which were covered with cylinder epithelium. The different appearance of the mucous coat in perpendicular and horizontal section is explained in that, according to Stieda, only by the acceptation of *numerous furrows or incisions traversing the mucous coat in all directions, intersecting abundantly, now deeper, now more superficial, now directly, now obliquely, penetrating deeply, ending here and there in blind points*, which are everywhere clothed with cylinder epithelium, whilst the epithelium on the free surface consists of roundish or flat cells. Those parts of the substance of the mucous coat bordered by furrows or incisions one may, perhaps, denote as a papilla, as is often done.

The difference of authors in regard to the epithelial covering of the connective coat seems to find a satisfactory conclusion in this, that in children, in whom the unevenness of the connective coat are as yet very little marked, such like differences between the epithelium of the surface and of the deeper parts cannot be recognised; rather the whole connective coat of the tarsus is covered with cylinder epithelium. In consequence of the friction which afterwards takes place the cylinder epithelium on the surface is changed into flat epithelium, whilst that in the deeper parts can maintain itself undisturbed.—*Schmidt's Jahrbücher*, vol. cxxxvi, No. 2, p. 147.

Purkinjean Fibres of the Heart: of their structure and texture.—Dr. Obermeier says, in epitome, at the conclusion of a long paper:

1. I have found the Purkinjean fibres in the sheep, ox, pig, horse, dog, goose and pigeon; not in the cat, in human beings, in the hare, in the mouse and frog.

2. The Purkinjean fibres are only found between the endocardium and the muscular structure, and form altogether a bag-like network of a form, like the inner surface of the ventricles of the heart. They are of a moderate (2 to 3 grains) thickness, and varying breadth. They lie beneath the main structure and in the elastic fibre layer of the endocardium, in one, two, three separate layers in succession, in such a manner that they are always separated from the muscles by a various scanty connective tissue layer.

3. The Purkinjean fibres partly terminate in the endocardium, blunt or pointed, or pass deeply into the muscular structure, or so pass over into the muscular fibres that no definite limit can be made out between these fibres and the muscular fibres concerned.

4. The polyhedral or cylindrical-shaped divisions formed by the fibres, the so-called granules, exhibit short cylindrical muscular bundles, of which the greatest diameter, the axis, lies in the plane of the endocardium, and follows the direction of the fibres.

5. These short muscular fibres consist of a very hyaline, cross-streaked muscular substance, and contain numerous hyaline masses,

nucleolar bodies, and granular masses. The latter may only amount to a minimum, or may be altogether wanting.

6. The Purkinjean fibres lie in a lamellar framework of connective tissue. These lamellæ have no appearance of any cross streaking.

7. Since the word fibres for these structures is altogether indefinite, I venture to propose the expression Purkinjean muscle-chains. —*Archiv für Anatomie, Physiologie, und Wissenschaftliche Medecin*, 1867, Part III, p. 385.

Spermatic Fluid of the Aged.—The investigations of M. Dien, of the Invalides, gives the results of 105 autopsies of men between the ages of 64 and 97. There were no spermatozoa in 64 of the 105; that is to say, that in 61 per cent. no spermatozoa were found. (Other like observations to those of the author would diminish this per-centage, but they are based on observations in cases of an average less-advanced age.) Four of the author's observations were of nonagenarians; of these, none had spermatozoa. Of the 64 who had no spermatozoa, 26 died of old age. The spermatozoa, when present, are more or less abundant. In 14 cases in which the spermatozoa were not abundant, some were perfect in form, but most of them had truncated tails, whilst others, the last vestige of them, only showed the heads. If spermatozoa were absent, or almost wanting, there were other interesting peculiarities in the seminal fluid—numerous granular cells and great fatty cells, yellow coloured, like colostrum globules, and strongly refracting light. Ether being added, they disappeared. Especially when the fluid was of a dark-brown colour, there were many blood-globules, some normal, and others undergoing destruction—an evident pathognomonic sign of little hæmorrhagies in the *vesiculæ seminales*. There were also often rather large masses, more or less yellow, of variable shape, resisting acetic and sulphuric acids, ether and caustic potash. These were evidently masses of colouring matter, the result of hæmorrhagies in the *vesiculæ* of a more or less recent date.—*Journal de Anatomie et de la Physiologie*, Sept. and Oct., 1867, pp. 449, 71.

Miasmata of the Healthy Human Body.—M. Lemaire's researches have been made in barracks. The atmospheric watery vapour was condensed by cold. Microscopically it was found to contain a great number of little diaphanous bodies, spherical, oval, or cylindrical, regular or irregular, and of 0·001—0·002 mm. diameter. In six hours their number had very much increased. There were also *bacteria* and *vibriones*, and a good many animalculæ, considered by the author to be the *monades ovoïdes échancrées* of Ehrenberg. (Is this monad the cause of typhus?) In twenty-four hours there appeared besides the bacteria vibriones and monads, some ovoid spores. The little diaphanous bodies had very much diminished in number,—as much as that of the animalculæ,—and the spores had increased. (Are not these little bodies rudimentary infusoria?) The same microzoa and microphytes were found again and again in other similar experiments. The outer air-vapour showed few vibriones

and bacteria, and no ovoid monads; and, in it, 24 instead of 6 hours were necessary for the development of the diaphanous bodies, the animalcules and spores.—*Archives Générales de Médecin*, Nov. 1867, p. 623.

Part II.—Pathological Micrology.

Aneurisms of the Heart.—In a large work on this subject, Dr. N. Pelvet, among other forms, considers those of the walls, which are various,—may be the result of an endomyocarditis,—interstitial or parenchymatous. That this latter form, as Virchow inconsistently asserts, is characterized by fatty degeneration of muscular fibre, the author disputes. He considers, at length, the *fibrous transformation* aneurism,—the result of a slowly progressive irritation, characterized by a proliferation of the heart's connective tissue framework, which extending, developing, suppresses the muscular element and causes it almost entirely to disappear. Then a fibrous tissue is produced whose elements (given in an illustration) are composed of very curious cells. These cellular elements are connective tissue whose dimensions and form, by compression, have been changed.

As to the *fatty degeneration* aneurism, as the result of very many observations, the author admits that it is very often produced by contraction of the coronary arteries, &c.—*Archives Générales de Médecin*, Nov. 1867, p. 639.

Corpora Amylacea in the Lungs.—The only communication hitherto on this subject has been that of Friedreich. He found them in five cases, in one of which there was recent pulmonic infiltration, with brown induration. He explained their origin by capillary blood effusions in the interlobular connective tissue of the lungs. By the coagulation of the blood the corpuscles pack themselves into the form of a little rounded clot, and the fibrinous part of this or subsequent repeated blood effusions are established around the same in concentric lamellæ. Gradually now the colouring matter of the blood of the central blood-clot dissolves, and colours the fibrinous enveloping layers, until finally it becomes altogether absorbed, and the discoloured corpuscles, with a granular colourless mass, left behind in the interior; or the colouring matter of the blood collects into crystalline or amorphous bodies, which form the central pigment nuclei.

By Dr. T. Langhans, the origin of the corpora amylacea is otherwise explained. He is able to point out the three following forms:

1. Regular concentrical laminated bodies, whose outer contour runs parallel to the concentric streaks. They consist of an outer, broader laminated zone, and an inner, non-laminated, bright, slightly granular areola. The latter is round, oval, contracted in the middle, or irregularly indented, bowed, club-like, and so on, much larger than the surrounding cancroid cells, and frequently includes one or more variously sharply circumscribed nuclei resembling corpuscles, which themselves often contain a dark central spot (nucleolus).

Sometimes more areolæ of different sizes are fonnd, and the surrounding concentric layers according to this are more or less irregularly hollowed, but outwards passing always more into the shape of a sphere. It appears by this an accumulation of smaller to larger bodies to have taken place, whereby the concentric layers vanish in the accumulating surfaces, and the areolæ unite themselves into one.

2. Irregular bodies with granular surface, which in profile form smaller or larger segments of circles. The areola here by the irregular surface becomes not unfrequently hidden. In its neighbourhood the concentric streaking is most distinctly seen; towards the surface the streaks are there certainly also present still, but standing away at various distances from each other, and formed like the surface itself of the segments of many circles. In the neighbourhood there were small, bright, sharply-contoured, brilliant spheres likewise with concentric streaking, or at least having double contours, which were in part still isolated, in part already united with the larger bodies.

3. Just such brilliant, darkly-contoured balls without concentric streaking of the size of the round cells in the cancroid cones (0·006—0·012 millemetres). These lie singly or compactly grouped, free in the alveolæ, or also in the interior of the cancroid cones. They often blend one with another to larger bodies with undulating contour, but without concentric division; sometimes, however, one finds a double contour or a division begins in the middle. After this the regular streaked bodies proceed by growing together of these small balls and the concentric division. There are also numerous irregular parts of homogeneous, brilliant substance which are like all the mass of the concentric bodies, and are probably formed by breaking up of the latter. Near these, by carmine imbibition, very dark red-coloured bodies, was found a peculiar change of the cylinder cell cones, into a mass incapable of imbibition, homogeneous, brilliant, and darkly contoured, which by their form and their evident radiated streaking in the periphery pointed to their origin, and which like the other cones enclosed round isolated, aggregated, or combining corpuscles, but without concentric streaking.—*Schmidt's Jahrbücher*, 1867, Part cxxxv., No. 3, p. 299.

Crystalline or Amorphous Hematinoptysis.—A thesis, bearing this title, has been presented by M. Clément. He says, "The name hematinoptysis has been applied by Lebert to a complication of hematic pleurisy, characterized by the presence in the expectoration, not of globules of blood perfect as in hemoptysis, but of what is called hematine, in the crystalline state. The author, before studying the conditions under which this phenomenon is produced, first establishes the origin of sanguineous exudations of the lungs. They are, he says, connected with the presence of false membranes on the serous coat, and caused by the rupture of the vessels, newly formed, which they contain."

Several cases are then quoted—

"Hematinoptysis," he says, "is a variety of hemoptysis which can

only be produced when the expectorated blood has remained a long time in a cavity, a condition which is fulfilled in hematic pleurisy and pulmonary infarctus. In this last complaint the quantity of expectorated matter is less; in the former, when the effusion has escaped into the bronchi, it may be very considerable."

"The blood in the cavities of the organism show the following changes: the globulin, the fibrin undergo the fatty degeneration, the colouring matter is set at liberty, and may be transformed into crystallizable hematin. When these matters are expelled by the bronchi, the expectoration has special characteristics, its colour is a yellowish brown or chocolate; the colouring matter is contained in the crystalline state or amorphous.—*Gazette Médicale de Lyon*, 17th Nov. 1867, p. 486.

On the Epithelium of the Cornea, and especially in the Multiplication of its Cells.—Dr. C. Schalygen, after that he had considered the shape of the epithelial cells of the cornea, as to changes in them by different reagents, inquired in what way the hyperplasy of these cells, by irritation of the outer layer of the cornea in living animals is brought about.

He showed *a division of the cells*, and certainly in the following way:

At first the cells only appear somewhat larger, then they seem to become somewhat more granular, and afterwards the division begins in the nuclei. These then appear as lines, which one only perceives at first by the screw of the microscope, which becomes gradually broader, and at last forms a furrow between two halves of nuclei. These halves separate from each other, become rounded at their edges, and show at last two nuclei in each cell. The little streak is generally rectilineal, sometimes bowed and sometimes undulatory. Thereupon follows the division of the cell itself, and certainly in the same way as in the nucleus, either across or obliquely; seldom vertically. An actual drawing in, in a biscuit form, of the cell finds no place there, is also impossible because of their flat polygonal shape. A cell seldom divides into three, and still seldomer into four parts.

In this it is to be remarked that the vital activity of the cell does not appear nearly always and much less in all cells in this form, as a consequence of the irritation. It does not often follow after irritation has taken place; but for it there appears only an enlargement with a more granular and glistening appearance which pointed to fatty degeneration: commonly, also, division and fatty change are coincident in certain cells.

The division of the epithelial cells takes place also when the epithelium of the edges of an ulcer from the bottom of the ulcer fills up by degrees. These new epithelial cells are as transparent as the normal cells, they only become opaque when they overlie in very numerous layers confusedly beside the normal coat of the cornea.—*Archiv für Ophthalmologie*, xii, 1, p. 83.

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PART FIRST.

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On the Management of Labour in Contracted Pelvis: An Inaugural Thesis, for which a First Prize was Awarded by the Minister of Public Instruction of France. By William H. Jones, M.D. Paris, M.R.C.S.E. Translated from the French. Robert Hardwicke. *London,* 1867. Pp. 59.

On Cephalotripsy. By G. H. Kidd, M.D., F.R.C.S.I., &c. Assistant-Physician to the Coombe Lying-In Hospital. John Falconer. *Dublin,* 1867. Pp. 22.

On Ovariotomy (Clinical Surgery, Part vii.*)* By Thomas Bryant, F.R.C.S., Assistant-Surgeon to Guy's Hospital. John Churchill and Sons. *London,* 1867. Pp. 151.

Contributions to Medicine and Midwifery. By Thomas Edward Beatty, M.D., T.C.D., President of the King and Queen's College of Physicians in Ireland, &c. &c. Fannin and Co. *Dublin.* Pp. 651.

Obstetrics: the Science and the Art. By Charles D. Meigs, M.D., late Professor of Midwifery in Jefferson College at Philadelphia. Fifth edition, revised, with 130 illustrations. *Philadelphia,* 1867. (*London:* Trübner and Co.) Pp. 760.

Obstetric Aphorisms for the Use of Students commencing Midwifery Practice. By J. G. Swayne, M.D., Lecturer on Obstetric Medicine at the Bristol Medical School. Fourth edition. John Churchill and Sons. *London,* 1867. Pp. 139.

The Principles and Practice of Obstetric Medicine and Surgery, in reference to the Process of Parturition; with 171 illustrations on steel and wood. By Francis H. Ramsbotham, M.D., F.R.C.P. Fifth edition, revised. John Churchill and Sons. *London,* 1867. Pp. 752.

The books on our list all refer to subjects connected with the reproductive organism of woman, and fall into three divisions: Dr. Duncan's statistical papers; Dr. Graily Hewitt, Dr. Byford, Dr. Wright, Mr. Bryant, on diseases of women; Dr. Ramsbotham, Dr. Beatty, Dr. Meigs, Dr. Swayne, Dr. Jones, and Dr. Kidd, on midwifery and collateral subjects.

The laws affecting the increase and diminution of population have, until very recently, been studied chiefly in their relation to the means of subsistence. Statistics, very loosely drawn up, and figures compiled with the help of the imagination, have been argued upon dogmatically. At one time Malthus (1791 and 1803) startled the world with the broad assertion that population increased in geometrical proportion, while their subsistence increased in arithmetical, and therefore it was the duty of Government to take means to keep down a superabundant population. This theory was vehemently denounced and declaimed against by Mr. R. T. Sadler, who, in 1830, published two volumes entitled 'The Law of Population,' which he says may be thus briefly enumerated: 'The prolificness of human beings otherwise similarly circumstanced varies inversely as their numbers." The weakness of the arguments and the absurdities of Mr. Sadler's style were fully shown up by Macaulay.[1]

Naturally, one of the chief questions in the consideration of the growth of populations relates to "generation." Now the

[1] 'Edinburgh Rev.,' July, 1830, Jan., 1831.

laws of the fecundity, fertility, and sterility of women, are up to the present time undetermined, and this defect arises from the scanty materials hitherto collected. Dr. Matthews Duncan has brought together in the present volume the papers which he has in the course of some years contributed to the transactions of the Royal Society of Edinburgh and the medical journals, and which form a valuable contribution towards the study of this subject. He confines his "basis of operations" to the returns for Edinburgh and Glasgow in the year 1855, referring more or less fully to Dr. Collins' report on the women delivered in the Dublin Lying-in Hospital, the writings of Nicander (of Sweden), Dr. Stark's and Major Graham's annual reports for Scotland and England, and the writings of Quetelet, Braun, Hecker, &c.

Our limits prevent us from undertaking more than a very brief survey of the opinions put forward, and we must refer our readers to the volume itself for the tables on which they are based.

Premising that by fertility is meant "the amount of births" in contradistinction to fecundity, or the "capability to bear," we may pass over the first paper on fertility and fecundity, merely noting the conclusions drawn by Dr. Duncan:—

"1. That the actual fertility increases from the commencement of the child-bearing period of life until the age of thirty is reached, and then declines.

"2. That the actual fertility is much greater (about $\frac{3}{5}$) before the climax is reached than after it is passed."

Dr. Duncan remarks on the sudden decrement that takes place in the numbers at the ages of twenty-nine and thirty-one respectively, and thinks it may be explained by the very probable supposition that the age thirty is given by women as a round number. We find that a sudden decrement also occurs at the age of twenty-seven, with a sudden rise at the ages of twenty-six and twenty-eight in both Dr. Collins' and Dr. Duncan's tables.

By comparing the number of children born of women of different ages with the number of women living at the different ages respectively, the comparative fertility is found, and by comparing the number of wives with wives' mothers, the comparative fecundity. The conclusions drawn are,—

"1. That comparative fertility increases gradually until the age of thirty, and then more gradually declines.

"2. That it is greater in the decade of years following than in that preceding the climax. Hence it follows that while the mass of population is recruited from women below thirty, the women from thirty to forty contribute to the general fertility a larger proportional share than those from twenty to thirty.

"3. The fecundity of the mass of wives, not of individuals, is greatest at the commencement of the child-bearing period of life, and after that period gradually diminishes.

"4. This fecundity before thirty is more than twice as great as it is after that period."

The next point examined is the fecundity of women at different ages. By an arrangement of tables showing the number of women who bore children before the end of the first and of the second years of marriage, Dr. Duncan shows—1, "that the initial fecundity of women generally waxes to a climax and then gradually wanes"; 2, "that it is very high from twenty to thirty-four years of age"; 3, "that its climax is probably about the age of twenty-five years;" and by a table exhibiting the number of wives at various ages compared with the first children born in the same year, he shows "that nearly all women married at from twenty to twenty-five years are fecund, and that this period is the climax of fecundity."

Tables xvi to xxi exhibit the average weights and lengths of children born at various pregnancies and the ages of the mothers. The object Dr. Duncan has in view is to disprove Hecker's proposition that primogeniture determines the comparative lightness of children and *vice versâ,* and to advance the law that the determining influence is the age of the mother. The comparative lightness and shortness of firstborn children he concludes to be due to the fact that the bulk of primiparæ are young; moreover, the weight and length of these children increase as the mother gets older, until the period from twenty-five to twenty-nine is reached, and then gradually diminishes.

The chapters on twins and the laws of their production are necessarily imperfect from the very scanty materials at Dr. Duncan's command. By a skilful use of Dr. Collins' and his own data, he brings forward some presumptive evidence of conclusions which, though not proved, are very interesting. Agreeing with Dr. Mitchell that twin-bearing is an abnormality, for woman is uniparous, he argues that twin-bearing is not a good test of fecundity, and shows from tables that the mean age of the twin-bearer is older than that of the single bearer corresponding to the commencement of the decline in ordinary fertility; so that the older a mother is the more likely she is to have twins, and thus the law is the opposite to that of general fecundity. Twin-bearing increases in frequency, as the number of the pregnancy increases, excepting only the first, in which women are more likely to have twins than in those immediately subsequent. Data are wanting to answer the question whether twin-bearers have larger families than continuous uniparæ, but as twin-bearing belongs to the prolific class of women

it is probable that the families in which twins occur are larger. On the question as to the fertility of whole marriages in a population, Dr. Duncan contents himself with showing the fallacy in the ordinary mode of computation, viz., the dividing the births by the marriages, no allowance being made for the wives who are no longer fecund, and with quoting Major Graham's report, who assigns the births to the marriages in England in the years 1862, 1863, and 1864 as 4·255, 4·301, 4·304 respectively.

How many children does a fertile woman produce living in wedlock from fifteen to forty-five years? The only data Dr. Duncan offers in answering this question are taken from the report published by the Statistical Society on the poorer classes of St. George's in the East, from which it would appear that the mothers who had been wives thirty-one years had borne on an average 9·12 children; also making allowance for inexactness in returns, he concludes that ten is the average fertility, but that a woman bearing children periodically for thirty years will have fifteen at least as an average. In chapter x, part iv, the questions as to the intervals between marriage and the birth of the first child, and between the subsequent children, is discussed, and the tables given indicate that in the first case the period is generally seventeen months, in the second twenty months; lactation, therefore, has little efficacy in retarding conception. After the third or fourth pregnancy the intervals diminish.

It has been maintained that marriages formed late in life are more prolific than those formed earlier. This does not accord with the report of the Statistical Society nor with the tables of Dr. Duncan, from both of which the opposite appears to be the case, and is doubtless due to the longer continuance of fertility in the younger. To which is also due the fact that the great majority of elderly fertile women are mothers of considerable families.

One main obstacle that meets the statistician at every step is the enormous difficulty of getting together and duly estimating the various disturbing forces, whose value must be calculated if the result he offers is to be regarded as truthful; and this is especially the case in endeavouring to answer the question as to the fertility of marriages at different ages in children that will survive to adult age. The question is one of wide significance, inasmuch as it has relation to the longevity of the children, and for purposes of life assurance, should form an element in the calculation of the value of lives according to the age of the parents at their birth. As it has been shown that the fertility of marriages in the first decade, from fifteen to twenty-five, is far superior to those subsequent, Dr. Duncan restricts his inquiry to this period, and compares the two quinquenniads on the

points of 1, fecundity; 2, fertility; 3, survival of child-bearing; 4, survival of the offspring; 5, healthiness of the offspring.

The third point is discussed more fully in Part VII. On the whole "the wives of the second quinquenniad may be regarded as the most prolific in desirable offspring."

Investigating the sterility of wives, Dr. Duncan finds that there were in Edinburgh and Glasgow, in 1855, 4372 married women between the ages of fifteen and forty-four inclusive, and of these 1 in 6·6 was sterile. Sir James Simpson had the census taken of two villages, and after correction for age and length of marriage found that 1 in $10\frac{1}{9}$ was sterile. Taking this average together with an average drawn from the Peerage, Sir James makes the total average to be 1 in $8\frac{4}{7}$.

Elaborate tables on the actual and relative sterility of wives are given, from which it appears, 1, that the question of a woman's probable sterility is decided in three years of married life, only seven per cent. bearing children, after this period; 2, a wife who, having had children, has ceased for three years to exhibit fertility, will probably bear no more children; 3, fertile wives breed generally every two years. Dr. Duncan especially calls attention to these deductions as forming a strong argument against operations proposed to cure sterility. We must, however, observe that he does not enter at all on the physiology of the question, nor examine those instances which may be quoted in opposition. We should be glad if he would draw up tables showing the relative success or non-success in cases where the means he condemns have been employed, and distinguishing the cases where failure followed a perfect operation. In connection with the same subject statistics of wives who, sterile with the first husband, become mothers on a second or subsequent marriage, are required.

The next question examined is "the influence the number of a woman's pregnancy and her age has on childbed mortality. Taking the tables furnished by Drs. Johnson and Sinclair, Professor Hugenburger, Dr. Collins, and the Edinburgh and Glasgow reports of 1855, Dr. Duncan first compares the relative mortality from puerperal fever of primiparæ and multiparæ, which is about two to one, and then examines the relation of the number of the labour to puerperal mortality, and finds that as the number of a woman's labour increases above nine, the risk of death from all causes increases with the number. "These statistical facts point," he considers, "to some other pathological cause than that expressed by the words accidental, fever, contagions, epidemic, while the regular increase of mortality after the ninth labour discountenances the idea that mere duration of labour, which by some has been cited as the cause of

primiparous mortality, is of itself of any weight," but he looks for it "in the numerous slight complications accompanying labour, which in the primiparæ are chiefly mechanical, in the elderly multiparæ are connected "with the constitution or uterine infirmity."

Dr. Stark considers the great mortality in the first labour as the principal influence on the whole mortality of married women before thirty, so that "after the birth of the first child the female during the rest of the child-bearing life has an equal chance of life with the unmarried, and a better life after she has passed her thirtieth year"; but this opinion must be modified if we accept Dr. Duncan's statement as to the rapid increase of mortality in labours subsequent to the ninth.

The relation of age to puerperal mortality is next examined; the chief conclusion arrived at is that the age of least mortality is near twenty-five, and on either side of this age mortality gradually increases with the diminution or increase of age, but much more considerably with the increase.

The paper on nubility offers some arguments in answer to the question,—what is physiologically the fit age for female marriage? Dr. Duncan warns us that menstruation is not to be assumed as synonymous with nubility; and allowing it to be so with puberty, though the exceptions are very numerous, he quotes M. Joulin, "that nubility is the complement of puberty, and the one is ordinarily separated from the other by an interval of several years." The arguments are briefly,—

1. The female pelvis does not acquire the shape best fitted for the passage of the child until after eighteen, while the bony structure is not completed until after the twenty-fifth year.

2. The heavy mortality which accompanies first labours, being about double that accompanying all subsequent labours, is due to the large admixture of premature marriages, while it has been shown that the age of least mortality of first labours is between twenty and twenty-five.

3. The avoidance of sterility. For the age of greatest initial fecundity is from twenty to twenty-four, and there is a greater survival of children born of women aged from twenty to twenty-five.

4. Immature and old mothers are specially liable to bear idiots.

The duration of pregnancy has afforded writers on obstetrics an occasion for much discussion, and Dr. Duncan, republishing his paper of 1856, contributes seven chapters. The point urged by him is, that conception, or the junction of the sperm with the ovum, may and probably does not take place till some days after coitus; and that the normal duration of pregnancy from this time is not more than 275 days. To find, therefore, the probable day of labour, add to the last day of

menstruation nine months + three days; or, if February be included (excepting in leap year), + five days, making 278 days: "this will give the middle day of the week in which the labour will probably take place." Dr. Duncan considers that protracted gestation is very rare; that in the real cases, the fœtus is always larger than normal, and that most of the instances alleged may be explained by supposing that the semen retained its vivifying power some days after it reached the maternal passages, and that the ovum did not meet with it till at a distant period from the coïtus. He assumes that the ovum is matured and expelled from the Graäffian vesicle at the menstrual period; but Ritchie has shown very good grounds for believing that the ova are much more frequently shed, and not necessarily in conjunction with menstruation.

We will now turn to the more strictly medical works on our list. Dr. Graily Hewitt in this, his second edition, still retains the plan on which he wrote the first, we cannot think with advantage to the student, for it necessitates frequent repetitions, and the turning over from one part of the book to another to gain a distinct description of any particular disease. Had the portion on pathology and treatment preceded that on diagnosis, which is really the fruit of pathological investigation, we should have had a more readable and more handy work. At the same time, we know of no book which gives so thoroughly the minute points of difference between various diseases which, simulating in appearance one another, demand acute tact and varied knowledge to form a true diagnosis. It is especially a safe and valuable guide to the practitioner who only occasionally meets with the class of cases treated of, and may be said to form the complement to West.

Dr. Byford's work is, as he describes it in his preface to the first edition, a concise yet sufficiently complete practical and reliable treatise, intended to meet the wants of the student and junior members of the profession in everyday practice. In it he has incorporated the views of some of the latest writers on the various subjects, as Dr. Marion Sims' manner of operating on the cervix and vagina.

Dr. Wright takes a different stand-point from Drs. Hewitt and Byford. He deals rather with general features than with minute observation, and views his subject chiefly in its medical aspect. The first chapter is a brief sketch of the records of uterine pathology amongst the ancients, and contains woodcuts of specula and instruments, some found at Pompeii, and others described by Scultetus.

He separates his subject-matter into three heads:—Disorders of Place, of Function, and of Structure.

Under the first head he discusses uterine and ovarian displacements.

The anatomical arrangements for the support of the uterus, though lengthily, are not very clearly described; but Dr. Wright calls attention to the intimate relation existing between the portal and uterine vascular systems, and urges very properly the use of cholagogues in diminishing uterine congestion, while he denounces the ill effects produced by the fashion of suspending the dress from the waist, and girthing the thorax with stays. We quite agree with him that "the extent of vulval protrusion in prolapsus is of less importance than the recognition of the elements which compose it, and the discrimination of the manner of its production," if we would succeed in remedying, if not curing the mischief; but we are surprised not to find a due notice of that very frequent form elaborately described by Huguier, "elongation of the cervix," nor does he mention the fact that retroversion of the uterus precedes real "prolapsus uteri."

Dr. G. Hewitt describes and recommends Huguier's operation, but advises the use of the écraseur instead of the knife, and notices the danger of including the bladder in the loop of the instrument, or of wounding it when the knife is used.

We wish we could speak with as much confidence as Dr. Wright of the success of the perineal operation in bad cases of vaginal prolapse. Unfortunately it does not even generally afford "a simple and efficient means of permanent cure;" for indeed these cases are rarely simple: usually when operative procedure is indicated, the uterus or the cervix is also prolapsed, and then simple paring of the perineum is ineffectual, and a more formidable operation—ablation of as much of the cervix as can be removed—is also requisite if we want to make a radical cure, and not be satisfied with a mere temporary expedient, while the success of this mode is probably due to cicatricial contraction of all the tissues implicated in the operation rather than to the actual amount removed.

The consideration of flexions of the uterus gives Dr. Wright an opportunity of bringing forward his spring intra-uterine stem. We have used a much simpler and equally efficient instrument, the invention, we believe, of Dr. Meadows, consisting of a straight glass or vulcanite rod about two inches in length, seated on a round flat button of vulcanite half an inch in diameter. The vagina closing on the button effectually prevents the extrusion of the stem, unless such an amount of uterine action is set up as would counter-indicate its use, while normal mobility is not interfered with.

Dr. Hewitt gives a modification of this intra-uterine stem, in which the button is slipped up into the vagina, and readily

attached to the stem after the latter has been passed into the uterus, a matter of some consequence when the vagina is narrow, and the walls rigid. He tells us also that he has invented a modification of Hodge's Pessary, which he recommends "as unrivalled in the facility of introduction." "They are," says he, "most comfortable and most efficient. This method of support is much more simple and more certain than instruments having a stem or perineal bandage."

We wish we could share in Dr. Hewitt's opinion of the immense benefit conferred on womankind by this highly lauded invention: but we can hardly go so far as he does in the views he holds as to the great importance of the lesions for the correction of which these instruments are invented. He declares that his experience has convinced him that "they play a very considerable part in the production of the sufferings to which women are liable, entailing years of discomfort, inability to participate in the enjoyments of life being one of the smallest of the effects which may be produced." Our own observation leads us to conclude that the pain and suffering associated with versions and flexions are due rather to concomitant disease of the tissues of the organ itself or its appendages. Most frequently a subacute inflammatory action is present, no doubt in some instances fostered by mal-position, on the subdual of which by rest and proper local and general treatment the *malaise* disappears, though the flexion or version remains; while we often meet cases where, the flexion being congenital, uterine distress has only supervened after a morbid condition of the tissues has been originated by some external cause.

Dr. Wright alludes but scantily to displacement of the ovary, either as to its cause or importance, though it is a fertile source of pain in conjugal relations, and Dr. Hewitt contents himself with a quotation from Dr. Rigby. We doubt much whether Dr. Wright ever succeeded in returning an ovary displaced into the recto-vaginal cul-de-sac by an examination, for the finger per rectum can hardly reach it, and it is felt much more readily per vaginam. His observations on the ill effects of hard purging are much to the point.

Dr. Wright classifies disordered menstruation as occurring under one of three influences—systemic, ovarian, uterine; and directs his treatment according to the supposed origin. Thus, in systemic amenorrhœa he gives tonics, mineral acids, and iron; and in certain cases, accompanied with a dry, harsh condition of the skin, he has found great benefit from arsenic. When the ovaries seem to require stimulation he recommends liniments to the loins, dry cupping to the breasts, stimulant enemata, and especially Faradisation; and when they appear unduly

irritable, sedatives, aconite, bromide of potassium, counter-irritation. Where the uterus seems to be chiefly in fault, excluding cases of occlusion, he thinks ergot of great service.

Dr. Wright specially calls attention "to the relation between disordered uterine function and the occurrence of severe joint-pains," which Dr. Todd called rheumatism, "but which," Dr. Wright says, "differ from true rheumatism in the absence of increase of local temperature, and the characteristic general perspiration of acute rheumatism. Applications to the painful parts, or treatment directed exclusively for the relief of the supposed rheumatic seizure, would only exercise a palliative influence: restoration or establishment of the natural menstrual relief being the method obviously indicated for insuring permanent benefit." But he has previously said, and we agree with him in this earlier opinion, "that the menstrual flux merely represents a provision of supply in excess of demand," and therefore we cannot regard it as an excrementitious secretion like the urine, the non-elimination of which allows the accumulation of poisonons products in the general circulation.

Menorrhagia, metrorrhagia, and dysmenorrhœa are discussed in a similar manner as to their origin and treatment. The use of intra-uterine injections of perchloride of iron when the uterus is large and spongy, and the metrorrhagia unchecked by ergot and gallic acid, is recommended, care being taken that the cervical canal is patulous. Sir J. Simpson and others have recorded cases of fatal peritonitis following the use of fluid injecta, and Dr. Hewitt can only quote Routh as to the value of iodine or other injections, not apparently having made any use of them himself. We have found that a very safe and effectual application is to introduce either the solid or powdered anhydrous sulphate of zinc or nitrate of silver. Dr. Byford describes an inexpensive and useful *porte caustique* for this purpose.

Dysmenorrhœa is considered very fully by Dr. Wright, especially that form which has been referred to ovarian causes, which latter he considers under three forms, neuralgic, capsular, and stromal. Dr. Hewitt, while admitting the influence of the ovary, evidently leans to the belief that the majority of cases are due to menstrual retention, and though he does not think every case can be relieved by division of the cervix, he is much in favour of opening the cervical canal, either by the curved scissors, and small knife, which he prefers to the metrotome caché, or by tents, but the latter he only recommends when there is "congenital narrowness of the whole cervical canal, associated with an infantile uterus, or when simple flexion is the apparent cause;" in other cases as "congenital narrowness of the cervical canal, the uterus being normal as regards size and de-

velopment," in "cases of inflammatory hypertrophy of the cervix," and "where the cervix is elongated, and bending forwards forms a flexion with the uterus, thus causing stricture," he would perform incision.

But our limits forbid further examination of these books. Suffice it to say, that Dr. Graily Hewitt and Dr. Wright have written with care and give the honest results of their experience. The former work is a necessary adjunct to the library of every medical man. It contains a large store of information, and the well arranged index greatly assists the reader who wishes to make a speedy reference to any particular point. Dr. Wright's book deserves careful reading; it often is highly suggestive, and is the work of much thought, and though we may not always agree with him in his opinions, but think that some of the theories advanced still require proof, his dispassionate language and fair dealing with the opinions of others commands our respect.

Dr. Jones's thesis for the degree of Doctor at Paris is worthy of more attention than the ordinary run of exercises. Written in 1864, after three years' study at the "Clinique," he now presents it to the criticism of his brethren at home. Unfortunately, in putting it into an English dress, he has not quite laid aside French idioms. He relates fifty-one cases of dystocia with contracted pelvis, and discusses fairly and ably the treatment he thinks should be adopted. Arranged according to Dubois' classification, in sixteen the pelvis was contracted but measured in the sacro-pubic diameter three and a half inches (class 1); in fifteen it was between three and a half and three inches (class 2); in eleven it was between three and two and a half inches (class 3); and in nine under two and a half (class 4). Craniotomy Dr. Jones would avoid whenever possible, and therefore in the first and second classes he advises an early application of the long forceps. Should the attempts be fruitless, he would follow Sir J. Simpson's practice, and perform version, and this, he thinks, should be attempted even in the third class, though here most probably embryotomy will be necessary to complete delivery. In twenty-four of the cases the cephalotribe was used, and we are glad of the opportunity of urging the adoption of this instrument in English practice. Dr. Kidd has described very fully the advantages it offers to the accoucheur. "Cephalotripsy," says he, "may legitimately be tried in all suitable cases in which the instrument can be passed through the brim of the pelvis." "It takes the place of the crotchet, hooks and craniotomy forceps." The base of the skull, the thorax, or pelvis may be reduced to the smallest possible dimensions without injury to the mother. Both Dr. Jones and Dr. Kidd speak of M. Pajot's

method of "cephalotripsy without tractions," which Dr. Kidd thus describes—

"As soon as the os is sufficiently dilated, he perforates; and when it is large enough to allow of the introduction of the cephalotribe, he effects the first crushing, taking care to grasp the base of the skull. Then he slightly rotates the head to the right or left, as he finds most easy, but does not persist in his efforts to do this if he finds much difficulty, as the uterus itself will, in a little time, and often in a very short time, rotate the head so as to bring its diminished dimensions into the narrow part of the pelvis. After the first crushing he withdraws the instrument without traction, and proceeds immediately to make a second, and even third crushing, and then the patient returns to bed. According to the general and local state of the patient, and the weakness or energy of the uterine contractions, he repeats these crushings every second, third, or fourth hour, making two or three crushings at each sitting; in some cases one or two sittings suffice. The head, broken and elongated, is expelled by the uterine contractions; and if the thorax present any difficulty it also is crushed once or twice."

Dr. Kidd has figured the instrument, which he thinks nearly perfect.

"It is straight in the blades, which are long enough to lock quite clear of the vulva, and the lock is the reverse of the ordinary mode, being so made that the groove in the upper blade locks forwards instead of backwards when the instrument has been introduced, so that the upper blade may be passed first, and then there will be no difficulty in introducing the second or under-blade."

In Dr. Jones's essay we see the advantages which the Paris school offers to the student. Acknowledging fully the mortality of general lying-in hospitals, we would ask why our great hospitals might not each reserve a ward of three or four beds for cases of dystocia, and make arrangements with the parochial medical officers and the midwives who attend the poor in the neighbouring districts, to send in any case requiring or likely to require special skill. In this way a great benefit would be conferred on the mothers while the students would have the opportunity of learning to recognise abnormal presentations, contractions of the pelvis, &c., &c., and of seeing the management of necessary operations. At present, while amputations and special operations, which are usually, in the case of the poor, performed in hospital, are seen to satiety, the general student learns nothing of midwifery difficulties, which he may at any time meet with in practice, except as it were by accident, or unless he specially study this branch of medicine.

Mr. Bryant's monograph on ovariotomy comes before us opportunely. The sensational talk and writing indulged in about the operation have pretty well subsided, and the subject

can now be scientifically and impartially discussed. Those who will never be called upon to operate will gladly read what can be advanced as to the justifiability of the operation, its history, the mode of procedure, the causes of death in ovarian disease, and the statistics of ovariotomy, treated of in the first four chapters. These we shall pass over, merely observing, that a more detailed account than a mere reference would have been of value as to the mistakes in diagnosis which have been made; for errors traced out serve as hand-posts for avoidance of similar disasters. We quite agree with Mr. Bryant,

"That it seems probable most of these errors might have been avoided had all the means of examination been employed, amongst which a careful examination of the pelvis is unquestionably to be named as the most important, by the finger, by the uterine sound, and by the catheter." "And that when there is doubt as to the nature of the disease, the operation should be postponed, as in cases of calculus."

One point also should be specially noted by all who may have charge of a patient with ovarian disease, that tapping for temporary relief is

"Not unfrequently directly followed by acute peritonitis and suppuration of the cyst, and that these causes of death are 35·5 per cent. more frequent when tapping has been employed than when the disease has been allowed to run its course. While parietal and omental adhesions" (a chief cause of embarrassment, if not of occasional failure, in the completion of ovariotomy) "are 45 per cent. more frequent when tapping has been employed."

We will now briefly look at the subject from the operator's point of view.

The solid benign tumour of the ovary need but seldom be removed. The benign cystic should be removed so soon as the growth by its size begins to affect the general health; but if the powers of life have become so enfeebled that there is "no reasonable prospect of success," Mr. Bryant would hold his hand. The cystic tumour may possibly be cancerous, and the diagnosis is in the early stage often very uncertain. Suspicion of its real character is raised if both ovaries are involved, if the growth is very rapid, if the patient's constitution is greatly affected, if cancer appears in other parts, if the pelvic organs be fixed.

The operation being determined upon, no particular preparatory course need be insisted on, but the general condition should be raised as much as possible to a healthy standard, and Mr. Bryant thinks the tinct. ferri perchlor. has a special prophylactic power against the occurrence of erysipelatous inflammation. He particularly advises that those engaged in the operation should not have assisted at a post-mortem, or handled any morbid pre-

parations, and would not admit to the operating room a spectator who was engaged at the time with a case of scarlet fever or other contagious disease. General anæsthesia is far preferable to local, and he recommends the compound of alcohol, 1 part; chloroform, 2 parts; æther, 3 parts.

The abdominal incision should be made according to the circumstances of the case; a short one may be sufficient for a monocystic unadherent tumour, but a long one is required if there are adhesions, or the tumour is semi-solid.

Having opened the abdominal cavity, any adhesions in front are to be broken down by the finger; but Mr. Bryant would not pass the hand into the abdomen, to see whether the tumour is free, preferring to divide any lateral and posterior adhesions as they are dragged forward when the cyst is being emptied.

Almost every operator of note has treated the pedicle in a different way, either by various modes of fastening the pedicle outside, or to the walls of the abdomen, by curiously contrived clamps, hair-lip pins, &c., or by dividing the pedicle with the écraseur and crushing it, or with the actual cautery, and then allowing it to drop into the abdomen, or with the knife and ligature. Mr. Bryant lays down the right principle, "that the first object is to prevent hæmorrhage, and to employ such means in doing so as shall be least likely to excite peritonitis," and approves of dividing the pedicle, passing a whipcord ligature round it, and then dropping it into the abdomen, as he does not think the cautery alone can be trusted. He concludes his little volume with the detailed account of twenty-six cases, and an analysis, furnished by Dr. J. J. Phillips, of the post-mortems of ovarian cases made at Guy's during forty years.

Dr. Beatty's position as a scientific practitioner is so well assured, that the volume bearing his name is certain to be received with pleasure by all, and with interest by those who are desirous of tracing the steps by which certain instruments, modes of treatment, and drugs, which at the time he wrote were foreign to many of his contemporaries, have become articles of faith in these later times. To his father, Dr. John Beatty, is chiefly due the credit of re-introducing in Ireland the use of the forceps in place of craniotomy, when the latter operation had become the rule with scarce an exception in the Dublin school. A letter by "the father" on premature labour, with death in utero of the fœtus, owing to a syphilitic taint, illustrated by four cases, in which women, who had previously repeatedly miscarried, bore live children at term, after undergoing a course of mercury, is well worth perusal at the present time, when the dispute is still so unsettled as to mercury or no mercury in syphilitic disease.

We have also a good example of the course of treatment more frequently used twenty years ago than now pursued in puerperal fever,—the exhibition of large and frequent doses of calomel and opium, the former in 3-grain doses every two hours. Dr. Beatty remarks that, in the three cases detailed and ending fatally, the mouth did not become affected; but in other cases, where recovery took place, the mouth was made sore. The question had not yet been asked, whether the mercurialization might not be the sign of successful poisoning of the system by the metal, in addition to the blood-poisoning by the fever, while the absence of special action of the drug was due either to the metal remaining unabsorbed in the stomach and intestines, as has been shown more recently to be often the case in cholera, or to its passing away in the black stools of half-decomposed bile, the result of its destructive power on the blood globules and otherwise healthy bile. But Dr. Beatty, commenting in 1866 on what he had written in 1839, marks well the change of opinion, when he says: "Cases formerly ascribed to phlebitis would now be designated as pyæmic, while generous support and stimulants have taken the place of leeches and mercury, and we endeavour to uphold the system and enable the patient to live until the virulence of the poison is subdued."

In chapters v and vi on the use of ergot and chloroform, we find much well considered advice; we note especially some points which are sometimes forgotten in practice, for example, ergot, unless followed by labour in two hours, is almost certain to poison the child;[1] when post-partum hæmorrhage, or severe after-pains are dreaded, a dose of ergot given when the head of the child passes the vulva, frequently averts the threatened danger and pain; ergot in small doses is often serviceable in checking menorrhagia.

Dr. Beatty was one of the first of the Dublin authorities to follow Sir J. Simpson's practice in exhibiting chloroform; and to neglect of his caution as to the necessity of using the anæsthetic in a pure state may, perhaps, be traced some of the inconveniences, and especially the use of large quantities sometimes complained of. Dr. Gregory's method of testing was to agitate the suspected chloroform with sulphuric acid, which should be quite colourless, pure acid, of the full density of 1·840 at least; the impurity being dependent on volatile oils will be shown by their charring; or looking across the test-tube, we shall see the surface of the acid become concave when the impurities are

[1] Some think that this death in utero is due to the tonic contraction of the uterus impeding the placental circulation, so that the child dies asphyxiated.

destroyed, until then the line of junction between the acid and the chloroform remains horizontal. Dr. Beatty relates three cases of death by uræmia consequent on the blocking up of the ureters by cancerous deposit, which had spread from the uterus, and a very interesting account of aneurism of the abdominal aorta. It is true that since this case was first published many have been added, but the clear and succinct details are well worthy perusal.

Division of the cervix for dysmenorrhœa is approved of, and performed by our author, who still prefers the single-bladed hysterotome to Dr. Greenhalgh's double blade or Marion Sims' method with the scissors. The remainder of the volume is occupied by a reprint of certain articles on impotence, rape, doubtful sex, persons found dead, in the 'Cyclopædia of Practical Medicine.'

Professor Meigs, of Philadelphia, has brought out the fifth edition of his work on obstetrics. Criticism by us of a book well established in its own country would now be somewhat late, and we only allude to the work as an acknowledgment of the high position of its venerable author. Yet we cannot recommend the volume either to the student or practitioner at home. For the want of systematic arrangement will confuse the former, while the latter will object to the diffuse and often unscientific style, together with the want of acquaintance shown as to the late advances made in instruments used in forcible deliveries.

We merely give a few instances in justification of these strictures. Thus, while describing the dry pelvis, Dr. Meigs stops to relate four cases of labour in which the forceps were used on account of cramp caused by pressure on the sacral nerves by the head of the child, and gives a long dissertation on the origin of the name os sacrum, and some pages on the planes which can be described in the living pelvis.

He also mixes up abnormal with normal conditions, relating slough with ordinary pregnancy a case of extra-uterine fœtation. In the chapter on forceps he gives a quotation from Tertullian, while he is wholly silent on the various forceps, cephalotribes, perforators, &c., of later invention than those of the late Professor Davis, and takes great credit for inventing a pair of pliers for picking away portions of the fœtal skull in craniotomy cases. There is, however, much practical information scattered in the book, and though we think four pages is rather much to spend on recommending "with undoubted confidence" a flannel skull-cap as the treatment for infantile coryza, yet observations and thoughts will frequently be found to repay the leisure reading of the obstetrician.

The fourth edition of Mr. Swayne's obstetric aphorisms will be as well received as its predecessors. It forms a "handy-book" for the student, who may use it for testing his knowledge, and as an index pointing out problems to be studied thoroughly by help of larger works and practical observation, while the numbered paragraphs in which the book is arranged serve as texts to be thought over.

Dr. Ramsbotham's work on midwifery has so long been the standard book both for student and practitioner, that comment on the fifth edition now presented is almost superfluous. The preface tells us that, "the chapter on anæsthetics has been slightly extended, a chapter on the diagnosis of pregnancy added, and many emendations and additions made throughout the body of the work, too inconsiderable, however, to merit a special enumeration."

We cannot help expressing a regret that the chapter on anæsthetics was not wholly rewritten, for though it may be a gratification to the author to preserve a record of former feelings on the subject, yet after reading the cogent arguments mustered against the use of chloroform, the student will be surprised to come upon the recantation of all that he has just carefully gone through, and read that—

"Since the above was written, eleven years ago, experience has fortunately proved that the gloomy anticipations which I had formed respecting the danger universally attending the administration of anæsthetics have turned out to be in some degree fallacious; or at least it is not so great as I feared it would be, for the casualties that have resulted from their use during that period have been astonishingly few. And I am pleased to have the pleasure of confessing the value of this drug in those cases where in the body of this work I have advised its exhibition."

He will also be disappointed in not finding any further arguments for its use, nor directions as to the mode of exhibition, and will be still more puzzled by the *Parthian* shot at the northern school contained in the note where it is suggested that "the excess of childbed mortality in Scotland over England may depend on the almost universal employment of chloroform in labour throughout Scotland which is *rarely*" (?) "used in England." We should have been glad also of a new chapter on craniotomy, and a discussion on the merits of the principal instruments which of late years have been brought very prominently forward as testified by the exhibition held by the Obstetric Society, March, 1866, and in the catalogue since published by them. Cephalotripsy, of which we have already spoken, remains still unnoticed in this work, nor is mention made of

other instruments than those represented in the former editions. The chapter on the diagnosis of pregnancy details concisely the signs on which an opinion can be formed, none by themselves being proof positive, except, of course, the fœtal heart, and even this may be sometimes simulated to an inexperienced ear in the case of tumours, when the circulation is quickened and the sounds obscure.

Suppression of the menses, both by Dr. G. Hewitt and Dr. Ramsbotham, is regarded as a very unreliable sign in the earlier months; and the former warns us that it may occur two or three months previous to conception taking place. The presence of a periodical uterine hæmorrhage during the earlier months of pregnancy is admitted by both; indeed, Dr. G. Hewitt speaks of one lady within his own knowledge who had a periodical discharge of blood resembling the catamenia during the whole of her pregnancy. Dr. Ramsbotham thinks "it quite within the range of possibility that a female may really menstruate once or twice after having conceived; but that, after the os uteri is blocked up by its gelatinous plug, the discharge proceeds from the surcharged vessels in the upper part of the vagina and cervix," as Whitehead showed by specular observations. Dr. G. Hewitt adds the caution that the discharge may be a symptom of extra-uterine fœtation. Ballottement, Dr. Ramsbotham says, he has never had occasion to recur to, and that "it can only be experienced when the head presents." Dr. G. Hewitt thinks it "one of the most reliable signs of pregnancy, but then goes on to mention various conditions of pregnancy in which it may be wanting. The coloration of the vagina, first brought into notice by Kluge and Jacquemier, consisting of patches of a dusky livid hue, Dr. G. Hewitt considers as a sure sign of pregnancy, and not simulated by any other state of the system.

The condition of the mammary areola is by both thought to be "strikingly distinctive of pregnancy," "when the dark portion near the edge appears as if it had been partally washed out by a shower of small drops having fallen on the part" (Montgomery). The other symptoms, such as 'morning sickness', 'enlargement of the uterus,' on which Dr. G. Hewitt remarks that during the mid-period of pregnancy the uterus often lies to the right instead of in the median line, 'the peculiar condition of the os and cervix' as pregnancy advances, 'the apparent movements of the fœtus,' 'the presence of kiestein in the urine,' 'the placental souffle,' are all corroborative, but any one may be either undiscoverable or be simulated by disease. It is therefore on the sum total of all the symptoms present that a correct diagnosis can be founded, and in some cases it is wiser to let time prove,

rather than hazard our own or our patient's reputation by a hasty opinion.

Review II.

Statistical Report of the Health of the Navy for 1863. (By Order of the House of Commons.) 8vo. Pp. 322. 1866.

Statistical Report of the Health of the Navy for 1864. (By Order of the House of Commons.) 8vo. Pp. 365. 1867.

These health records of the naval service increase in interest and value from year to year, under the able direction of Dr. Mackay. Taken in connection with the annual reports of the army, they form by far the most instructive contributions to medical geography, as well as to the nosological and hygienic condition of large bodies of men under diverse and very varying circumstances, which the profession has hitherto possessed. No officer in either of the public services should fail in making himself master of their contents; they will continually suggest to him topics of interesting inquiry, as well as of immediate practical value. It is earnestly to be desired that the medical department of the navy may ere long be assimilated with that of the army, and that a school like that at Netley may be furnished at Haslar, or other suitable place, for special instruction in nautical medicine and hygiene. No branch of the profession has stronger claims for liberal encouragement on the part of government, and, if duly encouraged, can contribute more usefully to scientific and technical research. The greatest praise is due to the present director-general for having originated, and to Dr. Mackay for so efficiently carrying out, the publication of these annual reports. We are glad to observe that the last one, that for 1864, has received considerable extension, and has thus afforded space for more frequent and larger extracts from the individual reports of the medical officers themselves, whenever they are deemed worthy of special publication. This step will serve to stimulate zeal and generous ambition among all, and especially among those who have recently entered the service, and cannot fail to do good in various ways. We should like to have fuller information from the large naval hospitals, both at home and abroad; their experience might be most valuable, in respect of the health not only of the nautical, but also of the civil, population around them. But for this and other additional topics that might be suggested, we must wait till the medical department at Somerset

House obtains that enlargement which the sister service at Whitehall has within the last few years received. At present, the shoulders of one person in the former have to bear the weight which in the other office is divided among three.

On the important subject of the multiform varieties of fever, continued and periodic, there are always some interesting details to be found in the 'Navy Reports.' Most of the cases of enteric fever in the service—and they occur on every station—are traceable to direct communication with seaport towns, which are without exception notoriously unwholesome in those localities where sailors most do congregate. Portsmouth, Plymouth, Liverpool, and Leith, were the places where the home fleet chiefly contracted the disease. In the Mediterranean, Malta, Gibraltar, Palermo, and Naples, appear to be the most frequent *foci* of infection. No spot is worse in this respect than the dockyard creek in Malta harbour; it is a constant seed plot of febrific distemper. In 1862, and again in 1863, there was a large amount of typhoid fever, due to this source, among the fleet.

"The emanations," writes the surgeon of the 'Hibernia,' which suffered severely, "are constant and most offensive; but though exposure to them may produce a low condition of health, it is not until after the early rains, which usually fall about the end of September, or beginning of October, that the state of the creek becomes absolutely dangerous. During the dry summer an accumulation of sewage takes places in the sewers, and is swept by the first autumn rains into Dockyard Creek. There the water is almost always stagnant, and the consequence is, that the adjacent atmosphere becomes contaminated by sewage gases to such an extent as to produce a more or less poisonous influence on persons exposed to this atmosphere. As a fair proof of this I may state, that more than one-half of the police force employed in the dockyard and victualling yard have suffered from the prevalent fever. These men, beyond all other persons, except those who live in houses very close to the edge of the creek, are much exposed, both by night and day, to the contaminated atmosphere I have described. Moreover, almost without exception, the residents in the officers' quarters, in the Admiral's house, and in the victualling-yard houses suffered more or less from fever during the autumn, and these houses are situated at only a few yards' distance from the margin of the creek."

Nor were things better in 1864. Dr. Duirs remarks of the crew of the "Marlborough," that

"One good result of our departure from Malta was, that very few new cases of fever came on after we left, and there was undoubtedly a higher standard of health generally in the ships during our absence.

"A few days after our return to Malta, in the end of September,

cases of fever began to come in again. They had ceased during our absence, and now they presented themselves with some grave complications—abdominal tenderness, and diarrhœa, and complete prostration, with deafness, and persistent wakefulness."

Again in 1865, the neighbourhood of the dockyard was one of the localities where cholera was most prevalent. This dangerous health-condition of the place is obviously a question of national importance, and loudly calls for prompt and effective correction.

In the Report for 1864, there is an excellent description of what is ordinarily called "Malta fever," a species of remittent, and also of the "dengue" or "break-bone fever," as occurring in Bermuda.

Respecting yellow fever, and its relations to other forms of febrile disease, various interesting memoranda will be found in both reports. In 1863, nine cases appear in the returns from the West India squadron; but Dr. Mackay expresses a doubt as to their nature, and whether they should be regarded as instances of the true pestilence. Of six cases in the "Barraconta," which occurred while the ship was among the Bahamas, where yellow fever seems to have existed,[1] the first had certainly the characteristic symptoms. After exposure to the burning rays of the sun at the mast-head, "he was seized with violent headache, and was in a delirious or unconscious state during the whole period of the attack. There was yellowness of the conjunctiva, and, for some hours before death, a black grumous fluid welled out of the mouth without effort. Immediately after death decomposition set in, the body rapidly inflated, the skin became black, the extremities mottled, and the face of a dirty yellow colour." The five other cases, which occurred about the same time, were mild, and all "recovered under the influence of quinine."

Again, in the single fatal case in the "Buzzard," while she was off Vera Cruz, where the fever was reported to be present, "the symptoms unquestionably resembled those of specific yellow fever," although the surgeon of the ship returned the disease as remittent fever, mainly on the ground, it would seem, that it did not spread on board:

"The strange and unaccountable fact is, that although some of the officers and men were exposed to the same virus, and protected in the same way by quinine, they were neither infected, nor was the disease developed on board amongst the ship's company, his being

[1] "The mortality from cases (of yellow fever) in the district of New Providence (Nassau), amounted to 21, while in 1862 they amounted to 102."—'Reports of the British Colonial Possessions for 1863,' p. 14.

the only case during the ship's detention there, a period of nearly three months."

But to make the mere absence of contagious properties in particular instances a diagnostic character of a disease, would obviously be contrary to experience in respect of yellow fever, and would sin as much against all sound nosology as Cullen has unquestionably done when he made contagion an essential attribute of dysentery.

The difficulty, if indeed the possibility, of at times discriminating bad cases of yellow fever from what is called "malignant, bilious, remittent," and, on the other hand, mild attacks of the disease from ordinary remittant, comes forcibly before us in the present reports.

"To say," observes Dr. Mackay, "that the symptoms of severe cases (of 'dengue') cannot be distinguished from those of mild yellow fever, is saying little more than than that they cannot be distinguished from those of any other fever; for yellow fever in its symptoms may be as mild as any ephemeral fever, and yet confer as perfect an immunity from a second attack as the most virulent seizure; just as it does not require small-pox to assume the confluent form in order to confer upon the affected person exemption from a repetition of the disease."

And then as to the attacks of more formidable pyrexia, how are the fatal cases on board the "Handy," while at Lagos on the west coast of Africa, in 1864, to be designated?

"The other fatal case is also stated to have been one of bilious remittent fever, and was of an extremely urgent character from the first. Two days after being taken ill vomiting set in, and continued persistent until his death, which took place on the fourth day of the disease. The vomited matters in this and the former case were of a dark or brownish black colour, as frequently occurs in severe cases of this form of fever, and has so often led to its being confounded with yellow fever. The surgeon[1] of the 'Handy' says that at the time the officer died,—

"'Bilious fever was raging on shore, where out of forty-two Europeans, twelve died in six weeks. From the accounts given of yellow fever, I am of opinion that three of the cases on shore were of that description; however, as I have never visited the West India or other places where this disease makes this appearance, it is possible I may be mistaken. In all the three cases death took place within thirty-six hours of the appearance of the disease; there existed intense prostration from the commencement, deep yellow skin, and at last black vomit.'"

It behoves the medical officers of the navy to consider more

[1] Surgeon Henry Eales.

attentively and unbiasedly than they have probably yet done this difficult question of nosology, as its bearings on practical hygiene as well as on ætiological medicine are of signal importance. Among other points too of medical inquiry for the investigation of which their service affords special facilities, may be mentioned the incubation of malarial and miasmatic poisons. The following observations deserve notice:—

"Ships employed on river service," remarks the surgeon of the 'Gladiator,' on the West African station, "for periods of from one to six weeks, or two months, have remained healthy during the time they were so employed, but immediately on their return to the open sea, endemic fever has made its appearance. This is a fact known to all on the coast, and has happened so often as to preclude the possibility of its being attributable to mere chance. The first time it was brought under my own notice was in 1860, when the 'Bloodhound' ascended the Niger, and remained for sixteen days. During that time she was in the most unhealthy part of the river (the Delta), yet there was little or no sickness. A week after her return from the river, remittent fever appeared, and, with only two exceptions, went through the whole ship's company. The following year the 'Espoir' was detailed for the same service; she was a much longer time in the river; exactly the same thing occurred to an officer and some men, after she was to all appearances removed from the influence of malaria. This year the 'Investigator' has just returned suffering from a similar epidemic, and upwards of half the complement, which was lent her from the 'Rattlesnake,' are now on their way home[1] in this ship invalided, and I have been told that during her stay in the river she was particularly healthy, having had only one or two cases of fever on board."

There is an excellent paper on the fevers and other diseases of the east coast of Africa by Dr. Pendrith, of the "Rapid," which will repay attentive perusal. The disastrous epidemic last year at Mauritius has recently drawn special attention to this region. We learn from Dr. Pendrith that a fatal fever was prevailing at Port Louis, in 1864.*

The wide geographical diffusion of smallpox in 1864 is a fact of much interest, taken in connection with its more than ordinary prevalence that year in this country. In 1863, the number of cases throughout the navy was 121, while in the following year it amounted to 462, or nearly three times as many. No fewer than 199 cases occurred on the home station, indicating the prevalence of the disease in our chief seaports. Several cases

[1] In 1864 an alteration was made in the limits of the Cape of Good Hope, and of the East India and China stations. The East Indian division of the latter is now combined with the Cape of Good Hope into one, while China and Japan form a distinct station. The useful outline maps affixed to the account of each station enable the reader to at once perceive their extent and boundaries.

were contracted at Malta, at the Piræus, and at Smyrna, in all of which places the disease was prevailing on shore at the time. Most of the cases in the West India squadron were caught at Kingston, Jamaica, where the smallpox was unusually severe. In the case of the admiral's ship, the "Duncan," there were no fewer than thirty-five cases during the voyage from Portsmouth, where the first case occurred shortly before sailing. The history of this epidemic outbreak is highly interesting; but our space prevents the insertion of the details relating to the period of incubation, &c. On the West African station smallpox was epidemic at Fernando Po, where two cases were contracted by the crew of the "Zebra." Again, at Monte Video, two men of the "Satellite" were infected on shore. In several instances the disease was caught at Bombay, "where it was very prevalent." But it was on the China station where our seamen suffered most from small pox. As many as 150 cases were put on the sick-list, and, of these, sixteen were fatal. The majority of the attacks were traceable to Shanghae, and to Yokohama in Japan, in both of which places it was widely spread. Nearly one half of all the cases in the squadron occurred in the "Euryalus"; she lost six of her crew in consequence. The history of the outbreak by her surgeon—

"Is a valuable contribution to the epidemiology of smallpox. While it by no means unsettles a perfect faith in the protective influence of vaccination, it suggests the probability of the protection, in certain cases, being weakened in the course of time, and consequently the importance of establishing compulsory revaccination in the public services; it indicates the necessity for a careful regard to the quality of lymph employed in the operation, and it opens a question as to the character of the vaccination cicatrix that may be looked upon as affording the most satisfactory proof of the operation having been effectively performed. The idea that the co-existence of the secondary manifestations of syphilis exerts a modifying influence on the variolous poison is interesting, but upon this point further information is required."

A singular epidemic outbreak of variolous, varioloïd, and varicellar disease occurred on board the "Forte," on the Brazilian station in 1863. A narrative of it, given by her surgeon, is exceedingly interesting and instructive, "not only as showing the great diversity of features which may be presented by different cases of the same disease during an epidemic, but as indicating the method of dealing with such an epidemic when it makes its appearance at sea." We commend its perusal to all who take interest in the natural history of smallpox and its modification.

Some interesting memoranda respecting scarlatina and

measles, especially the former, are scattered through these reports. The great majority of cases of scarlatina occurred in the home and Mediterranean fleets, and chiefly, of course, among the midshipmen. In 1863 there were no fewer than 159 cases on the home station, and three of them were fatal. Eighty-six of the attacks occurred in the training-ship for boys at Portsmouth: "of these forty-two are returned as cases of scarlatina and forty-four as cases of albuminuria," or scarlatinal nephritis. An interesting account of an epidemic at Corfu, in the early part of that year, is given by the surgeon of the "Edgar," among whose crew two cases occurred. The population suffered severely, as might be expected from the hygienic condition of the people, and the mode of practice of the native physicians. Towards the end of the year, the disease appears to have been prevailing in Malta; and a good many cases occurred in some ships of the fleet, both then and in the following year. In several instances, the simultaneous occurrence of numerous cases of cynanche, accompanied or followed by albuminuria and anasarca, on board was very remarkable. Many of the details are well worth perusal.

"Although only nine persons altogether" (in the 'Meeanee') remarks Dr. Mackay, "were returned as suffering from this disease, it appears that throat affections were at the same time very prevalent, and that in many of these cases as the throat symptoms disappeared, and even after the patients were discharged to duty, a process of desquamation was observed, from which it may be inferred that the exanthem, although not so well marked in its symptoms in all cases, had a much more extensive spread than is assigned to it. As happens, in fact, in almost all epidemics of this fever, there occurred contemporaneously a number of obscure affections, which doubtless were referable to the action of the scarlatinal poison. One case of this nature occurred on this occasion, in which the patient, a master's assistant, was placed on the sick list with the ordinary symptoms of catarrh. There was cough, with ropy mucous expectoration, general malaise, debility, and great pallor of countenance. The urine became albuminous; serous effusions into the lungs and pericardium, and various parts of the body took place, and he finally sank exhausted after a lingering illness."

In the report for 1863 it was stated, on the authority of the surgeon of the "Rattler," that scarlatina was prevailing at Nagasaki, in Japan, and that several cases had occurred among the crew of that ship. The statement would, if correct, have been of much interest in respect of the geographical distribution of the disease, which, as far as our present information goes, is much more limited in extent than that of other exanthemata; but, on examination, "the detailed histories of the

cases in the 'Rattler' lead rather to the conclusion that they were "examples of irregular action oft he variolous poison," than of genuine scarlatina.[1] To the medical officers of the navy we must chiefly look for data on this interesting question; and it is, therefore, very necessary that they exercise the utmost accuracy respecting the diagnosis of cases which occur under their own notice, as well as the authenticity of statements which may be made to them of cases on shore.

With respect to measles, it need only be remarked that in 1863, exclusive of the cases, not numerous, on the home station, a few scattered instances occurred at Malta, and also in one ship on the Pacific station, where the disease seems to have been contracted at Valparaiso. In 1864 the irregular form of measles, to which the term "rubeola notha" has been applied, was extensively prevalent in Malta and elsewhere; and a good many cases of it occurred in the fleet.

"I was at first puzzled," says the surgeon of the 'Firefly,' "to name it nosologically, as it had a great deal the appearance of scarlatina; the tongue was not characteristic of this latter disease, but the form of the eruption was not in crescentic patches, as described in true measles. I believe the case to have been one of Rötheln, a disease first noticed in Germany."

A solitary but well-marked case of measles occurred in the "Pearl," immediately after leaving Hong Kong. There was also one case in the "Tartar," contracted at Yokohama, where, the surgeon says, the disease was prevalent on shore. But no details are given. The history of isolated single cases of any of the exanthemata should always be reported, after thorough investigation of all particulars, with precision and fulness.

Diphtheria appears to have been prevalent in some parts of Australia, as at Sydney and Melbourne, in the latter months of 1864; and a considerable number of cases, one of which was fatal, seem to have occurred on board the "Curaçoa," while she was in dock near the former town, chiefly among the boys and midshipmen.

The following interesting narrative, by Dr. Patrick of the "Sutlej," bears on the very curious question of the atmospheric diffusion over wide areas of certain morbific miasmata:

"The ship left Acapulco on the 9th of November, and proceeded along and parallel to the coast line, at varying distances from the land. depending on the depth of the bays or projection of the head-

[1] "No reference to the existence of that form of fever (scarlatina) amongst either natives or foreigners in Japan is made by any officer on the station, while there were numerous examples of irregularity and diversity in the character of the eruptions, which were unquestionably occasioned by the variolous poison." (p. 252.)

lands. Throughout this voyage we had usually light and variable winds; but on the 14th of November, while crossing the Bay of Tehuantepec, and about 140 miles off the shore, a strong gale sprung up off the land, attended by a remarkable phenomenon, and followed by an outbreak of influenza in so striking a manner, that they could not fail to be regarded as cause and effect. Though a long distance from the shore at the onset of the gale, it reached the ship charged with the perfume of fragrant flowers, such as orange blossom and jessamine, which scented the atmosphere for a length of time so agreeably, that all hands lingered on deck to inhale the sweet perfume. This phenomenon received no consideration at the time beyond the pleasant sensation it conveyed, but subsequent circumstances invested it with greater importance. Two days after the gale, on the 16th of November, the ship arrived off San José, a small seaport in the State of Guatemala, and left again in a few hours, without any one going on shore. On the same day two cases of influenza occurred; on the next day, the 17th, four more cases were added; and on the 18th five cases. The ship had now reached La Union, a seaport in the State of San Salvador, and here also influenza was very prevalent, a large per-centage of the population being affected by it. It was named by them the 'calentura' and not only in this port, but among the population of the whole country extending to the westward through Guatemala, the complaint was very severe and prevalent. That some connection existed between the disease which broke out so mysteriously on board the 'Sutlej' at sea, and the same complaint which we now saw on shore, could not fail to suggest itself, particularly as it was observed that the gale which preceded the disease was wafted from off that part of the land where the complaint at the time was very active; and although we were then some forty or fifty miles from the coast, we had the strongest evidence, that of our senses, that it carried, even to that distance, abundant exhalations from the land, in the pleasant perfumes we inhaled. Is it not certain that the same breeze was charged with a more subtle and more deleterious agency, imperceptible to the senses, but potent enough to prostrate a large number of the crew? I think the conclusion is inevitable. Altogether fifty-seven cases of influenza were placed on the sick list, but that did not include nearly all the attacks, for a great number, though suffering a good deal, were still able to perform their duties."

Next to fevers, alvine flux—including diarrhœa, dysentery, and cholera—causes the largest amount of sickness, disablement, and death, in the navy. It is on the China station where these diseases always inflict the greatest distress and loss. Both reports contain much valuable information on the subject. In that for 1863, the evil effects of impure river water are much dwelt upon.

"Of diarrhœa," says the surgeon of the 'Cormorant,' we had a very large number of cases, the greater portion of which occurred

at Shanghai and Yokohama, and were, in my opinion, attributable in a great degree to the use of impure water in both places. The water supply for the war vessels at Yokohama is taken from a basin or reservoir standing close to a cliff, the top of which is manured several times in the year with liquified excrement, and much of this must necessarily percolate into the water contained in the rude basin, which is, moreover, studded pretty plentifully with vegetable matter in every stage, from the embryonic to the last condition of decomposition."

The medical officers of the fleet are unanimous that the use of impure water is one, at least, of the elements of mischief operating on the health of the ships at China and Japan. The evil effects may to a great extent be remedied by "advising and allowing tea *ad libitum* for drinking purposes," as the Chinese do. In the report for 1864, there is an admirable account of a severe epidemic of dysentery among the Marine battalion in Japan, between the 7th of June and the 26th of August, by the surgeon of the battalion. The outbreak occurred soon after their coming from Hong Kong, where they suffered much from diarrhœa immediately upon their arrival, after a long voyage from England. Dysentery is far from being a prevalent or endemic disease in Japan, nor did the other European troops or sailors suffer while the Marines were so severely smitten. Even the officers of the battalion were but little affected—a fact which alone suffices to indicate the influence of local and personal causes in producing and aggravating the sickness.

"On a careful review of the whole circumstances connected with this disastrous epidemic," observes Dr. Mackay, "it would appear, that whatever influence may have been exerted by the circumstances under which the men were disembarked, and the soil on which they were encamped, the disease was unquestionably originally contracted at Hong Kong, and that acting with peculiar obstinacy on men whose vital stamina was reduced by the comparative privations of a five months' voyage, it was kindled into activity at Yokohama, and assumed its epidemic character by the unbridled dissipation and debauchery in which the men indulged, and by the exposure to which they subjected themselves during a period of unusual climatic vicissitude. That in some instances infection may have propagated the disease among the men on shore, as it certainly did among the crew of the 'Conqueror,' is not improbable, but it would not appear that its infectious character could have been very great, or could operate at any great distance, otherwise it must have spread to the other regiments in the immediate vicinity of the marine camp."

The case is one of great practical value in proving how much the susceptibility to and the development of dangerous diseases are influenced by the hygienic condition of persons on their

arrival in a foreign station; and, therefore, how necessary it is to adopt every possible precaution in respect of troops when landed in a new climate after a long voyage. With the known predisposition to alvine disease in the Marines upon their arrival from Hong Kong, where they suffered considerably from it, more might surely have been done in the way of precautionary and preventive discipline, to guard against the evils to which the men were exposed when they reached Japan.

It was on the East India and China station that all the cases of cholera occurred, throughout the naval service, in 1863. Of the fifty cases, twenty-six were fatal. Many of the attacks took place in Japan, in some parts of which the disease "was prevailing epidemically among the natives." Most of the other cases were at Shanghai.

Of eighteen cases, of which half were fatal, throughout the navy in 1864, ten occurred on the China station, in five different ships; so there was evidently no tendency to spread among their crews. Of the remaining cases two occurred in the East Indies, two on the West African station, and four on the home station.

The following judicious remarks by Dr. Mackay, on the preventive treatment of the disease on board ship, are quite in accord with medical experience on shore:

"As no amount of experience on the part of the men themselves, and no advice given them appears to be of the least value in inducing them to present themselves at an earlier period, it will obviously be the duty of the medical officer, in all localities where cholera is prevailing, to institute such measures as may enable him to obtain a knowledge of the general state of health of the individual members of the ship's company. For this purpose a modification of what is known on shore as house-to-house visitation might readily be established, a sanitary police, composed of the petty officers of the different messes, quietly organized, and such instructions given to those in charge of the head, as would effectually prevent a man labouring under diarrhœa from making repeated use of it, without being detected and reported to the medical officer. When cholera has already established itself on board, too much care cannot be taken to ensure that the choleraic discharges, whether from the bowels or stomach, shall be largely mixed with the solution of the chloride of zinc, or other disinfectants, before they are thrown away, and that any clothing or bedding contaminated with such discharges should be destroyed; and it would be desirable to 'flush' the head-'shoots,' and those of the different water-closets in the ship which are much used, with some disinfectant two or three times daily. It seems hardly necessary to add, that where there is any doubt as to the purity of the source from whence the water supply

to the ship is at such times obtained, all water for culinary or drinking purposes should be obtained by distillation."

An increased amount of berthing space should always, when possible, be given the men in choleraic seasons and localities.

Among the miscellaneous topics of interest scattered through the reports, we may notice the following description of leprosy—a malady which will probably attract more attention now than it has done for the last century and more, in consequence of the recent report by the College of Physicians—as it occurs at Lagos, on the West African coast:

"Another disease not uncommon here is leprosy, of two varieties. In one the indurated integument beneath the heel and great toe becomes thickened and cribriform with an immense number of minute dry holes. After a time a thin colourless fluid exudes from these openings, and soon after this a deep ulcer, with elevated edges and very large granulations, forms. This sore spreads until the ankle-joint becomes implicated; swelling takes place, with indurations, and small fistulous openings form. The constitution now participates; great emaciation supervenes, with anorexia and sleepless nights; very little pain, however, is complained of. The period at which this disease ends varies considerably, from two to ten years being about the ranges. Occasionally, but very rarely, nature effects a cure, the toes ulcerate off, and the stump heals. As a rule, however, the disease again breaks out, either in the same or the other foot."

"In the other form alluded to, the constitutional symptoms are often the first to appear; general debility comes on, with anorexia, and wasting of the body. The inferior extremities then become numb, the toes become particularly thin, giving them the appearance of being elongated; then a constriction takes place, exactly as though a piece of small cord had been tied tightly round the first phalanx of one toe; no ulceration takes place, but the constriction increases until integument alone is left, and the top of the toe soon drops off; there is no ulceration and no hæmorrhage. As soon as the distal extremity of each toe is gone, the disease attacks the other foot, but it is worthy of remark, that it very rarely attacks both extremities at the same time. While the outward manifestation of the disease is progressing, the constitution becomes weaker, the body is reduced almost to a skeleton, very little pain is complained of, and one day the patient is 'found dead.'"

There is much important information as to the great amount of syphilitic disease in the navy, and the serious consequences therefrom, as affecting the efficiency of the service, as well as respecting the working of the legislative measures which have, of recent years, been adopted in this country at some of the principal military and naval stations. No officer seems to have studied the subject in all its bearings more carefully than Dr.

Sloggett, the medical officer of the "Edgar," the flag-ship of the Channel fleet. His very valuable report is given in full, and will well repay attentive perusal. With what difficulties the question is surrounded, as respects the navy, will be patent from the following extracts, with which we must close our notice of these reports:

"The possibility of hygienic measures on board the ship, in checking the spread of syphilis, is a subject of interesting and serious inquiry. *First*, as to men's leave. Commanding officers would strongly oppose any plan of substituting for the night leave which is now given whenever it is practicable, day leave at certain fixed times; and on those occasions on which I have seen permission given for the men to go on shore for the afternoon and to return in the evening, but few have cared to avail themselves of the indulgence. The men themselves would be discontented if they were thus deprived of their usual monthly leave of from twenty-four to forty-eight hours, and those who are determined to incur the risk of venereal contagion, would not be deterred even if compelled to return to the ship at sunset. *Secondly*, personal cleanliness; the means of personal ablution might and ought to be provided in all ships. In steamships the baths could be heated by steam; and if every ship were fitted with a sufficient number, say six, with a constant supply of water, the men would soon learn to look on cleanliness as a duty as well as a pleasure. In the lower deck messes, where men wash in the large filthy tubs with water filthy with soap, and the accumulated dirt of their messmates, with no place of secrecy or retirement, it is not to be wondered at that they rarely wash their genitals; and I doubt not, many men have ulcers on the penis often for days, sometimes perhaps weeks, without being aware of them. *Lastly*, weekly inspection of men, though I do not believe this would have much effect in lessening the number of cases; it might be of benefit if properly and efficiently carried out, in preventing men going on shore when diseased, and neglecting to apply for medical aid until the disease has extended and the patient may require hospital treatment. I have myself on some occasions inspected the whole ship's company for venereal disease; but only when after being a long while in a home port, the ship has proceeded on foreign service, and the sick-list has been suddenly increased by the addition of men suffering from venereal disease, who had concealed it so long as they had opportunities of going on shore. Even in these cases, when most of the older, more respectable, and more intelligent men have seen the necessity of such general inspection, it has excited so much discontent as to convince me it is a measure to be carried out rarely, and only on urgent necessity."

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"*Period of Incubation.*—The earliest period at which any man has ever appeared with the characteristic pustule of the early stage of soft sore has been on the fourth day, but men are so much in the

habit of concealing their sores either from intention or neglect, that it is difficult to form a correct opinion. Men have often applied with chancres of both kinds of two months' date, and have declared their ignorance of the existence of these sores until the day of application."

REVIEW III.

Micro-Chemistry of Poisons, including their Physiological, Pathological, and Legal Relations: adapted to the Use of the Medical Jurist, Physician, and General Chemist. By THEO. G. WORMLEY, M.D., Professor of Chemistry and Toxicology in Starling Medical College, and of Natural Sciences in Capital University, Columbus, Ohio. With 78 illustrations on steel. New York, pp. 702.

IT will be seen from the title that in dealing with this work we have to take into consideration its merits from more than one point of view. We must as far as possible ascertain the value of the plates, the accuracy of the processes given, the exactness of the physiological information conveyed, and the clearness of the legal definitions laid down. We are of opinion that Dr. Wormley would have sent out a far more useful work had its scope been less ambitious,—had he adhered to the chemistry of the poisons alone, and carefully figured the crystalline forms of the products obtained by various processes. He has, however, probably with the idea of rendering it more generally useful, tacked on to it portions relating to the symptoms, post-mortem appearances, &c., characteristic of certain poisons. Whilst there is much to admire, therefore, in this work, there is also much to condemn: for instance, not only the author, but his reviewer in one of the principal American periodicals, would seem to labour under the impression that this is the first important contribution to the micro-chemistry of poisons, thus showing themselves ignorant of the valuable researches of Helwig and Guy. Again, in speaking of the manipulation best adapted for bringing out the crystals characteristic of each poison, he makes no allusion to the most important of recent discoveries in this direction, viz. the fact that the alkaloïds (as well as other substances) are capable of being volatilized and again condensed so as to assume distinct crystalline forms, not only without any change in their constitution, but also in quantities incapable of being otherwise collected or estimated. So, also, speaking of the best means of observing the results obtained by adding chemical reagents to minute quantities of any poison, he very properly recommends low powers as the best adapted for the purpose; but he makes no reference

whatever to the binocular microscope, which we esteem indispensable to every one following up this line of investigation.

Shortly dismissing this portion of the work, which might, we think, have been prolonged with advantage, our author proceeds to discuss the general notions connected with poisons. In doing so he commits the mistake we have more than once had occasion to refer to—he attempts a definition of the word poison. Now, a poison is not an *entity*—it is a *potentiality;* what may occasion symptoms of poisoning in one man at one time, may at another and on the same individual have absolutely no effect. True, there are substances which possess the property of giving rise to certain bad effects more constantly than others do, but here again the question of dose steps in, and on investigation it will be found that there are few even of the most virulent poisons which when taken in small quantity are incapable of doing good. For these and many other reasons we hold with Tardieu, that to give any definition we must fall back on the effects and through them behold the cause. As to classification, Dr. Wormley adopts the effete arrangement into irritants, narcotics, and narcotico-irritants. He next speaks of the sources of evidence in poisoning, which he enumerates as,—1st, the symptoms; 2nd, the post-mortem appearances; and 3rd, chemical analysis: thus omitting two of the most important, viz., the evidence derivable from experiments on animals, and that of the moral circumstances of the case. What would have been the results in the case of De la Pommerais, had not experiments on animals been accepted as reliable evidence? and whence would the proofs as to the existence of aconite in Mrs. Taylor's (Pritchard's mother-in-law) bottle of medicine have come? It is further impossible in most instances to come to a correct conclusion as to the nature of a case of poisoning without taking into consideration the motive or inducement, and although that lies to a certain extent out of the physician's province, still there are many points which must be best observed and narrated by the physician or surgeon in attendance on the poisoned individual. Thus, to take an illustration,—did not Palmer's conduct with reference to Cook, and his behaviour with regard to the post-mortem examination on the remains of that ill-fated gentleman, have a fearfully prejudicial influence on his case in the eyes of the jury who tried him? Did not the motive which De la Pommerais had for sacrificing Madame Paw weigh heavily against him when tried for her murder? But what need is there for enforcing a point well known and recognised by every jurist of eminence. The part that treats of the evidence derivable from chemistry is good, and shows that the author is well acquainted with the details of practical toxicology. One remark he makes is well worth quot-

ing. He tells us that it is often stated that a reagent will detect an infinitesimally small quantity of poison, but to know its real value we must know the state of dilution in which the poison exists. "The hundreth part of a grain of nicotine in one grain of water yields with bichloride of platinum a copious and rather characteristic precipitate, while the same quantity in ten grains of that liquid yields no precipitate whatever." This concludes the introductory part of the work.

We now find that the author, for the sake of convenience, separates all the poisons of which he treats into two groups, the inorganic and the vegetable, but with the former he includes of the latter both hydrocyanic and oxalic acids. Nevertheless, of inorganic poisons treated, the list is a meager one, comprising only the mineral acids and the alkalies, including ammonia (oxalic and hydrocyanic acids), phosphorus, antimony, arsenic, mercury, lead, copper, and zinc. Of vegetable poisons, again, he only includes nicotine, conine (sic), opium (with meconic acid, morphine, narcotine, codeine, narceine, opianyl), nux vomica (with strychnine, and brucine), aconitine, atropine, daturine, veratrine, and solanine. The work is thus essentially a fragmentary one; it aims at completeness, and is incomplete.

Let us, however, examine in detail what is said of each poison, commencing with the alkalies. Dealing with ammonia Dr. Wormley fails to distinguish between the effects of this substance on the glottis and on the stomach when swallowed in bulk; for instance, he quotes a case in which the patient died in four minutes, which could only have occurred through spasm of the glottis, and immediately after one of poisoning by the same substance, which proved fatal in three days. He alludes to the vapour causing death by its irritant effects, but without doubt spasm of the glottis at times proves fatal when the substance has been swallowed, as is sometimes the case with sulphuric acid. If, now, we turn to the portion relating to the chemistry of the alkalies we find that it is extremely full and elaborate. With each reagent the reaction of given quantities of the substance, say from $\frac{1}{50}$ to $\frac{1}{1000}$ of a grain is given, a fact which we think adds especial value to the observations. When treating of sulphuric acid, our author is much more satisfactory than when speaking of the alkalies. He gives a very fair outline of its actions, symptoms, and post-mortem appearances, but as before, the superiority of his chemical over his physiological knowledge is very apparent. He tackles the grand difficulty as to the means of distinguishing sulphuric acid from alkaline sulphates. He recommends the precipitation of an acidulated solution of the suspected substance by chloride of barium, and then to compare this precipitate with one obtained by first *thoroughly*

drying the suspected fluid, dissolving by a dilute acid, and then precipitating by chloride of barium as before.

Every 2·38 parts by weight of the former precipitate in excess over the latter—correspond to one part of free monohydrated sulphuric acid. By this plan an approximate estimate may be formed as to the amount of free acid contained in the original fluid. Of nitric acid we need say nothing except that the tests recommended are the copper, the gold, the sulphate of iron, the indigo, the brucine, and the narcotine tests. But when he speaks of hydrochloric acid or a chloride as necessary to the decoloration of indigo we conceive him to be in error, for if free nitric acid be added to a solution of indigo, it rapidly converts it into isatine, and changes its blue colour to a yellow one; not so with litmus, that is only reddened. The article on hydrochloric acid is short and to the point.

Oxalic acid is what would probably be termed a more deadly poison than any of which we have yet spoken. The chapter on its effects is not, however, of much value, but the author gives a most instructive case occurring in America, in which death did not occur till the tenth day. An ounce was taken on this occasion, and water given to facilitate vomiting, a mode of treatment we are usually taught to avoid. Speaking of hydrocyanic acid, his remarks on the toxicology of the subject carry no great weight, but those referring to its chemistry are of much value; his estimates of the relative delicacy of the silver, Prussian blue, and sulphur tests, are very good, and evidently founded on careful observations. He places the silver test first in point of delicacy when dealing with the gaseous acid, the Prussian blue reaction when in a fluid form, the sulphur test occupying an intermediate position. Treating of its separation from organic substances, he makes an important practical distinction, according as the acid is given off spontaneously by heat alone, or after the addition of an acid only. This is of importance, as the ferrocyanide of potassium is, if at all poisonous, but very slightly so. He also alludes to the important fact, that the acid may fail to be detected after death by its means, owing to its conversion into other and allied substances, as, for instance, in Casper's case, where it was changed into formic acid.

Phosphorus is treated of in the same chapter as the two last-mentioned substances, but a full and proper use of the published materials for a history of this poison does not seem to have been made. In detailing the symptoms our author does not allude to the jaundice so often observed in poisoning by phosphorus, except in recounting one case; neither, in speaking of the post-mortem appearances, does he refer to the fatty degeneration so common in all the viscera, but especially in the liver, which

in many cases would seem to have undergone acute atrophy of its substance. In fact we hold it questionable whether this is not one of the ordinary methods whereby phosphorus causes death. For the separation of and detection of phosphorus, Dr. Wormley refers to the methods of Mitscherlich, Dusart, and Lipowitz, but does not allude to the very simple one given by Professor Taylor, viz., the dissolving up of the phosphorus by means of bisulphide of carbon, the spontaneous evaporation of the latter, and the estimation of the phosphorus by its conversion into phosphoric acid.

Antimony, the first of the metallic poisons with which Dr. Wormley deals, is treated at no very great length. One very interesting case, where a young man recovered after taking an ounce of the poison, is probably the most interesting in the paper. In this instance the skin ultimately became covered with a true Tartar emetic eruption. Of the tests given he very correctly lauds that by sulphuretted hydrogen as the simplest and most accurate: he also gives Reinsch's test, although he does not give its inventor's name, and he seems inclined to rely *to a certain extent* on the violet colour of the deposit. In this we think he is wrong; not only may it be simulated by arsenic, but one not well acquainted with the process might take the stain produced on the bright copper by decomposing organic matter for one produced by antimony. He also describes Marsh's process, and gives the best plan for making use of it. He gives two processes for separating antimony from organic substances, and from the tissues; the latter of these we should certainly adopt by way of preference. Its basis is that of Fresenius and Von Babo, being the destruction of the organic matters by chlorate of potass and hydrochloric acid.

Arsenic is treated of in the shape of metallic arsenic, arsenious acid, and arsenic acid—orpiment, realgar, and arsenuretted hydrogen, are mentioned, but not otherwise discussed. The ordinary run of symptoms of poisoning by arsenious acid are succinctly given; but those of an anomalous nature are not alluded to sufficiently to enable the student to get a clear idea of them. Of antidotes Dr. Wormley very strongly recommends the hydrated sesquioxide of iron, and adduces certain experiments he has made in behalf of his statement. The author's remarks on the chemistry of arsenious acid are of value, especially when speaking of its solubility; he has evidently studied the matter with great care.

For the removal of mercury from organic substances Dr. Wormley recommends Reinsch's process. In this, bearing in mind the many mistakes which have arisen through its use, we do not agree with him. The other metals demand no special notice.

Turning to the portion which treats of the vegetable poisons,

we meet an introduction treating of the mode of separating organic poisons from organic matters. The processes enumerated are those of Stas, Rodgers and Girdwood, Uslar and Erdmann, Graham and Hoffmann, and by dialysis. It will thus be seen that he omits some of the more important ones, as Merck's and Sonnenschein's, beside which there are many others.

The first alkaloïd noticed is nicotine. As usual the symptomatology is extremely imperfect, both as to tobacco and the alkaloïd itself. The author also overlooks some of the published cases of poisoning by nicotine, as the case narrated by Fonssagrives. The tests recommended are, bichloride of platinum, corrosive sublimate (said to be the best), carbazotic acid, iodine in iodide of potassium (very delicate), the terchloride of gold, bromine, and tannic acid. It will thus be seen that he omits what, when speaking of ammonia, he described as Nessler's test (by the chlor-iodide of potassium and mercury) one of considerable value and delicacy. The process recommended for the separation of nicotine from organic substances is good and simple, being founded on its ready solubility in chloroform. Very much the same remarks apply to conia, which he terms conine.

To sum up, we find that all parts of Dr. Wormley's book are characterised by the same excellencies and the same deficiencies. Everywhere the chemistry is excellent—the symptomatology and the pathology poor. The former contains many original observations, some of them, especially those referring to the solubility of the alkaloïds, of great value. The latter appears to be for the most part mere second-hand material, collected chiefly from the pages of Taylor and Christison. Occasionally we come across cases of value or interest, little, if at all, known in this country; but this is the exception, not the rule. In fact, we consider that Dr. Wormley has materially injured his book by tacking this portion on to its original plan. The work is a valuable one to the professed chemist or toxicologist, but, comparatively speaking, useless to the general practitioner or lawyer.

Turning to the plates, which are seventy-eight in number, we are bound to speak of them in terms of the highest praise. They have been executed on steel by Mrs. Wormley, and are printed with the greatest possible care. It will be seen that they enable certain reactions, formerly termed tests, but in reality nothing of the kind, to be utilized, the deposits formed constituting an important clue to their nature. We might have preferred Helwig's plan of photography, even although the crystalline forms of the reagent are sometimes given as well as those of the substance tested; but this portion of the work is altogether of so great value that we are unwilling to be captious. When the book reaches a second edition we recommend Dr. Wormley to stick to chemistry.

Review IV.

Jaccoud, *Article "Albuminurie."* 'Nouveau Dictionnaire de Médecine et de Chirurgie.' Paris, 1866. P. 517—592.

Jaccoud, *Article "Albuminuria."* 'New Dictionary of Medicine and Surgery. Paris, 1866. P. 517—592.

Pathology and Treatment of Albuminuria. By W. H. Dickinson, M.D. London, 1868. Pp. 265.

Albuminuria, with and without Dropsy: its different Forms, Pathology, and Treatment. By G. Harley, M.D., F.R.S. London, 1866. Pp. 61.

Since the time that Cotugno, in the year 1770, first detected albumen in the urine of dropsical people, that Cruikshank, Blackall, and Wells divided dropsies generally into those with and those without albuminuria, and thus helped to pave the way for Bright's great discovery of the connection between dropsy, albuminuria, and disease of the kidney, chemistry and microscopy have, in the hands of many a patient worker, united, the one to throw fresh light on the nature of albuminuria as a symptom, and on the concomitant changes in the urine and blood which make it so formidable a symptom, the other to facilitate the study of renal lesions attended with albuminuria, and both to bring the diagnosis of these several lesions to a point of nicety that is highly creditable to medicine. Nor is it to be wondered at that this should be the case, if we consider what advantages a daily examination of so important a secretion as the urine must offer for the detection of structural changes in the very organ by which that secretion is formed, and with what comparative clearness minute alterations can be seen after death in the kidney, as compared with other internal organs, the spleen, lungs, etc. Once given the fact that certain changes in the urine must necessarily follow on certain changes in the kidney, and there could have been but little doubt that both must ere long be accurately estimated. Let it not be supposed, however, that the task is done, that the field is cleared. Opinion is still divided on more than one point. The remarkable versatility of albumen, which seems, Proteus-like, to be perpetually changing its form, and so endeavouring to evade detection, at one time recognised by its behaviour to certain reagents, at another uninfluenced by the self-same reagents, even though still present as albumen, throws the greatest possible difficulties in the way of the chemist who wishes to ascertain what are the peculiar changes

that take place in the albumen of the blood under the influence of disease. Much, too, remains to be settled in connection with the causes of renal disease; as to how far alcohol is really harmful; why cold and damp act only on certain people in determining acute Bright's disease, and then only at certain times; what the peculiar condition is that predisposes to such an attack; whether it be the case or not that renal disease is more common in certain epidemics of scarlatina than others, and how far a chill to the surface has any real influence in determining the attack of scarlatinal nephritis, a moot point among pathologists; what is the proper explanation of the occurrence of acute dropsy with acute albuminuria; all these questions and many others are yet to be satisfactorily answered.

Before we proceed to consider the different forms of renal disease associated with albuminuria, it will be well to discuss shortly the question as to how albumen finds its way into the urine, and what are the causes which operate directly in the production of this symptom, for it is no more than a symptom. And first, be it premised, that a modification of albumen is present in all healthy urine in the form of a substance not coagulable by heat or nitric acid, but coagulable by chloroform (Gigon) or, better still, by absolute alcohol (Harley). Here, however, we are only concerned with albuminuria as a symptom of disease: nor, in the small space allotted to our subject, would it be possible to do more than deal shortly with the history of genuine albuminuria; so that the so-called false albuminuria of Vogel, where the albumen is present not as simple albumen, but as a necessary part of hæmaturia, pyouria, or spermaturia, must be likewise excluded from consideration. First, then, how does albumen find its way into the urine? To this it may be answered that it exudes from the blood through the capillaries in all parts of the kidney, choosing for its passage now one now another set of capillaries according to circumstances, which will be afterwards explained. Whether, as some of the German school pretend, the epithelial cells of the tubules, when irritated to excessive increase or hyperplasia, take to themselves from the blood an excess of albuminates, and then again set free albumen into the tubules, so as to aid in the production of albuminuria, cannot yet be positively asserted, but is a reasonable explanation of certain forms of albuminuria. Secondly, what are the causes which operate directly in bringing about this transudation of albumen? These may conveniently be considered under one or other of two principal heads. A. Changes in the constitution of the blood in consequence of which the albumen undergoes some chemical or physical alteration, and transudes unnaturally through the capillaries of the kidney. B. Changes in some part

of the kidney itself, either overdistension of its blood-vessels from pressure or from nervous influences, or some alteration in the coats of the blood-vessels which renders them preternaturally permeable, or hyperplasia of the secreting cells of the tubules.

A. The question how far albuminuria can be present for any length of time, quite independently of any renal disease, and simply as a consequence of some fault or change in the constitution of the blood, is one that is for the present difficult to answer with anything like positive certainty. Even now the principal authorities are at issue on this point, and each seems to give his answer according to the special bent of his investigations. The man who finds a peculiar interest in the chemistry of the blood, and looks at albuminuria from the chemist's point of view, will answer the above question in the affirmative, while he who has devoted his attention more particularly to the morbid anatomy of the kidney in albuminuria is of an exactly opposite opinion, and regards the presence of a persistent albuminuria as a sure sign of diseased kidneys. We shall endeavour to show how far and under what circumstances albuminuria is known to be present without renal disease. And, first, there is no doubt that it can be artificially induced by experiment. Bernard injected albumen in solution into the veins of dogs, and found albumen in their urine. Subsequently Schiff and Stokvis showed that this effect does not follow when serum of blood is thus injected, but only when the white of eggs is employed. Pavy, wishing to ascertain whether the liver can produce in albumen the necessary change through which it must pass, and naturally does pass, in the stomach, before it is fit for absorption, injected white of egg, milk, and isinglass into the mesenteric vein of dogs, and found that albuminuria follows just as when the above substances are injected into the veins of the extremities, thus confirming Bernard's experiments, and at the same time showing that the liver cannot transform albumen into albuminose. The experiments of Jaccoud and Stokvis further prove that if cooked albumen in the solid form be taken, even in considerable quantity, into the stomach, no albuminuria appears, but that this symptom regularly ensues if an excess of albumen in solution be thus taken: from which it follows that so long as the stomach is capable of acting on albumen, and converting it into that modification called albuminose or peptone, the natural form in which albumen is absorbed, no albumen will filter through the blood-vessels of a healthy kidney; but that if the stomach, on the one hand, be incapable of fulfilling its proper functions, or, on the other hand, the stomach being healthy, more albumen in solution be introduced into the organ than it can digest, the same thing happens as when white of

egg, milk, and isinglass are introduced directly into the blood; that is to say, a form of albumen circulates in the blood which ought not to be there, and which can filter through the blood-vessels of the healthy kidney so as to be immediately discharged with the urine. The great importance, then, of this shifting and changeable nature of albumen—an importance which cannot be too highly rated—becomes evident. Why it is that when one form of albumen is present in the blood albuminuria occurs, and when another form circulates there no albuminuria takes place, is satisfactorily accounted for by the "great difference which exists in the diffusibility of different forms of albumen," as shown by Dr. Pavy's experiments. It is clear, then, that albuminuria may occur as a consequence of dyspepsia; but with this exception it is, on the whole, doubtful whether it can in any other single instance be referred positively and directly to changes in the blood alone. The effect of the inhalation of poisonous gases—as arseniuretted hydrogen and carbonic acid—is adduced as an argument in support of the blood theory; but although no blood-corpuscles are found to accompany the albumen in these cases, yet, as Vogel himself asserts, the hæmato-globuline escapes into the urine, sometimes in enormous quantities, together with the albumen, and hence these are not cases of genuine albuminuria, but rather of dissolution of the red corpuscles and "hæmatinuria." Certain injuries of the nervous system, as a puncture in the floor of the fourth ventricle (Bernard), division of the cerebral peduncles, section of the renal nerves, and section of the spinal cord in the dorsal region (Harley) will also give rise to albuminuria; but, as Harley suggests, it is more probable that the phenomenon is here due to the influence of the nervous system on the blood-vessels of the kidney, which, becoming over-distended through paralysis of their coats, suffer the albumen to transude, than to any effect produced on the blood itself by the operation. We confess, then, that we are inclined to side with the two English authors under review in their belief that "all cases of permanent albuminuria are, in the long run, always associated with an organic change of structure in the tissue of the kidneys." M. Jaccoud is not of accord in this matter, but believes that there are cases of persistent albuminuria in which the individual is to all appearances in perfect health, and in which there is no disease of the kidney, so that the terms "albuminurie persistante" and "albuminurie Brightique" are not synonymous. But Dr. Dickinson shows how cases of this kind, lasting sometimes from ten to twenty years, have been found after death to have granular degeneration of the kidney; so insidious, chronic, and difficult of recognition may this form of disease be.

B. Although, as has been stated, the albumen of the blood in its normal state will not diffuse through the blood-vessels of the healthy kidney, yet it appears that a comparatively slight increase in the pressure exercised by the blood on the walls of the renal capillaries will cause the albumen to filter through together with the other constituents of the urine. It will be seen that such an increased intra-vascular pressure is by far the most important agent in the immediate production of albuminuria. Admirably adapted as are the Malpighian tufts to the important part which they play in the secretion of the urine, they are at the same time unusually liable to suffer from the effects of any obstruction to the flow of blood beyond them. It is easy to see how readily a number of loops coiled thus closely together, and getting rid of their blood by one efferent vessel not much wider than each individual loop, must be distended if there be any unusual pressure on the divisions of their efferent vessel. Further, if it be remembered how exposed the efferent vessel is, in its onward distribution among the tubules, to pressure from any swelling of the tubules or from any increase in the thickness of the very delicate matrix by which its branches are supported, we are furnished with a clue to the explanation of a very large proportion of all cases of albuminuria. In like manner, if the obstruction be seated still further on in the circulation away from the tufts—either in the renal vein, the vena cava, or the heart itself—the vasa efferentia as well as the Malpighian tufts will be subjected to intra-vascular pressure and will bear their share in the production of albuminuria. Yet another source of albuminuria from pressure is to be sought, as Virchow thinks, in the arteriolæ rectæ. These little arteries spring from the renal artery at the bases of the pyramids in the form of branches which, after running for a short space horizontally, turn suddenly downwards at a right, or even acute, angle, and break up after a short course into tufts which run down between and encompass the lower bundles of the tubules. In advanced cases of renal disease, where, from stasis in the capillaries of the cortex generally, the arterial blood can scarcely make its way onwards, relief is obtained by an extraordinary collateral flux into the arteriolæ rectæ, which, lying as they do in the pyramids, are comparatively unobstructed by the disease everywhere pervading the cortex. The deep red colour so often observed in the pyramids when the whole cortex is pale and anæmic from disease is pointed to by Virchow in confirmation of this supposed flux. In this case we have an active onward pressure at work instead of a passive backward one, but the effect of both is the same.

It will be well first to consider shortly those less important

affections of the kidney which are attended with albuminuria before entering on the discussion of the severer forms of disease with their more permanent albuminuria. In the majority of these slighter affections there is some abnormal condition of the blood present, some poison at work which irritates the kidneys in common with many other organs throughout the body. As a consequence of this irritation the epithelial cells of the tubules undergo the changes which are comprehended in the term inflammation: they swell up, become cloudy, and increase in number so as to fill out the tubules and press on the adjacent blood-vessels. While there is thus a temporary obstruction offered to the passage of blood through the Malpighian tufts, there is at the same time an unusual afflux of blood to the inflamed or irritated part, so that the tufts are placed midway between two evil influences, an active determination of blood to them from their afferent vessels, and a check to the exit of blood from them through their efferent vessels. The amount of albuminuria will be, therefore, cæteris paribus, in direct proportion to the amount of irritation present and, consequently, to the severity of the general affection of the blood.

In the class of cases here alluded to are included all the so-called zymotic diseases—the eruptive fevers, cholera and diphtheria, as also puerperal fever, pyæmia, hospital gangrene, erysipelas. In these cases the kidneys are found after death, like the liver, the spleen, the lymphatic glands, the follicles of the intestine and the tonsils, to be the seat of the changes above described—that series of changes to which Virchow has given the name of "parenchymatous or cloudy swelling." It is important to bear in mind that this is only a mild and transient form of that which will be presently seen to constitute one of the most formidable of the diseases of the kidney—the "tubal nephritis." M. Jaccoud would make more of the blood-affection as a direct cause of the albuminuria in this group of diseases than we are disposed to do. He classifies these cases under two heads—*a*. Cases of albuminuria from some abnormal condition of the blood alone without any affection of the kidneys; *b*. Cases of albuminuria from some abnormal condition of the blood together with an affection of the kidneys. In the former of these classes he includes pyæmia and puerperal fever: in the latter he places the eruptive fevers and hospital gangrene. It will be thus seen that he does not deny *in toto* the influences of renal disease in the production of albuminuria in such cases, but he evidently thinks more of the blood-change as a direct or proximate cause of albuminuria. We are agreed with him as to the presence of a blood-poison in all these cases, and as to its indirect or remote influence on the albuminuria. We

believe, however, that the albumen passes through the blood-vessels of the kidneys, not because the constitution of the blood is altered by the poison circulating in it, but because the circulation in the kidneys is interfered with by the action of the blood-poison upon them. At all events, from what we know of the pathology of pyæmia, puerperal fever, hospital gangrene and the eruptive fevers, it would appear more probable that the action of all in the production of albuminuria is similar, and that they should all be grouped together, than that they should be dissociated and supposed to act, the two former through the blood alone, the latter through the blood and the kidneys. Again, the effect of certain poisons, as lead, phosphorus, cantharides, on the kidneys has a very important bearing on the question under discussion. Jaccoud reasonably suggests the advisability of separating cases of chronic from acute poisoning. In the former there is no doubt that the kidneys are seriously affected, and the reason why the albumen transudes is clear. Dr. Dickinson has especially insisted on this in chronic lead-poisoning. He says,—"If a man who has a blue line on the gums have also albuminuria, it is almost certain that he has also this variety of kidney-disease (granular degeneration or interstitial nephritis)." And again—"Compared with other external circumstances, the influence of lead is a more fertile source of this disease than any other with which we are acquainted." But it is the acute cases with which we are here more particularly concerned: and in them we find renal lesion just as in the chronic, only bearing evidence of an acuter attack. Recent investigations into the appearance of the kidneys in acute poisoning by phosphorus have thrown much light on this question. A case reported last year by Dr. Habershon, in which especial pains had been taken to note carefully the symptoms during life and the post-mortem appearances of the different organs, bears testimony to the unmistakeable evidence of positive renal lesion. We are told that, during life, the urine contained albumen and, under the microscope, a large quantity of epithelium with casts of tubes and a few blood-corpuscles; and that, after death, the kidneys were light yellow or pink in colour, the cortex injected, the pyramids deep red, and the uriniferous tubules loaded with fat. This extreme fatty degeneration of the epithelium of the tubules seems to have been the most noticeable feature in the majority of cases recorded. It remains, therefore, that neither in acute nor chronic poisoning have we any evidence of albuminuria save only as a consequence of positive renal lesion, and that albuminuria from tangible poisons is in all respects identical with that from the zymotic diseases, where the presence of a poison is suspected

but not tangible. Temporary albuminuria is likewise met with in a variety of cases where its occurrence is more purely mechanical than in the above instances. We allude to those cases in which temporary pressure on the vena cava causes temporary congestion of the renal vessels and consequent albuminuria. Here, as has been already pointed out, both the inter-tubular capillaries and the Malpighian tufts become the seat of excessive stasis. A typical instance of the kind is seen in the *albuminuria of pregnancy*. The pregnant uterus is found in certain women, especially primiparæ, to cause albuminuria by its pressure on the vena cava,—a phenomenon usually observed somewhere between the sixth month and the time of delivery, and ceasing as soon as labour relieves the kidneys of the obstacle to their free circulation. At the same time it must be borne in mind that it is not all cases of albuminous urine in pregnancy which are thus explained and thus easily removed. Dr. Harley enters at length into this question and shows how the above albuminuria of pregnancy must be distinguished from pregnancy with albuminuria (*i. e.* where positive renal disease supervenes during pregnancy) on the one hand, and, on the other, pregnancy in a woman already suffering from disease of the kidneys. In neither of the two latter forms can the albuminuria be called temporary, for it is not relieved by labour, but persists, being dependent on some more serious structural affection of the kidneys, whether induced as a secondary effect of venous engorgement or pre-existing before conception had taken place.[1]

From these transitory and less important kinds of albuminuria, we pass on now to the consideration of that which is more persistent in its nature, and is a direct consequence of some more marked and more abiding change in one or other of the tissues of the kidney. Let it not, however, be supposed, that there is any wide gulf of separation between this and the transient form. For, first, the same mechanical influences which are at work in the production of the one, are also mainly concerned in the causation of the other; and, secondly, the pathological changes which have already been shown to be present in the one, are likewise active in one form at least of the other. Between the transitory albuminuria of typhus or diphtheria, and the persistent albuminuria of nephritis from cold, there is no difference of kind, but only of degree. In both alike it is reasonable to believe that there is some irritating influence at work which acts on the secreting structure and blood-vessels of the kidney: but in the one case the irritant is slight, and its effects are

[1] For a full account of this subject, see Abeille, 'Traité des Mal. a Ur. Album. et Sucr.'

transient; in the other the irritant is severe, and its effects permanent.

The idea of classifying the different varieties of renal disease attended with albuminuria on an anatomical basis; the idea, that is, of taking the several structures of the organ one by one —the tubes with their epithelial contents, the interstitial connective tissue, and the blood-vessels—and studying separately the pathological changes in each, seems to have sprung in the first instance out of the teaching of the cellular pathology, and to have emanated from the school of Berlin. Virchow has for many years past thus unravelled the difficulties of Bright's disease in his lectures at Berlin; and Rasmussen, in an able paper on the subject, in the year 1862, divides those diseases of the kidney which may be grouped under the general denomination of Bright's disease into "parenchymatous nephritis, interstitial nephritis, and amyloid degeneration," according as the one or other of the three different constituents of the kidney is primarily affected. This classification seems now to be accepted as the best, and has been adopted by Dr. Dickinson. We cannot, however, agree with certain writers, who propose to banish the term Bright's disease from our nomenclature; nor would we, as Dr. Harley advises, reserve it for that one particular kind of renal disease alone in which the tubules are inflamed. We had rather, without losing sight of the necessity for investigating separately, both from a clinical and an anatomical point of view, the three forms of disease above mentioned, group them together under the common title of *Bright's disease*, as a generic term for a series of diseases, which, though clinically distinct, have yet all features in common, and, though anatomically separate, yet frequently complicate one another. Dr. Bright's esteemed name has gone forth into all lands, and is heard in every hospital at home and abroad, never to be dissociated from the particular forms of disease with which it is so honorably connected. Thus considered, Dr. Dickinson's book may be said rather to treat of Bright's disease than of the wider subject of albuminuria. For a complete exposition of the pathology and treatment of albuminuria, we would refer our readers to the French article at the head of our list. For the most perfect treatise yet written on the anatomy of Bright's disease, we would recommend them Dr. Dickinson's book. This author's attention has been mainly directed to the post-mortem appearances of the kidney in health and disease. By great perseverance he has succeeded in bringing the microscopic examination of the organ in question to a degree of perfection that it had never before reached. He is enabled by his method of treating the tissues to preserve them all *in situ*, and thus

obtain, by means of large sections, an accurate view of the exact relation that they bore to each other during life. His extended observation of healthy specimens has satisfied him that, even in the healthy kidney, the epithelial cells are sometimes "charged with oil-globules," and that it is quite the exception to find the tubes and their epithelium in what is considered to be their typical state as represented in books on physiology. Under the influence of post-mortem changes "the cells rapidly become granular and crumble up, while they separate from the basement membrane and fill up the cavity." Hence, although appearances of granular degeneration do often follow on inflammatory changes, and coexist with renal disease, yet they are not of themselves necessarily morbid. The real points to be considered in deciding as to the presence of disease are, whether there be an increase in the width of the tubes, the presence or absence of fibrinous casts in them, and whether there be any great increase or loss of epithelium.

The first of the trio of diseases which constitute Bright's disease, is seated in the secreting part of the kidney, and is well named by Dr. Dickinson "*tubal nephritis.*" In this disease we have but a more extensive, a severer and more damaging form of what has been already noticed as the parenchymatous swelling of blood-poisons. The pathology of both is essentially the same. Some irritant present in the blood—whether from returned excreta that should have been thrown off in the sweat, or from scarlatina—falls with especial violence on the epithelial cells of the kidneys and inflames them, giving rise to the hyperplastic increase already described, distending the tubules so that they press on their surrounding capillaries, causing an active determination of arterial blood to the inflamed structures, and hindering the onward flow of this blood out of the Malpighian tufts by the check offered to the circulation in the compressed vasa efferentia. Hence arise the well-known large, swollen, bloody kidneys of acute tubal nephritis—swollen because of the hyperplasia of epithelium, bloody because of the acute congestion and stasis in the capillaries. At a still later period the swelling is found to have still further increased, and the redness of congestion to have proportionately diminished. The blood finds more and more difficulty in its passage; the myriads of epithelium cells tend to pass into a state of fatty degeneration, and there are now found very large, smooth kidneys, with a dull-white or yellowish cortex, and, not uncommonly, deep red pyramids, which offer a remarkable contrast to the cortex. The blood, checked in its passage through the cortex, is forced in unnatural quantity through the collateral branches in the pyramids, unless the disease has been so general as to involve

the straight tubes equally with the convoluted, in which case the same impediment is met with in the pyramids as in the cortex, and the whole organ is alike pale. In the majority of cases this is the final change; these kidneys "remain large and smooth to the last." It is quite settled now that they never degenerate, as Frerichs supposed, into the small granular kidney. Dickinson thinks, however, that they may in rare instances have superadded to them the amyloid degeneration, and in this way become smaller in size while still retaining their smoothness of surface. The rule is that they remain large, becoming more and more fatty the longer life lasts. The tubal nephritis is, comparatively speaking, an acute form of Bright's disease; when fatal, rarely protracted beyond from six to twelve months. It is especially common in the first decennium of life (period of scarlatina), and is unknown in old age. It is as a rule attended with dropsy, and is more often complicated with inflammatory affections of the lungs and peritoneum than of the heart. Vomiting is commonly present. Convulsions are especially apt to occur, and generally precede coma when this supervenes. The urine is generally highly albuminous, scanty, often bloody: its specific gravity much as in health: it throws down an abundant deposit of renal epithelium with casts, first of simple transparent fibrine enclosing epithelium, then granular, and, at the very last, quite transparent or waxy from the straight tubes. Chemically, all its constituents are diminished, especially the water and urea. The plan of treatment adopted and strongly recommended by Dr. Dickinson in this disease is worthy of mention, as being a good deal at variance with that so generally in vogue among us. Purging with jalap, and other active remedies of the kind are condemned, for the reason that the water of the blood is thus diverted from the clogged tubules. The real object in view is to increase as much as in your power lies the secretion of water at the kidney itself, and thus flush out the choked-up tubules. On this principle he gives copious draughts of water to his patients, and repeated doses of digitalis (Infus. Digit. f. ʒj—f. ʒiv, ter in die). "In the majority of cases thus treated the urine will increase, the dropsy diminish, and the patients pass into convalescence without the occurrence of the various secondary evils which tend to swell the mortality of the disease." Iron, especially the perchloride, is, of course, highly spoken of in the after-treatment. When uræmia and head-symptoms have declared themselves, he seems to place but little faith in any treatment. "Bloodletting is out of the question." And again,—"The attacks, when of the convulsive character, frequently pass off of themselves, leaving the patient much as before." He thinks that chloroform has the power of hold-

ing in check the convulsions, but must be used with great care.[1]

We now come to the second of the trio—that in which the very delicate interstitial connective tissue of the organ is the seat of irritation, and consequent hyperplasia. Dr. Dickinson employs here the name of "granular degeneration," but we prefer Rasmussen's title of "interstitial nephritis," and shall adopt it throughout. The essence of this affection consists in a slow irritation of the connective tissue, especially that which immediately surrounds the Malpighian capsules and blood-vessels, followed by an increase in quantity of that tissue, so that it gradually usurps the place of the tubules which it contracts and flattens till they become mere threads. The earliest appearance of this change is met with, according to Dr. Dickinson's observation, at the surface, immediately beneath the capsule, whence it extends inwards at right angles to the surface, in the form of little "streamlets of fibrous tissue." At each point where this takes place, the surface is slightly drawn or puckered in by the contraction of the new product, and becomes consequently granular, each little granule or prominence representing the healthy tissue that remains uninvolved, and each little pit or depression corresponding to the seat of disease. It will thus be clear that we shall have an infinite variety in the size of the granulations, according to the extent of the disease, whether larger or smaller tracts of the organ are involved. The change is identical with that of cirrhosis in the liver, and the same contraction and condensation of tissue occur in the kidney as in the liver. The Malpighian bodies seem to be the last parts to suffer from the pressure of the surrounding disease, even where all the adjacent tubules are obliterated; and, as a consequence, one of the peculiar microscopic features of this form of kidney, as Dr. Dickinson's sections show, is the unnatural aggregation of the Malpighian bodies. Another consequence of the pressure on the tubules is the formation of *cysts*, which are peculiar to this form of nephritis, and which arise either by accumulation of fluid in, and distension of, that part of a tubule which

[1] In connection with this doubtful treatment of uræmia we are reminded of a story that we have heard told of one of the first of living physicians, who was on one occasion summoned to meet a young practitioner in consultation on a case of the kind. After examining their patient, the two doctors retired into an adjoining room, where the following dialogue ensued. Young Practitioner.—"Well! what shall we do?" Physician.—"Ah! what shall we do?" Young Practitioner.—"Suppose we put on a blister." Physician.—"Suppose we do. Where shall we put it; on the bed-post?" It will be remembered that Dr. Richardson, in his 'Asclepiad,' speaks even more strongly in favour of bloodletting than Dr. Dickinson speaks against it. He quotes some very striking instances where, as the blood flowed from the arm, consciousness returned, and where he could hardly doubt that life was prolonged by the treatment.

remains open between two points of obstruction, or, as Wilks suggested fifteen years ago ('Guy's Hospital Reports,' 1853), by dropsical distension of Malpighian capsules whose necks have been similarly closed by external pressure. Dr. Dickinson suspects that certain specimens of the very large cystic kidney, where the entire organ is converted into cysts, may be only an exaggerated form of that which is usually present in a much milder degree as a part of the interstitial nephritis. The mechanism of albuminuria in this nephritis is the same as in the tubal form. In both, the escape of blood from the Malpighian tufts is checked by pressure on the intertubular capillaries; but, whereas in the latter the pressure was seen to be caused by the distended tubules, it is accounted for in the former by the adventitious connective tissue. Perhaps, too, as Virchow suggests, a collateral flux to the pyramids will account in part for the phenomenon, at least in very advanced stages of the disease. Among the direct causes which act as special irritants on the connective tissue, and give rise to the form of disease under consideration, alcohol is usually ranked as the first. Dr. Dickinson has here struck out of the beaten track, and, in a chapter devoted to the question, has endeavoured to show that much too prominent a place is given to alcohol as a cause of renal disease. After a careful examination of the facts which bear on the question, he comes to the unlooked-for conclusion that though alcoholic excess causes pre-eminently cirrhosis of the liver, and, as has been recently shown, of the lungs, yet it rarely injures the kidney. He is also at variance with other writers in his assertion that when it does act prejudicially it gives rise to the tubal nephritis with fatty degeneration of the epithelium, rather than to the interstitial nephritis. The facts adduced in support of his belief are these. First, after examining a large number of bodies that had died of delirium tremens, and comparing the post-mortem appearances with those found in an equal number of bodies that had died from accident, he discovered that granular degeneration of the kidneys was even less frequently observed after death from delirium tremens than when death had resulted from causes quite independent of alcohol. Secondly, in forty cases of cirrhosed liver, not depending on heart disease, but associated with spirit-drinking, the kidneys were only found granular eight times, and then only in an early stage of the disease. Thirdly, on comparing the proportion of deaths from alcohol with those from renal disease in different parts of England and Scotland, as collected from the reports of the Registrar-General, he finds that the prevalence of the one bears no relation to the prevalence of the other, but that the contrary rather holds good; that, for instance, London, Lancashire, and

Glasgow, in which intemperance stands highest, suffer less from renal diseases than many of the agricultural districts, in which the wages of the labourer render any great intemperance impossible, and where the rate of mortality from alcohol is lowest. The valuable researches of Dr. Anstie have an important bearing on this question, and rather tend to confirm from another point of view this belief. He shows, with much reason, that alcohol ceases to exist in the blood as alcohol shortly after it is absorbed, and that it is not eliminated by the kidneys unless a considerable excess—so considerable as to produce signs of narcosis—has been taken. The common belief that alcohol undergoes no changes in the blood, but is separated as alcohol by the kidneys, irritating them in its passage just as it irritates the liver, has received a rude shock from his experiments and those of Schulinus. It is thus quite intelligible that the liver, exposed as it is to the direct action of the alcohol, should suffer much more than the kidneys, yet it still remains a fact that an *excess* of alcohol does pass through the kidneys as alcohol; and if to this be added the very close resemblance which the morbid anatomy of cirrhosis bears to that of interstitial nephritis, we shall find it difficult to dispossess ourselves entirely of our old and cherished belief that alcohol does play a certain part, though a less important one than was supposed, among the causes of interstitial nephritis. Most unmistakeable in their action are all those "conditions which produce and maintain venous congestion of the kidney." Such are, pre-eminently, heart disease, and, more rarely, pregnancy, where the stasis has been unusually severe and prolonged. The peculiar red appearance and tough consistence of the kidneys in valvular disease is notorious to all who are used to post-mortem examinations. The granulations are, as a rule, smaller than when the disease has occurred from other causes, and the kidneys themselves are often of the natural size; but the change is, nevertheless, invariably interstitial. The poison of gout ranks high in importance as a cause of this nephritis, and we have already alluded to the influence ascribed by Dr. Dickinson to chronic poisoning by lead. Lastly, a very considerable number of cases remain for which none of the above causes will suffice, but which creep on as it were spontaneously, being probably due to the effects of climate, of which more hereafter. Interstitial nephritis is essentially chronic in its progress, and insidious in its onset. It "belongs to middle life and advancing age, and is most common between fifty and sixty." Dropsy, which was the rule in tubal disease, is long absent in this and sometimes never appears. As complications, inflammatory affections of the heart and its membranes show themselves more often than pulmonary affections.

Hypertrophy of the left ventricle is the rule. Another not infrequent complication is apoplectic extravasation in the brain, which is well accounted for by the atheromatous degeneration of arteries so commonly present, and is aggravated by the hypertrophy of the heart. Vomiting is even more common in this than in the tubal disease, and whereas, in the latter, convulsions are frequent, in the former, coma more often supervenes without any convulsions, the patient gradually sinking into a quiet stupor. The urine is increased in quantity and passed more frequently than usual; is generally bright, clear, and of a low specific gravity; is at first free from albumen and casts, but later on contains a few granular casts and a trace of albumen (though it is no uncommon thing to see a case in which for days or weeks no albumen can be detected, but then suddenly shows itself and again for a time disappears; so that there is no form of kidney disease in which a daily patient examination of the urine is so necessary as this). The casts are coarse, large, granular, opaque, and differ essentially from those of the tubal nephritis, in that they do not contain epithelium or pus-cells as a part of their structure. Chemically, there is this important difference between the urine under consideration and that in tubal disease, that the water is increased, instead of being diminished, in quantity: the decrease of the other constituents being a prominent feature in both forms. Most important in the treatment is change of climate, a subject which will be again referred to. If this cannot be obtained, iron is generally beneficial: the skin must be kept active by the vapour bath, and warmly clad: the diet must be light and nutritious, with but a moderate supply of nitrogenous food, since experiments show that the quantity of albumen in the urine is increased after the ingestion of highly nitrogenized foods.

There remains for consideration, thirdly and lastly, the pathology of the renal blood-vessels. Passing by the sclerosis and atheroma, which may be met with even in the small arteries, we come to the special form of disease for some years past spoken of as amyloïd degeneration. This important discovery of Virchow's has lately been the subject of much discussion among pathologists, and its real nature has been interpreted in a very different light from that in which it was first regarded by Virchow. The fact remains unchallenged that the blood-vessels of the kidneys do, under certain circumstances, become the seat of a strange deposit, which is at once recognised by the peculiar deep wine-red colour imparted to it by the action of iodine. Virchow's error really consisted in regarding this deposit as akin to starch or cellulose, and naming it "amyloïd."

Dr. Pavy, in a very interesting paper, in the year 1864, exposed this error, and showed, from analyses and observations by Schmidt, Freidreich, Kekulé, and himself, that the so-called amyloïd substance has no affinities whatever with starch, but is a "nitrogenized material:" so that he proposes to discard the term amyloïd from our nomenclature. Dr. Dickinson has carried his investigations in this direction still farther, and in an elaborate contribution to the last volume of the 'Med. Chir. Transactions' has come to some most interesting conclusions, which may be briefly summed up as follows:—That the amyloïd substance has no affinities with starch, but is a fibrinous substance, a "dealkalized fibrine." This is inferred (*a*) from its ultimate analysis; (*b*) from the fact that a substance identical with it, and giving the characteristic colour with iodine, can be made artificially out of fibrine by neutralizing or removing the alkali which the fibrine naturally contains; (*c*) that if potash or soda be added to the amyloïd substance (thus artificially making a natural fibrine of it), it at once ceases to give the red colour with iodine; (*d*) that if a solution of sulphate of indigo be added to healthy tissue, the colour of the solution is destroyed by virtue of the alkali contained in the tissues, but if the same solution be added to amyloïd substance, the colour is vividly retained, because of the absence of alkali in that substance; (*e*) that an analysis of amyloïd liver shows a diminution by one fourth of alkaline salts. He has, further, insisted on the great frequency with which amyloïd degeneration depends on chronic suppuration that has taken or is taking place in some part of the body, and hazards the theory that the blood being drained by suppuration of its albumen and alkali, retains an excess of fibrine, minus potash and soda, which dealkalized fibrine is deposited in certain organs. He consequently proposes the term "depurative nephritis" for that form of Bright's disease in which the blood-vessels of the kidney are infiltrated with this deposit. This is not altogether a satisfactory name, because the very same form of disease is occasionally met with in cases of old syphilis, where there has been no suppuration. We have had a tubal and an interstitial nephritis, why should not this be called "arterial nephritis"? The blood-vessels primarily and chiefly affected with the change in question are the Malpighian tufts, the vasa afferentia, and the arteriolæ rectæ of the pyramids. The change consists in thickening of their coats and infiltration with the peculiar deposit. In advanced stages of the disease the surrounding interstitial tissue is similarly affected, and assumes the characteristic appearance of rind of bacon or white wax. How far the new deposit when once effused among the tissues can, as Dr. Dickinson supposes, become "converted into

fibroïd tissue" is very doubtful. He shows, it is true, a very beautiful specimen, in which the microscope reveals the presence of an abundant finely nucleated connective tissue: but we cannot help doubting whether this adventitious tissue be not a consequence of interstitial nephritis superadded to this specific change, and that we have here an excessive formation of connective tissue infiltrated with the deposit. It is hard to believe that a "dealkalized fibrine" can become organized into fibrous tissue. Rasmussen maintains that the amyloïd degeneration is in the majority of cases complicated with interstitial nephritis, and would doubtless explain in this way the above appearances. The same material which is thus poured out into the interstitial tissue exudes also into the tubes, where it takes the form of waxy casts, which occasionally give the red colour with iodine. Fatty degeneration is frequently associated with this disease. The occurrence of albuminuria is here explained by an excessive porosity in the coats of the blood-vessels from the changes they have undergone. The kidneys are pale, anæmic, and slowly increase in bulk; some of the largest kidneys that are ever seen being of this kind. Their surface is smooth, or faintly granular. The cortex, at first thicker, denser, and heavier than natural, becomes later on, as the interstitial change progresses, slightly puckered and contracted, and its capsule more adherent; while the deep red of the pyramids often contrasts strangely with the pale cortex. By far the most frequent cause of the arterial nephritis is chronic suppuration, not necessarily, but often connected with tubercular and scrofulous disease, especially of bone. Virchow and others have remarked on its frequent connection with protracted syphilis, a cause which must be likewise recognised. Like the interstitial, the arterial nephritis is chronic and insidious in its onset, but variable in the rate of its progress. It may occur at any period of life, but prevails between twenty and thirty (the decennium in which phthisis is especially prevalent). It is often attended with dropsy, which makes its appearance but slowly. As complications, pulmonary, especially pneumonia, are more frequently seen than cardiac; but most common and deadly of all is diarrhœa, which is caused by an extension of the disease to the blood-vessels of the intestine, as shown by the action of iodine on them. The face has often a waxy pallor and cachectic aspect. Cerebral symptoms are uncommon. The urine closely resembles that in the interstitial nephritis; the chief microscopical difference being the hyaline, waxy appearance of the casts in the arterial nephritis. The little that can be done in the way of treatment consists in the administration of nutritious food, iron, and cod-liver oil. Dickinson hints at the importance to the surgeon of the study of this

disease, as a warning to him against any operation which is likely to be attended with protracted suppuration.

Although these three types of disease have been thus separately described, it must be remembered that two, or even all three of them, are sometimes combined in one and the same kidney. A kidney that is the seat of mixed arterial and interstitial nephritis may, for instance, be suddenly attacked by tubal nephritis. Nor is this a matter for surprise when we bear in mind the very intimate way in which the three several structures are blended together, and interwoven one with the other. The types, nevertheless, are quite sufficiently marked to warrant a separate description of each for itself.

A few observations on dropsy, as it occurs in connection with albuminuria, will not be out of place here. It is too much the custom in writing on this subject to treat this dropsy as if it were a consequence in all cases, either directly or indirectly, of the renal disease. We are told that the blood becomes impoverished by the loss of albumen; that its water increases above measure from a checked urinary secretion; that the blood-vessels are subjected to an increased pressure, partly by the superabundance of water in the blood, partly by the impediment which an impure blood meets with generally in its passage through the capillaries, partly by the obstruction offered to the circulation through the kidneys; and that as a consequence of one or more of the above causes dropsy ensues. But not one of these factors will satisfactorily account for that form of dropsy which is acute and general in its onset, and which sometimes shows itself actually before the albuminuria betrays the presence of kidney-disease. We see a person exposed to cold, and becoming affected in a few hours with general and acute dropsy. Simultaneously with the dropsy appears the albuminuria; or either may precede the other; or—a very strong argument against the dependence of the dropsy on the albuminuria—either may be present without the other. Here it is impossible that the dropsy can be the effect of impoverishment of the blood, or in any way a consequence of albuminuria; the two are rather independent, but coexistent phenomena. If it be not then a sequel of renal disease, how is this dropsy produced? And here it is better at once to confess our ignorance. No hypothesis that has yet been framed meets all the difficulties that beset the question, or arrives at a satisfactory conclusion. A reflex paralysis of the vaso-motor nerves from the effect of cold on the sensitive cutaneous nerves; an altered condition of the blood which allows the albumen to filter into the urine, while it causes the serum to filter into the subcutaneous tissue; an excess of water thrown back on the blood by a sudden suppression of the

sweat—all of these hypotheses are insufficient. This is one of the paths that has not yet been fairly trodden, and where there remains much to be explored by future investigators.[1] How widely different from this is the œdema which slowly creeps on in chronic renal disease, and is evidently regulated by the amount and kind of renal disease present, bearing in its intensity a direct relation to the quantity of albumen in the urine, and an inverse relation to the amount of water present in that secretion. Here there can be no doubt that the loss of albumen and the hydræmia, both of them effects of the kidney disease, are the causes of the dropsy. There are, then, two totally distinct forms of dropsy associated with albuminuria, distinct in their onset, distinct in their nature, and distinct in their production. The one acute, the effect of a cause which is not yet clearly ascertained, affecting the subcutaneous tissue of the body generally, and occurring independently of the albuminuria. The other chronic, slowly extending from below upwards, and a direct consequence of the impoverished state of blood which owes its existence to disease of the kidney.

Some instructive views concerning the effects of climate on renal diseases are contained in the closing chapter of Dr. Dickinson's book. His arguments go to prove that the most potent of all agents in the production of Bright's disease, and more particularly the interstitial nephritis, is climate. He shows, from a series of carefully-constructed tables, that Bright's disease is essentially a disease of temperate climates, scarcely known either in extreme heat or extreme cold, but prevailing "chiefly where the mean temperature of the year is not far removed from 50°." Thus in Melbourne it is almost as destructive as in Great Britain. In Iceland, on the other hand, it is very rare; and any one who has read Dr. Chambers's little work on the climate of Italy must have been struck with the comparative immunity that Italy is there shown to enjoy in this respect. Again, great variability of temperature is equally prejudicial. The eastern counties in this kingdom are, consequently, found to suffer more than the western, Aberdeen being of all places that which is most afflicted with renal disease. If further investigation shall confirm the views here put forward—and the facts adduced by Chambers and Dickinson are hard to dispute—a very great service will have been rendered to medicine. We shall be able to do that for the intractable diseases whose pathology we have been considering, which drugs and home treatment have hitherto failed to effect;

[1] The difficulties that beset this subject have been very clearly set forth by Dr. Andrew, in his Thesis for the M.D. degree, 1864; which we noticed on a previous occasion.

and we shall recommend at once, as of the most vital importance, to any case of the kind, a change to a warmer and more equable climate. The Mediterranean coast and the Cape seem to enjoy special advantages.

We cannot conclude without once more mentioning, in terms of the highest praise, the work of Dr. Dickinson. In demonstration of the morbid anatomy of the kidney he is certainly unequalled; and the beautiful illustrations of his preparations, by Tuffen West, contribute in no small degree to the merits of his book. Hanhart's chromo-lithographs are likewise admirably executed, and portray with great faithfulness the naked-eye appearances in typical examples of the three forms of Bright's disease.

Review V.

Bidrag til Kundskab om de i Island endemiske Echinokokker. Af Jón Finsen, Distriktslæge. (Særskilt Aftryk af 'Ugeskrift for Læger,' 3die Række, 3die Bind, Nr. 5—8). Kjöbenhavn. F. S. Muhle, 1867.

A Contribution to our Knowledge of the Echinococci Endemic in Iceland. By John Finsen, District Physician. (Reprint from the 'Ugeskrift for Læger,' 3rd Series, vol. 3, Nos. 5—8). Copenhagen, F. S. Muhle, 1867, 8vo, pp. 46.

Although we have in our nineteenth volume (p. 112), in our thirty-fifth (pp. 139 and 330), and in our thirty-eighth (p. 285), paid much attention to subjects closely allied to that of the work now before us, we think that we may with advantage devote a few pages to the consideration of Dr. Finsen's book. The author has, in fact, had special opportunity for collecting the kind of information to be found in his pamphlet, having been for ten years the district physician of a part of Iceland containing 10,144 inhabitants, *i. e.* one sixth or one seventh of the whole population of the island. He remarks that while this disease (which though elsewhere occurring but rarely, constitutes a plague for the inhabitants of Iceland, in many other respects also unfortunately circumstanced) has been the subject of important works from Eschricht, Krabbe, Christensen, Rasmussen, Storch, Aarestrup, and others, "it will probably have surprised many that the physicians in Iceland, who beyond all others must have the opportunity of acquiring rich experience in this direction, should have remained perfectly passive, and not have made the least exertion to elucidate a disease almost peculiar to their country." As an excuse for them he refers to

their isolated position, the absence of the means of scientific research, and their extremely laborious and disagreeable, peculiar practice. The present work he offers "as an instalment of the debt which, he fully admits, the Icelandic physicians owe to medical science respecting echinococci."

Frequency of the Disease.—Dr. Finsen is of opinion that the statements made by various writers, that one seventh of the population suffers from echinococci, or, as has been even said, that every fifth individual is carried off by the disease, are exaggerated. Of 7539 cases of illness treated by him during nine years that he kept a journal, 280, or only 1 : 26·9, were cases of echinococci.

Seat of the Disease.—Of 255 patients 74 were males and 181 females. In these 255 cases the origin of the echinococci was in 176 or 69·4 per cent. situated in the liver; in 3, or 1·17 per cent., it was in the kidneys; in 2, or 0·78 per cent., in the spleen; in 54, or 21·17 per cent., in the abdominal cavity, the original seat of the disease having been undetermined; in 7, or 2·7 per cent., it was in the lungs; in 4, or 1·5 per cent., in the head; in 1, or 0·39 per cent., in the nape of the neck; in 2, or 0·78 per cent., in the supra-spinous region; in 1 in the subclavicular; in 2 in the axillary; in 1 in the mamma; in 1 in the arm; and in 1 in the thigh. The source of the echinococci has been found in the abdominal organs in more than 92 per cent., and of these in the liver in 69·4 per cent. In the lungs it occurred in only 2·7 per cent., and in the external tissues of the body in 5·09. No case was met with in which the osseous system, the brain, or the eye was the part so implicated.

Symptoms.—Experience seems to show that echinococci may be present in internal organs, even for several decades, without producing any symptom whatever indicative of this disease. The most frequent and earliest symptom is pain often present long before the tumour becomes perceptible. This pain is liable to remissions and exacerbations, the latter, which are sometimes so severe as to affect the general health, being apparently connected with the increase of the tumours, and not with the occurrence of inflammation. When the echinococci are situated in the liver the patients generally suffer from pain in the shoulder and clavicle. Dyspeptic symptoms, especially constipation, but scarcely ever nausea or vomiting, often accompany hepatic and abdominal echinococci, probably in consequence of pressure on the stomach and intestine; nutrition, too, may be more or less impaired. Jaundice is rarely observed as a result of echinococci in the liver, this symptom having occurred only seven times among the author's 176 cases. In some instances the jaundice has been remitting. Ascites and œdema also

seldom attend abdominal echinococci. Bright's disease, without contemporaneous presence of echinococci in the kidneys, was met with in two cases.

The general health suffers to a greater or less extent; in some, however, this is scarcely perceptible, as the patients, notwithstanding the size to which their tumours frequently attain, are nearly fully competent to their work, and their condition does not indicate any delicacy; but in others the general derangement is considerable; the patients are no longer able to discharge their functions, they emaciate, their appearance becomes pale and unhealthy, and their temper gloomy.

"On examination by the touch, when the cyst is superficial, a smooth, elastic, most frequently rather resistent, roundish or oval tumour, more or less fluctuating, is felt. If the cyst be situated in the right lobe of the liver, the diaphragm is pushed upward, and the lower part of the thorax is dilated. If the echinococcus tumour arise from the posterior part of the right lobe of the liver, it will often be covered by the ribs, while the anterior part of the same lobe is pushed downward, as the echinococci increase, and forms a tumour in the right part of the abdomen.

"*Frémissement hydatidique* I did not succeed in discovering in the cases in which I have looked for this sign. Indeed, I have not in general looked for it, as my diagnosis has usually been clear and distinct; but I have looked for it often enough to enable me to state that it is not a usual symptom."

Pathological Anatomy.—The author's observations on this head are based upon his experience at the bedside, rather than at the dissecting table:

"Abdominal Echinococci in Iceland often attain a much more considerable size than writers state, their size being usually said to be limited to that of a child's head, or of the hand of an adult. In Iceland they sometimes grow so large that the abdomen becomes as much distended as it would be by highly developed ascites; I once evacuated upwards of eighteen quarts from a patient. In the cases in which I have opened such enormous cysts, the latter have always contained daughter-cells. Writers generally state that the compound echinococcus is met with in preponderating frequency in man, while the single occurs only exceptionally. This does not agree with my experience, as in forty-eight patients operated on, I found daughter-cells only in nine, and in one of these they were not present directly on the cyst being opened, but appeared first a month subsequently, and therefore after the cyst had long been the seat of inflammation. In the course of several days a large quantity of these small daughter-cells were evacuated, all being at about the same stage of development, viz., of the size of boiled sago-groats. In one case the daughter-cells were floating

freely in the abdominal cavity without being enclosed in any sac." —p. 13.

In forty-eight patients operated on the echinococci only twice contained a partly purulent, in one case a viscid, chocolate-coloured fluid; in all the others the contents were clear; and in the cases examined by the author exhibited no trace of albumen when boiled. With the exception of the echinococci on the hairy part of the head, where they in general occur in numbers of from five to ten, but almost never singly, Dr. Finsen was able only in six cases to distinguish more than one echinococcus in the same individual. Of 86 hepatic echinococci, 58 proceeded from the right lobe and 28 from the left, a proportion corresponding to that given by Frerichs and other writers, but not coinciding with Schleisner's statement, that echinococci proceed more frequently from the left lobe.

Causes.—Respecting the origin of echinococci from the *Tænia echinococcus* of the dog, the author refers to Dr. Krabbe's treatises on the subject. We also may refer to the articles already alluded to, to be found in our thirty-fifth and thirty-eighth volumes. As to *sex*, males were in the author's practice less frequently the subjects of the disease than women, in the corrected proportion of 1 : 2·27. This preponderance of females the author attributes to the occupation of women in cooking, and in washing utensils, rendering them more liable to swallow the ova of the *Tænia echinococcus* of the dog than men are, in consequence of dogs often licking the vessels employed in the kitchen. The *age* at which most cases occurred was from ten to thirty, and particularly from twenty to thirty years. The youngest patient treated by Dr. Finsen was four years old, but in some of his patients the disease was said to have commenced at two years. The author's experience is rather against the disease being of an hereditary nature. Want of cleanliness is an evident cause of the affection.

As to the *duration* and *course* of the disease, the author adduces three cases in which it appeared to last eighteen, sixteen, and fifty-two years respectively. These cases are, however, not very conclusive, as they are those of persons long absent from Iceland, in whom it is inferred that they must have brought the disease thence, an inference based merely on the great frequency of the disease in that island, and its great rarity in Denmark.

"When the growth of the echinococcus has advanced so far that the tumour becomes perceptible to both the patient and the physician, it usually progresses very slowly, often periodically, the swelling being in the interval stationary, or even occasionally be-

coming less, until it has attained a certain size, varying in different individuals. Sometimes, however, it may attain its full development in the course of a year, or even of a shorter time.

"If the echinococci be not artificially cured, they may be cured spontaneously by a retrograde metamorphosis, inflammation occurring in the echinococcus, the fluid being absorbed, and the tumour shrinking with a process of calcification, or ossification. This occurrence is, however, certainly very rare in the human subject, in whom the echinococci attain so great a development. I have, indeed, spoken with some, in whom a gradual diminution of echinococci, which might indicate such a process, has taken place; but it has never fallen to my lot to observe this; on the other hand I have sometimes, on opening echinococci, discovered small bony laminæ in the evacuated contents. But among the ruminants this process is very common.

"A more frequent termination of echinococci, and which often leads to recovery, but not unfrequently results in death, is rupture."—p. 22.

The author appends a table of the cases of this latter nature which have occurred in his practice, adding the organs into which and through which the tumours have been evacuated, and the result:

	No. of Cases.	Deaths.
Rupture of abdominal echinococci through the abdominal wall	7	2
" " " " back	4	2
" " " into the abdomical cavity ...	6	2
" " " through the intestinal canal	3	
" " " " lungs	3	1
" " " " vagina	1	
" renal echinococci through the ureters	3	
" pulmonary echinococci through the bronchi	7	2
" " " into the cavity of the thorax	1	
Total...	35	9

"In addition to the above, I have had six relapses after rupture into the abdominal cavity: of these one recurred twice; four relapses after rupture through the intestinal canal, one of which recurred twice; and a relapse after a rupture, the direction of which is not stated. The relapses have thus been most frequent after rupture of echinococci into the abdominal cavity. The reason of this is certainly that the echinococcus in this rupture, which is usually caused by external violence, is often fresh, and contains living scolices; while the latter, in cases of rupture into other organs, which is a result of inflammation in the echinococcus, and consequent adhesion to the organ into which the rupture takes

place, of ulceration and perforation of the walls of the echinococcus, are dead.

"Rupture of abdominal echinococci through the abdominal wall and the back proceeds precisely as an abscess, which opens spontaneously. Yet it is remarkable that in this kind of rupture the prognosis is comparatively the worst, four cases out of eleven having terminated fatally."—p. 23.

A symptom first observed by the author as attendant upon the rupture of echinococci into a serous cavity, is a very itchy urticarial eruption on different parts of the body, usually disappearing after one or two days. A similar eruption took place on a couple of occasions, shortly after Dr. Finsen had opened abdominal echinococci externally, an occurrence which he attributed to a deficiency in the adhesion between the echinococcus and the peritoneum permitting a transudation of the morbid fluid into the abdominal cavity.

From the table above given it will be seen that Dr. Finsen did not find rupture of echinococci into the abdominal cavity to be so invariably fatal as has been represented. He is of opinion that the rupture of *fresh* echinococci into that cavity is, on the whole, unattended with danger, and that death is the result only when the fluid is purulent.

The mean duration of the disease, when not cured either by nature or art, it is difficult to fix. The shortest time the disease lasted among the author's cases, before death took place, was four years, the longest thirty.

"That echinococci may sometimes result in death, although this does not take place by rupture, is certain; but this case is, however, not of frequent occurrence. Of thirty-two fatal results which I recognise among my 255 cases, death was due in fifteen to other diseases and operations, in nine, as above stated, rupture of the echinococci, and in eight hectic, marasmus, &c., proved the cause of death."—p. 27.

In his section on the differential diagnosis of the disease, the author speaks chiefly of the resemblance of some cases to ascites and to ovarian cysts. In one instance he successfully operated on an echinococcus, which had completely the character of an ovarian cyst, after Récamier's method, and he is thence led to suggest a trial of this plan in cases of ovarian cysts.

"The external echinococci, which occur usually in the subcutaneous connective tissue, rarely in the interstitial tissue between the muscles, never, according to my experience in the muscles themselves, and which, on the whole, have the character of benignant tumours, seldom present any diagnostic difficulty, and are in general easily distinguished from other tumours by their smooth

surface, their ordinarily rather oblong form, and by their elasticity."—p. 30.

From what has gone before it may easily be inferred that the author is of opinion that the *prognosis* in this disease ought to be more favorable than it is usually considered to be.

In the *treatment* of abdominal echinococci, Dr. Finsen speaks highly of Récamier's method, which, as is well known, consists in cauterising the integuments so as to produce adhesion between the echinococcus and the abdominal wall, and then opening the echinococcus. For this purpose he has latterly employed a "Vienna paste," prepared with equal parts of potassa fusa and magnesia calcinata, which has the advantage over the potassa cum calce of remaining dry, no matter how long it may be kept, and which proves constant in its action. We shall give his mode of proceeding in his own words—

"I apply the Vienna paste on the most fluctuating and most prominent part of the tumour; but if the latter be everywhere fluctuating, I apply the paste as near as possible to the point of origin of the echinococcus. After the lapse of fifteen minutes I remove it. Three days after the first cauterisation, I split longitudinally the crust formed by the paste, and again apply the caustic in the split. Three days later I dissect away the scab formed in the split, and then continue to cauterise every third day, until the echinococcus has either opened spontaneously, or has appeared as a prominent, slightly bluish coloured vesicle in the bottom of the ulcer, and in such case I open it with the lancet. The time the cauterisation has taken has varied immensely, viz., from fourteen days to five or six months, without my being able to account for this great difference."

Having evacuated the contents of the echinococcus as far as possible, Dr. Finsen introduces a tent into the cyst, which tent he subsequently removes daily, to give exit to the fluid gradually again collected. Usually in about a week after the echinococcus has been opened, the proper sac begins to come away in pieces of various sizes, a process which it is generally necessary to aid with the forceps.

The author first adopted Récamier's operation in 1857, since which he has resorted to it forty-three times in forty patients, having in one employed it for three abdominal echinococci and in another for two. Of these forty patients five for various causes gave up the treatment before the echinococcus was opened, and the operation was therefore performed in thirty-five patients, with thirty-eight echinococci. Of these thirty-eight echinococci, thirty-one were cured; in two patients, however, echinococci remained in the abdomen, which were not operated

on, in seven cases death was the result. Of these seven cases, Dr. Finsen gives detailed reports, in order to show that the fatal termination was not in all attributable to the operation. From his remarks it would appear that—

"Of thirty-eight operated on, thirty-one were cured, five or six proved fatal from causes independent of the operation, and one or two proved fatal in which it was doubtful whether death was due to the operation or not."

The author next proceeds to refute some objections which have been raised against the foregoing operation, and concludes his very interesting, practical, and clearly-written treatise with a few remarks upon the treatment of echinococci by puncture, incision, and electricity, to all of which methods he prefers Récamiér's operation. The treatment of external echinococci must, of course, consist only in extirpation, which he has performed seven times, always with success.

Review VI.

Annual Report of the Commissioners for Administering the Laws for the Relief of the Poor in Ireland; including the Twentieth Report under the 10 & 11 *Vic., c.* 90, *and the Fifteenth Report under the* 14 & 15 *Vic., c.* 68, *with Appendices.* Dublin: printed by A. Thom, for Her Majesty's Stationery Office, 1867. Pp. 260.

The Report of the Irish Poor Law Commissioners for the past year (1866) appears at a time, when the condition and management of our institutions in England have attracted, in some instances at least, an undesirable species of publicity. The Report, which we proceed to consider, necessarily briefly, presents some features of peculiar interest in themselves, for the year 1866 was remarkable as that in which the last cholera visitation occurred in Ireland. While we would draw the attention of the Government to the necessity for the establishment of a species of coastal as well as foreign supervision, if not of quarantine, as strongly seen in the mode of approach of the epidemic cholera to Ireland last year, we would do the whole machinery of the Irish Poor Law an injustice, if we did not acknowledge the general efficiency and promptitude with which that most formidable disease was met and combated. Indeed it may be said that "Ireland's necessities" have been "opportunities" for England to establish some admirable institutions,

in which the British Government have been ably seconded by the national quickness and perception of the Irish themselves.

The systems of poor-law administration and of police thus present, in Ireland, some features of excellence, and tend materially to facilitate the conduct of other matters connected with the government of that country, and the relief of sickness, not possessed by other countries far more highly favoured in other respects. And we trust that the efforts of those, whether of foreign origin or not, who would retard the progress of Ireland and the enlightenment and development of her people's better natures and many genial and estimable qualities, may be defeated. Nor do we despair of the result, provided that justice be firmly and impartially administered, and the requisite encouragement and protection afforded by our Government to the many intelligent, enterprising, and indefatigably industrious classes and individuals, of whom Ireland, labouring under not a few adverse circumstances, can boast.

The relief afforded to the poor of Ireland by the Poor Law authorities for each week of the year ending 16th February, 1867, is stated, both to persons in the various workhouses of Ireland and that given to poor out of the workhouses. Diagrams and tables are also given, representing the amount of relief afforded in each of the eight years ending at the date above named. 1859-60 was the most favorable year which has occurred since the famine.

The following tables represent in figures the maximum, minimum, and average daily numbers for the eight years 1859—1867:

RELIEF IN WORKHOUSE.

	Maximum Numbers.	Date.	Minimum Number.	Date.	Average Daily Number.
1859–60	46·273	25 February, 1860	33·796	27 August, 1859	39·846
1860–61	51·552	23 February, 1861	36·107	8 September, 1860	42·758
1861–62	61·485	22 February, 1862	39·580	31 August, 1861	46·312
1862–63	66·976	14 February, 1863	45·201	20 September, 1862	55·610
1863–64	66·375	14 March, 1864	48·275	5 September, 1863	58·203
1864–65	65·549	27 February, 1865	47·170	27 August, 1864	55·808
1865–66	63·009	25 February, 1866	44·596	2 September, 1865	52·121
1866–67	59·205	9 February, 1867	42·785	1 September, 1866	50·241

OUT-DOOR RELIEF.

1859–60	2·093	25 February, 1860	1·124	24 September, 1859	1·445
1860–61	4·828	16 February, 1861	2·060	22 September, 1860	2·654
1861–62	6·509	22 February, 1862	2·912	14 September, 1861	3·964
1862–63	8·968	21 February, 1863	4·289	11 October, 1862	6·263
1863–64	10·434	20 February, 1864	6·665	19 September, 1863	7·859
1864–65	11·903	18 February, 1865	6·689	1 October, 1864	8·748
1865–66	12·595	11 March, 1866	8·003	7 October, 1865	10·040
1866–67	18·816	9 February, 1867	9·949	13 October, 1866	12·205

The average daily number of inmates shows a decrease; and we had hoped at the date of our last annual report that the gradual decrease of pauperism in the workhouses since the year 1863 would be continued throughout the succeeding series of fifty-two weeks for 1866-67. That period, however, proved to be one of an eventful character, having been marked in the first place by a threatened invasion of the cattle plague; secondly, by an actual visitation of cholera; and, finally, by the Fenian movement.

The succeeding winter was also one of extreme severity, and has been protracted to an unusual date, the whole face of the country being, at the time of writing this report, covered with snow. A great part also of the period under consideration has been very rainy and tempestuous, creating, in addition to the usual amount of febrile complaints, an extraordinary amount of sickness and mortality by bronchitis and other diseases of the respiratory organs. Persons acquainted with the interior of Irish workhouses, and the description of cases admitted there, will easily understand, that an increased number of admissions must take place during a season of the character described. It is perhaps the best proof of the value of the Irish system of poor-law relief, that the numbers, in the workhouses, fluctuate from time to time in almost exact acordance with the character of the seasons.

To the above causes must be added the decrease of employment and wages, arising from the languid state of trade during the financial crisis, so far as the same may have affected the towns and villages of Ireland. On the other hand, agricultural enterprise was stimulated by the prospect of good prices, and the result of the harvest was such as to prove remunerative; and in no recent year has the payment of rent and taxes by the tenantry have been made with more promptitude and cheerfulness. The increase of pauperism, therefore, under the circumstances described, must not be received as any positive indication of a general decrease of prosperity.

The report goes on to show the marked effect severe weather exercises upon the demand for workhouse relief, and that fine weather immediately lessens the number of applicants for the same.

The amount of outdoor relief given of late years has extended considerably, as will be seen by reference to the figures given above.

The average weekly cost of maintenance in the workhouses in Ireland, exclusive of clothing, rose from 2*s.* in 1864 (January) 2*s.* 5½*d.* in 1867, having risen continuously in the intervening

years, owing to the gradual increase in the cost of provisions. This state of things, and some change in the dietaries, has occasioned "a material part of the increase of the relief expenditure," which is noticed in another part of the report.

Of the causes of death we must content ourselves with quoting a few of the more prominent. Thus, in the year ended on 9th February, 1867, of 12,582 which occurred in workhouses, 2383 were attributed to old age, 851 to atrophy, 298 to brain disease, 233 to cancer, 13 to childbirth, 249 to cholera, 1081 to consumption, 233 to convulsions, 557 to diarrhœa, 463 to dropsy, 165 to dysentery, 981 to fever, 394 to heart disease, 2,166 to inflammation or other diseases of the lungs, 442 to paralysis, 206 to scrofula.

There were less deaths by fever in the last year than in the preceding by nearly 300; and it was mainly owing to the very severe weather in the eight weeks ending 9th February, 1867, that the increase in the number of deaths, 960, as contrasted with the year ending February, 1866, occurred, no less than 900 deaths having taken place in the period first mentioned.

The commissioners, very reasonably, attribute the remarkable diminution in the number of fatal cases of smallpox, in the workhouses, to the operation of the Compulsory Vaccination Act of 1863: the numbers stand thus, in the years 1865-7 respectively, 145-59 and 9. It may, however, appear to many that the epidemic or pandemic tendency has also had something to say to the result. We say this without at all desiring to undervalue the importance of compulsory vaccination.

Within the last seventeen years no less a number than 25,174 persons, chiefly women and children, have been assisted to emigrate from the poor-rates, "usually to join friends already settled."

The Poor Law Administration was made the means whereby £13,474 was collected by a farthing rate, on the rateable property of the unions in Ireland, for the purpose of "immediately stamping out the plague," wherever it might first appear, and for compensating the owners of all cattle slaughtered for that purpose. It is well known how very satisfactorily this proceeding turned out. We do not certainly advocate the same mode of treating human beings who import disease into any country, but we would say that the experience of Ireland with respect to cholera, to which we have above alluded, shows the necessity for a system of prevention as regards arrivals from places affected with contagious diseases. The Sanitary Act of 1866 and all acts and parts of acts incorporated with it were published by the Poor Law Commissioners in one volume, and forwarded to

the several boards of guardians, &c., for their guidance during the recent cholera visitation.

The net annual value of property rated for poor relief and medical charities has risen from £11,175,586 in 1852, to £12,989,026 in 1866.

The amount of poor-rate collected, which was £1,109,630 in 1852, and had gradually decreased to £509,380 in 1860, has since risen to £749,757 in 1866, the rate amounting to a poundage of 1*s.* 2*d.* last year. The increased rates being due mainly to the enhanced price of provisions, the commissioners apprehend a still heavier rate in 1867, as the number of inmates in workhouses has increased, unless a decline in prices occurs.

We would suggest an inquiry into the causes of the high prices of provisions in Ireland, being now aware of the immense gain to the public, which has followed the recent determined inquiry by the people and press in Great Britain, and knowing as we do the very large amount of live stock in the United Kingdom generally. We cannot help thinking that good would also arise from investigation into the high price of cereals, &c.

The Poor Law Commissioners anticipate much improvement, especially in remote parts of the western coasts of Ireland, from the funds now allocated from the Civil Service estimates for medical charities, whereby they shall be enabled to place the machinery, so to speak, of the medical relief on a more efficient footing, without pressing too heavily upon poor and thinly peopled districts.

A diminution in the number of cases relieved by the dispensaries and medical officers of Ireland occurred in the year 1866, attributable, in the opinion of the commissioners, to the decrease of the population, and an improvement in the condition of the health of the poor: judging from what we have learned of Ireland, we would ascribe some of this reduction to the excitement arising from the doings of the Fenian conspirators.

New appointments of midwives were authorised in the past year in fourteen dispensary districts. There are now seventy dispensary districts in which the attendance of skilled midwives is provided in cases of natural labour, in other cases it is the duty of the midwife to call for the aid of the district medical officer. The great necessity for constant activity on the part of the several boards of guardians in enforcing the Compulsory Vaccination Act is dwelt upon, and the comparative facilities afforded by the fact that the dispensary medical officers are nearly all registrars of births, &c., for the carrying out of the provisions of the law, are mentioned in the report. The number of vaccinations and of births, however, still show a proportional deficiency of the former.

The number of cases of fever and smallpox, in the practice of the dispensary medical officers, is less than the number recorded in the preceding year; that of scarlatina is slightly less than in 1865. The number of smallpox cases in Ireland are, it is thought, underestimated, owing to the illegal practice of inoculation still existing, with itinerant inoculators, and the concealment of cases so arising by the peasantry. It is hardly necessary to point out the great evil attendant upon such a state of things.

The Report details the proceedings taken, prior to and, on the appearance of cholera in Ireland, when the advantage of a manageable and central authority, for directing the measures to be adopted by the several Poor Law boards of guardians became evident.

The spreading of the cholera from individuals recently arrived from infected localities was seen in a remarkable manner, and the several stages by which the disorder travelled to the affected localities in Ireland are clearly traceable, establishing most palpably the fact of the contagiousness of the disease. It is satisfactory to be able to say that in nine out of twenty localities visited by cholera, the disease did not spread beyond the persons first attacked. There were exceptions, however, to the general rule of the origin of the disease by transmission from the sick to the healthy, two of which are given in the report. In these cases there was not evidence to show how the disease arose.

The commissioners consider the prevention of the spreading of the disease, in the several workhouses attacked, was owing to the prompt treatment of all cases of incipient diarrhœa. In only one workhouse, that of Kilkenny, did any considerable number (34) of cases occur. Up to the 3rd of January last 17 of these persons had been discharged cured, 10 deaths having taken place. The mortality from cholera, in cases treated by the medical staff of the Irish Poor Law Department, during the whole or a portion of the duration of the several cases, in or out of hospital, was at the rate of 53·6 per cent. of cases in 1867, against 46·8 in 1854. The total number of dispensary cases of diarrhœa treated throughont Ireland during the last epidemic was 25·100, with 340 deaths, against 27,423 cases, with 279 deaths in 1854. Mr. Lambert, the inspector sent from England to inquire into the operation of the Irish Dispensary system, with regard to the applicability to the London unions, says: "It provides an organization always ready and capable of expansion, if necessary, to meet any outbreak of epidemic disease with promptness, while at the same time it is calculated to prevent disease becoming epidemic, and procuring the adoption of precautionary measures in any locality, which may be threat-

ened. These benefits have recently been largely realised in Ireland in reference to cholera."

In two instances the Poor Law Commissioners had to exercise "the recently enacted power of enforcing adequate remuneration to the medical officers for extra service under the cholera order."

The Irish Dispensary system is not without its abuses. The same authority observes:

"The only blot in the system is attributable to the extreme facility with which the tickets for medical relief are obtainable from the members of the dispensary committees. I was assured at one place that retail tradesmen have been known to sign a book of tickets, and leave them to be distributed amongst any customers willing to accept them; and in another, the medical officer informed me that a member of the committee had sent one of his children with a ticket, under a fictitious name, and obtained cod liver oil for a period of three months. The dispenser at Limerick, who is also the house-surgeon at the Barrington Hospital, stated that the right conferred upon so many persons to give medical orders is open to great abuse, and he thought it should be limited to relieving officers and *ex officio* guardians, &c."

"Another reason for the somewhat lavish administration of out-door medical relief in Ireland is attributable to the professional etiquette which prohibits even a surgeon from attending a patient for a less fee than a guinea; so that the question upon which the granting of medical relief is supposed to hinge is, whether or not the applicant is provided with that sum."

From our knowledge of Ireland we cannot agree to this latter statement. It is probably true with regard to the leading surgeons, but almost every one of them can be consulted by poor persons, if they apply as extra cases at the hospitals, or, in some cases, at the residence of the surgeon; and from a somewhat extensive acquaintance with the practice both in England and Ireland we believe that the small tradesman and artizan can obtain medical assistance, on quite as easy terms, in the latter as in the former country. Indeed the extreme facility of obtaining gratuitous medical aid in Ireland appears rather to tend to produce improvidence and intemperance; and it is well known that in not a few instances a portion of the weekly earnings go to the encouragement of persons and societies whom if we termed them political we would use a very mild term indeed.

"The power given to the committee of cancelling the ticket after it has been issued and acted upon is found," observes the inspector quoted above, "to be quite inoperative in practice." If the medical officer ascertains that the applicant is the owner of houses, or cattle, or other property, or proprietor of a flou-

rishing business, or in the receipt of large wages, as well as, probably, a small shop managed by his wife, a week or often a much longer period must elapse before he can obtain the cancelling of the ticket, if even then he is successful in so doing; and moreover he may almost always reckon upon the hostility, open or concealed, of the member of the committee who issued the ticket, and he must continue attendance until the ticket is cancelled. The granting of orders forme dical attendance, upon persons able to pay for the same, is the greater hardship upon the medical officers, inasmuch as their payment for harassing duties and constant exposure to contagious diseases is very inadequate.

The appendix contains besides the letter of the English inspector, from which we have quoted some passages above—details of the working of the several hospitals, dispensaries, and workhouses, their expenditure, &c., as well as the correspondence and instructions of the commissioners, inspectors, and medical officers, and on the subject of the new Sanitary Act, the cholera, &c., and presents several features of interest in connection with sick poor relief and the sanitary condition of Ireland.

Last year (1867) an Act[1] was passed increasing the duties, risks, and responsibilities of the Irish Dispensary Medical Officers, from whom so much had been previously exacted; for it has been enacted that they shall examine any person "discovered and apprehended under circumstances denoting a derangement of mind, and a purpose of committing some crime," &c., "without fee or reward." Soon after the notification to the Irish Dispensary Medical Staff of the above-mentioned Act another circular was issued publishing extremely satisfactory results of a recent inquiry into the state of Ireland, as to the existence of smallpox in that country, which reflects the highest credit upon the medical staff, and shows that variola has fallen to a total of but twenty deaths in the year 1867 in the whole island. Surely such a result deserves another reward besides that of inflicting additional labour, of a most anxious, dangerous, and responsible kind, upon men already notoriously over-worked and underpaid. We trust, however, that our professional brethren in Ireland will find that their invaluable services to the nation and to society will not much longer remain so ill-requited.

Our limits do not permit us to notice at present certain matters to which the Poor Law Commissioners have drawn attention, in connection with the prevention of smallpox in Ireland.

[1] Act 30 & 31 Vic., c. 118 (section 10).

Review VII.

La Fièvre Jaune à la Havane, sa Nature et son Traitement. Par Charles Belot, Docteur en Médecine de la Faculté de Paris, &c., &c., Directeur de la Maison de Santé Fondeé par son père à la Havane. Paris, 1865.

Yellow Fever at the Havanna, its Nature and Treatment. By C. Belot, M.D., &c.

An Essay on Yellow Fever, comprising the History of that Disease as it appeared in the Island of Antigua in the years 1835, 1839, 1842. With an Appendix, continuing the History to 1853. By Thomas Nicholson, M.D. London, 1866.

The author of the above French work may be said to inherit a taste for yellow fever; his father founded an hospital at Havanna for its treatment, and the son has worked in it for twenty years with a genuine enthusiasm, stimulated both by love for his profession and respect for his father's memory, so long connected with this particular disease. After watching eighteen epidemics, and treating annually about 1000 patients, Dr. Belot gives his experiences to the world, and these cannot fail to be of value. He says that he can reckon his autopsies by thousands, and that in his anxiety to wrest its secret from nature, he has operated on subjects when they have barely ceased to live!

"The Havanna," so unhappily notorious for its mortality from yellow fever, is the chief port in the island of Cuba, and has one of the finest harbours in the world, from which fact, indeed, it derives its name. A long and narrow channel leads into a land-locked bay some nine miles in circumference, and well protected by hills from the north winds, but freely open to the sunny south. The town, which has grown with the increasing commerce, consists of a new and an old port, and seems disposed in such a way as to contravene every principle of sanitary science.

The old town has narrow streets, with small and low houses, and it is here that the ships discharge their cargoes, and that men congregate in the largest numbers. Just at this spot the sewers empty themselves, and the only river contributes, with its own streams, the *débris* of the public slaughterhouse, and the rejections of the gas factory. At this "meeting of the waters" is the military hospital, with 1400 beds, where, as is not to be wondered at, the mortality is very great. Outside the walls is the new quarter, Regla, where the richer classes live, where the houses are better built, and the situation is more

healthy, and where, of course, the yellow jack is a less familiar acquaintance.

The rise and fall of the tide makes a difference of about two and a half feet in the harbour, though it is hardly perceptible outside, and at the ebb there is an immense surface covered with vegetation, and also with far less pleasant objects, such as dead animals and the refuse of the streets, exposed to the force of a tropical sun.

The climate of Cuba is for the most part hot, and always moist. In winter the temperature is as low as 60·8 Fahr., and in summer it rises to 100·4, while at the same time the air is charged with moisture, the daily rains being followed by a burning sun. In the hot season the variations of temperature are constant and as follows: At 4 a.m., 83·75° Fahr.; at 8 p.m., 93·65°; at 4 p.m., 52·4°; at 8 p.m., 91·4°; and at midnight, 79·45. After sunset the temperature falls rapidly, the watery vapour, which rises in such abundance, condenses, falling in a sort of mist, and this phenomenon is much more marked under the influence of *moonlight*, a well-established but unexplained fact.

In the hot season the wind varies from the north and north-east to south-west, but from June to September south winds prevail, and these are the most dangerous, from having traversed the island and arriving charged with miasma. These atmospheric changes have a considerable influence, as shown by yellow fever existing on the shore, and not on the hills, and by greater prevalence among those living in the low damp places. Such are the dangers which await the visitor to the Havanna, and when we consider that sailors, at least those engaged in trade, on their arrival are, as a rule, badly provisioned, have unfiltered water, and are confined on board ship amidst poisonous exhalations, we cannot wonder that so many of them fall victims to yellow fever.

The character of the attacks varies. Sometimes they run their fatal course with great rapidity, and kill in three or four days, but generally the duration is longer. In the acute and worst forms the attack is sudden, and commences generally in the night, with violent rigors, followed by intense headache, pains in the loins and in the joints, and a nasty taste in the mouth. If left alone for twenty-four hours the progress of the disease is rapid, the headache increases, the least pressure over the stomach gives great pain, and the pulsation of the vessels is extreme, the gums swell and turn livid, the breath is fetid, and thirst intense, the conjunctivæ turn yellow, the urine contains albumen, and the febrile symptoms become aggravated. After another twenty-four to thirty-six hours the skin changes colour and becomes yellow, the tongue is dry and rough, the pain at

the epigastrium is very severe, and the patient's sensations become more dull from diminished cerebral susceptibility. Then commence the characteristic vomitings, the matter ejected being at first clear, then yellowish, grumous and afterwards consisting of dark blood, the urine contains more albumen, or is sometimes suppressed, delirium supervenes, and death closes the scene from the third to the fifth day.

We may thus trace three distinct stages. The first is characterised by headache, lumbar pain, stiffness, pain in the joints, bad taste in the mouth, &c. In the second, the pathognomonic signs arise, viz., gastric pain, dyspnœa, swelling of the gums, and albuminous urine. In the third, the symptoms are typhoïd, and are consequent on an altered state of the blood. Cases do not, however, always follow such a regular course, the early symptoms often subsiding and giving the appearance of a less serious attack. It is noticed at the Havanna that if the weather is dry, the temperature high, and the wind blowing from the south, cerebral symptoms predominate, while, if the temperature is lower and the air charged with moisture, lumbar pains characterise the onset of the attack.

Taking the individual symptoms, we may observe that the rigors vary a good deal in intensity; if violent, they only last about two, and if slight, they may continue twenty-four hours; but if they begin during the night, they always have a well-marked remission—a dangerous truce. When the heat of skin is followed by perspiration, there is hope, but when the dry heat continues, it becomes a grave symptom. Headache with great heat of skin at the commencement is a bad sign, but when it is accompanied by gastric symptoms and persists after these have disappeared, the typhoid state soon follows. Delirium and photophobia often accompany the headache, but their continuance after the first twenty-four hours is unfavorable. The odour of the breath is peculiar, being due to alterations of the state of the mucous membrane of the stomach, and it becomes offensive when blood is poured out and undergoing change. Thirst is sometimes very distressing, and our author "has seen sailors throw themselves into the sea because refused water to drink."

Vomiting, beginning early and not persisting, is a favorable sign, but a bad one if it continue beyond the first twenty-four hours. Black vomit is of frequent occurrence, the matter being either liquid blood, effused in the stomach, or sometimes that which has flowed from the mouth or nose into the stomach and coagulated there.

Jaundice is not an indispensable symptom, and is rare in the first stage. If it appear before the third day, it is of fatal sig-

nificance, but after the fifth or sixth day may be regarded as favorable.

The urine is unchanged in the first stage, but in the second becomes thick, and charged with bile, and afterwards is found to contain albumen.

The state of the mind in those attacked has great influence, some being unable to master their dread of the disease, and this has been observed chiefly among the natives of the north of Spain and of the south of France.

The pathology of yellow fever offers nothing constant, except it be in one singular point, viz., changes affecting the sympathetic. The solar and semi-lunar plexus are found red, and at some points black, and tear easily. The spleen is almost always hypertrophied, and filled with blackish fluid blood, and the blood is found decomposed in the stomach and intestines.

As the early symptoms are such as are common to many diseases, the diagnosis is not always easy at first, and even the most characteristic symptom, the black vomiting, has been noticed in the course of other maladies. Thus, in 1858, during an epidemic of variola at the Havanna, several cases showed this symptom. Bilious remittent fever, however, resembles in its phenomena more nearly yellow fever, but there are several well-marked points of difference. The former is found in all localities and seasons, while the latter occurs on the sea-board, in low marshy lands, and never on the heights, and is met with in the hot season. The latter attacks strangers, the former those acclimatized. The symptoms, too, differ, for the blood undergoes considerable changes in yellow fever, which is not the case in the bilious remittent; the urine is albuminous in the one, and not in the other; and lastly the sympathetic nerves suffer in the one, and in the other the liver is the organ most frequently affected. The prognosis must vary with the circumstances and condition of the patient, but we have to count on a mortality of twenty to thirty per cent. as a rule in the second stage of the disease, and in the third, happy are those who only lose three fourths of their cases. The negroes escape from this frightful disease, and, as though the colour of the skin were a criterion of the liability to attack, the Chinese, who are a shade less dark, are less subject to it than white men. Atmospheric conditions have considerable influence, particularly the electric state, and it is not rare, says Dr. Belot, "to see a patient, approaching convalescence, die rather suddenly after a storm." This is not surprising when we consider how intense are the disturbances of a tropical storm. "At such times," he adds, "fresh meat decomposes immediately, fish is quite spoiled a few minutes after being taken out of the water,

and milk turns sour with amazing rapidity." As regards the nature of the disease, Dr. Belot says:—"yellow fever is the result of a miasmatic poisoning, *sui generis*, which acts at first on the great sympathetic and abdominal ganglia; the organs in relation with this nervous apparatus are more or less altered in their functions; the blood itself is modified in its constitution." In the first stage, the blood is observed to be red and coagulates very quickly, the quantity of fibrin and albumen being much increased. In the same persons twenty-four hours later, the blood is of a mahogany colour, more liquid, does not coagulate so easily, the serum is yellowish, and the clot soft. In the third stage it is very fluid and quite black. In a word, the formation of fibrin diminishes at the expense of the albumen, and the blood not getting oxygen enough passes from red to black.

"The organs connected with the solar plexus are those that suffer most, and hence we see why the epigastric pain is the last to disappear. The anastomoses of the solar plexus explain the violent headache, hiccough, lumbar pains, dyspnœa from paralysis of the diaphragm, and all the other symptoms; for there is not one which cannot be accounted for by the direct relation of the solar plexus and great sympathetic to the organ affected."

The cause of yellow fever is purely miasmatic and is conveyed by the air, but the first condition for its development is a high temperature. It may continue through a winter, but no epidemic has commenced in the cold weather. Those who can take proper care of themselves, keep in a pure atmosphere, and avoid the unhealthy quarters, generally escape infection, and this fact, one would think, might have read a lesson before this to the authorities, and compelled the sorely-needed sanitary reforms.

The period of incubation is generally from eight to twelve days, and this explains how ships arriving in the course of an epidemic may leave the port, congratulating themselves on escaping the dreaded enemy, and still find it break out when they have got to sea again.

The chief points in treatment recommended by Dr. Belot may be summed up as follows. While he deprecates general bloodletting he advises local depletion, and thinks cupping preferable to leeches; for instance, eight glasses to the nape of the neck, ten to the loins, and eight on the abdomen. At the same time he uses strong mustard foot-baths every two hours, and sinapisms to the calves.

As a "great aid in lessening the plasticity of the blood and relieving local congestions," he gives the Tinct. Aconite in doses of six drops every hour, and says, "the pulse drops, and

diminishes in frequency, as do also the heat of skin and perspiration."

If the attack begins with vomiting, an emetic of thirty grains of Ipecac. in four ounces of warm water should be given, and the nausea should be kept up so as to produce diaphoresis, as well as merely to empty the stomach, but if the tongue be clean and the epigastric pain severe, emetics are bad. A few hours after the action of the emetic, there is generally some amelioration, and then is the time to give a purgative of castor oil or of sulphate of magnesia.

Continuous headache is best treated by flying blisters to the nape of the neck, and applications of camphorated spirit, and belladonna to the forehead. For the gastric oppression the same application is useful combined with a very small dose of tincture of nux vomica internally, and if nausea comes on, bicarbonate of soda alternated with the nux vomica is of service. In the acute and severe cases any treatment is too often useless, but in the more ordinary it is better to begin with an emetic, a gentle purge and diaphoretics, particularly Dover's powder, and when the remission occurs to give quinine in a *single dose of thirty-six grains* in a little strong coffee. When febrile symptoms prevail and rigors are absent, quinine is not applicable, and the author gives calomel, in small doses, every half hour till the usual effects are produced, and this method is, he says, efficacious. Hiccough is be stopped (?) by pressing on the phrenic nerve near the hyoïd bone.

Tannin, or perchloride of iron, is good for the hæmorrhages which often occur either from the mouth, nose, stomach, or bowels. Inflammation of the parotid gland frequently follows on these hæmorrhages, and is a good sign for recovery.

It remains to mention a method tried at Havanna by some German adventurer, as a preventive against yellow fever, viz., inoculation with the poison of a serpent known as *Crotalus horridus*. He observed that the Indian prisoners sent from Mexico to Vera Cruz when bitten by a viper, showed symptoms like those of yellow fever, and he thought that inoculation might, perhaps, on homœopathic principles be a safeguard against the genuine disease. He pretended to make the serpent bite the liver of an animal, kept this till it was putrid, and then inoculated with this substance, giving at the same time by the mouth a syrup of *mikiana guaco*, and rhubarb with iodide of potassium, &c. This man made some experiments at the military hospital, but the results were very unfavorable to his theory, and he refused to yield to the wishes of the commission appointed to report upon the experiments, and try the inoculation and physic separately. The subject has since dropped out of notice. During

the epidemic of 1862, 1107 cases of yellow fever were treated in the *Maison de Santé*, between June 1 and October 15, of which 196 died, *i. e.*, about 17·7 per cent, the victims being chiefly English, Germans, Spaniards, and French. The matter vomited was made the subject of careful examination, and it was found that, when clear, it was generally acid, and when black it consisted of bile, with excess of gastric juice and altered blood, this being the form of vomiting best relieved by calomel. The liquid of the black vomit was acid, and, treated with Barreswil's solution, was found to contain glucose. Dr. Belot speaks in high terms of the efficacy of small doses of arsenious acid in this form of vomiting.

We have said enough to give an outline of the chief facts contained in this book, which is of considerable merit, being a record of carefully observed facts in a wide experience, undistorted by theories, and honestly worked at by a well-educated practitioner. Since we have had a threatening of this disease in our own country, we may feel a closer interest in acquainting ourselves with its features, so terrible by reputation.

Dr. Nicholson's essay treats of the epidemics of yellow fever in Antigua, in 1835, '39, '42, and '53. He published it first in 1849, and has added an appendix with his more recent experiences. He advocates bleeding generally, and disapproves of the calomel and quinine treatment in large doses. He says, "This practice is so contrary to what I consider the rational treatment of ardent fevers, that I could not in my conscience adopt it in such cases. I might venture to try it in the congestive form of the disease; and that, perhaps, is the type most prevalent in the swampy colonies of Guiana." In the epidemic of 1853 he attended fifty-three cases, of which he gives an abstract (p. 56), showing that forty recovered and thirteen died. Of those attacked thirty-two were Europeans, of whom twenty-three recovered. The author says, "in all cases in which, at my first visit, there were symptoms of cerebral or hepatic congestion, or when the force of the circulation was so great as to threaten destruction to the capillary system, I had recourse to bloodletting," which was, it appears, borne well in every instance. The author has no faith in "any medicinal astringent" after hæmorrhages and black vomit, or in anything "but the most diligent exhibition of diffusible stimulants." This little work is worth consulting as a record of personal experience after many years' residence in the island of Antigua.

The above comments on yellow fever may be read in connection with an article on the same disease in Bermuda in our number for July last.

Review VIII.

Guy's Hospital Reports. Edited by C. Hilton Fagge, M.D., and A. E. Durham. Third Series. Vol. XIII. London. Pp. 538.

The Guy's Hospital Reports by this time begin to assume the dignity of an honorable old age, but with the dignities none of the weakness and effeteness ordinarily indicative of that period of life. Indeed, the present volume gives tokens of as great intellectual vigour as has ever tended to enhance the reputation of these well-known and highly-esteemed volumes.

But to begin our review of the contents, we find that first of all Mr. Cock contributes a second case of pharyngotomy. The patient, a servant in the camp at Aldershott, had been accustomed to wear even during his sleep a tooth-plate, from which all the teeth had been removed or worn away, and one night swallowed it. All attempts to remove it having failed, the patient came from the camp to Guy's Hospital, and was there operated on. The incision into the pharynx was made as far back as possible, to avoid filaments of the recurrent laryngeal nerve; a forceps introduced by the mouth was found to facilitate this part of the operation. The body was found in the ordinary situation, opposite the cricoïd cartilage, and removed without difficulty. After the operation the patient was carefully fed through a tube and by enemata, and in a short time perfectly recovered. Mr. Cock lays considerable stress on early operation, before the patient has been weakened by prolonged abstinence and local mischief.

Mr. Hilton next contributes some of his clinical lectures, arranged for publication by Mr. George Eastes. The first of these details an interesting case of ruptured kidney, the injury being occasioned by a railway engine, in which death did not occur until the twenty-fourth day, although the organ was broken up into several pieces, and a large collection of bloody matter was found around the kidneys. In fact, the patient seemed to do well, although hæmorrhage from the bladder still continued, until, unfortunately, his food was changed, and made more nourishing, after which he rapidly retrograded. In this connection, Mr. Hilton makes some important remarks on the diagnostic value of clots, whether

in the urine or elsewhere, pointing out that they assume the form of the space into which the blood is effused, as in this instance, the broken pelvis of the kidney; also that the form of the blood-clot may be unravelled by agitating it in water. Still continuing on the same subject, Mr. Hilton in a second and a portion of a third lecture founded on the same case, at least inasmuch as it starts the subject of bleeding, continues his admirable remarks on the diagnostic value of blood-clots, as discharged from the urethra, the rectum, or the stomach. He points out the importance of attending to the relation of the bloody discharge and the urine with regard to priority in appearance when passed as indicative of the urethral nature of the hæmorrhage. He also shows that bladder clots are flat and circular, not rounded like those from the urethra. So also with bloody discharges from the rectum, the nature and colour of the blood, whether clotted or otherwise, may enable the surgeon to determine the source of this bleeding, and enable him to apply the proper remedial measures. He also shows that a blood-clot may destroy life, as often after cut throat or tracheotomy, and that by deluding the surgeon as to the condition of his patient may lead him to defer operative procedure for the arrest of hæmorrhage until too late, as after injury to the head, or the incision of a carbuncle, &c.

The next subject discussed by Mr. Hilton is that of loose cartilages in the knee-joint, the case selected for description being complicated with fracture of the tibia. As to such fractures, he recommends that they should be put up immediately, or else not until the swelling has subsided, and advises the suspension of the limb. Of loose cartilages Mr. Hilton recognises three kinds: decolorised blood-clots, portions of bone and cartilage broken off, and pedunculate tumours, whose pedicles have been severed. The case referred to was characterised by the great size of the tumour in the knee and the absence of pain on moving the joint. The remarks as to the mode of cure to be adopted in such cases are, however, of much importance. He deprecates cutting into the joint as an extremely dangerous operation, and advises fixation by means of a backsplint. He further says, that, by the judicious exercise of pressure, the loose body may be made to adhere to the *synovial membrane*, and ultimately become absorbed—a practical remark of the greatest importance. An allied subject, floating bodies in the thecæ of tendons, is next discussed, and in this case also Mr. Hilton is opposed to a cutting operation if it can by any means be avoided, such being too frequently followed by suppuration and sloughing of the tendon. He also raises a warning voice against interfering with certain bursæ which communicate with joints. Remarks are also made on the treat-

ment of an ulcer remaining after a Chopart's amputation of the foot, and on the treatment of painful ulcers by cutting the nerve filaments directed to them; the hyperæsthetic parts may be marked with caustic, and the nerves divided below the surface of the wound by means of a fine knife. The fifth lecture commences with an account of a case of compound fracture of the thigh, complicated with tetanus. Although valuable for teaching purposes, we need not enter into details with regard to it, but will content ourselves with repeating the doctrine cited by Mr. Hilton, that if under such circumstances the patient can breathe and swallow well he will probably recover. The case of a man who suffered from injury over the knee-joint is also given, it ended in anchylosis of the joint. We need hardly say that both student and practitioner will benefit by the perusal of these lectures.

Mr. J. Salter, well known as one of our most scientific dentists, contributes a paper on 'Affections of the Nervous System dependent on Diseases of the Permanent Teeth.' Such a paper was greatly wanted. Cases of this kind are not infrequent, but they have never been collected into a single article. Mr. Salter divides such diseases into local and remote, but recognises a sort of intermediate group, which it is hard to assign to either. The local affections are readily distinguishable, the remote less so, the most common being neuralgia of the upper part of the face or head, and painful affections of the fifth nerve. But besides pain, irritation arising from diseased teeth may give rise to muscular spasm, muscular paralysis, paralysis of some of the nerves of special sense, perverted nutrition, &c. The diseases which may give rise to these abnormal conditions are caries with or without exposure of the pulp, exostosis, hypertrophy of the crusta petrosa, nodular developments of dentine in the pulp cavity, periostitis plastic or suppurative, impaction of the permanent teeth in the maxillary bones, crowding of the teeth, &c. We cannot enter into these cases, our space does not admit of it; but we may say that each is of particular interest, even more so to the general practitioner than to the dentist, and shows how carefully we ought to examine the mouth when any local affection in the neighbourhood of the jaws occurs.

Mr. Cooper Forster contributes an article on acupressure, on which we must make some remarks. We think that Mr. Forster deserves very great credit for the trouble he took to make himself master of the most approved methods for thus arresting hæmorrhage, even in taking a long and fatiguing journey to Aberdeen to see the practice of Drs. Pirrie and Keith. Since the period of that journey Mr. Forster has been unremitting in

his endeavours to work out the problem he has set himself to solve the value of acupressure as a hæmostatic; in this he has been materially aided by Mr. Durham. Mr. Forster speaks highly of acupressure as a means of arresting hæmorrhage, but seems disappointed at not attaining such success as has been obtained in Aberdeen. For this there are doubtless several reasons: one being the hardier constitutions of the more northern people; one Mr. Forster seems to think rests with the diet; but certainly in Mr. Durham's cases there is something far more significant. Mr. Durham ties in the needles by ligature silk or by catgut. Now this we would submit is not acupressure, the great object of which is to avoid the introduction of any non-metallic body into the wound. And we think it may be noticed in the records of the thirty-one cases given, that hæmorrhage much more frequently followed the withdrawal of the needles in this than the ordinary, we might say proper mode of constricting the vessels by pins or iron wire. Notwithstanding these things, which we cannot help looking on as drawbacks, Mr. Forster is greatly enamoured of acupressure, and considers its introduction as great an advance as was that of the ligature over the actual cautery. The reasons he gives for maintaining this view are good, but too long to be quoted here.

Dr. Braxton Hicks follows with forty-one cases of uterine polypi removed by his annealed steel wire-rope écraseur. They are notable as having been neither followed by death, hæmorrhage, nor indeed by any troublesome symptom, save in two cases. This is certainly more than average success. There can be no doubt but that the immediate removal of polypi is a great advantage over the old plan of allowing them to come away by sloughing, thus exposing the body to the results of the absorption of much putrid matter. On one little point Dr. Hicks strongly and judiciously insists, viz., the absolute necessity for keeping the patient quiet for a fortnight or three weeks after the operation. He also highly recommends the injection of a quantity of warm water every day to remove any undesirable substances which may have accumulated near the site of operation. He divides polypi into those small enough to be included in the speculum, those which will permit the écraseur to be adjusted by the fingers, those which will not allow of the fingers being passed alongside of them; and, fourthly and lastly, the most unmanagable of all, those still within the uterus, bodies in fact presenting more of the characters of fibrous tumours than of real polypi. The directions given for the removal of each variety are very clear and explicit, Dr. Hicks insisting in an especial manner on the employment of a rope of

sufficient strength. We shall not speak of the pathological characters of these tumours.

Mr. Hinton writes on nervous deafness, contributing a paper of great value to aurists and other practitioners. Twenty-three cases are recorded, each with its appropriate commentary. The whole subject is one of unusual interest, the facts recorded are so curious, and in the meantime so inexplicable. The first case which came under Mr. Hinton's notice, and which seems to have struck him greatly, was that of a gentleman who, under the nervous excitement of a call on the parents of a lady to whom he wished to be engaged, became totally deaf. The signs on which Mr. Hinton relies for the diagnosis of this form of deafness are, 1st, the history; 2nd, peculiarities of hearing, as hearing better in a noise, or worse from excitement, depression or fatigue, a better hearing of some sounds than others, a marked diminution of the power of hearing on inflating the tympanum, and so on; 3rd, the degree of deafness, if it be very excessive, it cannot depend on deficient or absent conduction; 4th, the tuning-fork applied to the cranial bones is especially useful; if it be not, or only very imperfectly heard, the disease is probably nervous, especially so if it is best heard, by the better ear, when the meatus has been closed. Finally, a certain peculiarity of appearance marks persons labouring under nervous deafness, which is of some value as an aid to its diagnosis. The disease with which it is most likely to be confounded is anchylosis of the stapes. When speaking on this subject, Mr. Hinton makes some remarks as to the causation of aural diseases which must be considered of great importance; they are with reference to the effects of earache in children in the production of future deafness. Mr. Hinton is strongly inclined to believe that the connection between the two is much more decided than has been suspected, and that the congestion of ear-ache, if it do not cause disease of the labyrinth, at least leaves it in a condition to be more readily affected in its nerves at a subsequent period. The question is as yet unsolved, but the idea is certainly good. So also is that which refers the cases of nervous deafness, in which the sound of the tuning-fork is diminished by closing the meatus to increased pressure of fluid within the labyrinth, in fact to *glaucoma of the ear*. But the whole paper is one worthy of the most careful study.

Dr. Owen Rees writes on elephantiasis græcorum, which he shows to be quite possible in this climate, even in one who had never been out of the country. One of his cases indicates that the tuberculated form may be characterised by quite as much anæsthesia as that ordinarily termed the anæsthetic variety. He consequently gives in his adhesion to the terminology re-

commended by the College of Physicians, viz., the division of the disease into the tuberculated and the non-tuberculated varieties. The first case, one of the smooth variety, presents no unusual features beyond the fact of its having been developed in one who had never been out of Great Britain, but had been subjected to a good many privations. The second was one of the tuberculated form, and occurred in a native of India. It made the most determined progress under all sorts of remedies; its conclusion is not given, the record stopping abruptly. Dr. Rees holds that this is a blood disease, sometimes hereditary, but he is inclined to think with Dr. Carter and others that spare diet or decomposing food, especially the latter, have a powerful influence in inducing the disease, even where there is no hereditary taint. The Somalee tribe in India believe that a milk and fish diet tend to produce elephantiasis.

The next paper is also on cutaneous affections, and is from the pen of Dr. Hilton Fagge, who has charge of the skin department at Guy's Hospital. He treats of rare cutaneous affections, the first mentioned being circumscribed gangrene of the skin. This curious form of disease occurred in a patient who died of phthisis at Guy's. It has been noticed by Sir B. Brodie, by Morley Rooke (as erythema gangrænosum), and others. The sloughs were dry and shining, like those of senile gangrene on a small scale. The next case mentioned is one of what M'Call Anderson terms eczema rupioïdes, a term to which Dr. Fagge objects as too precise, and giving an erroneous conception of the nature of the complaint. The scales form in crusts, not unlike those of rupia, but there is no ulceration beneath. A case of eczema squamosum universale, apparently identical with Hebra's pityriasis rubra, follows. Dr. Fagge enters into some details as to the real nature of the disease, and, as seen at first, holds it to be a variety of eczema rather than of pityriasis. The one point of importance to the general practitioner in connection with these cases is their tendency to terminate fatally. A case of acne following smallpox is next given and followed by one of acne cornea: the latter is a very uncommon variety of skin disease; the sebaceous follicles become filled with a hardened secretion, which causes them to assume a tubercular aspect, somewhat similar to tubercular syphilide. The last case given is a doubtful one of acute recurrent eczema; the vesicles were very delicate, something like those produced by croton oil.

Mr. Hilton follows with a second contribution on a case of intestinal obstruction, for which colotomy was performed, and twice repeated. The case is full of interest, all the more so, probably, as occurring in the person of a member of our profession. He had been without any motion of the bowels for a

month before the operation was performed; but in a few days after this he had a motion per anum, which happened regularly every day, until at last the wound healed. Not long afterwards the constipation returned as bad as ever, and the wound was re-opened with a like success; but it was again allowed to close, and the constipation recurred. This time an abscess formed, communicating with the gut and with the hip-joint, which it destroyed. A repetition of the operation along with an opening of the abscess was attended with no very good result, and the patient soon sank. It was found that the stricture, which was simple in its nature, occurred about eight inches from the anus, and that immediately above it the gut was greatly dilated, and bent at an abrupt angle downwards into the pelvis, probably thus causing the mischief being then tightly tied down by adhesions; the acute angle would only be rendered more acute by distension, and the passage of fæces would be thus prevented until the distension was relieved by operation.

Dr. Taylor's two contributions to forensic medicine, which invariably constitute one of the chief recommendations of the 'Guy's Hospital Reports,' are, the one toxicological, the other on the detection of blood-stains. In the former of these are recorded sundry cases of poisoning of greater or less interest. The first is one of poisoning by carbolic acid, probably the first on record, although deaths have occurred from substances which much resemble it, as oil of tar, wood spirit, &c. The individual poisoned was a child, who swallowed the substance which had been spread out as a disinfectant. About two teaspoonfuls of the liquid acid were swallowed, and the child died twelve hours after, death being caused by a portion of the acid having reached the lungs. The external parts, as the lips, were coloured brown, as in poisoning by corrosive substances; the internal were whitened and thickened. The walls of the stomach were hardened, but not inflamed. The next case, one of poisoning by cyanide of potassium, occurred in a gentleman who, fortunately for himself, had at hand a solution of the proto-sulphate of iron, and possessed presence of mind enough to swallow it, following it up with mustard and water until he vomited. He recovered perfectly, the most notable symptom left behind being constriction and tremors in the throat. The most interesting of the lot, however, is one of poisoning by phosphorus, of a very obscure character, especially as to its nature, whether suicidal or homicidal. The substance swallowed was the ordinary phosphorus paste employed for destroying vermin. The matters vomited soon after the poison was swallowed are described as having been smoky and luminous. Unfortunately the patient was not seen at first by a medical man. She died on the sixth day. Ecchymoses were observed on the skin of the

abdomen and on the diaphragm. The liver, as usual in such cases, was bright yellow, having undergone complete fatty metamorphosis; nothing is said about change in its size. In examining the viscera, Dr. Taylor employed the process known as Mitscherlich's for the detection of phosphorus, but found none. The process is extremely delicate, and depends on the volatilization and subsequent condensation of water along with phosphorus, this being accompanied by a flash of light. The other points in connection with the case are of minor importance.

A second paper, by Dr. Hilton Fagge, follows that of Dr. Taylor, this communication being on certain obscure skin diseases, as keloid, scleriasis, and morphœa. This article is even better than his former one, being, in fact, an exhaustive treatise on the subjects of which he treats. He first deals with the keloïd of Alibert, and the development of the term. Alibert considered the affection cancerous, an opinion now abandoned. He also distinguished another variety, known as false keloïd, developed on scars, being especially common in soldiers who have been severely flogged. The characters of the keloïd of Addison are well defined, a smooth, flat, ivory-like appearance of the skin, sending out claw-like processes into the surrounding healthy parts, thickening, and induration with contraction and slight anæsthesia of the portions thus affected; and, it must be admitted, with a tendency to self-cure—quite a different affection from the keloïd of Alibert. The derivation of the word, adopted by Addison (κηλις, a spot), probably accounts for this. The most interesting of Addison's cases is that of a patient still alive, who was visited and examined by Dr. Fagge whilst he was engaged on the present paper. The upper extremities are frequently affected; when so they become bound down and attenuated; they were so in the instance referred to. When seen by Dr. Fagge she had evidently improved to some extent, at least from what she had been when in Guy's. Besides those cases recorded at Guy's, others have been described by Dr. Alderson, Mr. Sedgwick, and others. One, however, given by Professor Longmore as a true case of keloïd, does not present the distinctive characters of the disease ordinarily known by that name.

Next, as to the relations of keloïd to sclerema or scleriasis; these are tolerably well marked if we accept the original descriptions of Thirial as correct, but there can be no doubt, as pointed out by Dr. Fagge, that several of the cases described in foreign journals under this appellation, are cases of Addison's keloïd. The most marked distinction between scleriasis and keloïd is the acute onset of the former, the induration being perfected in a few days. It also tends to subside much more speedily than does the more chronic keloïd. A most interesting

series of cases occupying an intermediate position are given by Dr. Fagge, but we have not space to discuss them at length.

Only one post-mortem is recorded in a case of Förster's, who sums up his observations by stating that the sclerema was characterised by a chronic process of proliferation in the connective tissue of the corium, and particularly of the subcutaneous cellular tissue, unattended with fever or local inflammatory symptoms. The treatment of these affections is most unsatisfactory; many remedies have been tried, none seem to have any very decided effect. To separate the two distinct affections, Dr. Fagge proposes for Addison's keloïd the term *leuce*.

A word or two on the subject of morphœa, and we must leave this interesting paper. This would seem to commence as a sort of bald patch on the top of the head, most frequently just on the left side of the median line, and extending downwards over the nose. At first this may be slightly elevated and discoloured, ultimately it becomes depressed, and of a shining white appearance. It seems to correspond with the distribution of the first division of the fifth nerve. Finally, Dr. Fagge discusses the relations of these affections to leprosy, which are but slight, and unimportant.

Dr. Moxon contributes a paper on the history of visceral syphilis, both interesting and valuable, and we would recommend his paper to the consideration of those who still believe with John Hunter, "that the brain, heart, stomach, and kidneys, and several other viscera, have never been known to be affected by syphilis." Surely the researches of Dittrich, of Wilks, Bristowe, and others ought now to be recognised; and we think that the clear and distinct recitals of Dr. Moxon's cases will do much to dissipate any lingering shade of doubt in candid minds. Of all internal organs, the liver is the one most frequently affected by syphilitic lesions, whether by the sulphur-coloured gummous formations commonly recognised as diagnostic of visceral syphilis, or by changes of a less marked character, and more closely allied to those induced by other agencies, as, for instance, fibrous hepatitis. No doubt this form of disease is exceedingly common, following other causes than syphilis, notably alcoholism, but Dr. Moxon points out that in subjects undoubtedly syphilitic there is a variety of the affection of a more strictly limited character, generally near the surface, which it is fair to conclude follows on syphilis. So again, Dr. Moxon believes that a certain form of renal disease—the lardaceous kidney—is also produced by syphilis, which must therefore be regarded as one of the causes of Bright's disease. The vessels are the portions most and primarily affected by the lardaceous change; the tubules become dilated, and their epithelium squamose, the whole organ being now recognisable as the large white-mottled kidney. Besides this

change, the kidneys may become the site of true syphilitic gummata. It has long been known that the Fallopian tubes of prostitutes are frequently found closed, accounting for the infrequency of their impregnation. This fact Dr. Moxon seeks to couple with a syphilitic history, for in at least four out of the eleven cases given by Dr. Moxon the Fallopian tubes exhibited well-marked pathological changes. It would appear that the lungs may also be affected; they were so in eleven out of twenty-seven cases, and the appearances left are tolerably characteristic, being a circumscribed gangrenous patch, in the centre of hard hepatized pulmonary tissue, perforating from above downwards, whilst no marks of tubercle or scrofula are detectable. The brain, larynx, and testicle are so often affected that we need say nothing about the lesions to be specially sought there, but rather advert to the question as to what really constitutes a true syphilitic deposit. The microscopic elements of these tumours are not very well marked, being only imperfect and perishing corpuscles, but the sulphur yellow colour and the transitional character are sufficiently distinctive. We cannot speak of Dr. Moxon's fragmentary comments appended to each case, although they are to the point, but will only delay to give some idea of the frequency with which different parts of the body are affected. Of the 27 cases, 16 were in males, 11 in females; of the former, the testicles were affected in 8 distinctly, the Fallopian tubes in the women 4 times, the liver was diseased in 21 instances, the air-passages in 10, the lung itself in 11, the spleen in 10, and the kidneys in 12. Dr. Moxon's contribution is illustrated by two very good plates.

Dr. Stevenson follows with a note as to the colouring matter in a case of melanuria occurring in one of M. Bryant's patients, and *en passant* notices that all such cases previously reported by Golding Bird, Hughes, Odling, Petters, &c., have had this peculiarity, that carbolic acid, either pure or in combination, has been exhibited internally or externally in each case. Most specimens of black urine hitherto examined have contained indigo, or, probably, we ought rather to say indican, and peculiar colouring matters have been observed repeatedly in cutaneous discharges from patients suffering from skin disease. We have seen such, both pink and blue, from cases of psoriasis and eczema, but according to Dr. Stevenson's researches the substance contained in the urine in this case had altogether a different character. To show that it was not indigo, the urine was rendered strongly alkaline by caustic potash, grape sugar was added, and a well-stoppered bottle was filled with the mixture and set aside for sixteen hours, being well shaken from

time to time. The clear portion was then exposed to the air, but no indigo was deposited, showing that this substance was not present in the urine. We cannot enter into particulars as to the various chemical manipulations to which this substance, or rather the urine containing it, was subjected; but we may state that these led to the belief on the part of Dr. Stevenson, that the urine contained a glucoside or sugar-producing body, and that the pigmentary matter which darkened it was something hitherto undescribed; it was neither blood-colouring matter nor was it indigo, the two substances most frequently found under such circumstances.

The paper that follows is on the extirpation of the spleen, ending, as such almost invariably do, in the death of the patient. It is contributed by Mr. Bryant, well known as one of the soundest, and yet one of the most enterprising of our metropolitan surgeons. Cases are not so very rare of a portion or the whole of the spleen having been excised, and the patient doing well afterwards; but this for the most part has occurred where the spleen was already extruded from the cavity of the abdomen, as a consequence of the rupture of its wall. Only one completely successful case has been put on record, and that by M. Peau. Kœberle of Strasburg has been equally unsuccessful with Mr. Bryant, and the want of success evidently depended on the same cause in both instances. It must in the first place be remarked, that the operation has been performed on purely theoretical grounds. In leucocythemia the spleen is usually much enlarged, but we cannot, therefore, conclude that the enlargement of this viscus is the cause of the disease, or that its removal would be attended with complete recovery, the affection being really a constitutional one, having no distinct local origin. To this view Mr. Bryant has now acceded. Again, the leukæmic condition is invariably accompanied by a tendency to hæmorrhage, so that an injury ordinarily of little importance may lead to fatal results by this means. When the spleen becomes very greatly enlarged, adhesions between it and other organs or the abdominal walls are to be expected, and the division of these may give rise to fatal bleeding. This would seem to be the most common cause of death, as in Mr. Bryant's last case and in Kœberle's. In the instance of which we now speak, there were firm and close adhesions to the diaphragm, which being separated gave rise to an infinity of bleeding points from which the flow of blood could not be arrested, and which rapidly led to death. Lymphoïd bodies were detected in most of the glandular structures of the subject.

A short paper on malposition of the testicle and of mal-

formation of the male and female genito-urinary organs, also by Mr. Bryant, follows. Its main interest lies in its adding to our knowledge a certain number of facts, most of them already known, but which still require increase in number to enable the man of science to arrive at safe conclusions as to their cause and frequency. In one case the testicle was situated in the perinæum; in another (an important practical hint), it became impacted and inflamed in its going down the inguinal canal, and was found to be much swollen and very tender. Another curious case is one of inflamed testicle from inability to gratify sexual passion. A very practical point brought forward by Mr. Bryant is the propriety of deferring any operative procedure for the relief of extroversion of the bladder until it can be seen what nature will do in the way of repair. The last case narrated is that of a female child possessing the ordinary characters of a hermaphrodite.

The paper which follows is a second contribution from the pen of Dr. Taylor, on "the guaiacum process for the detection of blood-stains." British literature is singularly barren on this subject. Since the time Dr. Taylor contributed one of his best papers to this periodical, the case of Thomas Drory for the murder of Jael Denny, little or nothing has been done, for we hold the introduction of the spectroscope as a thing of but little value. We are glad that the same pen which yielded the paper we refer to has again produced this most valuable contribution to forensic medicine. Dr. Taylor has indeed lifted the guaiacum process from the doubtful position it has hitherto occupied, into one of the most scientific of our medico-chemical processes. Let us see how. It was proposed some years ago now by a Dutch chemist Van Deen, to employ a solution of guaiacum along with some ozonized body as a test for the colouring matter of blood, but little was done in the matter until Liman took up the process in 1863. His results were corroborated by Casper's authority, and the process came into more extended notice. Nevertheless, he employed as an ozonized fluid oil of turpentine, inconvenient and unsatisfactory. Dr. Day, in Australia, proposed to employ ozonized ether, and in one case showed the efficiency of this process in a remarkable manner. This was the first great step in advance, but Dr. Taylor has made a still greater improvement by the introduction of peroxide of hydrogen, a substance both more cleanly, more manageable, and more miscible with water. Further, if we are to accept Dr. Schönbein's views, the substance which is thus active is not ozone at all, but rather antozone. Now most people are aware that many things may produce a blue colour with guaiacum; thus a favorite experiment is bringing a

substance containing guaiacum in contact with the surface of a freshly-pared potato, when an intense blue is immediately struck. This is owing to the presence of gluten. Gum does the same thing, as does unboiled milk, but the colouring matter of blood does not until an antozonide be added. These facts have constituted the great stumbling-block in the way of this test as performed by Dr. Liman, but Dr. Taylor by an improvement in the mode of manipulation has been able to obviate the difficulty. It is true that many substances give rise to the bluing of a solution of guaiacum, they do so without the presence of an antozonide, but blood will not, and it is by separating the addition of these two that the process has acquired its greater value. Still, there is a difficulty, for substances may be present along with the colouring matter of blood which would render guaiacum blue, and might thus, perhaps, lead to the conclusion that no blood was present when there might be much.

Dr. Braxton Hicks and Mr. Bankart send a paper containing an account of the dissection of two acephalous monsters. This subject is full of interest, as it opens up a very important point: how does the blood circulate in these beings, seeing that they have no head, heart, lungs, or liver? It is suggested that the blood may be driven through the two bodies, if in twins, by the action of the heart in one of them, provided their vessels anastomose in the placenta, but this, of course, remains to be proved. The distribution of the remains of the vascular system is curious. In the one the intestine was extremely imperfect, in the other not so much so. Two others still remain for dissection, which these gentlemen intend to describe before giving any conclusions with regard to the interesting points just mooted.

Mr. Birkett next gives two cases of intestinal obstruction of a very complicated character; in the one there was intussusception of the transverse colon along with an irreducible omental hernia in the scrotum. The other was intussusception of the ileum, the patient being in the house at the time suffering from a simple surgical complaint. In the former case, the man had laboured under hernia for a very long time, but when the worst symptoms of intestinal obstruction appeared, there was no pain associated with this protrusion, neither was there much pain caused by pressing on the abdomen. Still it was deemed advisable to perform an operation, as a small knuckle of intestine might be lodged behind the epiplocele. On opening the sac nothing of the kind was discovered, and nine days after the patient died with the seat of obstruction undiscovered. After death, it was found that the transverse colon was invagi-

nated into the descending colon, forming a mass about four and a half inches long. In the second case, there was nothing to account for the occurrence of intussusception except a saline aperient taken for slight constipation; the patient died on the eleventh day. Her case was peculiar, inasmuch as diarrhœa was present during the last three or four days of her life. This was accounted for by the post-mortem examination showing a distinct line of demarcation between the descending and returning portion of gut; the division was complete, so that the constriction was removed. A small slough in the peritoneum existed just below this, and a dilated portion of the vitelline duct which had remained was filled with the intestine. This had probably been one of the causes of the original mischief.

In a second paper, Mr. Birkett discusses the statistics of the result of operations for the removal of stone from the bladder, performed at Guy's Hospital during the last ten years. He gives, first, the total number of cases in which a surgical operation was performed; there were in all, males and females, 162. Next, the results; and here the question of age is seen to be of vital importance. Of the 162, 103 were under 15, of whom 4 died; 30 under 50, of whom 7 died; and from 50 upwards 29, of whom 14 died. The operation of Aston Key that is with the straight staff, and long scalpel was ordinarily performed; sometimes, however, median lithotomy was introduced. Mr. Birkett remarks that henceforth the statistics of lithotomy will appear much more unfavorable than in times past, so many of the most promising cases being now selected for lithotomy; but, on the other hand, no doubt the statistics of operations for the removal of stone will be improved, as many who, formerly in dread of a severe and dangerous cutting operation, put off applying for relief until the time for operation was almost past, will now be induced to submit to the simpler procedure at an earlier period. That this operation is not invariably favorable at its result, Mr. Birkett's statistics distinctly show, there being in twenty-five cases of lithotrity as many as six deaths; but these were all beyond middle age, most died from intercurrent disease chiefly of the kidneys. Twenty-six adults underwent lithotomy, of these fourteen were cured and twelve died, mostly from disease of the kidneys. Some of the patients operated on were not adapted for the operation, which might partially account for the greater mortality.

The only paper Mr. Durham contributes this year is on a case of true hæmorrhagic diathesis. The patient, a boy aged three years and a half, was admitted labouring under stone in the bladder, after having suffered from the symptoms four or five

months. His complexion was pale and clear, and his mother stated that three of his brothers had bled to death on very slight causes. Indeed, there was in her family a history of this diathesis, but only in the males, not in the females. Notwithstanding this warning, the symptoms were urgent, and a painful death for the child was inevitable if no operation was performed. So Mr. Durham, supported in this by his colleagues, determined to cut into the bladder. During the operation little blood was lost, and but slight oozing followed until after five in the evening, when the child became rapidly blanched and died by half-past eight, six hours after the operation. He had earlier in life suffered from profuse bleeding from the gums. This case is of the ordinary type; but as Mr. Durham remarks two distinct classes of cases have been termed those of the hæmorrhagic diathesis, there are cases in which the patient tends to sink under slight effusions of blood, the other where copious hæmorrhage has followed slight wounds or injuries. To the latter the term should be restricted. We think, taking everything into consideration, that Mr. Durham acted rightly in operating. Under the circumstances, he had the chance of permanently and completely relieving the child, and death was inevitable were it not relieved.

Dr. Pavy writes on gastric erosion, that somewhat unaccountable self-digestion of the stomach under certain circumstances, or, rather, the non-digestion of its walls under ordinary circumstances. Hunter first drew attention to the phenomenon, and held it to be a post-mortem change. In France, on the other hand, Cruveilhier and Louis have set it down as the result of vital action occurring during life, but were thereby led into certain almost self-evident absurdities, as an extraordinary rapid progress or a period of complete latency of all symptoms, as it is well attested that people have been, indeed generally are, found with those lesions after death, who up to that time had enjoyed perfect health. Rokitansky would seem to incline to the same view as the French observers; but Carswell has taken the opposite side, and done much to elucidate the nature of the process, as did Mr. Wilkinson King, who showed that the lower portion of the œsophagus was frequently implicated along with the great cul-de-sac of his stomach, owing to a regurgitation of a portion of the contents of that viscus. There can be no doubt but that the great inducing agents of this gastric erosion are something swallowed just before death to cause an unusual flow of the gastric juice, and the maintenance of a temperature about that of the living body after death has taken place. Still gastric erosion may occur without the agency of food. Again, Mr. Burns points out that the occurrence of such post-mortem

appearances even in the intestines are not uncommon in young children while suckling, probably on account of the ready production of lactic acid in their stomachs at that period. But it is time we considered the causes whereby this chemical solution of the stomach is prevented from occurring during life, this being the most important part of Dr. Pavy's paper. As is well known, Dr. Pavy strongly advocates the alkalinity of the blood as the great means nature has provided for opposing the action of gastric juice, but let us examine some of the other theories brought forward. First, John Hunter held that it was the "vital principle" which prevented the living walls of the stomach from being acted on by the gastric juice, but this view was readily set aside by Bernard, who showed that the legs of a living frog were speedily digested in the stomach of a dog, as did Dr. Pavy with the tip of a rabbit's ear. Bernard advanced the hypothesis that perforation was prevented by a continual renewal of the epithelium, which formed the lining membrane of the stomach; but to this Dr. Pavy demurred, for he was able to show that if a piece of the mucous membrane of the stomach were removed, that the tissues underneath were no more affected than the parts still covered by epithelium. Again, he objects that ulceration of the stomach is by no means uncommon, yet he says we do not find that rapid perforation follows as a matter of course. From a great number of experiments, Dr. Pavy was induced to come to the belief mentioned above, viz. that it is the alkalinity of the blood circulating in the walls of the organ, which prevents these being acted upon and destroyed by the acid gastric juice. As is well known, the walls of the stomach are highly vascular, especially during digestion, when they become gorged with blood. Then, again, the blood which passes through the more superficial capillaries has already passed close to the walls of the peptic follicles, and given up the materials for the secretion of gastric juice; consequently, says Dr. Pavy, the contents will then be more than ordinarily alkaline. Further, Dr. Pavy states that the union of the acid with pepsine is necessary for the production of a properly solvent menstruum, but the supply of the former from the follicles is more or less intermittent of the latter from the surface tolerably constant. Hence the secretion from the follicles is not truly solvent until it reach the surface where it can be neutralized, and is most abundant just where there is most alkaline blood to oppose its action. How, then, to account for the digestion of the frog's limb and rabbit's ear, in both of which alkaline blood is flowing; yes, but in a very slow stream and in comparatively speaking remote capillaries, whence it is not capable of resisting the solvent action of the gastric

juice. So also stopping the flow of blood in a dog's stomach, and the addition of a small quantity of acid causes self-digestion. We cannot say that we are convinced that Dr. Pavy's explanation is in all respects satisfactory, but we may safely admit that it is the best yet advanced.

The last paper is by Mr. Bader, its subject being the human eye in health and disease, as seen by the ophthalmoscope; it is illustrated by two beautiful chromolithographs. In a former paper, contributed to the volume of reports published in 1865, Mr. Bader described the plan for interrogating the structures of the eye by the direct method of ophthalmoscopy; he now describes the indirect or ordinary method. We fancy that both of these are fragments of lectures intended to be accompanied by demonstration at each step, which being impossible in a printed work, somewhat detracts from their value; still they are good, and calculated to do good. Day by day the use of the ophthalmoscope, as an aid to the diagnosis of cerebral and other diseases, is becoming more manifest; and consequently it is becoming more and more imperative for every practitioner to make himself familiar with the ophthalmoscopic appearances of the eye in health and disease. Now it is a comparatively easy thing with irides dilated by atropine, and with the patient's head firmly fixed and all the other etceteras, to make out the condition of the optic discs, but it is evident that such arrangements pretty well preclude the use of the ophthalmoscope in ordinary practice, so that men should be trained to the use of the two circular discs composing the portable ophthalmoscope. In pursuing this study, Mr. Bader's account of the normal structures of the eye, their appearance, situation, and interpretation, will be found of great use. We, however, entered so fully into this subject in the last number of this Review that we need here say nothing more with regard to it.

We regret to find no communications from Drs. Wilks, Oldham, and Habershon, nor from Mr. Poland.

Thus concludes a volume of the highest practical value, for practicality is ever the great end held in view by the writers of these reports. Of no paper can it be said that it is poor or bad. Many are of a high degree of excellence; it would be invidious under such circumstances to say which we consider best. The subjects treated are so diverse, that in forming such a judgment one is too apt to be led away by one's favorite subject to the injustice of others. We, therefore, prefer to leave this task to the reader, having in the preceding pages supplied them with the means of coming to a tolerably correct conclusion.

Review IX.

1. *The Waste of Infant Life.* By J. Brandon Curgenven, M.R.C.S., &c. *London,* 1867. Pp. 16.
2. *A Few Thoughts concerning Infanticide.* By Mrs. M. A. Baines. *London.* Pp. 8.

The importance of the subject, the waste of infant life, can hardly be appreciated too highly, whether we view it in relation to national welfare or the social and moral condition of a nation. A stationary population either from the births not exceeding the deaths, or whatever the cause productive of that result, may well excite alarm, as an indication, if not of national decline, of national weakness. France, at the present time, is supposed by many to be an example of the kind; and this its presumed condition has recently become the subject of much discussion and anxious inquiry; and as one of the strongest proofs of the manner in which the evil is regarded, it is noteworthy that the Abbé Hyacinthe not long ago addressed crowded congregations of women in Notre Dame against the practices conducive to the evil in question, that, indeed, affecting, as he denounces "la vie nationale."

Mr. Curgenven, in the paper now before us, which was read at a meeting of the health department of the National Association for the Promotion of Social Science, has given a deplorable account of what he well designates "the waste of infant life;" and this, sad to think! in our own country, with its vast colonial possessions, and with so large a proportion of the habitable earth unoccupied and uncultivated.

The statistics which he brings forward are of a very striking kind, as illustrative of this waste. From the registrar-general's report for 1864, it would appear that of children under five years of age of the well-to-do class, the deaths are 11 per cent., whilst the agricultural standard is 20 per cent.; of the children fed by hand from 50 to 70 per cent.; and of those under charge of ignorant and negligent nurses, it is as high as from 60 to 90! In Normandy, we learn from a report of Dr. Dennis-Dumont, of Caen, that whilst the mortality of infants who have had the breast is 10 per cent., that of those fed by the hand or bottle has reached 50 per cent. Nor is the evil of improper alimentation and neglect confined to an excessive premature mortality; inasmuch as it is demonstrated to affect and vitiate the constitution of those whose lives are more or less protracted. Thus, Dr. Routh found, of 150 children who had

breast milk alone, up to the age of nine months, 62·6 per cent. well developed, 23·3 per cent. developed in a medium degree, 14 per cent. badly developed; of fifty children brought up by hand, with no breast milk, 16 per cent. were well developed; twenty-six in medium degree, sixty-four badly; and, of 407 who had a small supply of breast milk from birth, with other food, 26·8 per cent. were well developed, 26·3 in a medium degree, 45·9 badly.

Of substitutes for the mother's milk, one has lately been announced "an artificial milk," prepared according to a formula invented by Baron Liebig, which has raised expectation very high as to its efficacy. What trial it has had in this country we know not; but we are sorry to find that in France the results of its trial, in four instances, made by M. Depaul, has been a failure, all four children dying, diarrhœa setting in the day following the giving of the mixture. M. Guibourt, Dean of the School of Pharmacy of Paris, denouncing this artificial compound, in addressing the Academy of Medicine remarked, after pointing out what he considered its defective qualities: "Nous avons à notre disposition un produit *naturel* qui resemble plus au lait de femme qu'un melange de lait de vache, d'un restant de farine, d'orge germée, de lactate, de butyrate, ou de bicarbonate de potasse; à c'est le lait de vache lui-même." Adding: "on an average woman's milk contains a little more water, more sugar, less cream and curd than cow's milk; now by skimming cow's milk, adding a little sugar and a fifth of its weight of water, we obtain, as is well known, what will replace the mother's milk better, far better, than any artificial compound."[1] A proposition this, of the learned and venerable professor, which has our cordial approval.

As to the causes of the great mortality of infants, they may be summarised as ignorance, negligence, and vice. Mr. Curgenven very properly asks, adverting to Government aid in the way of prevention, "Why should the helpless infant receive less consideration than the lunatic? Let us hope that the time is not far distant, when it will be no longer necessary to ask such a question. That much may be accomplished to save infant life is certain, and there is ample experience in proof. In France, a good instance of the kind is afforded; whilst, where there is neglect, the mortality rises, as in this country, to 60 and 80 per cent.; in Lyons, under the medical supervision and the active labours of the Infant Life Protection Society, it is reduced to 20 per cent. The author gives other examples of the kind, and also suggests certain measures to check the fearful mortality of young life, all very deserving of attention. We

[1] 'Journal de Médecine et de Chirurgie,' &c., Juillet, 1867, p. 293.

would particularise them did our limits permit; but this is the less necessary, as his paper, no doubt, will be published *in extenso* in the Proceedings of the Society before whom it was read. We shall conclude with his summary, displaying the mean cause of the great evil under consideration, appending the recommendations of the Harveian Society for the prevention of infanticide, which are so deserving of being acted upon, and on that account of being well known.

"*Summary.*—In the year 1864, the number of infants lost through debility and low developmental power of the parents, especially the mother, giving rise to still-births, premature births, and imperfectly developed infants, amounted to	32,950
Died of smallpox, under the age of fifteen	5,374
Died of dietic diseases and diseases of nutrition, under the age of five .	70,073
Died of acute diseases of the respiratory organs, under the age of five .	37,361
Died of hereditary and induced tubercular diseases, under the age of five	15,563
Died of hereditary syphilis, under the age of five . . .	1,191
Died of murder and manslaughter, under the age of five . .	192
	162,794

The recommendations of the Harveian Society are the following:

"1. That the registration of all births should be compulsory.

"2. That all still-born children should be registered; and that the certificates of still-births should only be received from medical men and certified midwives—a certified midwife to be a person who has received instruction and a certificate of competency from a lying-in hospital, or maternity establishment. That no still-born child should be buried without a certificate.

"3. That in cases of still-born children where neither a medical man nor a certified midwife has been present, the Poor Law medical officer of the district should make inquiry into the case, and, if he see fit, acquaint the coroner, who may then hold an inquest as to the cause of death.

"4. That the registration of an illegitimate child in any other name than that of its mother, when known, or the registering of an illegitimate child as a legitimate one, should be punishable offences.

"5. That the crime of infanticide should no longer be punishable by death; but that the recommendation of the Royal Commission on capital punishments be adopted, and that the offence be considered as murder in the second degree.

"6. That evidence be no longer required of complete separation from the mother—that is of entire live-birth—for conviction; but that it be held sufficient for the medical and other evidence to prove that the child was alive during birth, and that it died from violence or neglect.

"7. That a single woman, certified by a medical man to be pregnant, should be enabled to make a declaration of the father before a

magistrate, when there is reason to believe that he is likely to abscond.

"8. That any pregnant woman being destitute, should be at once admissible into the workhouse by application, on or about the completion of the eighth month of pregnancy, on condition that she should engage to remain in the house for at least four months after the birth of the child, unless she can show clearly that, on leaving before the expiration of that time, she has a reasonable prospect of being able to support herself and child.

"9. That after the period of four months has elapsed, the mother, if a single woman, should be allowed to leave the infant in the workhouse; and that the guardians be empowered to recover from the mother in such cases a portion only of the sum required for the maintenance of the child.

"10. That the guardians should have the power to recover from the father of an illegitimate child a weekly sum towards its maintenance; and that the legal process of recovery should be assimilated to that for recovering the cost of maintenance of legitimate children deserted and left chargeable to the parish. The committee consider that the maximum sum which may be assessed on the father of an illegitimate child should be raised from half-a-crown to five shillings per week.

"11. That laundries, or some other means of remunerative occupation, be established in workhouses for the self-maintenance of the mother during her stay therein.

"12. That a classification of pregnant women and mothers should be adopted in workhouses, whereby the respectable married and single women should be separated from the vicious and more depraved class in the maternity and nursery departments.

"13. That for the rearing of children left in charge of the guardians, a colonization system should be adopted similar to that pursued by the Foundling Hospital, and to that followed under the old Poor Law system.

"14. That no person be allowed to take charge of an illegitimate child to nurse who is not registered as a fit and proper person; and that she and the child, or children in her care, should be under supervision of the district Poor Law medical officer. Any person acting as a nurse to an illegitimate child, and not being registered, should be liable to a penalty, and penalties should be enforced in all cases for neglect or ill-treatment. That no nurse should be allowed to take charge of more than two children without the consent of the district medical officer.

"15. That no single or married woman should take the situation of wet nurse whose child is not placed in charge of a person registered as a dry nurse.

"16. That a central authority or superintendent should be appointed by the Poor Law Board to carry out the provisions in regard to dry nurses, and to receive annual reports from the district Poor Law medical officers on the state of the illegitimate children, and of the efficiency of the nurses under their superintendence.

"17. That a register of dry nurses should be kept by the district Poor Law medical officer; and that certificates of fitness as regards herself and her residence, signed by the district medical officer, and also by the minister of the denomination to which she belongs should be required of every nurse placed on the register.

"18. That no infant or very young person be allowed to be entered as members of burial clubs, or to become the subject of life assurance.

"19. That the establishment of Foundling Hospitals for the free and indiscriminate admission of infants would be attended by bad results.

"20. In conclusion, the committee are desirous of expressing the opinion that the following causes of illegitimacy, and indirectly of infanticide require the attention of Government:—1. The overcrowding of the dwellings of the labouring classes in urban and rural districts. 2. The custom prevailing in the south and west of England and Scotland of public hiring of servants. 3. The gang-system in agriculture. 4. The promiscuous lodging of the sexes during hop-picking, harvests, cider-making, &c.

The 'Few Thoughts concerning Infanticide,' by Mrs. Baines, a crime which appears to be increasing, are equally marked by the good sense and the good feeling of the lady who has contributed them; and we call attention to them the more earnestly, viewing them as the complement of the foregoing—"the waste of infant life."

Limited as the space is to which Mrs. Baines restricts herself, the view she takes of this crying evil, one of the greatest of the present time, is sufficiently comprehensive. She traces it in part to its causes, and points out suggestively certain means for its prevention.

One of the causes she considers to be the negligence and indifference of the police. "It has been said (she remarks) of the police with too much truth, that they think no more of finding the dead body of a child in the streets than of picking up a dead cat or dog;" she very justly adding, that "the frequency of the occurrence familiarises the public mind to the offence instead of rendering it still more revolting." Another cause which she points out is, that, besides the facilities which exist for concealment, the lightness of the punishment awarded on its discovery and conviction, should be kept in mind; very properly insisting that "the taking away of life, whether of an infant or an adult, is *murder* in the sight of God; and, perhaps, the more heinous crime of the two is the laying hands upon a little child, an act all the more cowardly and cruel, on account of the helpless and inoffensive condition of the victim."

Of the suggestions proposed by this lady in the way of pre-

vention, one is the offering of a reward for the detection of the perpetrator in every case where now an open verdict is found of "*Found dead.*" Another, the selection of men of the medical profession for the duties of coroner. A third, an increased sense of responsibility on the part of medical practitioners who give evidence in cases of child murder, so as not to aid the escape of the criminal. A fourth, to check the abuse of "*Burial Clubs*" by a greater attention to their proceedings; with the enforcement of the registration of "still *births*," and that of medical certificates in all cases of the kind. A fifth, the licensing of midwives "even at a small fee, in order that they may be put under authoritative supervision." A sixth, that all persons offering themselves as "wet nurses," or "dry nurses," should be registered, and that nurseries should be subject to the occasional visits of sanitary inspectors. Another, and her last and most important suggestion, one founded on a very humane consideration for the erring and to be commiserated women, the mothers of illegitimate children, is to establish a "*refuge, lying-in hospital,* in which there would be the best prospect of preserving the life of the infants, and of checking crime, and of reforming the culprit" under those softening influences which the care and nurture of her child would impart to her, and which might be relied on in the great majority of cases, as a means of holding her in a virtuous course of life for the future; a result which can scarcely be looked for in those women who by force or choice are relieved entirely from the duties and responsibilities of their maternity."

Mrs. Baines does not finish without making an appeal to women in the higher walks of life, and pointing out the duty incumbent on them to give their attention to the subject, and especially not to give encouragement to profligacy by showing, when in wards, a preference for "single women" for the office of wet nurse.

The importance of the subject, and the interest which we have no doubt our readers will take in it, and as we would hope their willingness as far as lies in their power to aid in carrying into effect the excellent design which Mrs. Baines advocates, have tempted us to be more minute in our notice of it than so short a pamphlet would seem to warrant. Let us not forget the value of the life of the infants as regards the prosperity of the nation. In France, as already pointed out, we see how great is the apprehension now entertained of a failing population, and this mainly from the extraordinary proportion of deaths in infancy, an excess let it be well kept in mind very much connected with illegitimacy. In Paris, it would appear that one in ten of the births are illegitimate; and that of the infants

put out to nurse in the different provinces, from the age of one day to one year, the mortality varies from 90·50 per cent. to 58·56: this according to "le bilan mortuairé" for 1860. The particulars are the following:

Loire Inferieure	90·50
Seine-Inferieure	87·36
Eure	78·12
Calvados	78·09
Aube	70·27
Seine-et-Oise	69·23
Cote d'Or	66·46
Indre et Loire	62·16
Manche	58·66

It is added, that in Normandy, the proportion is from 73 to 87 per cent, "grâce à l'alimentation dite *au petit pot* absurde et funeste routine qui fait décroitre d'une façon effrayante la population rurale de la vieille Normandie." Well may the editor of the journal from which we make this extract,[1] say, "la mortalité des enfans est non seulement aujourd'hui une question d'humanité, mais encore une veritable question d'etat."

Review X.

The Physiology and Pathology of the Mind. By Henry Maudsley, M.D. (Lond.) *London.* 1867. 8vo. Pp. 442.

Mental Pathology and Therapeutics. By W. Griesinger, M.D. Translated from the German, by C. Lockhart Robertson, M.D., and James Rutherford, M.D., for the New Sydenham Society. *London.* 1867. Pp. 530.

Compared with France and Germany, England has been far less fruitful in works on mental disorder; and until the appearance of Bucknill and Tuke's treatise, English psychiatry had no adequate exponent. The great work of Esquirol constituted the text-book on mental maladies both on the continent and in this country; indeed, it will never lose its value as a grand repertory of facts and observations conveyed in a lucid and interesting manner. But the foundations laid by Esquirol and his distinguished predecessor, Pinel, having been enlarged and built upon by numerous disciples, ceased to represent the growing edifice of psychiatry, and it therefore became necessary

[1] See 'Journal de Médicine et de Chirurgie,' November, 1866, where the subject is discussed at some length.

that others should attempt its portraiture. This has been done in the several principal countries of Europe, and with much success; for whilst we can point with much satisfaction to the English treatise above mentioned, our neighbours in France and Germany can take credit for the works of Morel and Griesinger. Not, indeed, that the works named are the only successful productions, for various others of high merit have appeared from time to time; but they are simply cited as the best known text-books in each country mentioned.

M. Morel has not found an English translator, for the reason, no doubt, that almost all those who desire to peruse his volume can do so in the original language, and that publishers have little inducement to charge themselves with the production of translations of French works. The selection of Griesinger's treatise by the Council of the Sydenham Society for translation into English may be assumed as an indication of the high estimation in which it is held in Germany. It has further found a French translator, and the statement put forward in the preliminary note by the authors of the English version, may be accepted generally, viz., that "Professor Griesinger is essentially the representative and the acknowledged leader of the modern German school of medical psychology."

About the same time as the appearance of Griesinger's book in an English dress, the original and notable treatise by Dr. Maudsley was published, which, we apprehend, will claim for itself as high a consideration as even the well-known German production, and advance the credit of English psychological medicine. The two works are indeed constructed on different models; that by Griesinger abounds much more in detail and in practical matter, and is altogether more of a text-book for the student than the volume by Dr. Maudsley, which is especially calculated to attract the psychologist by its bold and original doctrines of mental physiology. Nevertheless there is a necessary approximation in many matters discussed which will enable a comparison to be instituted between these two treatises. Both writers, in the first place, agree in this, that they belong to the somatist school of psychologists, as opposed to the spiritualist. As physiologists and pathologists they profess no knowledge of a spiritual or immaterial essence, no acquaintance with the laws governing the existence of such an essence, and consequently cannot recognise mental disorders as symptoms of a lesion of some sort of entity in common parlance vaguely called "the mind."

As apprehended by Dr. Maudsley, the term "mind" is a general one, "acquired by observation of and abstraction from the manifold variety of mental phenomena. . . . . It is a meta-

physical abstraction that has been made into a spiritual entity." (p. 40.) It is of a true subjective character, and when viewed in its scientific sense like other natural forces, is appreciable only in the changes of matter which are the conditions of its manifestation. In other words, it is no independent source of power and self-sufficient cause of causes; and, though the highest development of force, ministered to by all the lower natural forces, it is at the same time the most dependent of all of them. In short, physiologically, mind expresses the marvellous energy arising from the metamorphosis of nerve matter.

In fact, both Drs. Maudsley and Griesinger admit only a material cause for insanity, and seek for indications of disturbance in the normal metamorphosis of cerebral matter to account for the aberrant mental phenomena. Yet both are driven to the admission, that physical appearances in the nerve-tissue are frequently absent, or otherwise inappreciable in the bodies of those dying insane; and that, even where such appearances are notable, their connexion with, or their part in producing the insane state, is not demonstrable. It was this failure to demonstrate the material cause of mental disorder in the brain-mass that afforded the members of the spiritualistic school their best argument. But, as Dr. Maudsley rightly urges, we at present know nothing of the intimate constitution of nerve element and of the mode of its functional action. Hence

> "Where the subtlety of nature so far exceeds the subtlety of human investigation, to conclude from the non-appearance of change to the non-existence thereof would be just as if the blind man were to maintain that there were no colours, or the deaf man to assert that there was no sound. Matter and force are necessary coexistents, and mutually suppose one another in human thought; and to speak of change in one is of necessity to imply change in the other. . . . And there are numerous facts available to prove that the most serious modifications in the constitution of nerve element may take place without any knowledge of them otherwise than by the correlative change of energy." (Pp. 367, 368.)

Similar considerations are adduced by Griesinger and enlarged upon. But he also asserts generally that the brains of lunatics are only exceptionally and apparently healthy, although indeed a knowledge of the intimate connexion between the kind of alteration met with and the form of psychical disease has not yet been arrived at (op. cit., p. 410).

In fine, nerve physiology and nerve pathology are in their infancy, and much advance in them may yet be looked for. Dr. Maudsley is encouraging in this matter. His chapter on the pathology of insanity is largely occupied with nervous physiology for the purpose of showing the progress towards the under-

standing of nerve-force in sickness and in health, accomplished recently by the researches of Helmholz, Lister, and others. The successful microscopic investigations of Mr. Lockhart Clarke on various nervous maladies, which had hitherto been, in respect to their pathology, on a par in obscurity with mental disorders, might also be adduced to encourage inquirers in the search after the physical causes of mental disturbance.

Further, the two authors follow a similar plan in introducing a section on mental physiology or psychology. Moreover, in the case of Griesinger, a chapter of "preliminary anatomical observations" is added. This chapter is, in our opinion, uncalled for. The student of mental disorder may be presumed, if he has any right conception of the proper order of his studies, to come to his work with at least as rude an outline of the anatomy of the brain as Griesinger undertakes to place before him. But, apart from its redundant character, this chapter is particularly obscure in its descriptions, for which we apprehend the translators must be called to account. Many sentences and paragraphs are clumsy and ungrammatical, and consequently confusing to the reader; and in several instances German anatomical terms are left untranslated—unexpressed by their English equivalents.

Whilst on this subject of the translation of Griesinger's volume, and the manner of its execution, we may observe once for all of the whole performance, that it partakes of the faults too common in translated works—the idiom of the original permeates the entire composition, and introduces confusion and grammatical inaccuracies into it. Moreover, the peculiar use of the words "will" and "shall" betrays the nationality of one at least of the translators to be to the north of the Tweed. It would seem, indeed, that the translators are not quite easy in their minds concerning the manner in which they have performed their task, and particularly in the rendering into English the more strictly psychological chapters; for, after observing in their prefatory note, that they have aimed at a literal translation, and have in this respect followed the example of Griesinger's French translator, they tell us that "it was soon evident that any attempts at a more liberal rendering of these difficulties would only *farther obscure*—possibly contravene—the author's meaning," his "medico-metaphysics being not easily understood even in German."

To return now to the chapters on mental physiology and metaphysics in the two volumes before us. In the matter of these Dr. Maudsley is much more original and important, besides being vastly more lucid than Griesinger; consequently, our annotations on mental physiology will be based on the English

author. Indeed, we may hazard the opinion, that Griesinger will not perpetuate in the forthcoming new edition of his work, the long and abstruse metaphysical chapter included in the volume now before us. For, in an introductory lecture given at Berlin in 1866, translated and published by Dr. Sibbald, in the 'Journal of Mental Science for January, 1867' (p. 475), he referred to psychiatry as no longer to be entered "through the dark portals of metaphysics," and added, that "in Germany the time has quite passed away when psychiatry could be developed from a specially philosophico-psychological point of view," and that predisposition to insanity is no longer to be conceived of as psychopathic but as neuropathic.

This being admitted, a valid excuse is afforded us for not wading through Griesinger's metaphysical dissertation on the mental processes for the purpose of presenting an analysis of it in these pages. And we may go further, and recommend the would-be student of psychiatry to avoid the "dark portals of metaphysics" therein interposed as likely only to darken knowledge and confuse the understanding, and to follow Griesinger's advice, to seek both work and fame in etiology, diagnosis, prognosis, and therapeutics. (Lecture, op. cit., p. 476.)

One half of Dr. Maudsley's treatise is occupied with the physiology of mind; and it is this portion, we have no hesitation in saying, that will most arrest attention. The author's first chapter is, "On the Method of the Study of Mind." In it he asserts the inadequacy of the interrogation of self-consciousness—the method of investigation commonly pursued, to the construction of a true mental science or an inductive psychology. He shows that such interrogation is not only not reliable as to the information afforded by it, but also impotent as reaching only to states of consciousness and not to states of mind (p. 11). For consciousness is not co-extensive with mind; the two terms are not synonymous, and the existence of mind does not necessarily involve the activity of mind. At the same time, everything which has existed with any completeness in consciousness is preserved as a *residuum*, which may reappear in consciousness at some future time. To these residua it is that memory owes its existence. The association of ideas is, besides, independent of consciousness, as is likewise the assimilation or blending of similar ideas, or of the like in different ideas, by which general ideas are formed. Lastly, the brain responds as an organ of organic life to the internal stimuli which it receives unconsciously from other organs of the body.

The brain has a life of relation; *a*, with external nature through the senses; and *b*, with other organs of the body by the

medium of the nervous system. It has also a life of nutrition—an organic life, for its building up and repair, which, as a process, is unattended with consciousness.

"In this, its true organic life, there is a nutritive assimilation of suitable material from the blood by the nerve-cell, and a restoration thereby of the statical equilibrium after each display of energy. The extent of nutritive repair and the mould which it takes must plainly be determined by the extent and form of the waste which has been the condition of the display of function: the material change or waste in the nervous cell, which the activity of an idea implies, is replaced from the blood, according to the mould or pattern of the particular idea; statical idea thus following through the agency of nutritive attraction upon the waste through functional repulsion of active idea. . . . The deep basis of all mental action lies in the organic life of the brain, the characteristic of which in health is, that it proceeds without consciousness. He whose brain makes him conscious that he has a brain is not well, but ill; and thought that is conscious of itself is not natural and healthy thought. How little competent, then, is consciousness to supply the facts of an inductive science of mind!" (Pp. 22, 23.)

To build up this science, Dr. Maudsley adopts the objective method, and therefore appeals to the study—1, of *physiology;* 2, of the *plan of development* of mind, as exhibited in the animal, the barbarian, and the infant; 3, of the degeneration of mind as seen in idiocy and insanity; and 4, of the progress or regress of the human mind as exhibited in history. In employing this method he would have us divest ourselves of the popular error, that the function of the mind is that of a passive mirror, simply to reflect natural phenomena, and to remember that every state of consciousness is a developmental result of the relation between mind and the impression of the subject or object,

"That the development of mind, both in individuals and through generations, is a gradual process of organization—a process in which nature is undergoing her latest and most consummate development." (P. 31.)

From the author's point of view it follows, therefore, that what in a physiological sense is called the mind, is the marvellous energy, which cannot be grasped and handled, proceeding from cerebral activity. Cabanis represented mind as the secretion of the brain, as the bile is that of the liver; but Maudsley objects to this analogy as crude and erroneous, since mind is not the material, tangible product of the brain as the bile is of the liver; but, as just said, the impalpable organized result of its activity, its true secretion being the products of nerve waste.

In pursuance of the physiological method of studying mind, Dr. Maudsley in his second chapter gives a sketch of the progressive differentiation of the nervous system in the various tribes of animals, commencing with the lowest, noting at the same time the advancement in nerve function attending an increasing complexity. Reaction shown to outward impressions under the simplest form of reflex action, is the lowest expression of nervous function. But further on in organization, sensation and motor reaction to sensation exist, where sensory ganglia connected with the origin of nerves are discoverable, but as yet no brain proper. And now for the first time can the reaction be sensorial. When a true brain appears, it is as supplementary and secondary in order of development, although primary in dignity. Its function also is to be concluded secondary in relation to that which the primary constituents or sensory ganglia fulfil.

"The impressions received by the sensory centres when they do not react directly outwards, as they may do where hemispheres exist, and as they must do where hemispheres do not exist, are in fact passed onwards in the brain to the cells which are spread over the hemispheres, and are there further fashioned into what are called *ideas* or *conceptions*. Here then we come to another kind of sensibility, with its appropriate reaction, to which a special nervous centre ministers; and it is known as perception, or, more strictly, *ideational* perception. The hemispheres have a special sensibility of their own to the ideas fashioned in them (but not to pain, as have the sensorial ganglia); and those ideas may have other particular emotional qualities, as pleasurable or painful." (P. 47.)

Dr. Maudsley recognises in man four nervous centres:—1, primary or ideational, situate in the convolutions of the hemispheres; 2, secondary or sensational, in the sensory ganglia of the brain; 3, tertiary or reflex, mainly in the grey matter of the spinal cord; 4, quaternary or *organic*, existing in the sympathetic system.

The relations and mutual interdependence of these several centres are set forth in the following quotation:

"Each distinct centre is subordinated to the centre immediately above it, but it is at the same time capable of determining and maintaining certain movements of its own without the intervention of its supreme centre. The organization is such that a due independent local action is compatible with the proper control of a superior central authority. The ganglionic cell of the sympathetic co-ordinates the energy of the separate elements of the tissue in which it is placed, and thus represents the simplest form of a principle of *individuation;* through the cells of the spinal centre the functions of the different organic centres are so co-ordinated as to have their

subordinate but essential place in the movements of animal life—and herein is witnessed a further and higher individuation; the spinal centres are similarly controlled by the sensory centres, and the sensory centres in their turn are subordinate to the controlling action of the cerebral hemispheres, and especially to the action of the will, which, properly fashioned, represents the highest display of the principle of *individuation*. The greater the subordination of parts in an animal, the higher and the more perfect it is."

Evidence for the location of different functions in different nerve-cells, in groups of such, and in larger masses as ganglia, is obtainable from anatomy, from experiments upon animals, and from physiological and pathological researches; and it is only when this evidence is duly recognised, that the groundwork of a true conception of the relations of mind and the nervous system can be attained.

"The characteristic of living matter is the complexity of combinations and the variety of elements in so small a compass that we cannot yet trace them; and in nervous tissue this complication and concentration is carried to its highest pitch. Nervous tissue with its energy is, therefore, dependent for its existence on all the lower kinds of tissue that have preceded it in the order of development: all the force of nature could not develope a nerve-cell directly out of inorganic matter. The highest energy in nature is really the most dependent; in the fact that it is so dependent, that it implicitly contains the essence or abstraction of all the lower kinds of energy, lies the reason of the powerful influence which it is able to exercise over all the lower forces that are subservient to its evolution. As the man of genius implicitly contains humanity, so nervous element implicitly contains nature." (P. 61.)

In the third chapter the physiology of the spinal cord, as containing the centres of reflex action, is lucidly and philosophically handled, and upon the right apprehension of the arguments and illustrations in this portion of the work will greatly depend the understanding of the contents of the following chapters of mental physiology. It is abundantly evident that the spinal cord is not only a centre of irregular reflex movements, but also of co-ordinate or so-called designed actions; and, consequently, the design apparent in an act does not necessarily witness to the co-existence of will, forethought, or consciousness. Moreover, not only is the spinal cord the centre of co-ordinate action which has been implanted in its original constitution, but also of similar action, which has been acquired and matured through individual experience.

"Like the brain, the spinal cord has, so to speak, its memory. . . . With the display of energy there is a coincident change or

waste of nervous element; and although a subsequent regeneration or restoration of the statical equilibrium by the quiet process of nutrition takes place, yet the nutritive repair, replacing the loss which has been made, must plainly take the form or pattern created by the energy and coincident material change. Thereby the definite activity is to some extent realised or embodied in the structure of the spinal cord, existing there for the future as a motor residuum, or as, so to speak, a *potential* or *abstract* movement; and accordingly there is a tendency to the recurrence of the particular activity—a tendency which becomes stronger with every repetition of it, until it assumes the character of an acquired faculty in the cord, and represents the *secondary* or *acquired automatic* acts as described by Hartley." (P. 67.)

The phenomena of such acquired acts serve to exhibit the true mode of origin, and the nature of what is called *design* in many actions of animals; and particularly when it is also remembered, that the acquired faculty of the parent animal is sometimes distinctly transmitted to the progeny as a heritage, instinct, or innate endowment.

We shall not follow the author in the analysis given of the causes which affect the functional activity of the spinal cord, but proceed to notice the physiological doctrines of the fourth chapter, on the "Secondary Nervous Centres or Sensory Ganglia; Sensorium Commune," represented by the optic thalami, the corpora striata, the corpora quadrigemina, and the ganglionic nuclei of the nerves of the different senses. These centres give rise to a class of reflex movements of their own—*sensori-motor*, for the most part acquired and perfected by repetition, just as in the case of the cord, by the medium of a power akin to memory. Of this class are, consensual acts, and most of the instinctive actions of animals. Sensation is not an inborn faculty of constant quantity, but, in the case of each sense, is a gradually organized result matured through experience. The mind

"Implies a plastic power ministering to a complex process of organization in which what is suitable to development is assimilated, what is unsuitable is rejected. By the appropriation of the like, in impressions made upon the senses we acquire. . . A *general* or *abstract* sensation, which exists latent or potential, as a faculty of the sensory centres, and on the occasion of the appropriate impression, renders the sensation clear and definite. . . . Coincidentally with the assimilation of the like in impressions, there is necessarily a rejection of the unlike, which, being then appropriated by other cells, becomes the foundation, or lays the basis, of the faculty of another sensation, just as nutrient material which is not taken up by one kind of tissue element is assimilated by another kind. In the education of the senses, then, there takes place a differentiation

of cells; in other words, a *discernment* as well as an improvement of the faculty of each kind of sensation by the blending of similar residua. There is an analysis separating the unlike, a synthesis binding the like; and by the two processes of differentiation and integration are our sensations gradually developed." (Pp. 92, 93.)

Sensori-motor acts may be innate or acquired; those of the latter class are in man the most important, and are, or otherwise are not, accompanied by consciousness. Moreover, the reaction of the motor ganglia in the sensorium commune, whether designed or undesigned, co-ordinate or irregular, may be excited not only by impressions conveyed to them (whether from without or from within the body) by different nerves, and by the so-called organic stimuli, but also by a stimulus descending from above (the higher nervous centres), either in the shape of an idea or of an impulse of the will.

"Thus the will is entirely dependent for its outward realisation upon that mechanism of automatic action which is gradually organised in the subordinate centres; the will cannot at once execute successfully a new movement, nor can it execute any movement without a guiding sensation of some kind: the cultivation of the senses and the gradually effected special adaptation of their reactions are necessary antecedents, essential pre-requisites, to the due formation and operation of will." (P. 98.)

After a summary of the causes of disorder of the sensory ganglia, Dr. Maudsley enters upon the consideration of the cerebral hemispheres regarded as the ideational nervous centres; as centres of independent reaction, wherein ideas may arise and produce movement, without volition, or actually in opposition to it, and without consciousness. Although the author recognises the existence of innate acts in connection with the spinal cord and with the sensorium commune, he rejects *in toto* the notion of *innate* ideas contemporary with birth. The formation of an idea is, he urges, an organic evolution.

"The cells of the cerebral ganglia, in reality, *idealize* the sensory perception; grasping that which is essential in them, and suppressing or rejecting the unessential, they mould them by their plastic faculty into organic unity of an idea, in accordance with fundamental laws. Every idea is thus an *intuition*, and implicitly comprises far more than could be explicitly displayed in it."

It is a mischievous error to treat of an idea as an actual entity, and to regard it as having a uniform quantitative and qualitative value; inasmuch as any given ideas will always have a different value in persons at different stages of cultivation or

civilisation, and even in the same individual at different periods of life and under the influence of culture and experience.

The following account is given of the nature of the so-called fundamental ideas and universal intuitions:

"Because all men have a common nature, and because the nature by which all men are surrounded is the same, there are developed certain ideas which have a universal application, but they are nowise independent of experience. . . . But their absolute truth, as expressions of certain fundamental relations between man and nature, is only guaranteed by the assumption of an unchanging persistence of these relations; a new sense conferred upon him would entirely change the aspect of things, and render necessary a new order of fundamental ideas."

But ideas when active display their energy by reflex action in various directions. Thus, when downwards upon the motor centres and muscular system, they give rise to ideo-motor movements, which may take place not only without any intervention of the will, but also without consciousness. Again, when exerted downwards upon the sensory ganglia their energy is concerned essentially in the formation of clear conception and representation, and under certain circumstances may even give rise to illusions and hallucinations.

"The excitation and cultivation of the sensorial cells are necessary antecedents in the order of mental development to the activity of the ideational cell; and the ideational cell in turn effects its complete function in the formation of a distinct conception by reacting downwards upon the sensory centres."

An idea may also operate upon the functions of nutrition and secretion; and, lastly,

"As, in reflex action of the spinal cord, the residual force which was over and above what passed directly outwards in the reaction travelled upwards to the sensorium commune and excited sensation; and as in sensori-motor action the residual force which was over and above what passed outwards in the reaction travelled up to the cortical cells, and gave rise to idea; so, in ideational action, the force which does not pass, or the residual force which may be over and above what does pass, immediately outwards in the reaction, abides in action in the cortical centres, and passes therein from cell to cell. . . . This communication is what does take place probably, when one idea calls up another by some association, itself disappearing in the act."

Further, not only may the force be transferred from cell to cell, but it may also be transformed, and then the tension of the particular cell, or the idea for the moment active, is attended with consciousness.

"That there may be consciousness of an idea, it is necessary not only that its excitation reach a certain intensity, but that the whole force of it do not pass immediately outwards in the reaction."

In harmony with this hypothesis, Dr. Maudsley defines *Reflection*

"As, in reality, the reflex action of the cells in their relations in the cerebral ganglia: it is the reaction of one cell to a stimulus from a neighbouring cell, and the sequent transference of its energy to another cell—the reflection of it. Attention is the arrest of the transformation of energy for a moment—the maintenance of a particular tension."

The like mechanical and physiological hypotheses are employed in each of the remaining chapters of this first part of Dr. Maudsley's work, devoted to the consideration of the emotions, of volition, of the motor nervous centres—*motorium commune*, and of memory and imagination. A self-conservative impulse is "immanent in all living organic elements," and an essential condition of their organic nature.

"Such reaction of organic element is as natural and necessary as the reaction of any chemical compound, because as much the consequence of the properties of matter thus organically combined. When the stimulus to a hemispherical nerve-cell is not in sufficient force to satisfy the demands of the latter,—when, in fact, it is inadequate,—then there is the manifestation of its affinity or attraction by the nervous centre, an outward impulse, appetency or striving, which, again, as it occurs in consciousness, is revealed to us as *desire*, *craving*, or *appetite*."

But consciousness is only a something superadded—

"The striving after a pleasing impression, or the effort to avoid a painful one, is at bottom a physical consequence of the nature of the ganglionic cell in its relation to a certain stimulus; and the reaction or desire becomes the motive of a general action on the part of the individual for the purpose of satisfying a want or of shunning an evil."

Volition is the subject of the seventh chapter. The teaching of this chapter is conveyed in a quotation from the French edition of Spinoza placed at its head, and which may be termed its text. "It is a delusion," says Spinoza, "on the part of mankind to fancy themselves free agents. What grounds are there for such an opinion? Only that they are conscious of their actions and ignore the causes which determine them. The idea that men are in possession of their liberty, arises therefore from the circumstance that they are ignorant

of the cause for their actions, for to say that these are dependent on their will, is simply to make use of words without meaning. In fine, all that I can say to those who believe that they can speak, or maintain silence, in a word, can do what they list by virtue of an unfettered decision of the mind, is that they are dreaming with their eyes open."

Dr. Maudsley enlarges upon and illustrates this text. The will is no concrete reality; it is nothing but the desire or aversion (physically an available or liberated force, consequent on the communication of activity from one cell or group of cells to others in the hemispheres), sufficiently strong to produce an action after reflection or deliberation. The many voluntary actions recognised proceed from different nervous centres, and the will differs greatly in quantity and quality according to the extent and character of the association of ideas that must necessarily precede its evolution.

"If, then," argues Maudsley, "the final reaction after deliberation, which we call will, is, like other modes of reaction of nerve element previously described, a resultant of a certain molecular change in a definitely constituted nervous centre, then all the *design* exhibited in any given act of will must, like the design displayed in the function of the spinal cells, or the cells of the sensory centres, be a physical result of a particular intimate constitution or organization of nervous matter. In other words, the act of will, which is the final expression of a process of reflection, must needs contain a conception of the end desired—such a conception as has been determined by the nature of the reflection; the conception of the result, or the design, in the act of will constituting, in fact, the essential character of the particular volition," and being also a physical necessity. (P. 150.)

The particular volition, and whatever it contains, whether of folly or design, is considered to be a product of the organised residua of all former like volitions, excited into activity by the appropriate stimulus. The design manifest in a mental act is not a power which transcends or anticipates experience, but is actually conformed in its genesis to experience. The more cultivated the mind, and the more varied the experience, the better developed is the will and the stronger its co-ordinating power over the thoughts, feelings, and actions. In short, the will is looked upon as an insensibly organized result of varying value, yet as being the highest mode of energy of nerve elements, its purpose is to control the inferior modes of energy by operating downwards upon their subordinate centres.

We cannot follow the author in the examination of the power of the will over the movements of the body, and over mental operations, and of its relations to the emotions, but must hurry on to analyse his views respecting the motor nervous centres, as

set forth in the eighth chapter. Those centres, as the region of motor residua, he would speak of collectively as the *motorium commune,* and generically as the region of *actuation,* inasmuch as they contain the powers or faculties through which the activity generated reacts upon the muscular system. In mental action, in truth, the whole bodily life is comprehended, and every muscular intuition has its due place and influence in our mental life; body and mind being separable by no barrier, and mind the special occupant of no one part of the body. Between the stimulus and the ensuing reflex action definite motor intuitions intervene, either attended by consciousness or not. Where no consciousness obtains, it is evident that the motor residua have been definitely and adequately organized in the proper motor centres, so that far from design implying con sciousness, this last vanishes when the design is firmly fixed in the nature of the nervous element.

The concluding chapter of this first section of the volume is on Memory and Imagination. An extract from Darwin's 'Zoonomia' here forms the text, according to which the ordinary conception of memory as the transference of images to a recipient medium, as pictures are portrayed on the retina, is both incorrect and inadequate.

"The organic registration of the results of impressions upon our nervous centres, by which the mental faculties are built up, and by which memory is rendered possible, is the fundamental process of the mental life."

Memory is an organized product, and imagination is due to a similar organic process to that by which like residua are blended, and general or abstract ideas formed. There are no actual existences answering to our most abstract ideas, which are, therefore, so far new creations of the mind, and, when rightly formed, are valid and real subjective existences that express the essential relations of things.

There can be no memory of what we have not had experience in whole or in part; and imagination, therefore, being dependent on memory, can be productive only as to form and reproductive only as to material.

"The productive or creative power of imagination, which seems at first sight to be irreconcileable with knowledge gained entirely through experience, is then at bottom another, though the highest, manifestation of that force which impels organic development throughout nature; and the imagination of any one creates truly, or brings forth abortions and monstrosities, according as the mind is well stored with sound knowledge, and has true concepts, or as it is inadequately furnished with knowledge, or is furnished with erro-

neous concepts—according, in fact, as the individual is or is not in harmony with nature." (P. 186.)

With this extract we conclude our sketch of the principal doctrines concerning mental physiology advanced by Dr. Maudsley. Those doctrines cannot be examined and be treated with indifference or contempt by the thoughtful and unprejudiced; although we imagine some will sniff in them rank materialism, and scout them as unworthy of discussion. This is not the place, nor is it our object in this review to discuss recondite problems in psychology, or to reconcile the hypotheses of Maudsley with the commonly accepted metaphysics of the day, or again to attempt to disprove them. It is enough for our purpose to give an abstract of his doctrines considered as physiological deductions.

To summarise the hypotheses advanced:—Everything in mind,—every mental operation or result, is referred to organization, and no force other than nervous force is recognised. Mental phenomena result from the functional activity of nerve-cells called forth by impressions from without or from within, and modified and directed by the residua of impressions, concepts and ideas heretofore existent. The like mental action exists in varying extent in all animals; it is improveable by hereditary transmission, and some of it is innate. Mind is no individual entity, but an organic product of ever variable quantity and quality, modified by surrounding nature and by the circumstances of life, and progressively evolved from the reciprocal action of external objects and events, and of the activity of nerve matter, in such a way that the building up of the mind is an act of the entire body, with which indeed mind is conterminous.

It is indeed difficult to conceive the aërial, imponderable, the most varying and varied, the most subtle and rapidly formed and executed, and marvellous phenomena of mind to be the direct products of organization—of material forces existing in nerve-cells, themselves dependant, like all other animal tissues, for their functional activity on the proper nutrition of the body. It is mystifying to be told that material nerve-cells—morsels of albumen—remember, discriminate, evolve ideas, and arrive at logical conclusions; but the author will say that it is for objectors to prove that this cannot be,—to indicate the line to be drawn between the nerve functions of animals in the ascending scale and man, to show wherein—what for another name may be called—memory of the spinal cord, as illustrated in acquired automatic acts, differs from memory, in the usual signification of the *term*, exhibited in the cerebral hemispheres; and, in gene-

ral, to discover the missing or the faulty link in that chain of nervous actions which he supposes that he has, by the recognised teachings of physiology, demonstrated as binding together in one harmonious whole, the so-called mental and nervous phenomena of all animated beings.

We pass on to review the second section of the work in question, viz., on the Pathology of the Mind; and now we may again take up Griesinger's book on mental diseases, and compare its contents with those of Maudsley's volume. The causes of insanity are taken into consideration by both authors, at the outset of their chapters on pathology; but before starting on their discussion, Griesinger presents a chapter on the Analogies and general Diagnosis of Insanity, which merits study, especially for the directions and suggestions offered for conducting the examination of a supposed case of insanity. He contends for a thorough examination of the patient, such as can only be obtained by prolonged observation over a period of more or fewer days, and by inquiries among friends, in all cases where any doubt can obtain respecting the mental state.

A similar minute examination is needed also when the causation of the insanity is to be investigated. Both authors concur in the assertion that

"It is not a single specific cause under the influence of which the disease is finally established, but a complication of several, sometimes numerous, causes both predisposing and exciting. Very often the germs of the disease are laid in those early periods of life from which the commencement of the formation of character dates. It grows by education and external influences, or in spite of these." (Griesinger, p. 130.)

The division of causes adopted by Maudsley is into predisposing and proximate, whilst Griesinger treats of predisposing causes, general and special, and of immediate causes, which, with regard to their mode of action, are subdivided into psychical, mixed and physical causes. The psychical and mixed causes enumerated agree in the main with those commonly called moral causes. But in Maudsley's opinion, the subdivision into physical and moral causes is a mistake, and he shows how impossible it is in many instances to refer a case to the one or the other group.

"The thoughts, feelings, and actions leave behind them certain residua, which become organized in the nervous centres, and thenceforth modify the manner of their development, or constitute their acquired nature; consequently the moral manifestations throughout life inevitably determine physical organization; and a slowly operating moral cause of insanity is all the while producing physical changes in the occult recesses of the supreme nervous centres of the

mental life. When insanity occurs as the consummate exaggeration of a particular vice of character, as it sometimes does, the morbid mental manifestations mark an internal definite morbid action in the supreme nervous centres,—a gradually effected modification of the mental organization." (P. 200.)

The predisposing causes recognised by the two writers are, for the most part, the same. Griesinger quotes largely from statistics to show the relative prevalence of insanity in the principal countries of Europe and of America. Were these statistics trustworthy, they would indeed demonstrate remarkable variations in the frequency of the disorder in the different countries cited, but Griesinger himself evidently holds them in light esteem, and in our opinion they are well nigh worthless. They may possibly exhibit with some accuracy the number of lunatics who have become denizens of asylums and the subjects of public supervision, but the history of lunacy in every country furnishes a denial to them as representing the extent of lunacy prevalent. When, however, in reference to this question, uncivilized or half-civilized communities are brought into comparison with nations advanced in civilization, it is generally conceded that insanity is by far less common among the former. This is, as might on theoretical grounds be, as Dr. Maudsley observes, expected: for

"In the complex mental organization, with its manifold, special and complex relations with the external, which a state of civilization implies, there is plainly the favorable occasion of many derangements. The feverish activity of life, the eager interests, the numerous passions, and the great strain of mental work incident to the multiplied industries and eager competition of an active civilization, can scarcely fail, one may suppose, to augment the liability to mental disease." (P. 201.)

These considerations are moreover borne out by such facts as are available.

"The sort of insanity most common among savages is imbecility, or idiocy, for the same reason that idiocy is the most common form of insanity in children; where the mind is not developed, varied degeneration of it cannot take place, though it may obviously remain morbidly arrested."

Both authors agree in the conclusion that, in recent times, there is a real increase of insanity among the people of civilized countries. In the case of England and Wales, Dr. Maudsley computes it to be at the rate of 1000 a year, an increase more than proportionate to an increasing sane population, and he advances several important considerations in explanation of this

unwelcome fact. Among others he refers to the social position of women, and boldly condemns it in a manner that must be most gratifying to the champions of the rights of women. Overcrowding of populations, and the eager pursuit of wealth to escape the degradation (as most certainly allotted it in the present state of society) of poverty, are also vigorously and faithfully discussed as predisposing causes of insanity. The remarks on the aspects of religion in relation to the causation of insanity are characterised by equal vigour and independence of thought; and most men who look around them, and honestly reflect on what they see, will endorse the sarcastic sentence—

"That the practical religion of the day, the real guiding-gospel of life, is money-getting; the professed religion is Christianity." (P. 209.)

We cannot here follow the two authors in their observations upon the other several causes enumerated as predisposing to mental disorder, such as age, sex, education, seasons of the year, and hereditary tendency, which are equally well discussed by both; but we must call attention to Dr. Maudsley's chapter on "the *proximate* causes of disorder of the ideational centres," as particularly deserving perusal. Under that head he includes original differences in the constitution of the ideational nervous centres, quantity and quality of the blood, reflex irritation, excessive functional activity, and injuries and diseases of the brain. The two first of these groups of causes are more fully examined than is usual in treatises on insanity, and will be read with interest and profit. Griesinger has sections also on several of the same causes referred to by Dr. Maudsley, and is particularly full in detail respecting the physical causes of insanity, which are but lightly touched on by the writer last named. We cannot, however, speak in praise of the German author's dissertation on psychical causes, and especially of that portion of it in which the mode of action of such causes is examined. But he may very justly cast much of the blame for obscurity upon the translator of this portion; as, for instance, for the following paragraphs:

"The emotions, particularly the passed-off psychical phenomena, are the *immediate* originators of the mental disease, inasmuch as they produce a state of intense irritation of the brain, which now (?) continues." (P. 167.)

And again,—

"A mediator of this description (meaning apparently an intercurrent morbid condition, *Rev.*) of especial importance and frequency in connection with mental disease is continued *sleeplessness*,

which often accompanies the depressing emotions, which (?) over-excites the brain and lowers the nutrition." (P. 168.)

In Dr. Maudsley's treatise the chapter on etiology is followed by one of considerable length, and of great interest and originality, on the "Insanity of Early Life." Had space permitted we could wish to have analysed this essay for the benefit of the reader. We are, however, compelled to pass on to notice the varieties or forms of mental disease enumerated in the two volumes before us. In Dr. Maudsley's treatise the consideration of these forms is introduced by a sketch of what he terms the "insane temperament," as seen among persons who cannot be called insane, but who are characterised by singularities or eccentricities of thought, feeling, and action. "This peculiarity of temperament, which undoubtedly predisposes to insanity, does nevertheless in some instances border very closely upon genius," and Dr. Maudsley proceeds at some length to inquire into "the relations which a form of talent bears to insanity, in order to exhibit the position of each in the social organization. In both cases there may be an uncommon deviation from the usual course of things; but in one case there is the full recognition of the existing organization as the basis of a higher development, a fusing of the past through a new mould into the future; in the other, there is a capricious rebellion, as the initiation of a hopeless discord."

The several varieties of insanity fall under two great divisions —*Affective* and *Ideational*. The former includes two sub-divisions, impulsive and moral insanity; the latter also is separable into two forms, partial and general. Dementia and general paralysis take a position as supplementary forms. Such is Dr. Maudsley's distribution of mental disorders, which, it will be seen, differs widely from the classification usually adopted, and which, in its principal features, is followed by Griesinger. The last-named writer treats of 1. States of mental depression; 2. States of mental exaltation; and 3. States of mental weakness; and, as supplementary, the complications of insanity, represented by general paralysis and epilepsy. The states of depression include hypochondriasis and melancholia. Under the latter term are comprised many insane conditions, having nothing in common except the presence of more or less mental depression at some part of their course. Among such conditions are the forms of disorder which make up Maudsley's group of the affective varieties of insanity.

The artificial system of classifying mental maladies framed by Esquirol, and followed generally by Griesinger, has long been looked upon as very defective, and full of inconsistencies. M.

Morel rejected it, and attempted a more natural system, and Dr. Maudsley, on his part, has advanced very valid arguments against it and further expressed as his conviction that adherence to it has fettered observation, and hindered the faithful study of the natural history of insanity.

"The different forms of affective insanity have not been properly recognised and exactly studied, because they did not fall under the time-honoured divisions; and the real manner of commencement of intellectual insanity in a disturbance of the affective life has frequently been overlooked."

It is, however, only just to Griesinger to note that he accepts the artificial system simply from want of a better, and that the two essential varieties of insanity which he admits, viz., disorder of the emotions, and disorder of the thought and will, bear a general resemblance to the two grand divisions accepted by Maudsley.

The history of the forms and of the complications of insanity presented by Griesinger is much more full in all details respecting their course and symptoms than that attempted by Dr. Maudsley. The manner also in which the chapter is subdivided into sections, each one devoted to some variety bearing—whether deservedly or undeservedly we do not say, a special name, necessary to be known by the student—renders it a more fitting text-book than the work of the English author. The translators besides, as practical psychiatrists, have, as might be anticipated, performed their task in a more creditable manner in this descriptive portion of the work; and doubtless they found Griesinger himself much more in his element, much more lucid and readable in describing the characteristic features of insanity, than in the more learned and abstruse disquisitions of the previous portion of his work. Hypochondriasis and epileptic insanity, moreover, are separately and sufficiently treated of in Griesinger's book whilst, for some reason, they have been omitted from Dr. Maudsley's treatise.

The remaining chapters in the two works are occupied with the pathological anatomy, prognosis, and treatment of mental diseases. In the mode of dealing with the first-named subject, Griesinger is again distinguished from Dr. Maudsley by careful detail. After some general remarks on pathological research, and the results to be looked for from it, he enters on a descriptive account of the alterations met with in cases of insanity, in the cranium, in its bones, membranes, and in its contents severally, and afterwards proceeds to note the morbid consequences of disease in all other organs of the body, with which the insane state may have been considered complicated. On the contrary his English fellow-author occupies much of his chapter on

pathology with recounting the latest physiological doctrines and experiments concerning the functions of the nervous system, the individuality of nerve-element and reflex pathological action; all of them subjects of the highest importance, but rightly belonging to another section—quite necessary to the right interpretation of morbid appearances, but somewhat out of place in the chapter occupied by them. Nevertheless credit must be given him for what is recounted of the morbid products and appearances of the brain and membranes, and particularly for an excellent summary of the kinds of degeneration met with in the brain after insanity; morbid changes distinguished in more recent times, of great importance pathologically, and likely, when more fully understood, to throw light upon the material cause of mental disease.

Passing by the other chapters we will, in conclusion, make a few remarks on the opinions and statements of the two authors on treatment. Suppose that we assume the correctness of Dr. Maudsley's hypothesis, that mind is an organic product, the result of the reaction of nervous matter in response to external nature, and to internal nerve-residua, and that at the same time the material instrument, the brain, must be nourished and kept in health, in accordance with the same laws as govern any other organ of the body,—a two-fold mode of treatment in insanity is indicated; directed, on the one hand, towards the modification of external influences operating on the mental organisation, and, on the other, towards correcting whatever is irregular in bodily function, whether this be in the nervous centres themselves, or in other parts of the body with which the well-being of those centres is indissolubly bound up as members of the same body. In short, the treatment need be both moral and medical,—psychical and physical, in the language of Griesinger.

It is clear that medical or medicinal treatment can have no direct effect upon the disturbed mental processes; yet, nevertheless, it can exert a tangible effect indirectly. The over-excited and over-worn brain may be thrown into repose by an opiate, or calmed by a prolonged or a Turkish bath; or a course of chalybeate medicines may restore a healthy state of the blood and therewith healthy brain function.

Under all circumstances the treatment must be grounded, as Dr. Maudsley observes, "upon the removal of those bodily conditions which appear to have acted as causes of the disease, and to be keeping it up, and upon the general improvement of nutrition."

Griesinger passes under review the various medicinal agents which have been more especially resorted to in treating the insane, and exhibits a correct appreciation of the value of the

various drugs considered as curative of the morbid states in which they are administered. But both he and Dr. Maudsley insist upon the necessity of early treatment, and particularly of the early withdrawal of the patient from those influences to which the disease is traceable. An entire change in the surroundings will sometimes of itself lead to recovery.

Yet under the influence of this demand for removal the mischievous, and too often fatal, error is made of being contented with the transfer of the patient to an asylum, as though this constituted the whole necessary treatment. Against this indiscriminate consignment of insane persons to asylums Dr. Maudsley protests strongly. In recent cases an asylum may be absolutely necessary; but it should be something more than a place of seclusion; medical treatment should form a real feature in it.

"Future progress in the improvement of the treatment of the insane lies (writes the author just quoted) in the direction of lessening the sequestration and increasing the liberty of them." (P. 430.)

Moreover, if we look to our asylums, more especially to the county asylums, we find, as a rule, overgrown institutions in which the medical element is reduced to a minimum, and medical treatment, except on a wholesale, empirical character, unattainable. Moral and medical means must be combined in the treatment of curable or recent cases; and this cannot be accomplished by certain set rules or a system of routine, but by special regard being had to the character and circumstance of each individual case.

"It is necessary (says Dr. Maudsley) to penetrate the individual character in order to influence it beneficially by normal means, and to investigate carefully the concurrence of conditions that have issued in insanity, in order, so far as possible, to remove them." (P. 431.)

The remarks of Griesinger on this subject are equally decided, though, may be, the English is not so clear.

"Nowhere (he says) is the desideratum strictly to keep in view the individual of greater importance than in the treatment of insanity; nowhere is the constant consciousness more necessary that it is not a disease but an individual patient—that it is not mania, but an individual who has become maniacal—that is the object of our treatment. Each individual case should be specially investigated in all its bearings, which constantly vary, and all the means of anatomical diagnosis and pathological research ought to be brought to bear upon its elucidation; in fact, a penetration into the psychical individuality of the patient is here demanded, which is

scarcely ever necessary in ordinary medical practice." (Op. cit., p. 462.)

But how different is the position of a patient on being introduced within one of our large English asylums? He at once loses his individuality, and is for the future nothing more than one of the four or five hundred lunatics who claim the attention of the duly appointed medical officer, and have an equal share in (as Griesinger describes it) the mechanical nature of the superintendence and treatment in operation. In our present monstrous asylums, as Dr. Maudsley truly observes, anything like individual treatment is an entire impossibility. Though the incurable majority may not require such individual looking after, the small curable minority have slight and uncertain chances of satisfactory treatment.

"To the medical officer (he further goes on to remark) there are not so many *individuals*, having particular characters and particular bodily dispositions, with which he is thoroughly acquainted, but they are apt to become so many lunatics, whom he has to inspect as he goes his round of the establishment, as he inspects the baths and the beds." (P. 431.)

And let it be added, that what makes the position and prospects of curable lunatics in our huge asylums still worse is, that the medical officers being sufficiently occupied in carrying out the routine of those establishments, and feeling themselves overwhelmed by the number of patients consigned to their care, often yield to the temptation to merge their medical character and usefulness in the routine of supervision, or, as Dr. Maudsley expresses the fact, "forgetting their character as physicians, degenerate into mere house-stewards, farmers, or secretaries," p. 431.

We have entered rather largely into this question of asylum treatment because it has become a problem of the day how to provide for our lunatics, seeing that the plan of building gigantic structures has failed to meet the demands for accommodation, and tended rather to the production and accumulation of chronic insanity, than to cure the insane and benefit the community.

A few words on the treatment of the insane without mechanical coercion. We are glad to find that Griesinger, unlike many of his countrymen, does not regard this plan as a deception and mistake. The question (he writes, p. 492) is now decided entirely in favour of non-restraint. Up to the time of the first edition of his work he allowed himself, (he states) to be influenced by the adverse opinion of his fellow-countrymen but since then he has seen the new system carried out in several of the large English institutions, and has been convinced.

Dr. Maudsley accepts non-restraint as unquestionably the correct plan of management, but, curiously enough, never mentions the name of Dr. Conolly, although he introduces that of Pinel. Griesinger, however, is more just to the memory of our great English champion of non-restraint, remarking that "the name of Conolly will always be mentioned with that of Pinel, whose work he has completed," (op. cit. p. 492).

PART SECOND.

Bibliographical Record.

ART. I.—*Lectures on the Progress of Anatomy and Surgery during the present Century.* By SIR WILLIAM FERGUSSON, Bart., &c. &c. London. 1867. Pp. 302.

THIS reprint of Sir W. Fergusson's Lectures, delivered at the College of Surgeons in the years 1864-5, contains nothing in the least degree new; in fact, we have failed to notice a single alteration—even verbal—from the text of the Lectures as they were delivered. But the book is a notable one; and since the form in which the Lectures were first published precluded us from then noticing them, we gladly avail ourselves of the opportunity now afforded to us of doing so, without violating the etiquette of periodical literature.

As we are admirers of Sir W. Fergusson, we are not afraid to trust ourselves in some personal remarks on him. He has always been pre-eminently the *chirurgus*—a man great in the operating theatre—and greater still in a far wider sphere, in devising new operative processes, in extending the applications of operative surgery, and thus widening constantly the domain of the great art which he has done so much to enrich and to adorn. Other men may have shown greater philosophic qualities; many surgeons have exceeded him in literary ability, none in our time have surpassed him as a practical surgeon. Hence the subject of the present volume is peculiarly the property of its author, since a history of the "progress of surgery" consists in no mean degree of improvements which he has introduced. His ability as a writer is not so conspicuous, nor does this volume show traces of any extensive labour in the study. In fact, his avocations have probably been too arduous to permit the leisure which such study requires.

It would be hopeless for us to endeavour in a notice like this to embrace all the points on which the professor touched in the twelve lectures before us. Those with which his name has been most prominently associated can alone be mentioned.

The lecture on 'Conservative Surgery' will well repay perusal. In it Sir W. Fergusson gives a liberal appreciation to the labours of his colleagues, such as Brodie, Syme, Jones of Jersey, and others. Especially important is the doctrine which is still, we fear, too little accepted, that it is not necessary in operating for diseased bone to conduct the operation through healthy soft parts, for that the inflamed and thickened tissues over a diseased joint will rapidly recover themselves when the joint has been removed. It has often been our lot to see a surgeon of the olden school insist upon sacrificing the whole foot and leg, on account of disease of the tarsus, misled by the thickening and the riddled condition of the soft parts of the foot, when excision of the diseased bones, or at most Syme's amputation, would have proved certainly adequate to the cure of the disease.

The observations which our author makes on harelip can hardly be considered worthy of his vast experience, extending to several hundred cases. None of the modern modifications of the old operation for harelip seem to have attracted Sir W. Fergusson's notice; at least he does not consider any of them worth mention, though the illustrations he himself gives show clearly how ugly a notch that method of operation leaves, and which it is the object of the modifications in question to obviate. It is possible that such methods may prove failures. But if Sir W. Fergusson has given adequate trial to the operations which go by the names of Malgaigne, Nélaton, Blandin, and Bruns, and has reason to be dissatisfied with them, it would have been useful to the reader to have been informed of it. Otherwise the essay can hardly be said to be up to the information of the day.

On the subject of fissured palate all that falls from our author must be most valuable and interesting. The present Lecture is indeed merely a reproduction of what Sir W. Fergusson has previously taught; but it is certainly of importance to hear that he has found nothing to change either in his doctrine or practice. Nor indeed does he appear to have followed the practice of other surgeons with much attention; for he speaks of Dieffenbach's method of operating as being the same as Pollock's, whilst, if we understand their works aright, they are perfectly different. However, much study of other men's practice need not be expected from a surgeon whose own is so perfect, that out of 134 operations 129 have been successful.

One of the most interesting chapters in the book is that on lithotomy in children, and on lithotrity. It is pointed out, and with incontestible force, that one of the gravest dangers in cutting for stone in the young subject, is that of tearing or

breaking the urethra into two pieces, and pushing the bladder before the finger deep into the pelvis. A cavity is thus produced in front of the bladder, which the operator mistakes for that viscus—the stone is not reached, and the operation has to be abandoned. It is in this way that Sir W. Fergusson is induced to explain the frequent occurrence of cases in which it has been said that the bladder was opened and no stone found. But that such is not always the explanation is proved by the well-known case of Mr. Paget, of Leicester; and other similar cases have come under our own knowledge in which the bladder has been fairly cut into and found empty. Sir W. Fergusson's extensive experience of lithotomy in childhood has impressed him with a more serious view of its difficulty than is usually entertained.

In treating of lithotrity Sir W. Fergusson lays great stress upon the removal from the bladder of the *débris* of the stone by means of a lithotrity-scoop, or even of whole stones when only of small size, such as those figured on p. 94. For this purpose he recommends a lithotrite with a very small stem, easily moveable in the urethra. It would be presumptuous in us to express an opinion derogatory to a practice which so great a surgeon says he has followed in 60 operations, and with the best results. But we think we are entitled to say that the general judgment of operators is against the promiscuous adoption of this practice. For a surgeon possessed of the exceptional delicacy of manipulation which distinguishes our author it may have its advantages—in ordinary hands it seems likely to lead to risk of laceration and injury much outweighing any possible advantage from shortening of the term of treatment.

In a subsequent lecture on lithotomy in the adult Sir W. Fergusson refers with natural pride to the vast extent of his experience in cases of stone, embracing 162 cases of lithotomy, and 109 of lithotrity.

We should like to spend much more time on this volume, but have only room to refer briefly to the subject so peculiarly connected with its author—excision of the knee. Passing over the very interesting historical matter with which the subject is introduced, we come to Sir W. Fergusson's opinion on the relative fatality of amputation and excision. On this head, without adopting the flourishing statements of the heated partisans of this operation, who have gone so far as to represent it as a proceeding of really trifling danger, Sir W. Fergusson yet professes his belief that it is not more fatal to life than amputation would be under similar circumstances. If this conclusion should bear the test of experience, it would indeed be most satisfactory. He also throws some doubt on the allegations

generally made as to the protracted period required for cure after excision. Totally apart from these questions, however, there is, as our author shows with great force and truth, the question of the result obtained by excision. Here three principal objections are usually made, and to these Sir W. Fergusson directs his replies. 1st. That the limb after excision is really little superior to a stump; a very absurd assertion, only to be accounted for by perfect ignorance of the subject, and which is very summarily and very satisfactorily disposed of. 2nd. That the limb is liable to be much shortened. This Sir W. Fergusson appears to admit, but he argues that however shortened it may be it is superior to a wooden leg. In illustration he quotes and figures two instances, which certainly seem to have little bearing on his argument—one that of Cæsar Ducornet, a man born without arms, and who made his living by painting, wielding the brush with his feet. This instance shows the value of a foot when supported by a healthy limb, but not that of a foot attached to an ankylosed and shortened leg. The other instance is that of a man whose limbs were of very unequal length, and much dwarfed, yet who was a celebrated rider, and who could walk, run, and leap. This shows that unequal limbs may be very useful when pliable, but has little bearing on the utility of stiff limbs. We ourselves, however, incline to agree in Sir W. Fergusson's conclusion (at least so far as to admit that any usual amount of shortening will leave the limb superior to a wooden one), and only regret the weakness of the analogies by which he has supported it. It is a little singular that he has not pointed out that this shortening is often not the fault of the operation at all, but of the operator, who is more anxious to make a clean and showy operation than to notice the position of the epiphysial cartilage, which is really much nearer to the lower surface of the femur than many surgeons seem to know. 3rd. The last objection which is combated here, and very successfully, is the tendency to recurrence of disease, and here Sir W. Fergusson shows how much may often be done by renewed resection, of which he gives some very interesting cases. On the whole this lecture on excision of the knee, by one who may claim to be its author, or, at least, its introducer into modern practice, is in every way most valuable and interesting.

We regret that we have not space to follow Sir W. Fergusson more minutely through this volume, which will always remain as a splendid monument of a long and successful career, and one which has left an enduring mark on the surgery, not of this country only, but of the whole world. Whatever literary defects a carping criticism may discover in his work, Sir W. Fergusson

may well be proud of the achievements which are so faithfully recorded in it.

ART. II.—*Bidrag til Belysning af Asphyxien og Döden, navnlig fra et hygieinisk og forensisk Synspunkt.* Af P. A. SCHLEISNER, Dr. med., Stadslæge i Kjöbenhavn. Kjöbenhavn, F. Hegel, 1868. 8vo. Pp. 94.

A Contribution to the Elucidation of Asphyxia and Death, especially from a hygienic and forensic point of view. By P. A. SCHLEISNER, M.D., Municipal Physician in Copenhagen.

THE writers who, according to the author, have treated the subject of apparent death most scientifically and impartially, are Louis,[1] Sommer,[2] Bouchut,[3] and van Hasselt.[4]

The first inquiry to which Dr. Schleisner directs his attention is, whether the accidental interment of living persons has really occurred so often as has been stated. He shows that most of the stories of this kind have, on due investigation, been refuted. It would appear, in fact, that there is on record in France only one authentic case of this nature which has been confirmed by a trustworthy physician, and that this dates back more than 100 years. The author believes that in the present day such an occurrence could scarcely take place, except in cases of sudden or violent death, and under unusual circumstances, as in great fields of battle or during destructive epidemics. But even under such circumstances the danger of interment during life is, in our civilised age, exceedingly slight, when so great care is taken of the wounded in battle, and when epidemics do not occur with the overwhelming violence and malignancy of former centuries.

The author considers the very general belief in the frequency of apparent death to depend on the assumption, more or less well founded, of the uncertainty of the signs of death; on the want of sufficient scientific inspection of the dead; and lastly, on the more or less perfect legal regulations prevailing in different countries as to the period of interment.

As to the signs of death the principal are: cessation of the

[1] 'Lettres sur la certitude des Signes de la Mort,' Paris, 1752.

[2] 'Dissertatio de signis, mortem hominis absolutam ante putredinis accessum indicantibus.' Partes I, et II, Hauniæ, 1833.

[3] 'Traité des signes de la Mort,' &c. Paris, 1849. Crowned by the Institute of France.

[4] 'Die Lehre vom Tode und Scheintode.' Bd. 1, Braunschweig, 1862.

heart's action, cadaveric spots and rigor mortis. These must be considered as sufficient proof of death; and Dr. Schleisner does not hesitate to express his conviction, "that when all these signs, or only two of them co-exist, death is certain."

"The latter two constitute the transition to the first sign of putrefaction, which consists in a bluish green discoloration of the skin, especially in the groins and on the abdomen, a discoloration ascribed to the effect on the colouring matter of the blood of the sulphuretted hydrogen developed in the cavity of the abdomen (Rokitansky) or perhaps of the ammonia." (Pp. 22-23.)

It is evident that death can be positively certified only by a medical man. Hence all writers who have treated of this subject agree as to the necessity of the rule, that no one should be buried without the inspection and certificate of an authorised physician. In France the organization for the verification of deaths, which had previously been confined to Paris, was, by a circular of the 24th December, 1866, extended, with some modification, to the country districts.

The machinery in the capital is as follows: in each of the arrondissements of Paris are three or four medical *vérificateurs de décès;* in addition there are for the whole city four medical inspectors, and finally there is a committee of inspection of the verification of deaths, composed of the Prefect of the Seine as president, different members of the Municipal Council, two physicians, one being the Dean of the Faculty, and some other professional members—in all eleven members. The committee is to meet at least once a month in the Hôtel de Ville, to consult respecting the reports received from the medical inspectors, who likewise are members of the committee. The honorarium of the vérificateurs is fixed at two francs for each certificate of death.

In England the same object is attained partly through the institution of coroners for sudden and violent deaths, dating from the time of Edward I, and partly by means of the civil registration of deaths. England had formerly the honour of being the only country in Europe which had carried out, so far as possible, a medico-scientific system of death certificates. In 1856 there were in England and Wales in all 324 coroners (of whom a great part were medical men), the cost of this institution amounting in that year to £67,000, of which £29,068 went for coroners' fees. The civil registration was established for England and Wales by the Act of the 17th August, 1836, for registering births, deaths, and marriages, which was subsequently extended to Scotland and Ireland. Dr. Schleisner remarks upon the "singularly permissive" nature of English

legislation, which so often has a "may," where we should expect a "shall," and he expresses his surprise that the certificate of registration is not made the express condition on which interment should be allowed. Stillborn children are not registered, &c., but he adds:

"It must, on the other hand, be admitted, that this institution, under the uncommonly talented guidance of the celebrated statistician, Dr. W. Farr, who, though not by name, is in reality the chief of the general registration—has attained to great perfection. This result is due especially to a judicious use of the 7th and 25th sections of the Act, but also to the benevolent interest with which all the medical men of the country, recognising its great importance to the public health, have afforded their co-operation." (P. 27.)

Dr. Schleisner quotes Dr. Farr's Report, to show that, for the whole of England and Wales, seventy-nine per cent. of the deaths are certified by medical men, four per cent. by coroners, and seventeen per cent. without the intervention of medical men, while in London the proportion is still more favorable, uinety-two per cent. of the deaths being registered on medical certificates, five per cent. by coroners, and only three per cent. without medical certificates, a result which, he adds, no other country in the world can show, and which is the more surprising, as the number of those who die yearly in England of want and privation—*a cause of death now quite unknown in Denmark*—is not so very small. Nevertheless, Dr. Farr is anxious to effect a special medical registration for the fraction of deaths at present unattested by medical men, a proposition which will more than double the cost of the institution, raising it from £41,350 to £91,350 per annum. This change Dr. Schleisner hopes to see carried out.

On comparing the French and English systems, the author gives unqualified preference to the latter. The plan of receiving certificates from those who have not had the deceased under treatment during life, he condemns as being calculated to lead to many errors, while it is extremely galling and inconvenient to the respective families, is very costly, and implies a mistrust in the whole medical profession in France, which is almost inexplicable. "The English system is much simpler and more certain with respect to the determination of the causes of death, and security for the discovery of concealed crimes is obtained by means of the coroner's inquest."

In Denmark it is only in the market towns that the deaths are attested by a physician; in the country parts this is done by the inspector of the dead appointed by the "Amtmand," a superior revenue officer having jurisdiction in certain cases.

This is, of course, a state of things which calls for reform. The arrangements for the investigation of violent and sudden deaths are also very defective; and therefore, to illustrate this part of his subject, the author proceeds to lay before his readers some statistics bearing upon it, derived from other countries, and "especially from England."

The facts he brings forward are quoted from the coroner's returns, as given in the average for the five years 1852-56 in the Nineteenth Report of the Registrar General. Upon these facts he remarks, that

"This review gives an insight into the whole social life of the English people, greater and more complete than that which even a detailed description of the customs and manners of the people could supply. We see from it, among other things, that it is with very great sacrifices that England gains the prize of being, in an industrial and material point of view, the most advanced people in Europe; and it is really the case, as Mr. Farr has somewhere remarked, that this large number of violent deaths has the same effect for England, as if she every year carried on the most bloody war. But as statistics have been able to unveil this side of English life, they have also placed the Legislature and the Administration in a position to adopt such regulations as year by year, in part at least, diminish and obviate these calamities. This is so far the case, that the manifold hygienic agencies, which in this direction are met with in England, may be said to be based upon the results deduced from the statistics of mortality, of which the Registrar-General's various reports bear so many and such eloquent proofs." (P. 35.)

Dr. Schleisner calls attention to the fact, that of the deaths by violence in England, so large a yearly number as 401 is due to the administration of poison. A still more surprising and indeed appalling circumstance is, that of these 286, or nearly three fourths, should be the result of accident. The author's remarks on this point deserve special attention. He shows that this wholesale accidental poisoning does not proceed from an excessive use of poisons in trade.

"On the contrary it will be seen," he says, "that laudanum, opium, and morphia, prussic acid, mercury in combination in different secret remedies, (as Godfrey's cordial and Morrison's pills), and unsuitable medicines, and too large doses of medicines have, out of the yearly average, made up the considerable number of 143. This remarkable result depends upon circumstances peculiar to England, especially the want of a protecting anti-quackery law, and the fact that in England pharmacy is a free trade." (P. 37.)

It is curious that in the criminal use of poison a certain fashion seems to prevail in different countries. Thus, while in

England opium occupies the first rank in the accidental, suicidal, and partly in the criminal poisonings, arsenic has in France continued to play the same prominent part in criminal poisonings, which it has held since the middle ages, when, as is well known, it constituted the principal ingredient in the "Cantarella" of the Borgias, and in the later famous or rather infamous "Aqua Tophana." In France, however, phosphorus seems now to be replacing arsenic. From a statement of the Prussian judicial chemist, Dr. Sonnenschein, it would appear that in his country nine tenths of the poisonings are nowadays attributed to prussic acid and cyanide of potassium ('Deutsche Klinik,' No. 13, 1867, p. 119).

"The reason why opium in England so frequently gives rise to fatal poisonings, must be sought partly in the fact that this potent medicament can there be obtained without a prescription in any chemist's shop, and partly in the bad habit which prevails, especially in the manufacturing districts, of quieting crying children with opium drops." (p. 39, *note.*)

The author next directs attention to a very important class of poisonings, the most dangerous of all, and which seems to have been very much overlooked by toxicologists, namely, poisoning *at second hand,* by the use of the flesh of animals poisoned by the administration of strong medicines, or in some other way. A case, brought forward by Mr. Gamgee, is quoted from the number of this 'Review for January, 1865,' p. 34, in which 107 persons suffered from partaking of the flesh of an ox to which two ounces of tartar-emetic had been given. The pig is, however, the animal which is most frequently exposed to poisoning, and the author mentions instances in which large numbers of swine have been lost from meeting with poisonous matters in offal. There are thus three ways in which pork may become dangerous, by communicating trichinosis, splenitis (miltbrand) and poison (especially phosphorus, arsenic, and antimony). Of these Dr. Schleisner considers the uncomplicated trichinosis, the mode of death in which is far from being satisfactorily explained, to be the least dangerous.

As deaths by poison are very frequent in England, the same is undoubtedly true of modes of violent deaths in general, which scarcely occur in the same proportion in any other country, not even in Belgium. An exact international comparison is, however, extremely difficult, as the official reports are not drawn up upon the same plan, and it is greatly to be desired that an uniform system of statistics should be, without delay, adopted in all countries, especially with regard to those causes of death which may be considered to be of predominant im-

portance in a hygienic, forensic, and economico-social point of view. These are—1. Deaths from epidemic diseases. 2. Violent and sudden deaths; and 3. Deaths from diseases which may be considered as eminently calculated to deteriorate race—syphilis, glandular and pulmonary phthisis.

We have dwelt so long upon the first three chapters in Dr. Schleisner's important and interesting work that the space at our disposal will not admit of our doing more than stating the subjects of the remaining two. In the fourth he treats of the danger, in a sanitary point of view, of permitting a prolonged interval to take place between death and burial, and of the Danish legal regulations on the subject. In the fifth he speaks of asphyxia, or apparent death in the stricter limitation of the term; of the medical definitions of life, disease, and death; of the different methods of resuscitation; and he concludes his valuable *brochure* with an account of the operations of associations for the rescue of the drowned and of the apparently dead, and especially of the Royal Humane Society at its principal station under the able, experienced, and zealous direction of Dr. Christian, of Brompton.

ART III.—*On the Physiological Relations of Colloïd Substances.* By ARTHUR RANSOME, M.D., M.B. London. 1866. Pp. 22.

DR. RANSOME, in this paper, a reprint from the 'British Medical Journal,' of the 3rd of February, 1866, gives a brief summary of Dr. Graham's very important observations on colloïd substances which, in their vital relations, open a new and most interesting field of physiological research.

As compared with crystalline substances, "crystalloïds," they appear, to use Dr. Graham's words, "like different worlds of matter, and give occasion to a corresponding division of chemical science," the distinction between them being that subsisting between the material of a mineral, and that of an organized mass."

From the facts already established, it seems highly probable that the inquiry carefully conducted may afford explanations of many vital processes at present but imperfectly understood,—such as digestion, chylification, secretion, excretion, and may shed light on some of the obscure problems of pathology as well as of physiology. Much caution and reserve, however, we need hardly remark, will be required in reasoning on forces so unstable and obscure as those which are concerned in all opera-

tions in which colloïd substances take an active part. One short extract from Dr. Graham's original paper may suffice to warrant such caution, at the same time that it shows how far-reaching and important is the inquiry. Contrasting the crystalline and the colloïdal he remarks:

"The colloïdal is in fact, a dynamical state of matter; the crystalloïdal being the statical condition. The colloïd possesses ENERGIA. It may be looked upon as the primary source of the force appearing in the phenomena of vitality. To the gradual manner in which colloïdal changes take place (for they always demand time for an element), may the characteristic protraction of chemico-organic changes be referred."[1]

ART. IV.—*On the Special Function of the Sudoriparous and Lymphatic systems, their vital import and their bearing on Health and Disease.* By ROBERT WILLIS, M.D., &c. London. 1867. Pp. 71.

THE title of this little volume may well arrest attention. The author of it, who is favourably known by his excellent translation of the works of Harvey, and by his translation with notes of the 'Elements of Physiology' of Rudolph Wagner, following the example of the illustrious founder of our modern physiology, has, in the treatise now before us, by induction from well-known and well-established facts, arrived at conclusions of a very interesting and novel kind, which, if confirmed and established, can hardly fail to solve certain obscure problems, and introduce a harmony at present wanting in an interpretation of the working of the animal economy.

Treating first of the sudoriparous system, after considering the commonly received opinions respecting its function and passing in review the data, the principal facts on which they have been founded, and other facts, three especially: 1st. That the fluid eliminated by these glands is nearly pure water; 2nd. That the arterial blood contains more water than venous blood; 3rd. That the suppression of cutaneous perspiration by an impervious varnish is speedily fatal, holds himself warranted to advance and maintain the following propositions:

1. "That the office of the sudoriparous system of glands is to abstract mere water from the peripheral circulation."

2. That it is thereby "subservient to securing the conditions necessary to the return into the venous circulation of the fluids

[1] On 'Liquid Diffusion applied to Analysis.' By T. Graham, F.R.S., &c. 'Phil. Trans.,' 1861, p. 184.

that have been shed from the arteries for the purposes of nutrition and vital endowment."

3. "This is the process, in fact, which, as carried on between the arteries and veins of a living creature, constitutes venous absorption, the conditions necessary to which, viz, the higher density of the blood in the veins, or returning vessels, than in the arteries or afferent vessels in all the peripheral parts of the body being mainly due to the action of the sudoriparous glands."

Owing to this system passing to the lymphatic system of vessels, he arrives at the conclusions enunciated in the following propositions:

1. That their "one essential function is the abstraction of a certain quantity of the watery element of the blood for the specific end of rendering the returning stream in the deeper seated parts of the body of greater density than the out-going stream."

2. That "these vessels may in fact be viewed as the essential elements of a filiform, and all but universally distributed gland."

The secreted fluid, the lymph, is a fluid holding only about 3·5 per cent. solid matter, identical with that of the liquor sanguinis, the remaining 96·5 being water.

Next our author treats of the spleen, considering it "as an element in the lymphatic system, and having a local function of the same specific nature as that of the lymphatic system at large;" founding this his conclusion on the composition of the spleen, mainly a vascular organ abounding in lymphatics, and on the fact of the venous blood coming from it containing less water than the arterial blood entering it.

These several propositions may give our readers some idea of Dr. Willis's doctrines, but at the same time, we must confess, a very imperfect one. To appreciate them fully they require to be read *in extenso*, and the perusal will amply repay, as his argument is so well supported, and the facts brought forward, apart even from his special views, so important in their physiological bearing,—many of them, though not new, hitherto too little regarded.

As a corollary, a section is added "On the influences productive of intermittent and remittent Fevers, and on the pathology of Scarlatina, in connection with the views embodied in the preceding essays." This portion, too, we can recommend to the attention of our readers. To us, however, it seems of unequal merit. His remarks on scarlatina, its varieties and treatment, though short, are excellent. Of his speculations relative to the obscure subject of malaria, we more than hesitate

in expressing approval. He has refuted several fanciful speculations regarding its nature, but he has failed to persuade us that its origin is simply a chill, insomuch as were it so, no country should be exempt from ague.

ART V.—*Notes on Health in Calcutta, and British Emigrant Ships, including Ventilation, Diet, and Disease.* By W. H. PEARSE, M.D. Edin., Government Emigration Service. London. 1866. Pp. 160.

THE subjects treated of in this volume have received less attention than their importance deserves. This is not from want of experience, for what people have had the opportunities possessed by our countrymen of witnessing the effects of the conveyance of large bodies of men *trans mare* under almost every variety of circumstances: but rather from another want, that of observers, or at least of men with inquiring minds, competent to observe and willing to give to the public the results of their observations. With one memorable exception—that afforded by Captain Cook—we cannot call to mind an instance of any attempt to elucidate, in a systematic manner, the subject as a whole.

We began the perusal of the work before us with the expectation that in it we should find another exception; we have to confess we have finished it with a feeling of disappointment which we cannot suppress. So far as simple observation is concerned we give the author credit for zeal, and we hope we may add accuracy. What most detracts from its value are the speculations which are so much indulged in, constituting indeed, the larger portion of the whole. Altogether the publication appears to us singularly incongruous, and its style, moreover, peculiarly involved, obscure, and repellant.

Of the nine chapters into which the work is divided, the first, on ventilation, is the most valuable, and will well repay perusal. The construction of the vessels in which the author served as surgeon superintendent in voyages with coolies from Calcutta to the West Indies, and from England with emigrants to Australia, is well adapted to render the problem of change of air, and a sufficiency of it, comparatively easy, especially the circumstance of the clear space, as it were a great room, 'tween decks. The means employed as described, consisted in three or four hatchways, with a considerable opening at the after end, and another in the fore end, and the addition of four tubes about one foot four inches diameter, placed securely at each

entrance corner of the 'tween decks, each rising above the bulwarks and fitted with moveable cowl-heads. By these simple means, we think, it is clearly shown that wholesome ventilation can be more efficiently accomplished than by any expensive apparatus hitherto invented. With much propriety as a defence from strong currents of air, stress is laid on the necessity of diffusion by a mat or platform of some kind placed about eighteen inches below the lower mouth of each tube. Speaking of the form of the tubes, the author remarks that they are usually "made with bell-shaped mouths, as though they were meant to send cool air below; they nevertheless answer well, though," he adds, "I think a narrow mouth would make them more perfect as chimneys." In this opinion we cannot agree with him, as, according to both theory and practice, chimneys expanding as they ascend are found to be most effectual in the allowing of the escape of smoke with "the heated air;" and it is on the same principle, we need hardly remark, that foul air in a ship must be got rid of.

The second and third chapters in which the author treats of the coolies, as to their diathesis, management, and diet, and the influences and effects of a sea voyage on them, may also repay perusal. Whilst they contain some good observations, they strongly display the author's speculative turn of thought, and his large, transcendental and obscure mode of reasoning and expression. In stating his surprise at the small amount of food the Hindu requires to support his working strength, Dr. Pearse seems to forget that one of the articles of his diet, not to mention others, is highly nutritive, for instance dholl or dhal, which the Hindu values so much, abounding as it does in the nitrogenous element, and so well-fitted to supply to him the place of flesh-meat.[1] Still, even with due allowance for this ingredient, it must, we think, be admitted that the quantity of food which satisfies the coolie is proportionally very small. Dr. Pearse specifies it as commonly consisting of 1¼ lb. of rice or flour, 4 oz. of peas (dhal?) a few vegetables, a little butter, and a few seeds and condiments per day. He notices how very various are the condiments, and that each article of diet is used in its native, entire state; to both which circumstances he attaches importance, and perhaps justly. The ingredients of the ordinary daily curry-stuff of the coolie are as many as nine, viz., lime-juice, onions, garlic, mustard-seed, chillies, black pepper, coriander-seeds, turmeric ghee, all in definite proportions. What their action may be, whether more than simply stimulating, is deserving, perhaps, of more minute inquiry than has hitherto been given to them; and also whether our labouring class

[1] See the October number of our 'Review,' p. 457.

might not use the like with advantage, especially those whose diet is chiefly vegetable. If we recollect rightly, pepper is used much more largely in Ireland than in England, and Mr. Gladstone, when Chancellor of the Exchequer, assigned that as a reason for reducing the duty on the article.

In the other chapters, exclusive of the fourth on water, he treats principally of the diseases to which coolies and other emigrants are liable, and which, according to his large and transcendental views, are all nearly allied, and are no more than natural developments depending on subjective and objective impulses to which the human species have been subjected during an indefinite period of time, becoming manifest in consequence of sudden change of circumstances, such as are experienced on the beginning of a sea-voyage. He apologises for the use of the word disease, the habitual use of which indicates, he thinks, a very little advanced state of intellect; he enumerates dysentery, cholera, and intermittent fever as the allied diseases to which the Hindu emigrant is chiefly liable: "and insidious lung changes, bronchitis, fever, sore throat," those to which the European is most subject. We would remind him that Europeans in India are in no wise exempt from the former maladies, and that cholera as an epidemic was little known there before 1818-19; and that since then it has spared hardly any portion of the globe.

On the author's speculative views we do not think it necessary to comment. We could have wished that he had omitted them, and confined himself to observation and induction from established facts. We have already adverted to Captain Cook's paper, that for which he obtained the gold medal of the Royal Society, and which is to be found in the 'Transactions' of the Society for 1776, giving an account of the method which he followed for preserving the health of his crew on his voyage round the world occupying three years and a half, and during which he lost only one man from disease, and that of a chronic lingering kind. If Dr. Pearse is not already acquainted with it, we would recommend him to consult it: it is soon read, it occupies only two quarto pages; and it should never be forgotten that the means employed were so few, so simple, and so easily attainable. To conclude; how much it is to be regretted that we have not more accounts written in the same simple and clear manner. As already remarked, how ample are the opportunities, for instance, in the naval, transport, and emigrant service. And what scope would be afforded to the medical officers in charge to distinguish themselves, were they required by the departments to which they belong, to make special reports detailing the results of their experience whilst afloat.

ART. VI.—*Acholic Diseases; comprising Jaundice, Diarrhœa, Dysentery, and Cholera. With a Preliminary Dissertation on Bile, the bilious Function, and the action of Cholagogues.* By ALEX. CHARLES MACLEOD, L.K.Q.C.P.I., &c., Surgeon-Major on her Majesty's Madras Establishment. London. 1866. Pp. 230.

THIS work, which we have read with much attention, we cannot say with equal satisfaction, is more characterised by speculative reasoning creative of doubt, than by the sounder method of induction from well-established facts, such as is needed to inspire confidence. Even the title, beginning "Acholic Diseases," affords a precognition of what follows, especially as applied to jaundice, diarrhœa, dysentery and cholera.

What surprises us not a little is the boldness with which the author advances his hypotheses, the reliance he has in his conclusions, and the confidence he seems to feel in opposing established doctrines, and placing himself in antagonism with some of our highest authorities.

Such being our general impression of this work we do not think it necessary to engage in its analysis. One quotation may, perhaps, suffice, in proof of what we have stated of its nature. The argument prefixed to the chapter on cholera is the one we select. It is as follows, all in italics:

"*Argument.—Cholera is an imponderable matter, or condition of matter; tellurial in its origin; existent in and with the atmosphere, but forming no component part of it, being of it as independent as are the rays of light; attracted by some other matter or condition of matter existent in and peculiar to the human body. Where a great space, as a continent or arm of the sea intervenes, the earth itself may become the conducting medium. But all matter, whether animal, or vegetable, or mineral, serves as a conducting medium.*

"*When present (that is, in the atmosphere, or supra-tellurial) it is attracted, and more or less neutralized, by every, even the healthiest, human body. In certain states, however, of the body, varying from health, the force of attraction is stronger, and the process of neutralization also more active and conspicuous. So long as the vital powers are sufficient to keep up this process of neutralization, and so preserve an equilibrium, the system is not overcome by the disease. But under unfavourable conditions, the powers of life are not adequate to carry on, through the lungs, a continuous process of neutralization. The poison is then, of necessity, conveyed through the lungs into the blood. Being*

there, a far more energetic process for its neutralization is required. A violent convulsion of nature ensues and the symptoms of 'Cholera' are present."

To those of our profession who are highly imaginative this quotation may, perhaps, serve as a recommendation of the volume. We had marked many passages for remark, but on reflection, averse from the ungracious office of commenting on them, we shall notice only a few of those parts in which the author offers the results of his experience on points of treatment, for instance, the use of cool spring, not iced, water, *ad libitum* in cholera; the assiduous rubbing of the limbs of those labouring under the same disease, and the friction of the surface of the body generally and diligently with cajeput oil. So high is his opinion of the free use of water in cholera, that he appears to rely on it more than on any other remedial means. He states:—"In the course of many years, numberless cases have come to my knowledge of natives of India, who, attacked at a distance from medicine and aid, and intent only on the relief of present suffering, and above all of the intolerable thirst, have sunk down by the side of lake or river, and found in their limpid waters, the simplest, perhaps the surest, means of cure." And his commendation of cajeput oil is almost equally great. He says nothing is equal to it. "The very odour seems to afford the patient satisfaction, and its efficacy in relieving agonizing cramps is truly astonishing." Adverting to children, he adds: "Its powers are conspicuously displayed in the young, and I have seen children apparently moribund rapidly revive under its use. In them the absorbents seem to act with greater vigour; and, from the results of past experience, I should be inclined in future to employ it in the cases of very young children, at first, as an external application only, and without the co-operation of any other remedy; cold water to drink forming under all circumstances, a part of the treatment." He gives minute directions for its use. Turpentine, where cajeput oil is not procurable, he considers, though "immeasurably inferior," its best substitute. We know that others have given it a trial in some almost hopeless cases, and apparently with excellent effect. Of internal medicines in this disease he trusts most to calomel administered in large doses, with the special caution not to combine it with opium. Whilst of the former, we think, he is too unqualified in his general praise, viewing it as a cholagogue, of the latter his reprobation both in cholera and dysentery, more especially in the latter, seems to us in no wise justified by well-established facts, putting aside hypothesis, respecting its action. Credit is due to him, we

willingly add, on the score of humanity in calling attention to "the unseemly custom of hasty interment," so generally followed in India, giving rise to the painful suspicion, as he expresses, "that it does sometimes occur, not only whilst the spark of life still lingers, but while there yet remains a chance of recovery." He well remarks, "An exaggerated notion, not certainly on the part of medical officers, but on that of the authorities, and of the public generally, of the danger to the living from the results of decomposition, leads to this selfish and unseemly custom." He very properly adds: "No body should be allowed to be covered up with a cloth, or placed in a coffin, or otherwise *treated as a corpse,* till at least twelve hours have elapsed from the moment of apparent dissolution."

We heartily agree too with all his remarks on the impropriety of not taking *superficial* as well as cubical measurement into account, as in the allotment of space in barracks and other buildings where there is danger of crowding, and cannot but approve his proposition, as a rule, that "the number of persons sleeping in any building should be a due proportion to the number of square feet on the ground floor."

ART. VII.—*Germinal Matter and the Contact Theory.* By JAMES MORRIS, M.D. Lond. London, 1867. Pp. 23.

As an hypothesis for discussion, we see no great objection to this which Dr. Morris advances, calling it a theory; which, according to our ideas, is rather an abuse of terms.

That certain diseases are propagated by contact; that is, inoculation either natural or artificial, is no new doctrine: it seems to us a distinction of little importance, whether we call the active matter a specific matter or a germinal matter.

No subject is more interesting than the origin of diseases, but surely none requires to be investigated with more caution. Hypothesis is well when leading to research, but is fatal to science if accredited as truth. Take the instance of ague: it is an ingenious idea, supported by some analogies, that it may be owing to inhaled vegetable matter; but this is no warrant for taking it for granted and for speaking of malaria after Dr. Morris's manner: we quote his words:—"It would seem that the spores as they exist in the most deadly malaria, grow, and that with great rapidity, on the membrane of the capillaries of the air-cell, passing from time to time into the blood. This theory of ague gets rid in great part of a puzzle of antiquity—

the cause of the periodicity of ague, which is brought under the known laws of the periodicity of vegetable development." We would ask, do the ascertained facts justify this statement and explanation; and we might put the same question to some of the other statements made by the author: even in the matter of the "dry east wind" being, as he asserts, the most powerful vehicle of dust, we have more than our doubts; according to experience, it would seem to be the moist wind from the opposite quarter which is most potent.

ART. VIII.—*On the Principles of Æsthetic Medicine, or the Natural Use of Sensation and Desire in the Maintenance of Health and the Treatment of Disease, as demonstrated by Induction from the Common Facts of Life.* By JOSEPH PEEL CATLOW, M.R.C.S. London, 1867. Pp. 325.

WE have rarely met with a work having any pretensions to science abounding more than this in vague and barren generalities. Its synopsis, the author's own, which is appended, may give better than brief words of ours an idea of its nature:

"*Synopsis.*

"The extensive postulates of the living system, with the passive and active relations of living beings to each other and to their common Creator, in all its modes of health and disease, are naturally indicated by the susceptibility of the external senses to perceptibly pleasant or organically congenial impressions from their severally appropriate objects, as such impressions are mutually modified; and by the appetites or apparent motions that are suggested or excited and modified by their perception, remembrance, or incidence, independently, socially, or casually induced."

ART. IX.—*Recherches sur les Alterations des Artères à la suite de la Ligature.* Par TH. COCTEAU, Docteur en Medicine, &c. &c. PARIS, 1867. Pp. 76.

Researches on the Alterations in Arteries after Ligature. By Dr. COCTEAU.

THIS is a moderately well-executed little treatise by a junior practitioner, on a subject which has so often engaged the attention of great surgeons and profound experimental investigators,

that a mere secondhand résumé of their labours, such as this is, cannot have any great value. Dr. Cocteau has not, as far his treatise shows, any personal experience on the subject, beyond a few experiments on animals. His literary acquirements also appear to be confined to the writers in his own language, and such English or other foreign authors as have been translated into French; consequently the production before us can only be used to show what is known in France at present on the subject, and for this purpose, as the pamphlet is clearly written and well arranged, we can recommend it to those of our readers who are investigating the never-ending topic of the ligature of arteries.

ART. X.—*Excision of the Knee-joint; a Description of a New Apparatus for the After-Treatment, with Illustrative Cases.* By PATRICK HERON WATSON, M.D., &c. Edinburgh, 1867. Pp. 78.

WE have read with much pleasure this very interesting pamphlet, with the object of which every surgeon who has had experience of the operation must warmly sympathize. This object is to extend the operation of excision from civil to military practice. We need hardly point out how great an advance this would be in conservative surgery, if only the operation were not found too fatal. The present reviewer has pointed out,[1] in opposition to the opinion of Mr. Butcher, Mr. Price and others, that the operation has been found, as hitherto practised, more fatal under similar circumstances and in similar cases, than that of amputation of the thigh; and that this conclusion is a correct one, and is likely to be verified by more extended experience, everything he has since seen of the operation, in a pretty extensive trial of it has tended to confirm. It has appeared strange to him that this opinion should have been so distorted that he has been represented on that account as an opponent of excision. The fact seems to be that all excisions which stand on at all equal grounds of comparison are more fatal than the corresponding amputations. We must except those of the shoulder and hip, where the deep position of the joint, and the enormous wound left by amputation renders that operation exceptionally fatal. Thus the experience of military surgeons hitherto in excision of the knee-joint has been most unfavourable. Even as compared with the sorrowful results of primary amputation of the thigh, those of primary excision of

[1] In our number for July, 1862.

the knee have been most disastrous. A table given in the present work (p. 27), shows only four recoveries out of eighteen cases of resection for gun-shot injury. In eleven cases which are reported in the circular (No. 6), recently issued from the Surgeon-General's office of the United States' Army, only two are said to have survived, and one of these cases is believed by the reporter to be unworthy of credit. Still the means for the treatment of this operation have hitherto been imperfect, and it is possible, as it is no doubt most desirable, that an improved after-treatment may enable army surgeons to save limbs by introducing excision in place of amputation in the less extensive injuries. Dr. Watson's apparatus is intended to obviate the necessity of confining the patient to bed continuously for some weeks after the operation, as must be done in the ordinary method of practice, a necessity which forms an almost insuperable obstacle to this operation in most of the situations of actual warfare. The apparatus consists "essentially of two parts. 1st. A suspension-rod made of iron, about the size of No. V, of trade wire guage; 2nd. A modelled Gooch splint, long enough to extend from the tuberosity of the ischium to beyond the heel." The rod is laid on the anterior aspect, being bowed upwards over the wound, so as to avoid it, and bent to the shape of the limb from the groin to the toes. It is provided with one or more hooks to swing the leg. The rod being enveloped in lint, it and the splint are secured by a plaster-of-Paris bandage, leaving the wound exposed. The splint is cut away somewhat at the popliteal space, and has a large notch at the lower part to receive the heel, and avoid any pressure on it. The advantages claimed for this apparatus are:—"1. The comparative comfort which the patient experiences, from the ease with which he can shift his lying posture or assume the sitting position without disturbing the adjustment; 2. The facility with which dressings are applied without detaching or removing any portion of the apparatus; 3. The permanence of the apparatus, never requiring, when properly applied in the first instance, to be renewed during the whole period of after-treatment; 4. The ease with which the apparatus can be obtained, its simplicity and cheapness," (p. 21). As we have not used this apparatus we cannot affect to give any opinion as to its merits. *Primâ facie,* it would seem that its advantages in keeping the bones always in position must be somewhat and perhaps entirely counterbalanced in civil practice by the impossibility of making any change in the apparatus without removing the whole of it, which is rather difficult to do without disturbance of the parts, nor can we divest ourselves of the idea that if inflammation should run high, as in the first few days it sometimes does, the unyield-

ing case might make deleterious pressure on the tissues around the wound. We have no doubt, however, that if the operation is ever to be introduced into military surgery, some immoveable apparatus must be employed, and Dr. Watson's appears a very convenient form. We shall certainly take an opportunity of testing the proposal fairly in practice, and we would recommend our surgical readers to do the same.

Appended to Dr. Watson's pamphlet is a collection of cases, twelve in number, equally divided between successes and deaths. Observing this large proportion of deaths, we may venture to remark that it appears to us evident from all we see and hear of this operation that its mortality would be greatly lessened if it were more clearly recognised as a truth that it is really a more dangerous proceeding than amputation, and therefore must be reserved chiefly for the milder and more chronic cases, and for young persons. Leaving aside the question of the introduction into general use of primary excision for accident, as not yet determined, can we doubt that excision should not be practised in cases of which the following summary can be given. "In the first of the fatal cases (case 7), there was hæmoptysis and physical symptoms of phthisis pulmonalis. In case 8, dysenteric diarrhœa and pulmonary symptoms with constant dyspepsia had existed for a long period. In case 9, the lad was tall, overgrown, and emaciated from the very first. [Case 10 was one of primary excision in a lunatic, æt. 32, who had thrown herself out of window. Pyæmia supervened.] In cases 11 and 12, the patients were anæmic, had suffered previously from hepatic affections of warm climates, and from the whole progress of their cases indicated the existence of some internal mischief." (p. 68.) It is quite true that Dr. Watson says the patients in all these cases, except two, selected excision in preference to amputation; but, unless the greatly increased risk of excision had been put to them, we should say they were not in a position to form an opinion, if, indeed, this is a question which the patient should ever be allowed to decide.

On a few other and minor points we should be disposed to differ with Dr. Watson, as for instance with respect to the removal of the patella, for retaining which Dr. Watson gives the following reasons; (1) Its removal is unnecessary in most cases; (2) Its presence in the flap bears up the soft parts from the line of incision, and, without preventing consolidation, helps to keep them away from the cut margin of either osseous surface; (3) Its removal occasions more bleeding, and (4) the hollow left after its removal from the centre of the long flap, leaves a hollow cavity in which matter bags, and requires a separate incision to drain it efficiently." (p. 76.) We think, on the

contrary, that the patella is often a source of subsequent disease if left, that it is of no use whatever, if ankylosis is sought for, and that there are no such complications of present bleeding and future bagging of matter as Dr. Watson believes—at least in a great number of excisions, in all of which we have removed the patella, we never experienced them. With respect to ankylosis we fully agree with Dr. Watson's views, in opposition to the practice of Langenbeck, who attempts to preserve the mobility of the limb. In the few cases in which we have found mobility after excision, we have always seen reason to regret it; for the limb does not seem at all more useful, and is in constant danger of becoming bowed.

On the whole we welcome Dr. Watson's work as a very valuable contribution both to the literature and to the practice of this operation. The suggestion which it is its chief aim to enforce is likely to prove a very useful one, and the moderate and impartial tone of the book, as well as its full statement of the whole results of the operator's practice, are models of what ought to be, but is not, the invariable method in which such questions are to be discussed.

ART. XI.—*The Essentials of Bandaging, including the Management of Fractures and Dislocations, with Directions for using other Surgical Apparatus.* Illustrated by 110 engravings on wood. By BERKELEY HILL, M.D. Lond., 1867. Pp. 167.

THIS is a very useful and practical little work, which we may fairly recommend, not merely to students, for whom, however, it is chiefly intended, but also to the more advanced practitioners whose line of practice has not made them familiar with surgical manipulation. Its directions are clear, easily carried out, and are explained by a sufficient number of very good illustrations. We know none of the works of this class which we should prefer to Mr. Hill's. A second edition will no doubt be required, and if so Mr. Hill will have an opportunity of amending a few errors and omissions which must inevitably be found in a work of this kind, as well as for withdrawing any unnecessary insertions. As an instance of the latter, we would ask, whether it is necessary or desirable to describe the apparatus for club-foot, which can only be very imperfectly done in the space at Mr. Hill's disposal, and which no one would think of ordering from a work of this description. Again, if the dislocations are to be treated of, we think that they should

be somewhat more fully and satisfactorily described than that of the thumb is, for instance, at page 93. It is surely an unsatisfactory statement of the case to say, that "with the greatest care and perseverance it is sometimes impossible to replace the bone unless the constricting bands be divided with a tenotome." The direction in which the dislocation takes place, and the cause of the difficulty of reduction should have been explained, especially as this could have been done in a very few words. The work is one which will, we have no doubt, become popular amongst our students and dressers, particularly now that some steps have been taken at the College of Surgeons towards practical examinations in surgery.

ART. XII.—*Reports of Hospital Cases; On Injuries of the Wrist and Ankle-joints.* By W. M'CORMAC, M.D., &c. &c. Dublin, 1867. Pp. 24.

THIS little pamphlet contains the reports of five very interesting cases: the three first of injury to the hand and wrist, in one of which the whole carpus and the last three fingers, with the proximal end of the second metacarpal bone, were removed at the time of the accident, in a child of 10 years; in the second a very severe injury to the carpus and metacarpus was treated by the expectant method with passive motion, in a woman æt. 25; in the third a similar method of treatment was pursued in a similar injury to a healthy man æt. 27. In all three cases the hand was very useful. They show how much may be done in preserving the hand from amputation after injury, and the first is of especial surgical value, as proving the great utility even of so small a portion of the hand as the finger and thumb after the removal of the entire carpus.

The two cases of injury to the ankle are one of compound dislocation, in which the patient (an intemperate man), æt. 39, would not permit amputation, and died of pyæmia; and the other in a man, æt. 46, of compound dislocation of the astragalus, treated by a resection of that bone, and with success—a very useful limb being the result.

We can hardly say that any novel principle is illustrated by this series of cases; but we think them well worth publishing, and congratulate Dr. M'Cormac on his success in saving useful members after such serious injury.

ART. XIII.—*A Treatise on the Principles and Practice of Medicine, designed for the Use of Practitioners and Students of Medicine.* By AUSTIN FLINT, M.D., &c. &c. Second Edition, Revised and Enlarged. *Philadelphia,* 1867. Pp. 965.

THIS is the second edition of a work which has obtained a very rapid sale in the United States. The former issue was exhausted in four months, a remarkably short time for a large volume addressed to a limited class of readers, if we compare it with the ordinary sale of scientific books in the old country. It seems that a text-book on medicine was much wanted in the class-rooms of the transatlantic schools and colleges; and there were few authors, perhaps none in America, better qualified to produce one than Dr. Flint. Our examination of the book has given us a very favorable idea of it as a whole; but, as it would be impossible in the space available for this notice to give a detailed account of its contents, we prefer calling attention to those portions of the work which have been added in the second edition, and to one or two passages contained in it which appear to us likely to interest English practitioners.

The article on Pyæmia in the present edition has been rewritten, and may be taken as affording a fair specimen of the character of the information which Dr. Flint's book contains. It gives the reasons for and against the old hypothesis of the absolute entrance of pus corpuscles from without, and the theory of transport of pus, which gave rise to such names as "purulent deposits" and "metastatic abscesses." Dismissing these views as no longer tenable, the author gives a very clear and good *resumé* of the light which Virchow and his school have thrown upon the hypothetical absorption and transmission, and on the theory of the so-called suppurative phlebitis as the cause of pyæmia. Dr. Flint especially insists upon the vagueness of the information hitherto derived from the microscope in the study of this disease. The close resemblance if not identity of the pale blood-corpuscle and the pus-corpuscle might make it at present impossible to discriminate by the microscope alone between leucocythæmia and pyæmia; and it is doubtless to this close resemblance of the two kinds of corpuscles that the discrepancies in the views of modern observers are to a considerable extent due. He concludes

"That a morbid condition of the blood exists, giving rise to the phenomena which have been considered as belonging to pyæmia is not to be doubted; but there is no proof that the presence of pus-

corpuscles has anything to do with the production of these phenomena. As already stated, experiments on inferior animals show that the phenomena attributed to purulent infection of the blood may be produced by injecting pus-serum without the pus-corpuscles." (P. 91.)

A somewhat brief account of the symptoms of the condition named pyæmia, and of the treatment applicable to it, in which however the experiments of Prof. Polli with the alkaline sulphites are given full prominence, concludes the section.

Whooping cough is a disease which, as it is generally treated of in works on diseases of children, was passed over in the first edition. In the present one the author has given a succinct account of its symptoms, pathology, and causation, in which, as might be expected, we fail to find anything very new. The only point in his summary of the various plans of treatment pursued in pertussis which struck us as novel, is a mode of using atropia in that disease, recommended by Dr. Brown-Séquard. At a meeting of the American Medical Association in May, 1866, that physician asserted that whooping cough might be cured in three days by giving atropia in doses large enough to produce delirium, and continued so as to keep up that condition for three days, except at night, when the patient is to be quieted with morphia or codeia. We do not wonder that Dr. Brown-Séquard ingenuously added, that he found difficulty in getting the parents to submit to this mode of treatment by an induced delirium of three days' duration. Moreover, he allows that this plan of treatment will only cure the neuropathic symptoms; the bronchitis remains after it is discontinued.

General cerebral paralysis, or the paralysis of the insane has obtained a notice in this edition which it did not receive in the former. The author prefers the term general cerebral paralysis to that of paresis on the ground that the latter "is applied by writers to paralysis dependant on a functional condition of the brain or cord, and he believes that the disease in question is always associated with organic change in the brain." He also objects to the designation "paralysis of the insane" the fact that cases may present all the features of the paralysis without mental derangement. Not only this fact, but post mortem records prove to our minds that whilst a group of cases may be classed together under the term general cerebral paralysis, it will, in reality, include not essentially one, but many pathological conditions. The author relates that of Austin's twenty-six cases, in twenty-two the optic thalami were *either* softened, indurated, atrophied, hyperæmic, or anæmic, whilst the soft commissure, fornix, septum lucidum, corpora albicantia, crura

cerebri, and corpora striata, were either usually or frequently implicated. On the other hand, from the examination of fifteen cases, and their comparison with fifteen other cases of mental disease, Sankey was led to conclude that sub-arachnoïd effusion increased vascularity of the pia mater, adhesion of the pia mater to the cortical substance, open convolutions, injection and abnormal firmness of white substance, dark colour of grey matter, and a varicose condition of the cortical substance of the cerebral hemisphere, were common if not constant conditions in the general paralysis of the insane. May it not be expected that when cerebral pathology has advanced as much as renal and pulmonary, the cases now classed as general cerebral paralysis will resolve themselves into as distinct pathological groups as have Bright's disease, and pulmonary phthisis.

A section on Polyuria or Diabetes Insipidus, in which Dr. Flint has made use of Roberts's valuable analysis of seventy-two cases, is also new. Dr. Flint describes a case which terminated fatally at the Bellevue Hospital in which, as in one of the fatal cases collected by Roberts, the kidneys presented almost entire destruction of the secreting substance, and had the appearance of empty sacs. The ureters were greatly dilated, and the walls of the bladder hypertrophied. The patient was a man æt. forty-two; diuresis and excessive thirst had existed for two years. The sp. gr. of the urine was 1008. It was free from albumen and sugar. The patient died comatose; the brain, lungs, and heart were not diseased.

One interesting passage in the book refers to the alcoholic treatment of phthisis which, as our readers know, has gained considerable favour in North America. Dr. Flint gives the particulars of two cases of arrest, one being that of a man aged 42, the other that of a young lady. In each a pint of whiskey was taken daily for a very long period; in the case of the young lady for two years. Dr. Flint acknowledges that this treatment does not answer in many cases, and that it is only upon a fair trial that the effect of alcohol in any case can be adjudged. With regard to the signs of usefulness or hurtfulness in any case the author believes, from his experience, that if the immediate effect of alcoholic stimuli be that of a cordial, if they produce a sense of comfort, and a greater disposition to exercise, and if they do not excite unduly the circulation and nervous system, benefit from their use may be expected. The limitation as to quantity must be determined by their effects. He has observed that a remarkable tolerance of alcohol is induced in certain cases of phthisis.

On meeting with foreign books on medicine the reader turns with interest to the descriptions of the diseases of the so-called

zymotic class. In the case of Dr. Flint's book he will not be disappointed. Under the head of continued fevers two epidemics of interest are described, one of so-called erysipelatous fever, which prevailed in New England, the middle Western and Southern States from 1841 to 1846. In some localities large numbers were affected, and the mortality was large. The fever was popularly known as "the black tongue," and by Dr. H. N. Bennett, who described it, was believed sometimes to follow the direction of rivers, small streams, and lakes. Pharyngitis, tonsillitis, with occasional sloughing, laryngitis, and in some cases, œdema glottidis were observed. Erysipelas occurred in about one-sixth of the cases, and was apt to lead to gangrene and sloughing. Puerperal peritonitis prevailed uniformly with the epidemic. The other epidemic fever mentioned by Dr. Flint was characterised by mild erythematic pharyngitis, and prevailed in the State of New York in 1857. This affection seems to have been neither scarlatina nor diphtheria, but bore an analogy to influenza except that the pharynx was attacked, and not the schneiderian and bronchial mucous membrane.

It will be remembered that cerebro-spinal meningitis or spotted fever has, on several occasions, made its appearance in various parts of the United States. We were, therefore, surprised not to find the disease treated of, under the head of fevers. Dr. Flint prefers considering it amongst the diseases of the nervous centres, and gives as a reason its anatomical characters which separate it from typhus, and its symptomatic phenomena, which are to a large extent due to inflammation of the brain and spinal cord. We must confess we think this an error of arrangement as the history of the epidemics of the disease, its local prevalence, its evidently toxical character as shown by the ecchymoses which have given it one of its popular names, and its rarity as a sporadic affection seem to affiliate it clearly to the zymotic class.

In taking leave of Dr. Flint's book we would add that although it is mainly a compilation, as all works of its kind must necessarily be, it is a good one. We think it not unworthy to take a place in the same category with Watson, Wood, and Aitken.

ART. XIV.—*Synopsis of the Pathological Series of the Oxford Museum; provisionally arranged for the Use of Students, after the plan of the Hunterian Collection, and chiefly under the Divisions of the Hunterian Catalogue.* OXFORD: At the Clarendon Press. 1867.

THIS volume is intended as a guide to the student who is commencing his pathological studies in the Museum at Oxford, and we can heartily recommend it as well fitted to accomplish the purpose for which it has been written. Its descriptions, which were entrusted, and as it proves wisely, to Dr. Tuckwell, formerly Radcliffe Travelling Fellow, are exact and clear, yet condensed, and the knowledge it imparts is well up to the mark of the time. Some will think there is a little too much Virchow-worship, but this may be unavoidable at the present day. The remarks in the Introduction relative to the topics embraced by Pathology are very much to the purpose. They recognise fully that it is much more than pathological anatomy, even of the most minutely scrutinising kind. It is one thing to note accurately the distinctive features of a tubercle, a typhoid ulcer, or a fibrous tumour, as far as our means of investigation permit; and quite another to expound how these lesions came to be. The story of disease, as we would anglicise pathology, comprehends to our thinking the fullest acquaintance possible with the conditions which give it birth, with its causes. Herein we are inclined to think that we of the present day are apt to boast ourselves rather too much of the advances we have made. Not unfrequently, after poring over the dead tissue, and noting the ultimate result of morbid changes which had probably been long in process, we have painfully felt how little, after all, was gained by the investigation, how far off we were from having attained any understanding of the all-important *actions* by which these changes were brought about. The study of the *motors* of disease is the most pressing need of the present day. How far pathology will avail as a "basis for the classification of diseases" seems to us doubtful; there does not appear much prospect of it at present. All notions of a strictly scientific arrangement are, we believe, postponed by the soundest thinkers to considerations of mere convenience. One point we are glad to see noticed, viz., the variability of disease, the greater malignity of the *same* disease, at least of what is so reckoned, in one time or place than in another. Few more besetting errors exist for the pathologist than the tendency to regard all groups of phenomena which have a surface-similarity

as inwardly and truly alike; *e. g.*, to consider pneumonia, dysentery, rheumatism, delirium tremens, as always identical in all circumstances, and not to remember that the *quality* of morbid action is liable to very great inconstancy.

We cannot close without expressing a thought which will find general acceptance. There are workers in abundance, good workers, clever, honest, able workers, but with very few exceptions, indeed, the mainspring of action, and an honorable one too, is the desire of personal advancement. With Dr. Acland it has been otherwise. A career more tempting to a man of ordinary ambition lay open to him, and if he did not pursue it, we believe it was because the form of duty beckoned him elsewhere. To develope the energies and to direct the efforts of a great University in the cultivation of biological study, he has made the chief aim of his life. The results are now apparent. Si monumentum quæris circumspice.

ART. XV.—*The Principles and Practice of Medicine: designed chiefly for Students of Indian Medical Colleges.* By JOHN PEET, M.D. London and Bombay, 1864.

THE author of this work has had a large field for experience not only in Indian disease, but amongst Indian students, for he is Principal and Professor of Medicine in the Grant Medical College, and Surgeon to the Jamsetjee Jejeebhoy Hospital at Bombay. In his preface he tells us that it has been his aim to avoid as much possible controversy and speculation, and to allot space to special diseases in proportion to their importance and prevalence in tropical countries. He does not claim to have issued a complete treatise on practice of medicine which might rival existing standard works. An admission of this kind goes far to disarm criticism, and to set the reviewer the more pleasant task of finding out the excellencies of a work rather than that of discovering and exposing its defects.

Dr. Peet's book is divided into two parts—the first treating of general, the second of special pathology. Under the former head the author considers pathogeny, or the nature and constitution of disease, etiology, hygienics, and therapeutics. The chapter on special hygiene contains some information on a subject—that of Indian native dietetics, clothing, and customs in relation to disease—which we should be glad to see treated at greater length. With regard to diet, as is well known, considerable difference exists amongst the Hindoo classes. The

Brahmins and Bunneas eat no animal food, and in the case of other castes, who are omnivores, fish to a great extent takes the place of meat. But in no case is animal food eaten as principal part of diet; it is rather used as a condiment to make other food more palatable.

The staple food of the higher classes of Hindoos is rice; of the lower, grain of various kinds, many of which, however, are so poor in nutritious qualities as to be insufficient to support health. Dhall, which contains much nitrogen, is used with rice. Ghee, vegetables, milk, and occasionally, on festivals, sweetmeats and fruit, complete the dietary of the "mild Hindoo." The quantity of solid food consumed daily is from eighteen to forty ounces. As a rule, alcoholic liquors are not taken to excess, but the same cannot be said of opium, bhang, and tobacco. According to Dr. Peet, when acute disease attacks the opium debauchee, it exhibits the same marked tendency towards fatal termination as in the drunkard. Asthenia, the consequence of insufficient nutritious diet, is very prevalent amongst Hindoos. The Mussulman takes a smaller bulk of food than the Hindoo, but it is of a better character, more animal food and less rice. The higher Parsees eat largely of rice, but allow more animal food than the Hindoos. The lower Parsees, who cannot get meat, are restricted to an inferior kind of fish. Dr. Peet points out that the subject of native dietetics in relation to health and disease has never received the attention it deserves, and that a really good account of the diet of different castes with the nutritive value of each is a desideratum. Clothing is very much neglected by the natives of India, and the children amongst the lower classes are left naked until they are seven or eight years old. Exercise is discouraged, from religious and other prejudices, amongst the Hindoos and Mussulmen; but Dr. Peet states that the Parsees are beginning to learn English games, and he prophesies that future generations of this enterprising race will not, as regards physical development, fall far short of their European brethren. Despite their frequent ablutions, the Hindoos are not a clean race; their houses and clothes are filthy, and disease often arises amongst them from dirt. There is a strong and universal native prejudice against the use of water in diseases attended with fever.

In the section on etiology, the author points out the influence of certain native customs in favouring and producing disease. Recent cholera visitations have made us too familiar with the act that epidemic disease is spread through the agency of pilgrimages and religious assemblies. Long fasts, early marriages, the consummation of marriage in the female before puberty, the customs connected with menstruation, when Hindoo women

are often insufficiently clothed and made to lie on the ground, are amongst the causes enumerated by Dr. Peet as producing uterine and other diseases—general weakness and premature old age. Parturient women are shut up in close, dark, badly ventilated rooms for forty or more days, during which time they are completely segregated, and are subjected to irrational treatment of various kinds. In fact, the author states that it is almost impossible to exaggerate the evils resulting from the management of the native women in the parturient state.

The second and larger part of the work, which treats of special pathology, is divided into four sections, the three first of which are devoted to diseases of the abdomen, chest, and head and spine; and the fourth to general diseases—fevers, cholera, and blood diseases. In the first section, one of the most valuable chapters is that containing the author's description of acute hepatitis and abscess of the liver. This disease, so rarely seen in England, but so common and fatal in India, is by no means a scourge alone of Europeans who venture under a tropical sky. Dr. Peet tells us that of ninety deaths from hepatitis which occurred in the Bombay military and civil hospitals in 1861, rather more than one half were those of natives, and that during the same period twenty-three native patients died from the same disease in the Jamsetjee Jejeebhoy Hospital. It is clear, therefore, that no amount of acclimatisation can prevent the action of those causes which in India produce inflammation of the liver.

In cases of hepatic abscess, Dr. Peet acknowledges the possibility that under favorable circumstances the pus may be absorbed. After unequivocal signs of hepatic abscess, it occasionally happens that a patient may recover his health although the abscess has never burst. Unfortunately, however, these are exceptional cases. If the patient escape the dangers of death from asthenia or peritonitis, the contents of the abscess will be discharged through the lungs, through the stomach and intestines, or by an external opening. Of these three modes of outlet, Dr. Peet regards that by the lungs as most favorable; and he agrees with Dr. Morehead that evacuation by the stomach and intestines is most rare, and least to be desired.

On the question of the relation of hepatic abscess to dysentery, Dr. Peet is not inclined to accept the doctrine unreservedly which assigns the former to the latter in the relation of effect and cause. The theory of the absorption and transport of pus from the ulcerated intestine he believes is not, in very many instances supported by clinical observation. "The direct vascular connection between the intestines and liver, by means of the portal system of vessels, leaves little doubt that hepatic

abscess may be produced by local pyæmia; but experience in tropical countries has abundantly shown that this is not the ordinary, nor indeed the most frequent, mode of its production" (p. 245). With regard to the treatment of hepatic abscess, the author is thoroughly opposed to operative proceeding. On this point he speaks with the authority derived from experience: "Whilst always believing the general adoption (of the practice of opening the abscess) to be unadvisable, I at one time thought there were exceptional cases to which it was applicable; more extended experience has convinced me that in no case is any material advantage gained by it. The small abscesses in which it would do no harm open of themselves; whilst, in those which do not reach the surface, an artificial opening increases the patient's sufferings, and hastens his death.

He adds, in a footnote, "I here speak of abscesses which are clearly apparent. Of the practice of pushing a long trocar into the liver in order to search for an abscess, I have no experience" (p. 251).

On the whole, we can pronounce a favorable opinion of Dr. Peet's book. If not quite so full and precise on certain subjects, *e. g.* physical diagnosis and minute pathology, as our home-made hand-books, we can give it the praise of being thoroughly practical in its aim and execution, and clear in its style. We think it very well adapted for the class of Indian students to whom it is specially addressed.

PART THIRD.

Original Communications.

Art. I.

On Strychnia Hypodermically administered in Paralytic Affections. By Charles Hunter, late Surgeon to the Royal Pimlico Dispensary.

It is proposed in this communication, by the author, to point out the advantages and disadvantages of administering strychnia by the cellular tissue; and to indicate, as far as his practical experience of the use of that alkaloïd has gone, what difference of action may be expected when it is subcutaneously given, from its usual effects when given by the mouth.

Pereira tells us that, "of all diseases for which nux vomica has been employed, in none has it been so successful as in paralysis, and it is deserving of notice that this is one of the few remedies whose discovery is not the result of mere chance, since Fouquier was led to its use by legitimate induction from observations of its physiological effects."[1]

Valuable as strychnia has proved as a nervine tonic, and more particularly in paralysis, there are some forms of nervous debility in which it is not only useless, but even injurious.

Very often strychnia has been given for a considerable length of time in chronic paralytic affections with entirely negative results. The question may be asked why the strychnia has been thus inefficacious, and whether the inertness has been due to its administration by the mouth, or whether the lesion has been of some part of the cerebro-spinal system over which strychnia has no specific action?

Now I think I shall be able to prove that the mode by which this alkaloïd is introduced into the system is one cause of difference of action. That such is the case with morphia and atropia, when introduced by different means into the system, I have long maintained, and am happy to see my views so thoroughly corroborated

[1] Pereira, 'Materia Medica,' vol. ii, p. 646.

with regard to those particular alkaloïds by the Hypodermic Committee of the Medical and Chirurgical Society, who have lately concluded their investigations.[1]

And if morphine can be proved, when introduced into the cellular tissue, to have greater rapidity of action, intensity of effect, economy as to the amount required, certainty of action, and that certain unpleasant symptoms can be avoided by giving it by this means rather than by the mouth, and if the same holds good with respect to some other alkaloids, as I have shown that it does, it is not unreasonable to anticipate certain advantages from the administration of strychnia also by the cellular tissue.

It is somewhat curious but there seems to me to be a great prejudice on the part of many medical men against—or fear of, the employment of strychnia subcutaneously, even with many who are constantly injecting morphia, a drug which requires quite as much care in its administration.

Certainly one has to study the dose which the constitution of the patient requires more carefully with strychnia than some other alkaloïds, and to begin with a minimum rather than a maximum dose, for the effects from a large dose may be almost too rapidly generated to be subsequently beneficial. Some patients, moreover, are far more susceptible of strychnia thus administered than others, but such is also the case with morphia and opium. In one patient, a lady who was suffering from injury to the spine and severe nervous prostration, after a fall more than a year previously, I found the $\frac{1}{90}$th of a grain of strychnia as large a dose as she could bear; on the other hand most patients bear well the $\frac{1}{30}$th of a grain, and some even the $\frac{1}{24}$th.

That this *mode* of administering strychnia is more powerful than others is shown by the experiments of the Hypodermic Committee upon rabbits, for they found that the $\frac{1}{16}$th of a grain of strychnine was the smallest dose that killed by the mouth, the $\frac{1}{25}$th of a grain by the rectum, and the $\frac{1}{120}$th of a grain "by the skin" as they call it, but more correctly by the *sub*cutaneous cellular tissue. That committee give no experiments or observations of the therapeutic effects in man, but allude to the experience of Dr. Biegel, "who found one case yield to this method," and to my own observations in favour of its usefulness in certain cases.

I will now shortly detail a few cases of paralysis in which I have injected strychnine with benefit; at the same time I would remark that one must not look for the astonishing or suddenly beneficial results which seem to and do at times attend the injection of anodynes in cases of *pain*, of delirium, &c.

Strychnine should be employed as a nerve tonic or nerve-excitant

[1] We hope shortly to give our readers some accounts of these investigations.—Ed.

in cases in which active irritation is supposed no longer to be going on about the clot or presumed cause of the lesion.

What we may fairly hope to expect when we inject strychnine is to find a *beneficial* result produced in a *shorter time* and from much *smaller doses* than when it is given by the mouth, and benefit may be expected even in cases which have, as in case 1, been frequently treated, for weeks together, by its stomachic administration without benefit.

CASE 1.—Hemiplegia of six years' standing. John C—, æt. 52 years. Had always enjoyed good health, and followed his occupation in the brewery until six years ago, when, whilst at work he was suddenly seized with loss of power on the left side of the body. He has never since sufficiently recovered to permit of his returning to his occupation, and the utmost he can do is slowly, by the aid of two sticks, to walk about dragging after him the paralysed limb. In addition to the want of power, he nearly always has *pain*, chiefly in the loins after walking a few yards, numbness and coldness, and a sense of weight in the limb, and fatigue from very trivial efforts, so that when out he has been accustomed to stand still frequently to rest, and to walk much bent forwards, chiefly to avoid pain in the loins.

This man had been a patient of mine at the Royal Pimlico Dispensary on and off for several years with these symptoms and loss of power over the bladder, and generally after a few months of stomachic administration of strychnia and other tonics, the symptoms have been moderated for a time. On the 24th of July, 1866, I put him on the $\frac{1}{20}$th of a grain of strychnia—the acetate—with sulphate of magnesia, and some carminatives. This he continued for five weeks twice a day without improvement, except as regards the loss of power over the bladder.

On the 31st of August I began the subcutaneous administration of the alkaloïd, expecting little or no more effect, as so little amelioration had attended the stomachic doses during three or four years.

To sum up briefly, this man, from August 31st to December 1st, that is during three months, had twenty-two strychnine injections; seventeen of these were in quantity the $\frac{1}{30}$th of a grain, the remainder were as strong as the $\frac{1}{24}$th of a grain. During the five weeks which preceded the hypodermic treatment, he had taken as much as *three grains* of strychnia by the mouth without any apparent or palpable effects of the drug upon the paralysed limbs; *but direct strychnine* effects manifested themselves with the *first* as well as with *every* succeeding puncture.

Ten injections were given during the first three weeks. The results were:—1. Rapid improvement in walking power, and increased steadiness of gait. 2. The previous sensation of cold was replaced by a sense of warmth of both legs, chiefly of the paralysed

one. This *induced* warmth has never quite subsided, and was always well marked for some hours after the puncture, in fact he almost *complained of* the heat the injections produced throughout his system. 3. The "heavy-weight" sensation in the leg was replaced by a sense of lightness of the limb. 4. The pain both of the loins and leg were removed.

These good results have continued, and he can now walk several miles, more upright, with comparative ease, with little or no pain, and by the aid, for a time, of only one stick.

The question might be put whether the three grains of strychnia previously given by the mouth did not materially assist in these results, seeing that by the cellular tissue he only had altogether about two thirds of a grain?

My reply is simply that he had more than once taken strychnia for two or three months by the mouth without such good results. 2ndly. That the effects from the injection were direct and comparatively immediate. 3rdly. They were such as have been described spontaneously by other patients.

Case 2.—William J—, æt. 60, of Belgrave Buildings. A tall, thin, active, intelligent engine-driver was seized in September, 1863, with right hemiplegia. He was at engine-work when the fit came on. He became insensible, and had much fever, he says, for some days. He gradually improved so as to be able to get about with a stick, but the leg has very little power, feels heavy, and drags; he feels that there is no dependence upon it. The arm is weak, especially the muscles of the upper arm and shoulder, but he can grasp with his fingers.

December 9th.—Omitted medicines by the mouth. I injected the $\frac{1}{90}$th of a grain of strychnia into the arm.

10th.—He felt momentary pains in the course of the evening about the muscles of the forearm and heel; no muscular twitchings, but less "stretchings" of the muscles. Repeated the injection.

11th.—Felt a lightness and freedom in the muscles of the limb. Repeated injection of $\frac{1}{90}$th of a grain.

12th.—Had a few slight muscular twitches in the lumbo-dorsal region on both sides of body. Injected the $\frac{1}{60}$th of a grain.

13th.—The paralysed limbs feel stronger and lighter; has had a few twitches in the right side of the face, right arm, and both legs.

21st.—Has had three more punctures from $\frac{1}{75}$th to $\frac{1}{60}$th of a grain. He had two or three punctures after this date, and by the end of the month the power both in the arm and the leg had greatly increased: he could turn his wife's mangle with the arm without pain or fatigue; he could stand steadily and strongly upon the leg, and stamp the foot on the ground with some vigour. On the other hand, during the ten weeks from the time of the fit to the time of the

first puncture, *no* progress, of any note, had been made; whereas each puncture (save two) seemed to add fresh vigour to the muscles. More jerking of the muscles occurred after the last few than after the first punctures.

* * * * * *

April 24th, 1864.—This man again came under treatment, not for paralysis, but for *cramp* of the *same* leg. For six weeks he had hardly passed a night free from four or five attacks of cramp which *came only* in the leg that had been paralysed.

I gave him a quarter of a grain of morphine subcutaneously; no cramp in the night; a slight twinge in the morning.

26th.—Three attacks of cramp in the night. Repeated morphia injection.

May 24th.—No cramp since.

October, 1866.—Keeps well; able to turn the mangle, and carry parcels about, the leg remaining as strong as when the puncture was omitted.

CASE 3.—James N—, a sailor, æt. 28. Came under my care on the 25th of May, 1866.

He had received a bullet fourteen months before in the dorsal region when at Shanghai. The bullet had entered close to the posterior border of the right scapula, and is somewhere deeply imbedded close to the spinal marrow. Paralysis came on gradually from that time; but it became much worse after he had been shipwrecked off Hong Kong eight months ago. He was two months in the hospital at the latter place. Strychnine was there given him by the mouth for some weeks; it caused jumping in the leg which is paralysed, but did not increase the power of the muscles.

He now walks very slowly and carefully with two sticks, and drags the left leg almost like a log; sensation is much impaired; leg still jumps occasionally, and would give way at once if he were to try his weight on it; has pain in the back and loins after walking many minutes.

It was doubtful to what extent power could be restored in this case if, as seemed probable, the bullet was mechanically interfering with the transmission of nerve power, the more especially as strychnine, as above mentioned, had already been given by the mouth *without effect.*

On May 25th, 1866, I injected the $\frac{1}{24}$th of a grain of strychnia into the cellular tissue of the upper arm, and on the 27th, the same amount into that of the leg.

28th.—Can put the foot more firmly on the ground. Some jumping of the leg after both punctures; no jumping of the right leg.

28th and 30th.—Repeated the same dose. Leg decidedly stronger and feels as if it now belonged to him, no longer like a heavy weight;

can lift the foot higher, and he can now (after five punctures) just momentarily bear his weight on the foot without pressing on his sticks.

June 9th.—I diminished the dose to the $\frac{1}{360}$th of a grain still injected every second, third, or fourth day.

29th.—Can now walk two hours without feeling fatigue, and without that pain in the leg and loins which used always to occur after very small efforts. The leg now feels quite supple and "sensible."

July 23rd.—Up to this date this man has had twenty-six injections from the 25th of May, just over two months, and altogether has had less than *one* grain injected during that time. The following are the chief results from the last few punctures. The $\frac{1}{360}$th of a grain suits him better than the $\frac{1}{240}$th of a grain; it causes much less jumping, at the same time it always causes the leg to feel lighter and looser, and as if life had come into the heavy useless painful weight it formerly was to him.

October 28th.—He comes up once a week from Barnes to report progress. He can now easily walk three miles without stopping to rest, and without pain in the loins, and can walk across the room without his sticks. These good effects still remained when I saw him nearly one year after I had ceased to attend him.

Case 4.—Several injections of strychnia were given to a young woman who for some years had suffered from incessant muscular jactitations, frequent attacks of sickness, pain, and debility of the spine. The doses injected were from the $\frac{1}{480}$th to the $\frac{1}{240}$th of a grain. This patient had received great benefit from the atropia injection, and was not told that the agent injected was different.

The chief effects observed by her were a sensation of warmth in the spine, of greater strength and less pain in the muscles of the neck; the sickness of stomach was also removed by it.

Case 5.—Mr. W—, a publican, came to me on the 23rd of March, 1866. For the last three weeks he had complained of numbness of the legs and feet, of the sensation of pins and needles in the latter, and a fear of walking without holding or looking to see his feet. Is a sallow, puffy, unhealthy-looking man, temperate, bowels regular, urine often loaded with lithates, and difficult to pass at times, no albumen in it. Has the tight pain or band across the stomach. I put this patient upon alkalies, and the $\frac{1}{240}$th of a grain of strychnia twice a day by the mouth. He improved a good deal, sold his business, and went into the country.

On October the 23rd, he came back to London. Had been going on pretty well until three weeks ago, when his legs again stumbled and he could now only walk slowly and with difficulty. Urine again loaded with lithates, more loss of power over bladder, bowels, &c. I ordered him alkaline saline by the mouth for the state of the

kidneys, &c., and this time gave him the strychnia subcutaneously, with the following results:—Decided increase of power of muscles of the legs and hips; he could, after five punctures, get up from sitting on a low chair, without supporting himself as before with his hands. Usually feels a warmth of both legs, increased diaphoresis, "live-blood" as it were circulating in his thighs, generally also a stiffness, but no jerking thirty minutes after each puncture, less fear of falling when walking, diminution of the numbness and trembling of the legs, and increased walking power.

He had ten punctures altogether, some in the arm and some in the thigh. The doses were from $\frac{1}{48}$th to $\frac{1}{30}$th of a grain.

CASE 6.—John B—, æt. 31. Came to me in March, 1866, with loss of power of the muscles of the left arm and forearm, consequent upon bruising and dislocation of the shoulder-joint some weeks before. Most of the bruise had disappeared, but the power did not return, as indeed it often will not for months; he could not grasp anything, nor pick up things. I ordered an iodine and camphor liniment for some days without benefit resulting, and then had recourse to the injection of strychnia.

This man had seven punctures; three of which were into the muscles themselves, and four into the cellular tissue of one arm or the other. The chief effects observed by this patient were, 1st. He felt the influence usually in ten to fifteen minutes, viz., tingling in the fingers of the affected limb, some pains in, and increased temporary power of the muscles of the arm.

The power returned quicker in the muscles of the arm than did the activity to the fingers.

He did not notice any difference in the time in which the effect was produced, whether the injection was made into one arm or the other; but thought the fingers felt its influence most when the strychnia was injected into the pronator muscles. The dose in this case varied from the $\frac{1}{48}$th to the $\frac{1}{24}$th of a grain.

CASE 7. — William B—, left hemiplegia. Came to me November 30th, 1867. Has had left hemiplegia for two years and a quarter, since a fit, which came on suddenly after two or three previous threatenings in August, at Madras; he was a soldier at the time. The left leg now drags, and he cannot walk (with his stick) more than fifteen minutes without the leg becoming stiff and painful; constantly has cramp in it at night, usually three or four times. The arm is very useless, and the mouth is still partially drawn; he seems very nervous, and frequently laughs when he should not; sleeps well, bowels regular, tongue clean, frequent micturition, urine healthy.

January 30th.—Has had eighteen punctures in two months, with the following results:—Feels generally stronger, not only in the limb which is paralysed, but "in himself." Has much more control

over his muscles. He looks less foolish, and hardly laughs now as before without occasion. Always feels "warmer all over" after each puncture; feels more power and warmth for some hours in the leg after the injections, which were all made into the cellular tissue of one of the arms.

In this man it is the arm, contrary to my experience in the majority of cases of hemiplegia, which has received the most benefit; he can grasp much firmer with it, and hold weights which he could not when he first came; he is less nervous, and looks as if he now had some energy and will of his own; it is also interesting that the cramps in his leg which used, for many months, to wake him up at night, have never returned the last six weeks. This patient is still under treatment.

Remarks. — The effects obtained from the hypodermic use of strychnia are not so remarkable as are those which are constantly to be observed from the injection of atropia or of morphia. This is easy of explanation. Anodynes and narcotics are agents acting especially on nerves of sensation, and on nerve-centres, and are most valuable thus employed in acute affections, such as delirium tremens, acute mania, of intense pain, &c. Strychnia is a nerve-tonic, and nerve-excitant, and its employment is chiefly valuable in cases of palsy and nerve atony, after all acute symptoms or causes have subsided. But because the case is one in which time is required to assist the action of the remedy, there can be no reason against trying to shorten the period required for the cure, or to limit the amount of the drug from which we expect benefit to accrue.

The chief advantages to be derived from the hypodermic use of strychnia are,

1st. *As a therapeutic test,* for three or four injections will almost always show if strychnia has any power or not over that particular palsy. If they have no effect it is almost useless to continue their employment.

2nd. *It is economical, both as regards amount of* (*a*) *alkaloïd to be used, and* (*b*) *time required for it to affect the system.*

(*a*) There is a great saving of the *amount of strychnia* required by this means over the stomachic employment of the same drug. The saving may be put at five-sixths of the amount which would be given by the mouth. For, as far as my observation goes, the $\frac{1}{30}$th of a grain, injected every other day for thirty times, will consume just one grain of strychnia in sixty days: now if the somewhat ordinary dose of $\frac{1}{20}$th of a grain is given twice a day—and some physicians order the $\frac{1}{10}$th and even the $\frac{1}{12}$th of a grain for a dose—it is evident that, in the sixty days, as much as six grains of strychnia are taken into the stomach. But, in cases of paralysis, where its continuance seems necessary, I do not, as a rule, inject the strychnia

more often than twice a week, so that the saving is nine rather than six times less than the amount which experience shows us has to be given by the mouth for a reasonable amount of benefit to ensue.

Nor need this saving of material be considered remarkable nor the results singular. The experience of many medical men who have largely employed quinine injections in ague and fevers in India, Italy and the West Indies, is quite in accordance with my results with strychnia. Dr. Moore, of the Bombay Medical Service, thinks four or five grains of quinine under the skin are equal to five or six times that amount taken by the mouth; and this opinion is confirmed by Drs. Chasseaud and McCraith of Smyrna, by Dr. Desvigne in France; and more recently by Dr. Huggins and his colleague at San Fernando in Trinadad.

(*b*) In addition to the ultimate tonic effects of the strychnia being more quickly gained, and from a smaller amount of material, we have also manifested, by its introduction into the cellular tissue, certain phenomena indicative of the immediate or direct primary action of the agent upon the system. These are, 1stly, a general warmth or glow of the cutaneous surface. This warmth is experienced by nearly every patient, especially those benefited by the injection.[1] It is most felt in the paralysed limbs and down the spine, and at times making the patient "quite hot all over." This sensation lasts a few hours, according to the strength of the dose. 2ndly, a sensation of lightness and freedom in, and a removal of the "heavy-weight" sensation of the paralysed part. The leg often feels "light as a cork," and, 3rdly, increased temporary power which also generally begins in about twenty minutes, and lasts for perhaps some hours.

As regards the jerking of the muscles. This symptom of the action of strychnia appears to me to be of less frequent occurrence than when strychnia is given with a similar object in view for a lengthened period by the stomach. It seems practically to be the case, as might theoretically be conceived, that the primary tonic effects—namely, greater power and improved nervous sensibility—should follow the small strychnine injections, sooner and more effectually, than after the system has, by slow degrees, absorbed enough strychnia which has been administered stomachically, and the quantity of which so given has been perhaps three or four times as much as has really been necessary. When, on the other hand, muscular "twitchings," spasms, or cramp, have accompanied the palsy or numbness previous to the employment of the strychnine injection, those irregular muscular movements seem very quickly to yield to the

[1] Diaphoresis is a more frequent effect from the injected strychnia, especially of the paralysed side of the body. The warm glow is always observed by patients to be entirely or *chiefly* in those parts supplied by the paralysed nerves, even when the strychnia is injected into remote healthy parts.

tonic influence of the puncture, as in case 7, and in a bricklayer now under treatment.

Thus far, then, in favour of the hypodermic injection of this alkaloïd. What, on the other hand, are the disadvantages of this method?

That great care is necessary lest too large a quantity should be injected of this agent, I need not point out: far better, therefore, always is it to inject a minimum than a maximum dose, say from the $\frac{1}{60}$th to the $\frac{1}{80}$th rather than from the $\frac{1}{30}$th to the $\frac{1}{20}$th. As a rule, however, the $\frac{1}{30}$th of a grain will suit most cases in which a tonic effect is desired upon a paralysed muscle or nerve.

I think it as well to mention that in two out of about twenty-five patients in whom I have injected strychnia a carbuncular state of the nose, or rather a collection of small boils arose. It is questionable to what extent, or whether or not, the strychnia injection is to be blamed. We know that belladonna will, at times, produce a rose-rash, and this is especially the case with atropia, its alkaloïd, when injected.

Both of the patients who had the boils produced about the nose, had had a good many injections; one was the sailor with the gunshot wound in the spine whose case is mentioned above; and the other was an Indian officer who had for years suffered from neuralgia and muscular prostration, consequent on—according to Brown-Sequard—"congestion of the spinal marrow."

I have seen no ill results from the injection of strychnia such as have been described as following the injection of the acetate or sulphate of quinine. Those salts seem, in many cases, to have set up severe irritation, and subsequent sloughing of the cellular tissue, and even tetanus has been attributed in two cases to the injection of that alkaloid. Strychnia is, however, innocuous to the cellular tissue, and scarcely ever causes the least smarting, burning, or other local sign of irritation, when injected. Nor would quinine, as far as my experience goes, if some more basic salt than those above alluded to was used.

Art. II.

Cases of the sudden death of Infants in circumstances suggestive of their having been "overlaid." By Francis Ogston, M.D., Aberdeen University.

Cases such as those that follow not unfrequently present themselves both to the medical jurist, and the private practitioner, and are sure to awaken, if they do not always justify, suspicion of intentional violence, or inexcusable negligence. The suddenness and

unexpected death of the infant previously supposed to be in health and vigour, is apt to lead to the imputation of blame to the mother or nurse. In the instances of this sort which have come under our notice, the illegitimacy of the infants in the mass of our cases, and the interest of the mothers in the opportune removal of their nurslings had been sufficient to awaken suspicion and justify the inquiries set on foot by the law authorities.

With but little alteration of the non-technical phraseology of the original reports, the subjoined outline of these will be arranged, as far as practicable, into such groups as they appear naturally to divide themselves.

CASE 1.—Susan G—'s female infant, æt. three weeks. Found dead in the cradle after a reported sleep of two hours.

Post-mortem.—Lower jaw, knees, and ankle-joints rigid. Lips and nails blue; left sides of the head, face, trunk, left thigh, and right lower extremity livid. Tongue protruded beyond the gums in front. Great toes flexed; nothing unusual in the head, the spinal column, the mouth, throat, gullet, or air-passages. Right cavities of the heart distended with dark fluid blood; its left cavities empty. Lungs expanded; of a deep red colour, moderately congested, and everywhere on pressure yielding a copious flow of thin colourless fluid (serum). Milk curd in the stomach; milky fluid in the lacteals.

CASE 2.—Female infant, æt. two months. Found dead in bed. Lips and dependant parts of the trunk livid. Fingers closely contracted; thumbs drawn in to the palms; joints rigid. Pia mater injected. From two to three drachms of clear serum at the base of the brain. Interior of the trachea moderately and uniformly reddened. Right cavities of the heart distended with fluid blood; its left cavities half-filled with dark clotted blood. Lungs slightly congested, and giving out on pressure thin frothy fluid (serum). Milk curd in the stomach.

CASE 3.—Robert R—, æt. five weeks. Found dead in the cradle. Pupils dilated; joints of the lower extremities rigid. The dependant parts of the head, trunk, and limbs, livid. Clear yellow fluid, (serum), escaping from the right nostril. About two teaspoonfuls of clear serum at the base of the brain. A yellow fibrinous clot filling and distending the right cavities of the heart; left cavities of the heart almost empty. Dark fluid blood in the lungs, liver, and kidneys. Clear yellow fluid (serum), in quantity, in the lower lobe of the left, and the two upper lobes of the right lung. Stomach empty.

CASE 4.—Matilda McL—, æt. six months. Found lying dead beside its mother on a roadside, the mother in a state of intoxication.

The dependant parts of the head, neck, and shoulders, slightly livid. Finger-nails blue; joints rigid. Tip of the tongue protruded beyond the jaws. Pia mater injected; puncta vasculosa pretty numerous in the brain. A little clear serum in its ventricles. Dark fluid blood on both sides of the heart, but in excess in its right cavities. Two drachms of serum in the pericardium. Surfaces of the aorta and pulmonary artery, minutely injected. Frothy mucus in the trachea. Thin frothy mucus filling the bronchi and their larger divisions. Lungs expanded, dark hued, firm, congested, and their air-cells filled with reddish, frothy (mucous) fluid. The liver, smaller intestines, and kidneys congested. A little curdled milk in the stomach.

Case 5.—Georgina McK—, æt. two months. Found dead; mother intoxicated. Lips blue. Livid patches on the right side of the face, the upper and fore parts of the thighs, the groins, the sides of the arms, the front of the left leg, and the dependant parts of the head, trunk, and limbs. Tip of the tongue protruded; joints rigid. Thumbs drawn in to the palms, and the fingers firmly closed on them; great toes partially bent. Feculent matter at the nates. Pia mater injected; moderate congestion of the brain and its sinuses. About three drachms of serum collected from the ventricles, and the base of the brain. A moderate quantity of reddish serum issuing from the upper part of the spinal canal. A thin reddish frothy (mucous) fluid filling the trachea, bronchi, and air-cells of the lungs. Lungs expanded. Serum in the pericardium and cavities of the pleura. Blood, chiefly fluid, in excess in the right cavities of the heart. Blood, mostly clotted, in sparing quantity in the left cavities of the heart. The roots of the lungs, the liver and the kidneys, moderately congested; about a teaspoonful of milk curd in the stomach. On laying open the spinal column a firm clot of blood was detected external to the theca vertebralis, at back part extending from the atlas to the seventh cervical vertebra, and, thickest in front of the bodies of the second, third, and fourth of these bones. Fluid blood also found effused within the theca of the cord from the first to the tenth dorsal vertebræ.

Case 6.—James A—, æt. two months. Found dead in bed. Lips and nails blue; lividities over the right shoulder, the upper and fore-part of the chest, the lower half of the belly, the groins and tops of the thighs, and the dependant parts of the body. Fingers closely contracted; thumbs drawn in to the palms; joints rigid. Pupils broadly dilated; a little dried blood at both nostrils; thick frothy mucus issuing from the right nostril. Scalp bloody. Sinuses and veins on the surface of the brain very much loaded with dark fluid blood. Larynx and upper part of the trachea very much reddened,

and containing a quantity of frothy mucus of a bright red colour. Right heart full of dark fluid blood, left heart empty. Foramen ovale of full fœtal size. Lungs, liver, and kidneys loaded with dark fluid blood. Curdled milk in the stomach.

CASE 7.—Male infant, æt. nine days. Found dead in bed. The body weighing 4 lbs. 3½ oz., measuring 18 inches, and 10¼ inches from the vertex to the centre of the navel. Fingers and toes closely bent; finger-nails of a very deep blue, approaching to black; lips blue. Fore part of the chest, and the dependant parts of the trunk reddish. Face sallow; belly greenish; joints rigid; pupils broadly dilated. Impressions of the gums on the upper and lower surfaces of the tongue near its point. Cerebral sinuses and veins loaded dark fluid blood. A little bloody mucous fluid in the back part of the mouth, and in some quantity in the trachea. Portions of the lower lobe of the left, and the margins of the inferior lobe of the right lung consolidated. Right side of the heart distended with dark fluid blood. Little blood in the left heart. Stomach and intestinal tube completely empty. Fœtal vessels closed.

CASE 8.—Jane P—, æt. ten weeks. Found dead in bed. Lips and dependant parts of the head, trunk, and limbs, livid. Fingers bent, and thumbs closed upon them. Left great toe flexed. Tip of the tongue projecting beyond the gums; joints rigid; scalp pale and bloodless. Contents of the cranium normal; muco-purulent fluid in the lower part of the trachea. Right lung reddened throughout, non-crepitant and firm to the feel. Left lung partly consolidated, partly yielding a copious quantity of serous fluid on pressure. Fluid blood, in about equal quantities, in both sides of the heart. Foramen ovale open. Intestinal tube pale and bloodless. Milk curd in the stomach. A small serous cyst in one of the ovaries.

CASE 9.—Elizabeth O— P—, æt. three months. Found dead in the cradle. The fingers and dependant parts of the body livid. The thumbs drawn in to the palms, and the fingers clenched on them; the toes flexed. The point of the tongue protruded beyond the gums. A thin yellowish fluid in the nostrils. Joints stiff. Frothy muco-purulent fluid filling the trachea and bronchi. Excess of serum in the pericardium. Left lung consolidated and infiltrated with pus; cells of the right lung filled with clear yellowish frothy fluid (serum). Fluid blood in the heart, in greatest quantity on its right side. Milk curd in the stomach. Liver loaded with blood.

CASE 10.—Male infant, æt. eleven days. Found dead in bed. The body weighing 5 lbs. 13 oz., measuring in length 19¼ in., and 10$\frac{3}{4}$in. from the crown of the head to the centre of the umbilicus. The

joints rigid. Slight projection of the tongue beyond the jaws, with impressions of the gums on its upper and lower surfaces. The left cheek and genitals bright red. Lividities more or less distinct on the left side of the neck, the front of the chest, the left side of the belly, the shoulders, the back of the right hand, the groins and upper parts of the thighs, and the dependant parts of the head, trunk, and lower extremities. Thin frothy fluid at the nostrils. Fingers and thumbs closely bent; finger-nails blue. Scalp bloody. Sinuses and veins on the surface of the brain, turgid with dark fluid blood. A little milk curd in the throat and upper part of the trachea. Dark fluid blood in large quantity in the right, and in sparing quantity in the left heart. Lungs much congested with dark fluid blood. Stomach full of curdled milk. Fœtal vessels contracted.

Case 11.—Male infant, æt. four days. Found dead at a road-side beside its mother in a state of intoxication. A general blush of redness over the surface, deepest on the left side and back. Front of the neck and the sides of the belly also greenish. Larger joints flaccid. Fingers and thumbs closely flexed. Great toes flexed. Scalp, bones of the head, and the contents of the cranium, all much loaded with dark fluid blood. Dark fluid blood on both sides of the heart, but chiefly on its right side. Lungs, liver, and kidneys, considerably congested with dark fluid blood. Milk curd in the stomach. Ductus arteriosus and umbilical arteries contracted, but containing a thread of clotted blood.

Case 12.—Male infant, æt. three months. Found dead in bed. Larger joints flaccid; fingers and thumbs flexed; finger-nails blue. Dependant parts of the body reddish, the eyelids and forepart of the trunk greenish. Corneæ opaque; anterior fontanelle depressed. Point of the tongue protruded and marked by the gums. Scalp bloodless. Veins on the external and figured surfaces of the brain turgid with blood. Pia mater minutely injected. Interior of the brain pinkish. ʒvj of clear serum at the base of the skull. Right cavities of the heart distended with dark fluid blood. Blood of the same character, but in much less quantity, in the left cavities of the heart. Lungs, liver, spleen, and kidneys considerably congested. Whitish farinaceous fluid in the stomach.

Case 13.—Female infant, æt. five days. Found dead. Face of a brownish red. The neck, vulva, and nates, reddish. Lips and nails livid. The thumbs firmly drawn in to the palms, and the fingers closed on them. Toes flexed; joints rigid. Tongue protruded beyond the gums, and its tip and the interior of the mouth livid. A little frothy mucus at the bottom of the trachea. Thymus

gland, pericardium, and the surfaces of the heart, aorta, and pulmonary artery minutely injected. The cavities on both sides of the heart, the veins on its surface, both venæ cavæ, the aorta and pulmonary artery, all distended with dark blood, mostly in a clotted state. Lungs collapsed, of a bright red colour, crepitant throughout, and very much loaded with dark fluid blood. Thymus gland congested. Liver, spleen, pancreas, and kidneys much congested. Intestines minutely injected. Colourless glairy fluid in the stomach; meconium in the rectum, and sigmoid flexure of the colon. Ductus arteriosus, and ductus venosus contracted and empty, as was the umbilical vein. Scalp vascular; veins on the surface of the brain turgid. The pia mater minutely injected; the interior of the brain mottled with red patches.

CASE 14.—James Alexander D—, æt. ten days (?). Found dead in bed. Lividities on the right upper extremity, upper and forepart of the chest, the lower part of the belly, the groins, and the dependant parts of the head, trunk, and lower limbs; lips and finger-nails blue. Joints stiff; fingers closely contracted, and thumbs drawn in to the palms of the hands. Pupils dilated. A little dried blood at both nostrils; tough, frothy mucus at the right nostril. Scalp bloody; veins on the surface of the brain very much loaded with dark fluid blood. Upper part of the trachea very much reddened, and filled with a frothy fluid (mucus) of a bright red colour. Right cavities of the heart filled with dark fluid blood; its left cavities empty. Foramen ovale open. Lungs, liver, and kidneys, loaded with dark fluid blood. Milk curd in the stomach.

CASE 15.—Male infant, æt. twelve days (?). Found dead in bed. Diffuse redness, more or less deep, of the lips, sides of the trunk, thighs, legs, and forearms, and on the dependant parts of the head, loins, and lower extremities. Joints rigid; thumbs drawn on to the palms and the fingers clenched on them. Left great toe flexed. Impressions of the gums on the upper and lower surfaces of the tongue, near its tip; anterior fontanelle depressed. Scalp bloodless; less blood than usual within the head; mucous fluid in the lower part of the trachea, containing a very few air-bubbles. Dark fluid blood on both sides of the heart, but in greater quantity in its right than in its left cavities. Capillary ecchymoses on the thymus gland, the inner surface of the pericardium, and the surfaces of the heart and lungs; pretty numerous in the lungs. Milky fluid in the stomach. Intestinal tube throughout anæmious. Liver and kidneys congested. Ductus arteriosus of nearly its full fœtal size; the other fœtal vessels closed.

CASE 16.—Male infant, æt. three months. Found dead in bed

beside its mother. Dull diffused redness on the front and inside of the right thigh and right arm, and inside of the left thigh. Lips blue; belly greenish. Tongue protruded beyond the gums. Pupils dilated. Joints flaccid. Fingers of the left hand contracted. Capillary ecchymoses on the right lung, heart, and thymus gland. Dark fluid blood, about equally distributed on each side of the heart. Lungs considerably congested, and rather less crepitant than usual. Pulpy matter in the stomach. Pia mater on the free and figured surfaces of the brain much injected. Brain soft. Scalp bloodless.

Case 17.—Charles P—, æt. eleven weeks. Found dead in bed, mother intoxicated at the time. Joints rigid; thumbs drawn in to the palms, and the fingers firmly closed on them. Tip of the tongue protruded beyond, and impressed by the gums. Livid patches on the sides of the face, right side of the trunk, front of the left shoulder, outside of the left thigh, insides of the right thigh and leg, and the dependant parts of the head and trunk. Body emaciated; anterior fontanelle depressed; scalp slightly vascular; pia mater vascular. Interior of the brain containing rather more blood than usual. Excess of clear serum at the base of the brain, and upper part of the spinal canal. Frothy mucus with minute air-bubbles filling the trachea, bronchi, and air-cells of the lungs. Lungs bulky. Capillary ecchymoses on the surfaces of the lungs. Right cavities of the heart distended with dark fluid blood; its left cavity almost empty. Gall-bladder distended with bile; liver and kidneys congested. Capillary ecchymoses on the lower surface of the liver. Stomach empty.

Case 18.—Female infant, æt. five days. Found dead. Weight 4 lbs. 8 oz. Length 17½ in.: centre of the body two inches below the navel. Diffuse redness of the skin over the head, face, neck, shoulders, groins, and dependant parts of the trunk. Nails blue; pupils dilated; thumbs drawn in to the palms, and the fingers closed on them. Joints generally flaccid. Blood (dried) around the lips and nostrils, and (moist) on the lower surface of the tongue. Cerebral sinuses and veins moderately congested. Thin frothy fluid in the trachea, and abundantly in the air-cells of the lungs. The lungs expanded, weighing 990 grains, covered with minute capillary ecchymoses, their air-cells over their left lower lobe unusually expanded, with minute depots of effused fluid blood in the substance of their right lowest lobe. Dark fluid blood in the cavities on both sides of the heart, but in greater quantity on its right, than on its left side. Ductus arteriosus partially contracted. Foramen ovale of full fœtal size. Milk curd in the stomach. Osseous points at the lower part of the femur.

Case 19.—Mary J—, æt. seven weeks. Found dead in the

cradle. Pupils dilated. Point of the tongue slightly protruded beyond the gums. Thumbs drawn in to the palms, and the fingers firmly closed on them. Toes of the right foot flexed. Joints generally flaccid. Finger and toe nails blue. Lividities on the fronts of the thighs and legs, portions of the fronts of both arms, the right side of the neck, and on the dependant parts of the head, neck, loins, and lower extremities. Scalp pale and bloodless. Arachnoid minutely injected. Cerebral sinuses full of blood. Serum, in some quantity, at the base of the brain. Thin frothy fluid in the trachea, bronchi, and copiously in the air-cells of the lungs. Capillary ecchymoses on the opposed surfaces of the lungs; intralobular emphysema to a small extent at several parts of the free surfaces of both lungs. Dark fluid blood in the cavities on both sides of the heart, but in greatest quantity in its right cavities; kidneys congested. A small milk curd in the stomach.

CASE 20.—Helen D—, æt. three months. Found dead in bed. Lips and nails blue; belly greenish. Dependant parts of the head and trunk reddish. Minute excoriations over the nates. Tip of the tongue protruded beyond the gums. Fingers closely contracted, and thumbs drawn in to the palms. Pupils dilated: joints stiffened. scalp pale. Sinuses and veins on the exterior of the brain, and on its figured surfaces considerably congested. Dark fluid blood effused into the left lateral and third cerebral ventricles. Clear serum, in excess in the remaining ventricles, at the base of the brain, and in the spinal canal. Larynx and trachea filled with a thick yellow pulpy matter. Capillary ecchymoses on the surfaces of the lungs, heart, and thymus gland. Lungs congested with dark fluid blood; dark fluid blood in the cavities on both sides of the heart. Stomach filled with a pulpy matter identical with that found in the larynx and trachea, which proved to be half-curdled milk. Air-cells at the free margins of the lungs over-distended.

CASE 21.—Adam P—, æt. six weeks. Found dead in bed beside its mother. Joints rigid. Thumbs drawn in to the palms, and fingers rigidly closed on them; toes flexed. A uniform blush of redness over the face, front of the neck, upper and forepart of the chest, the insides of the lower limbs, and the dependant parts of the head, trunk, and lower extremities. Belly greenish; scalp bloodless. Fontanelles depressed. A few capillary ecchymoses on the inner face of the scalp, at its back part. Copious frothy fluid in the trachea and bronchi. Right cavities of the heart distended with dark fluid blood; its left cavities almost empty. Lungs dark hued, expanded, and much congested. Capillary ecchymoses on the surfaces of the heart, thymus gland, and pericardium. Milk curd in the stomach.

Case 22.—James R— J—, æt. two months. Found dead in bed beside its nurse. Pupils natural. Thumbs drawn in to the palms of the hands, and the fingers firmly closed on them. Toes of one foot flexed. A blush of redness over the insides of the arms, the left side of the belly, the genitals, the left thigh, and the dependant parts of the body. Upper part of the belly greenish. Joints rigid; scalp bloodless; interior of the brain rose-hued. A whitish, frothy fluid (mucus) in the trachea, bronchi, and in the whole of the air-cells of the lungs. Blood, partly clotted, in quantity, in the right cavities of the heart; and sparingly and fluid in its left cavities. Capillary ecchymoses on the thymus gland, the left lung, the inner surface of the pericardium, and on the root of the aorta. Milk curd in the stomach.

Case 23.—Helen C—, æt. four months. Found dead in bed. Lower extremities mottled with purplish patches. Dependant parts of the head and trunk of a dusky red. Thumbs drawn in to the palms, and the fingers closed on them. Pupils natural; tongue protruded; scalp very pale; brain and its coverings natural. Interior of the trachea reddened, and filled with frothy (mucous) fluid. Capillary ecchymoses on the surfaces of the lungs, the upper lobes of which were emphysematous. Both lungs congested, and their air-cells on pressure giving exit everywhere to a reddish serum. Cavities on both sides of the heart firmly contracted and empty of blood. Liver and kidneys loaded with blood. Milk curd in the stomach.

Case 24.—James W—, æt. seven weeks. Found dead in bed beside its mother. Lower part of the belly, fronts of the thighs, and the dependant parts of the trunk and lower extremities, reddened. Lips bluish; slight greenish discoloration at the sides of the belly. Points of the fingers bluish; point of the tongue slightly protruded. Thumbs drawn in to the palms, and fingers closed on them; joints stiffened. Blood in greater quantity than usual in the sinuses and veins on the surface of the brain. Interior of the brain of a uniform pinkish hue. Frothy mucus at the bottom of the trachea. Capillary ecchymoses, in sparing number on the surface of the lungs, pretty numerous on the surface of the heart, and closely congregated on the exterior of the thymus gland. Upper lobe of the right lung reddened, and non-crepitant nearly throughout. The air-cells of this lung giving exit to abundant thin frothy fluid. Dark fluid blood in the right cavities of the heart; its left cavities empty. Fœtal vessels closed. A milky fluid in the stomach.

Case 25.—Agnes R—, æt. fifteen months. Found dead in bed beside her mother, in drink. Five scratches or linear abrasions on

the left cheek, about three-eighths of an inch in length parallel to each other. Lips of a deep blue. Point of the tongue livid and protruded beyond the front teeth. Lividities of the lower part of the face, the groins, the lower and foreparts of the thighs, the soles of the feet, and the dependant parts of the head, trunk and extremities. Pupils pretty widely dilated. Joints rigid; scalp bloodless. Cerebral veins and sinuses turgid; numerous puncta vasculosa in the interior of the brain. Milk curd, of the consistence of soft pulp in the pharynx and filling the trachea entirely, the pulp in the trachea containing numerous minute air-bubbles. Right cavities of the heart distended with dark clotted blood; dark fluid blood in smaller quantity, in the left cavities of the heart. Lungs fully expanded. Upper lobe of the left lung emphysematous. Fluid blood and bloody frothy fluid in the interior of the lungs, with capillary ecchymoses on their exterior. The stomach nearly full of a similar pulp to that found in the pharynx and air-passages. Spleen and kidneys congested.

CASE 26.—Female infant, æt. two months. Found dead, mother intemperate. Tip of the tongue protruded beyond the gums. Fingers closely bent, thumbs drawn in to the palms. Skin of a bright scarlet hue over the lower half of the belly, the genitals, and the insides of the thighs. Lips very red; nails very blue. Lividities on the dependant parts of the trunk, and lower extremities. Joints rigid. Sinuses and veins on the figured surfaces of the brain congested. Lungs expanded, congested, and when pressed giving issue to thin, frothy, whitish, or colourless fluid. Capillary ecchymoses on the surfaces of both lungs. Fluid blood in considerable quantity in the right, and sparingly in the left cavities of the heart. Liver much congested. Curdled milk in the stomach. Pallor of the intestinal tube.

CASE 27.—David C—, æt. five weeks. Found dead in bed in his mother's arms. Lips, genitals, and dependant parts of the body, generally and uniformly reddened. Finger-nails and points of the fingers bluish. Thumbs drawn in to the palms of the hands, and fingers closed on them. Point of the tongue advanced beyond the gums. Pupils moderately dilated. The veins at the base of the brain rather turgid. Lungs expanded, and thickly dotted over with capillary ecchymoses. Two such ecchymoses on the surface of the heart. Interiors of both lungs filled with thin clear frothy (serous) fluid. Dark fluid blood, in excess, in the right cavities of the heart and sparingly in its left cavities. Fœtal vessels closed. Milk in the stomach.

With no authentic or reliable information procurable as to the state of the above infants during life, the determination of the cause

of the fatal event necessarily rested wholly on the *post-mortem* appearances. The difficulties thus placed in the way of any very decided opinions as to the precise causes of death has, therefore, been kept in mind in stating the conclusions arrived at on this point.

Cases 1 to 3 inclusive were set down as examples of pulmonary œdema, a mode of sudden death, in its unmixed form at least, rare in infants, and still rarer in adults.

Case 4 was evidently one of broncho-pneumonia.

Case 5, in which the appearances pointed to bronchitis, is interesting from the co-existence in this instance of well marked spinal apoplexy.

Case 6 likewise presented the appearances often encountered in infants perishing in the early stage of acute bronchitis; the abundant secretion in the lungs and air-passages causing death by asphyxia (suffocation).

Case 7 was clearly a case of double pneumonia.

In Cases 8 and 9, besides the pneumonic condition of the lungs, there was the co-existence of bronchitis and pulmonary œdema.

In Case 10, the milk curd in the trachea, though not in any great quantity, in all probability sufficed to have led to fatal asphyxia (suffocation).

In Cases 11 to 14 inclusive, the amount of cerebral congestion indicated death by coma as met with in children cut off in convulsions.

The presence of capillary ecchymoses in cases 15 to 27 inclusive (nearly one half of the whole), evidently bring these under the category of deaths by smothering. Of this we have probably the only pure instance in Cases 15, 20, and 25; as in Cases 17, 18, 19, 21, 22, and 23, the states of the respiratory organs were indicative of the previous existence in these of bronchitis; in Cases 16 and 24 of pneumonia; and in Cases 26 and 27 of pulmonary œdema.

The part played by the milk curd in the trachea in Case 20 may be differently regarded; while the cerebral apoplexy in this instance may properly be looked upon as an effect of the asphyxia.

The distribution of the blood in the heart's cavities supports the conclusions stated above as to the asphyxial forms of death in all the different infants; and if any value is to be given to the states of the fingers and toes so generally encountered in these, we have the inference suggested that here, as in most instances of sudden death at this early period of life, convulsions had attended the closing stage of life.

ART. III.

Miscellaneous Contributions to the Study of Pathology. By JOHN W. OGLE, M.D., Physician and Lecturer on Pathology, St. George's Hospital.

CHAPTER I.

Remarks on Chorea Sancti Viti, including the History, Course, and Termination of Sixteen Fatal Cases, and also certain details of Out-patient and other Cases which were not fatal.

Continued from page 234 of the previous number.

HAVING concluded the details of the fatal cases of chorea which I have to record, and offered such observations as were suggested by them, I will now give some particulars regarding eighty non-fatal cases, all of which, with two exceptions, occurred in my former out-patient practice at the hospital.[1] To these I shall add the relation of a few cases illustrating one or two of the more unusual forms of chorea. The eighty cases I have arranged as follows in a tabular form, which will enable them to be compared with each other with some degree of facility.

[1] For help in accumulating the details of many of these cases I have to thank many of our hospital students, who so willingly from time to time assisted me in collecting notes of interesting cases in the out-patient department.

No.	Sex.	Age.	Side affected.	Duration of present attack.	Probable or assigned cause of the chorea.	Whether previous attack existed.	Peculiarity of symptoms.	Treatment.	Length of hospital attendance, and results.	Further remarks.
1	M.	12½	Right.	Two weeks.	None known, but had ascarides nine months previously.	Had an attack four years previously, owing to fright.	Remarkable; rolling about of the tongue.	Calomel and jalap at intervals. Quinine and steel, and afterwards spirit of chloroform added.	Five weeks. Became quieter, then left off attendance.	No worms seen.
2	F.	12	Left.	...	None known; no fright, but had ascarides one yr. previously, and four years ago had a fall on the head.	Had similar attack, and was in-patient previously for it, and then the whole body affected.	Right pupil rather larger than the other.	Steel wine and aloetic wine together.	Two weeks.	
3	M.	11	Left.	...	...	No.	...	Jalap and calomel, followed by steel wine.	One week.	
4	M.	11	Left. Confined to the face and neck.	Attack has been gradually coming on for four years.	None assignable. No worms, no fright, no rheumatic fever.	No.	...	Jalap and calomel, followed by syrup of iodide of iron, and later on by cod-liver oil.	Was patient five weeks. Discharged as well.	

5	F.	8½	Right.	...	Now has ascarides; no other cause known.	Had similar attack four mths previously on LEFT side, and got quite well.	...	Steel wine, scammony, and calomel; followed by cod-liver oil and steel.	Was patient for eleven weeks, and quicky improved. Discharged as well.	
6	F.	14	Right.	Three or four mnths. Been in-patient.	Had ascarides of late; no other known cause.	No.	...	Jalap and calomel, followed by syrup of iodide of iron, quinine, and steel, and shower baths.	Fifteen weeks.	Been beaten much for dirty habits and bad behaviour. Pulse always feeble; no worms seen. Much relieved.
7	M.	5½	Right.	For six months had loss of power in the same side, and been in-patient.	Has ascarides; no other cause known.	Had one previous attack, thought to be owing to sudden removal of disease of the eyes, which lasted seven weeks, and got quite well.	...	Steel wine, jalap and decoction of aloes.	Fifteen weeks. Dismissed much improved.	Had dropsy after scarlet fever two years previously.
8	M.	17	Both sides. Head and neck but seldom.	Two years.	Had rheumatic fever five weeks before present attack began. No other assigned cause.	...		Syrup of iodide of iron. Shower baths.	Two weeks. Dismissed "all but well."	Florid countenance.

No.	Sex.	Age.	Side affected.	Duration of present attack.	Probable or assigned cause of the chorea.	Whether previous attack existed.	Peculiarity of symptoms.	Treatment.	Length of hospital attendance, and results.	Further remarks.
9	F.	11	Both sides.	Nine months.	Had rheumatic fever five weeks before present attack began. No other assigned cause.	Had two previous attacks, and was in-patient (both sides being affected on each occasion). Was well of first attack in nine weeks; of the second attack in six or seven weeks.	Had been out of health for a year since he broke his leg. In previous attacks speech greatly affected, and teeth "apt to clench on the tongue."	Under jalap and calomel, followed by zinc and strychnia, he greatly improved; later on he had steel, and afterwards, as headache came on, salines and mercurial aperients, then belladonna plaster to cardiac region, with antimony.	Twenty-six weeks. Result doubtful, as he ceased to attend.	The mother had had chorea three times. Often had pain in the head, and was noticed as being dull and nervous at times; at first pains in the knees, and then swelling of the back of the hands, and strong cardiac action, with a systolic bruit, supervened.
10	M.	12	Left.	...	Ditto.	Had similar attack twice previously, and been in-patient both times.	Much flatulence, generally wakes up in morning with pain in the head and sickness, when he becomes "white, and shaking, and cold."	Syrup of iodide of iron and quassia, rhubarb and magnesia aperients.	Only a patient one week, and discharged as being well.	

11	F.	18	Right.	One month.	Ditto.	No previous attack.	Eyes rather staring, speech affected.	Mist. ferri comp. and dec. aloes comp.; senna, calomel, and hyoscyamus aperients.	Attended but one week. Result unknown.	Had only been married six weeks; a sister had similar attack six years previously.
12	F.	14	Right.	...	Ditto.	None.	Speech affected.	Sulphate of zinc, steel, and aloes wine.	Attended but one week. Result unknown.	
13	F.	10½	Left chiefly, but not entirely.	...	Ditto.	None.	...	...	Attended two weeks. Result unknown.	
14	F.	24	Right.	Three weeks.	Ditto.	Had previous attack twelve years previously from fright.	Often bites the tongue, troublesome only when eating. Bronchitic symptoms.	Treated only for bronchitis.		
15	F.	11	Right.	Twelve days.	Ditto.	None.	For two months had lost much flesh; formerly was very deaf, but less so since attack.	Calomel and jalap.	Six weeks. Result unknown.	
16	F.	13	Both sides, but chiefly the left.	...	...	Previous attack four years ago.	During sleep much affected.	Sulphate of zinc and steel, calomel and blue pill purges, ice to the spine, opium plaster to cardiac region.	...	Had much headache in illness.

No.	Sex.	Age.	Side affected.	Duration of present attack.	Probable or assigned cause of the chorea.	Whether previous attack existed.	Peculiarity of symptoms.	Treatment.	Length of hospital attendance, and results.	Further remarks.
17	F.	11	Both sides, but chiefly the right.	Five or six weeks.	...	Had several attacks since 3½ years old, and generally in autumn, remaining until past Christmas. First attack followed measles.	Has some choreic movements during sleep; often has headache, and then "has something before his eyes."	Calomel and jalap, quinine and iron, and zinc; followed by shower baths and decoction of aloes.	Six weeks. Result unknown.	
18[1]	F.	14½	Right.	Three weeks.	Has large number of ascarides; attack followed an attack of palpitation of three weeks' standing. No cardiac bruit found at any time.	Had an attack three years previously from a fright, and then the same (the right) side chiefly affected.	Often has pains in limbs, but never rheumatic fever. Often had palpitation.	Calomel and jalap, quinine and iron, and zinc; subsequently one third of gr. of extract of belladonna every night; shower baths.	Four or five months.	There was some dragging of the affected foot, and a slight leaning forwards, as if from tendency to fall; great weakness of the back; appetite ravenous; said to be better after the belladonna pills. Catamenia irregular.

[1] One year afterwards this patient again had chorea, and was out-patient for eleven weeks, and got quite well under the use of carbonate of iron and shower baths and the Mist. Ferri. comp.

19	F.	10	Limbs on both sides.	Two months.	None assignable.	...	Previous to illness had much pain in head. Symptoms first affected the mouth and tongue. Mouth became drawn to the right, and speech less distinct. Feet became more affected, and hands less so.	Shower baths. Sulphate of zinc, quinine and steel, calomel and jalap; zinc increased to seven grains twice a day.	Fourteen weeks. Dismissed as well, excepting being "rather fidgety."	No sickness produced by the large doses of sulphate of zinc.
20	F.	11	The entire body.	Three months. Been in-patient five weeks.	Fright. Had had ascarides for one year.	Previous attack, several months before.	The right pupil became larger than the left. Had nausea, but no vomiting.	Quinine and zinc, calomel and jalap, calabar bean.	Two months. Discharged much improved.	Improved much after began to take the calabar bean.
21	M.	15	Left.	Five weeks.	No cause assignable.	Had an attack two years previously, and was in-patient for eleven weeks.	Slight loss of power in the left side.	Zinc and valerian, calomel and jalap.	Ten weeks. Left off attendance, and result unknown.	
22	F.	6	Entire body.	One week.	Ditto. Had fallen down stairs three weeks previously.	...	...	Quinine and iron, scammony and calomel.	Two months. Dismissed very much improved.	Her mother had chorea when aged 14.

No.	Sex.	Age.	Side affected.	Duration of present attack.	Probable or assigned cause of the chorea.	Whether previous attack existed.	Peculiarity of symptoms.	Treatment.	Length of hospital attendance, and results.	Further remarks.
23	F.	10	Left.	Two months. Been in-patient one month.	No cause ascertainable. But had had rheumatic fever three months previously. Heart natural.	...	Had had pain at the left side, before she came to hospital. Appetite voracious; lost flesh since illness began.	Quinine and iron, calomel and jalap.	Three months. Discharged as very much improved.	
24	F.	10	Entire body.	Four days.	Fright and quarrel. Had had rheumatic fever three months previously. Heart natural.	None.	Always worse in bed, when first roused up from sleep.	Calomel and jalap, steel wine.	One week. Result unknown.	
25	F.	20	...	Had symptoms for eighteen years, off and on.	Fright, when aged two years.	...	Subject to pains of so-called "rheumatic" kind." Choreic spasms confined to muscles of face and eyelids.	Senna aperients, colchicum and opium, iodide of potash and valerian.	Three weeks. Rheumatic pains recovered from, choreic spasm the same.	
26	F.	14	...	...	Fright.	Previous attack, and in-patient four years previously.	Has symptoms indicative of phthisis.	Quinine and iron, squills.		

27	F.	11	Right.	Three months.	Followed immediately an attack of rheumatic fever. No cardiac bruit existing.	None.	...	Steel wine ammonio-citrate of iron, followed by sulphate of zinc.	Eleven weeks. Discharged the same.	
28	M.	11	Right.	...	No cause assignable.	...	Often falls when walking.	Steel calomel, and jalap, quinine and iron, and zinc subsequently.	Two months. Discharged himself, and result unknown.	
29	F.	18		Three weeks.	Had had rheumatic fever, and six weeks in bed nine months previously. Cardiac sounds natural.	None.	Face and eyes not affected. The hands first affected by spasms, & then the legs and the left of face only three days before attendance.	Steel and quinine, rhubarb aperients.	One week. Result unknown.	Catamenia only appeared once since rheumatic fever. Says that she sees stars when moving about, and at times has double sight. Occasionally great palpitation.
30	F	21	Right.	...	Had had several miscarriages of recent date. No other cause ascertainable.	An attack four years before, affecting the right side.	Sensibility of the skin generally much impaired.	Zinc and steel and valerian.	Two weeks. Result unknown.	
31	F.	15	Entire body.	...	...	An attack one year previously.	Pyrosis.	Calomel and rhubarb and bismuth.	One week. Result unknown.	

No.	Sex.	Age.	Side affected	Duration of present attack.	Probable or assigned cause of the chorea.	Whether previous attack existed.	Peculiarity of symptoms.	Treatment.	Length of hospital attendance, and results.	Further remarks.
32	F.	14	Left.	Five weeks.	...	...	Occasional headache, at times vomiting.	...	Two weeks. Result unknown.	Catamenia never appeared.
33	M.	8	...	...	None.	No actual attack, but one year previously for about three months was in habit of twisting about the shoulders very much.	Choreic movements very peculiar, consisting chiefly in opening the mouth about every minute. *This goes on in sleep, but less frequently.*	Syrup of iodide of iron.	Seven weeks. Much improved.	Before the attacks has much shrugging of the shoulders, and at times headache.
34	M.	15	Left.	...		An attack three years previously, and then the *mind was affected.*	...	Shower baths. Mist. ferri co. and dec. aloes. Zinc subsequently.	Two months. Improved, but result unknown.	Father died of apoplexy.
35	M.	16	Right.	Two weeks.	Ditto.	An attack, lasting four months, seven years previously. Galvanism used without benefit. Both sides affected. Lost speech.	The urine was apt to be retained, and sometimes for twenty-four hours. Pupils very dilated.	Aperients, zinc and sesquioxide of iron.	Was two weeks under treatment. Then left, and again returned two months afterwards. Became so well that he was discharged with a fortnight's medicine.	Had peculiar dislike to anything round the neck.

36	F.	14	Both sides, but chiefly the left.	...	None.	An attack four years previously.	Pupils unusually dilated. Is said to "plunge" when asleep in bed.	Salt-water shower baths. Quinine and zinc, and steel subsequently; also cod-liver oil.	One month. Relieved.
37	F.	9	Left.	...	Began during recovery from rheumatic fever and cardiac affection.	None.	Chiefly arm and hand affected.	Steel wine. Shower bath.	Three weeks. Left off attendance. Improved.
38	F.	8	Left.	One week.	...	...	...	Valerian, belladonna, steel.	One week. Result unknown.
39	F.	8	Right.	Eight days.	Fright. Has ascarides.	...	Subject to screaming at night.	Zinc, steel, and quinine, calomel and jalap; shower baths.	Two months. Quite recovered.
40	F.	7	Right.	Six weeks.	Had sores on head three months before. No other cause known.	...	Headache, and pain from bad teeth. Liable to choke at times when eating.	Zinc and steel. Blistering the neck.	One week. Result unknown.
41	F.	10	Entire body.	...	None known.	...	Restless when asleep. Liable to pains in the joints.	Calomel and scammony, zinc increased to 7-grain doses, extract of belladonna.	One month. Became worse and made inpatient.

No.	Sex.	Age.	Side affected.	Duration of present attack.	Probable or assigned cause of the chorea.	Whether previous attack existed.	Peculiarity of symptoms.	Treatment.	Length of hospital attendance, and results.	Further remarks.
42	F.	6½	Right.	...	...	An attack three months previously.	...	Calomel and scammony, quinine and steel.	One week. Became much quieter.	
43	F.	12	Whole of right side; and the left side of the neck.	...	Fright, which appeared to bring on general convulsions, after which the choreic spasm set in. Has ascarides.	...	Had much loss of power of left side; much pain in the groins came on, causing screaming. In sleep the eyes would twitch much.	Senna and valerian, arsenic, steel; other aperients.	...	A sister, now aged 8, is beginning to imitate the patient "blinking and acting," as the mother said.
44	F.	17	...	Two weeks.	...	...	Liable to hysterical attacks.	Mist. ferri co., dec. aloes.		
45[1]	F.	17	Entire body.	Sixteen weeks.	Fright.	...	Swallowing very difficult; had constant rotation and pronation of both arms; and at times peculiar movements of both upper eyelids; constant jerking of entire body.	Potassio-tart. of antimony; blister to neck; wine; subsequently assa-fœtida in mixture and in enemata.	...	Would fall down on trying to sit up; had great pain in the head and dimness of sight of right eye. When in bed constant extension of both legs in a shuffling way.

[1] Was in-patient under Dr. Page. (Elizabeth T—, admitted May 12, 1858.)

46													
47	F.	6½	Right.	...	Four days.	Has ascarides.	...	...	Saccharated carb. of iron, senna, calomel and jalap; subsequently sulphate of zinc.	Three weeks.			
									Scammony and calomel, quinine and steel, shower baths; subsequently sulphate of zinc added.				
48	F.	11	...	...	...	None known.	...	...	Mist. ferri comp., shower baths, aperients.	Eight weeks. Recovered.			
49	F.	12	Left.	...	Four weeks.	...	...	...	Steel wine, calomel and scammony, shower baths; quinine, steel, and zinc subsequently.	Seven weeks. Recovered.			
50	F.	11½	...	...	...	Has a systolic cardiac bruit at base, but never had rheumatic fever; has many decayed teeth.	...	...	Calomel and scammony, sulphate of zinc, iron and quinine.	One week. Result unknown.			Two week. Result unknown.

No.	Sex.	Age.	Side affected.	Duration of present attack.	Probable or assigned cause of the chorea.	Whether previous attack existed.	Peculiarity of symptoms.	Treatment.	Length of hospital attendance, and results.	Further remarks.
51	M.	9¾	...	...	Had worms a year ago.	...	Muscles of the left arm and shoulder atrophied, and the bone very atrophied also. Prominence of sternum and costal cartilages. Subject to headache.	Steel wine, jalap, shower baths.	Eight weeks. Recovered.	It may be supposed that the chorea was independent of the cause of the atrophy, which has been since one year of age. Left leg gives way, but not atrophied.
52	F.	21	Left.	Two weeks.	Fright.	...	Stammers and talks "thick." Pain in left of head and down arm and leg. Drags left leg much; at times has palpitation of heart.	Calomel and scammony, mist. ferri comp., blister to neck.	Two weeks.	Can only get the left arm to a right angle by much effort.
53	F.	13	At first right side affected, but now the left.	Fourteen weeks.	None.	...	...	Quinine and steel, shower baths; sulphate of zinc added subsequently.	Eight weeks. Recovered.	

54	M.	15	Left.	Two weeks.	None.	...	Had slight convergent squint of right eye ever since three years of age. Had feeling as "of blood racing cold down the back."	Calomel and jalap, arsenic and potash.	Five weeks. Discharged very much improved.
55	F.	14	Left.	...	...	...	...	Mist. ferri comp., shower baths; sulphate of zinc, quinine and steel.	Ten weeks.
56	F.	9	Both sides.	Nine days.	None.	Had similar attack twice before.	...	Saccharated carb. of iron, calomel and scammony.	Two weeks. Then described as "walking and talking better." Left off his visits.
57	F.	10	Both sides.	One month.	Fright. Had lumbrici some months previously.	...	Had twitchings of the whole body; constantly making a noise; "jumping, and hallooing," as friends said. Shouted much in sleep.	Steel wine, calomel and scammony, sulphate of zinc and valerian.	Seven weeks. Was much quieter in three weeks. Left as being "well enough."

No.	Sex.	Age.	Side affected.	Duration of present attack.	Probable or assigned cause of the chorea.	Whether previous attack existed.	Peculiarity of symptoms.	Treatment.	Length of hospital attendance, and results.	Further remarks.
58	M.	13	Right.	...	None.	...	The mouth much drawn to the right side. Speech affected, Eyes and root of tongue affected.	Calomel and scammony, sulphate of iron, quinine and zinc, up to four grains for a dose.	Six weeks. Discharged, having only very slight movements at times.	Sickness caused by the zinc.
59	F.	20	...	Previous attack some months before.	...	...	Much spinal tenderness, also furred tongue and constipation.	Mist. ferri and dec. of aloes; dry cupping to dorsal region; aloes and myrrh, shower baths, quinine and steel. Stimulating embrocations to back.	Ten weeks. Very greatly relieved.	
60	M.	10½	Both sides, but left one chiefly.	Two weeks.	Fright.	Had an attack one year before, lasting three or four months.	Foams at the mouth and loses power of speaking, but not the senses.	Mist. ferri comp., steel wine, and subsequently zinc, quinine, and iron; calomel and jalap; cod-liver oil subsequently.	Fourteen weeks. Recovered.	

61	M.	12	Right.	Two months.	None.	...	...	Quinine and steel; senna; steel wine subsequently.	Two weeks. Result unknown.	
62	F.	15	Left.	Six weeks.	Ditto.	None.	Sometimes cannot open her jaws to talk, and spasm of the muscles of the left jaw. Often moves whole body abruptly, as a child will do in a pet.	Croton oil, saccharated carb. of iron, the sesquioxide of iron, and latterly sulphate of zinc.	Four weeks. Result unknown.	Partly hemiplegic on right side when first taken ill; used to beat her hands in the night. Was excited at one time, as if going out of her mind.
63	F.	9	Both sides.	Nine days.	Ditto.	Had two attacks previously, and then on the left side.	...	...	Two weeks. Much improved.	
64	F. Married.	43	Left.	Fourteen months.	Ditto.	None.	Much headache at times, and has often "black spots" in the sight. Leucorrhœa and irregularity of catamenia, menorrhagia succeeded.	Quinine and steel, and valerian; shower baths and galvanism; later on gallic acid. Heat and cold alternately applied to the neck.	Four months. In six weeks was much quieter.	Worse after shower baths. Had 'queer' and unpleasant feeling at back after the ice application.

No.	Sex.	Age.	Side affected.	Duration of present attack.	Probable or assigned cause of the chorea.	Whether previous attack existed.	Peculiarity of symptoms.	Treatment.	Length of hospital attendance, and results.	Further remarks.
65	F.	11½	Right.	Six weeks.	Ditto.	Had chorea for seven years every autumn, lasting from September to Christmas.	Pupils dilated.	Calabar bean, the tincture, about 75 drops thrice a day; scammony and calomel.	...	Not so well after shower baths. Had nausea, headache, and giddiness.
66	M.	10	Left.	...	Fell downstairs two months previously.	None.	Had had scarlet fever three months before, and been weak in left hand for six weeks. Very little power in left arm and leg. Right pupil rather the largest.	Tincture of the calabar bean, ʒj, reduced to ʒss at a dose, owing to vomiting. Castor oil.		
67	F.	12	Both legs, and only the left arm.	Six weeks.	None.	Previous attack fifteen months before, and another one when æt. 7.	At times has palpitation of the heart.	Tincture of calabar bean, up to ʒiss ter die.[1] Syrup of iodide of iron and quinine subsequently.	Three months. For the first two months no better; began to amend after a week's action of the iron. Discharged at last as quite well.	

[1] **The strength of this tincture was in proportion of one drachm of the bean to one ounce of rectified spirit.**

68	F.	12	Right.	One month.	Ditto.	None.	Right pupil larger than left. Heart's action quick and irritable, but no bruit; pulse quick and feeble; "quite a job to feed herself."	P. jalap. co.; tinct. of calabar bean up to 3j thrice a day.	In six weeks was "almost quite well," the right leg only "giving a little." At last discharged as quite well.
69	F.	9	Right.	Six weeks.	Ditto.	Ditto.	...	P. Jalap, co. quinine and iron.	Eleven weeks. Discharged as quite well.
70	F.	7	Both sides.	...	Rheumatic attack preceded chorea. No cardiac bruit remaining.	...	...	Dec. aloes comp., steel wine, sulphate of zinc, quinine and iron.	Two weeks. Discharged as quite well.
71	F.	18½	...	Six months, and very ill for one month previously.	...	...	Right pupil rather smaller than left, both acting well; right eye opened more fully than left; speech "thick and weak" after long talking.	Rhubarb and magnesia, quinine and iron.	Four weeks. Left off attendance, and much better in all ways.

No.	Sex.	Age.	Side affected.	Duration of present attack.	Probable or assigned cause of the chorea.	Whether previous attack existed.	Peculiarity of symptoms.	Treatment.	Length of hospital attendance, and results.	Further remarks.
72	F.	8	Left.	Two weeks.	Not been quite right since illness five mths. previously "a kind of a fever." Slight obscuration of the last cardiac sound remaining.	...	...	Calomel and scammony, cod-liver oil, steel wine.	Three weeks. No further appearance.	
73	F.	11	Right.	...	Has number of ascarides.	Had some severe attacks three years previously, and never quite recovered from afterwards.	...	Calomel and jalap, quinine and steel.	Five weeks. Result unknown.	
74	F.	19	Left.	Four months.	Fright.	Previous attack four years previously. Had "low fever" a yr. previously.	Has less power in the left arm and leg and left side of face than on the right. Right pupil rather larger than the left one.	Aperients; quinine and steel, to which sulphate of zinc was subsequently added.	Five weeks. Somewhat improved.	Mother had chorea, and was treated by Dr. Bright, of Guy's Hospital, and since has had the mouth drawn to the right side.

75[1]	M.	9½	Both sides, but left one chiefly.	Two weeks.	None. Had "a fit four years previously."	...	Grasp with left hand much weaker than on other side, and want of power in left side of face. *Sensibility of skin of left arm and leg diminished.* No twitching of muscles of neck.	...	In hospital three weeks. Went out much the same.	Present attack began with shaking of left hand, and then the leg and side began; vomited once or twice after illness began.
76	F.	6	Entire body.	Six years.	Ditto.	...	Had lost much flesh of late.	Sulphate of zinc and iron, scammony and jalap. Subsequently the Calabar bean, and then strychnia.	Improved for three weeks, and then became stationary.	Had been taking the sesquioxide of iron throughout illness until she came into hospital.
77	F.	8	Both sides.	Two weeks.	Fright. Had loud systolic bruit at the base of heart, following the course of pulmonary artery. Never had rheumatism.	...	...	Sulphate of zinc, increased to large doses; iron and magnesia, scammony and jalap.	About a month. Speech became much better; he altogether improved very greatly.	

[1] No. 75 was an in-patient under Dr. Page whom I watched; and Nos. 76 and 77 under Dr. Fuller.

No.	Sex	Age	Side affected	Duration of present attack.	Probable or assigned cause of the chorea.	Whether previous attack existed	Peculiarity of symptoms.	Treatment	Length of hospital attendance and results	Further remarks
98	F.	11	Left.	Two weeks.	Not been quite right since illness five mths. previously "a kind of a fever." Slight obscuration of the last cardiac sound remaining.	...	...	Calomel and antimony, cod-liver oil, steel wine.	Three weeks. No further appearance.	
78	F.	11	Right.	...	Has number of ascarides.	Had some severe attacks threeyears previously, and never quite recovered from afterwards.	...	Calomel and jalap, quinine and steel.	Five weeks. Result unknown.	
79	F.	10	Left.	Four months.	Fright.	Previous attack four years previously. Had "low fever" a yr. previously.	Has less power in the left arm and leg and left side of face than on the right. Right pupil rather larger than the left one.	Aperients; quinine and steel, to which sulphate of zinc was subsequently added.	Five weeks. Somewhat improved.	Mother had chorea, and was treated by Dr. Bright, of Guy's Hospital, and since has had the mouth drawn to the right side.

9½	Both sides, but left one chiefly.	Two weeks.	None. Had "a fit four years previously."	Right. Had loud systolic bruit at the base of heart, following the course of pulmonary artery. Never rheumatic.	...	Grasp with left hand much weaker than on other side, and want of power in left side of face. *Sensibility of skin of left arm and leg diminished.* No twitching of muscles of neck.	...	In hospital three weeks. Went out much the same.	Present attack began with shaking of left hand, and then the leg and side began; vomited once or twice after illness began.
		Six years.	Ditto.		...	Had lost much flesh of late.	Sulphate of zinc and iron, scammony and jalap. Subsequently the Calabar bean, and then strychnia.	Improved for three weeks, and then became stationary.	Had been taking the sesquioxide of iron throughout illness until she came into hospital.
		Two weeks.			...		Sulphate of zinc, increased to large doses; iron and magnesia, scammony and jalap.	About a month. Speech became much better; he altogether improved very greatly.	

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No.	Sex.	Age.	Side affected.	Duration of present attack.	Probable or assigned cause of the chorea.	Whether previous attack existed.	Peculiarity of symptoms.	Treatment.	Length of hospital attendance, and results.	Further remarks.
78	F.	15	Both sides.	Six or seven weeks.	Had fright, which made her worse. No original cause.	No.	Movements confined to head and arms.	Calabar bean. This changed for aloes and steel. Afterwards sulphate of zinc up to 9-grain doses.	Seven weeks. Improving.	Catamenia been scanty, and only twice in ten months.
79[1]	F.	11	...	Ten weeks.	Slight blowing murmur at apex of heart with first sound. Had never had rheumatic fever.	Ditto.	...	Sulphate of zinc, iron, and magnesia, and subsequently strichnia added. Also shower baths.	Between six and seven weeks. this evidence was very slight. She had lost all power in the adductors of the right thumb.	The friend said there had been slight paralysis of the right arm since she was quite young, but of
80	F.	16	Both sides.	...	Had mumps, and three weeks afterwards became hysterical and choreic. Heart-sounds mature; never had rheumatic fever or experienced fright.	Ditto.	Decidedly hysterical. Chorea began with movements in hands and face.	Sulphate of zinc, iron, and quinine. Shower baths, which had quickly a good effect.	Six weeks. Got quite well.	Catamenia always very abundant and frequent, and long standing.

[1] Was an in-patient under my care, admitted June 19, 1867.

Reviewing the contents of the foregoing Tables, I will now proceed to summarise some of the information which they afford; and first of all, with regard to the SEX of the patients. In giving the details of the sixteen fatal cases of chorea, in the January number, page 223, the preponderance of females over males was, it will be remembered, very conspicuous, the proportion being fourteen of the former to two of the latter.[1] Out of the eighty non-fatal cases in the Tables it will be seen that the females are very much in the majority, there being sixty-one of this sex to nineteen of males, *i.e.*, rather more than three to one—a proportion which strongly suggests that there are circumstances in their case which render them especially prone to the affection.[2]

As respects AGE, I find that out of the eighty cases all, excepting fourteen, were under the age of sixteen. Eleven is the age in which the greatest number were affected, viz., thirteen.[3] Up to this age the numbers increase pretty uniformly from the age of eight, and decrease to the age of fifteen, being at the age of eight and nine, six in number; at the age of ten, eight in number; and again (on the outer side of eleven), being nine at the age of twelve; seven at the age of fourteen; and six at the age of fifteen. The youngest was five years of age, and that was the only instance under the age of six.[4] The only two cases which were above the age of twenty-one were twenty-four and forty-three years old respectively. Thus it is very clear that circumstances of age as well as of sex have marked influence in connection with the affection.[5]

[1] Taking the fatal cases registered as having occurred in England during several years, I find that the proportions as regards sex were as follows:—In 1848, 24 females to 14 males; in 1849, 24 to 10; in 1850, 39 to 21; in 1851, 67 to 10; in 1852, 54 to 19; in 1854, 28 to 20; in 1855, 47 to 22; showing in some cases a much higher figure for the females in comparison with the males.

[2] Dr. Willshire, who has had much experience in the diseases of children, states (see 'Med. Circ.,' Feb. 15, 1865, p. 101) that chorea is much more difficult of treatment in boys than in girls. It is curious to observe that Hamilton, whose great panacea for chorea was purgation, hints that the disease is more difficult of cure in girls, *because* the structure of the female pelvis allows of greater opportunity for the accumulation of feculent matter.

[3] The influence of youth in predisposing to chorea is also apparent in the lower animals. Youatt observes that in dogs it oftenest occurs in young ones, and after the distemper.

[4] The patient in case 17 had had an attack of chorea, when aged three and a half years.

[5] In the 'Register of deaths in England for 1839,' p. 121, a case of chorea, which proved fatal at the age of seventy-five, is recorded. In the 'Lancet,' for June 1, 1861, p. 530, Mr. Ellis records a case of chorea in a gentleman, aged seventy-five (the third attack). The movements came on at irregular intervals. He had a daughter who was epileptic, and a son who was insane. In the 'Medical Times,' for July 25, 1863, is reported a case of chorea, under Dr. Brown-Séquard's care, of the age of sixty-eight, and also one under Dr. Peacock's care, of the age of fifty-seven, the results of alarm. At the same place a case is given of chorea, from which the patient, aged twenty, had been suffering nearly all his life. Such a case, recorded by Rostan, is also alluded to in note at foot of page. In the

As respects the PARTS AFFECTED, it does not appear that one side was much more decidedly affected than the other. For, excluding ten cases in which no mention of this matter has been made, I find that in twenty-four cases it is stated that the *right* side only was affected, whilst the *left* alone was affected in twenty; and in twenty-five cases it is recorded that *both* sides were affected, although in some instances one or other side was more involved than the opposite one. In one or two cases the movements appear to have changed from one side to another, as in case 53. In cases 1, and 3, and 35, in which the *right* side was affected, both sides had been affected in a previous attack; in case 5, in which the right side was affected, it had been the left side in a previous attack. In case 63, in which both sides were affected, the affection had been one of hemichorea on the left side in a former attack.[1]

Respecting more restricted localisation of the choreic movements in certain cases (taking any period of the attack), the following were worthy of note. In case 19, the first symptoms were confined to the mouth and tongue; in case 25, they were confined to the muscles of the face and eyelids;[2] in case 80, the hands and face were first affected; in case 29, the hands

'British Medical Journal,' for May, 1867, a case of choreal movements in a woman, aged seventy-four, under the care of Mr. Hutchinson and Dr. Hughlings Jackson, is detailed. Mr. Henkeimer describes in the 'Deutsch. Clinik,' 1859, 52, the case of a man, aged eighty-four, who had a choreic affection of the arm and leg of one side, following an attack of numbness in the arm and confusion of the mind, after drinking. Dr. T. Thompson quotes cases of chorea at the age of seventy and eighty, recorded by Dr. Powell and Bouteille; and Trousseau quotes three or four cases of chorea at the ages of sixty and seventy, and also one described by Roger, at the age of eighty-three. On scrutinising the ages of 39 fatal cases, which are registered as having occurred in England, in 1839, I find that they were as follows:—Under four years of age, 1; under five, 5; between five and ten, 12 cases; between ten and fifteen, 7; between fifteen and thirty, 1; between thirty and forty, 1; between forty and forty-five, 2; between forty-five and fifty-five, 2; between fifty-five and sixty, 2; between sixty and sixty-five, 2; between sixty-five and seventy-five, 3; between seventy-five and eighty, 1.

[1] Romberg, in his work on 'The Nervous System,' vol. ii. p. 56, observes that, in the majority of cases both sides of the body are affected, and that the statement of Rufz and others, that the left side is more violently and more frequently affected than the right has not been confirmed. He quotes from Wicke, who found that out of fifty-eight cases, the left side was affected in twenty-three, and the right in twenty-six; that in one case it passed from the left to the right. Trousseau observes that most commonly unilateral chorea is on the left side. Bond, in an interesting article on chorea, in the 'Brit. and For. Med. Chir. Rev.,' July, 1860, observes that, according to Seé and Grisolle and others, including himself, chorea generally begins in the left arm, and that the hemiplegic form generally occupies the left side, which, if true, Dr. Bond suggests may be owing to the fact that the left limbs being, as a rule, subordinate to the right, are of weaker organisation, and therefore more liable to the influence of disturbing agencies.

[2] I have never seen a case in which the muscles of the *eyeballs*, so as to produce squinting, were affected, though of course we often had rolling about and distortion of the eyes. Youatt (op. cit., p. 121) mentions that in dogs sometimes the muscles of the eye are affected; I suppose he means the eyeballs. Trousseau mentions a case of chorea in which strabismus existed.

were first affected, and then the legs and the left side of the face, only three days before attendance, the eyes and the other side of the face remaining *un*affected. In case 33, the movements consisted in "opening the mouth about every minute." In case 78, the movements were confined to the head and arms. In case 43, whilst the whole of one (the right) side was affected, it was only the muscles of the neck of the left side which were affected. In case 53, the right side was first alone affected, and afterwards the left alone. In case 67, both legs, but only the left arm, were affected. It has been observed by some authors that choreic movements are more localised in the case of adults. Youatt says that in the dog they are often confined for long to one limb. The stringhalt in the horse, a local affection, has been looked on by some as analogous to choreic movements.

I now pass on to the apparent CAUSES of the choreic affection, including in one consideration those causes (determining or exciting) which by friends were assigned or thought probable; and also those which may be looked upon as being predisposing or remote. I find that out of the eighty cases, in ten no mention is made of any causation whatever, and therefore no conjecture can be formed regarding them. In thirty-five it is recorded that no cause of any kind was suspected by friends. *Fright or mental emotion* being often thought to act as a determining influence, I find that in five cases this cause alone was assigned. In another case (No. 78) it was said to have aggravated the already existing affection. In an additional case (No. 24), fright and quarrel, following an attack of rheumatic fever, which had existed three months before, were assigned causes; and in six more cases fright and the presence of the common ascarides, or of lumbrici combined, were thought to have been influential in producing it.[1] As respects the presence of *intestinal worms*, in addition to the cases above alluded to, eight were said to have worms at the time of commencement of treatment, and three had formerly had them. I have notes of a case under Dr. Bence Jones's care, in the hospital, June, 1858, who passed a large lumbricus whilst in the hospital, and in whom there was loss of power in the right arm and leg, thought to be choreic.

As respects *rheumatism* or *rheumatic fever*, or *cardiac affection*, in connection with the disease, it appears that in eight cases rheumatic

[1] In the Registrar-General's return for the week ending February 1st last is the record of a fatal case of chorea in a girl, aged twelve, "occasioned by the fright produced by the explosion," *i.e.*, the Clerkenwell Fenian explosion. In the same return for the week ending February 22, is the record of the death of a woman from "paralysis, accelerated by fright from the same explosion." We not long ago had a girl, aged sixteen, at St. George's Hospital with chorea, which was brought on by an attempt on the part of a young man to strangle her, by seizing her at the throat. The man had had a summons directed against him by the magistrates, on the testimony of neighbours, to the committal of the assault and of its leading to her illness.

fever had existed. In one of these cases (No. 8) no mention of the state of the heart's valves has been recorded; whilst in five cases it is stated that the cardiac sounds were natural, and in one only (No. 12), (and in this case it was somewhat doubtful whether the fever spoken of had been rheumatic), were the cardiac sounds interfered with, there being slight obscuration of the second cardiac sound.

In cases 50 and 77, it appears that a systolic bruit existed at the base of the heart; but in both cases it was affirmed that no rheumatic fever had occurred. In case 79, a systolic bruit at the apex of the heart existed; but there had been no rheumatic attack. Most likely in several cases there had been unnoticed temporary cardiac bruits, arising either from an anæmic state of blood, or from irregular action of the fleshy columns and tendinous chords of the heart.

In case 18, it appears that the attack was preceded by *palpitation* of three weeks' standing, but it is stated that there had been no rheumatic attack. Pains, however, in the limbs and palpitation had been experienced.

Dr. Chambers found that out of thirty-three cases of chorea in his books, in six the affection either began during rheumatic fever, or followed immediately after it, or else rheumatic fever succeeded to the chorea. He, however, made out no connection between the chorea and previous valvular or pericardial tension of the heart, only one of the six above cases having any cardiac affection. He justly, however, observes that, "considering how very common inflammation of the central organ of circulation is in rheumatic children, and that it is at this age that chorea usually occurs, on the mere doctrine of chances they would (*i.e.*, chorea and heart disease) often coincide." In the statistics of the London Hospital for 1864 (see 'Hospital Reports,' p. 388), it is stated that out of twenty-four cases of chorea twenty had a systolic bruit at the apex of the heart, persistent in all but two; and in the statistics for 1865 ('Reports,' p. 422), it was said that out of thirty-seven cases, 15 or 40½ per cent. had valvular disease of the heart.

As regards *derangements of the uterine system*, I find that in one case (No. 3) the attack followed a miscarriage, and in five cases it is stated that the catamenia had been scanty and irregular, or over-abundant and too persistent.[1] Looking to what may be termed

[1] It will be remembered that, among the fatal cases before recorded, two were related in connection with pregnancy. Of these, I find that one (No. 1) had been previously related by Dr. Lee, in his 'Clinical Midwifery,' 1848, p. 112. Dr. Barnes has recently informed me of a patient who had experienced several attacks of chorea which came on at various intervals always during pregnancy. In the early part of last year we had, in St. George's Hospital, under the late Dr. Page's care, a patient with chorea who was pregnant. In the 'London Obstetrical Society's Transactions,' vol. vii, p. 102, are two cases related by Dr. B. Woodman, showing the combination of chorea with pregnancy; one, the case of a young woman who had constantly had chorea from the age of seven to thirteen, in his

alleged causes of MISCELLANEOUS character, in case 40, the affection was thought possibly to have been connected with *sores on the head.*[1] In case 75, a fit had occurred, but a long time (four years) previously; in case 22, the patient had fallen down stairs three weeks before the attack came on; and in case 66, a fall two months previously. In both the latter cases the fright of the accident may have been instrumental in causation. In case 74, so-called low fever had existed; and in case 80, the attack followed, at a short interval, an attack of mumps.

In cases 22 and 74, the mothers of the patients had had chorea; and in case 11, it was stated that a sister had had it, possibly from imitation. Authors quite recognise the *hereditary* character of chorea in some, though rare cases. Thus Bright mentions it in page 469 of his work;[2] and Seé says he has found the disease to

own practice, and one following fright, in Dr. Down's, at the London Hospital. He expresses his belief that choreic movements are chiefly reflex, and connected with the sympathetic nervous system, and alludes to a third case of chorea in a pregnant woman which he had heard of. I have before alluded to Dr. Levick's paper (in the 'American Journal of Medical Science,' January, 1862), giving the details of three cases of chorea and pregnancy associated. Of these cases one was fatal, and in this it is said that "the brain was found very much congested throughout; the heart small and firm, with a bead-like deposit on the aortic valves." In these cases the choreic movements, though mitigated, did NOT cease during sleep. Dr. Levick quotes five cases of chorea, combined with pregnancy, from Dr. Ingleby ('Lancet,' 1840, p. 783); also two such cases from Dr. M. Duncan (Ed. 'Med. and Surg. Journal,' January, 1854); and certain cases of association of convulsive movements and pregnancy, described by Schenkius, in 1609 ('Observ. Med. Rev.,' De Spasmo, pp. 128-9). I would here allude to a paper in the 'Archiv. f. Path. Anat.,' Bd. xxiii, 1861, by Dr. Morler, in which he has collected and analysed twenty-one cases of chorea in pregnant women. They were chiefly of an age between seventeen and twenty-four. Of these five had had chorea previously, and fourteen were primi-paræ. In eight cases fright, or other mental emotion was assigned as the cause. The period of pregnancy at which the chorea commenced varied, but in seven cases it was at the second, and in eight cases at the third or fourth month. It was seldom that one side only of the body was affected; in many cases the chorea was accompanied by epileptiform convulsions, and in most there had been hysteria previously. In very few was there any intellectual aberration. Four aborted and three were confined before the proper term; three times the abortion was followed pretty rapidly by cessation of the choreic movements. In five the chorea remained until the end of pregnancy, and in nine cases recovery occurred before that time. Treatment was chiefly by iron and zinc. The reader will also find a paper by Mosler, of Giessen, in 'Virchow's Archiv' for 1862 (Hft. 1 and 2, p. 149), "Ueber Chorea Gravidarum," in which the cause, symptoms, course, and treatment of the affection are considered, and a table given, showing the histories of twenty cases. These include several of the cases which I have alluded to, and were recorded by Ungen, Frank, Haud, Jeffrey, Bezold, Romberg, Helfft, Aran, Duncan, Ingleby, Lever, Scanzoni. The whole subject of the connection between menstrual and uterine irregularities, suppression of the menstrual function, &c., and so termed nervous diseases, even insanity, is of the highest interest, and both worthy and capable of much greater development and attention than it has at present received.

[1] In the 'Brit. Med. Journal' for May 17th, 1862, a case of chorea, immediately following a severe burn, is related as being under Mr. Craven, of Hull; recovery ensued before the burns healed.

[2] Dr. Day, in his 'Clinical Histories,' p. 103, alludes to the more than ordinary

be hereditary in very many cases. They also allow that *imitation* may be, in certain instances, instrumental in its propagation. I find that Bricheteau describes the case of eight patients, within a space of six days, contracting the disorder after the admission of a severe case into the ward, requiring instant separation of the patients;[1] and Chambers, in his 'Lectures,' before quoted, records the interesting case of a boy, aged sixteen, who had been operated on for stricture, and accidentally placed in a bed opposite to one occupied by another boy with chorea. He soon began to imitate the movements which he witnessed, although moved into another ward, eventually died, abrasions and pericarditis (possibly due to pyæmia) having come on. I may mention here that we lately had two patients with chorea in the same ward, in St. George's Hospital (as I am informed by Dr. Archer, who was attending to the cases in the ward). One was much worse than the other, and the severer case was at one time so injuriously acting upon the other, whose imitative powers appeared considerable, that they had to be placed in separate wards.

As respects the fact of the patient's having had PREVIOUS ATTACKS or otherwise, I find that (excluding thirty-three cases in which no mention of this has been placed on record, and one case (No. 33) in which it is doubtful), there are nineteen cases in which it is stated that no previous choreic attacks had been experienced, against twenty-five in which previous ones HAD occurred, and out of these five (viz., Nos. 9, 10, 56, 63, and 67) had suffered from TWO previous attacks. In case No. 17, the patient had had SEVERAL attacks since the age of three and a half years. Case No. 65 had had chorea every year for seven years, lasting from September to Christmas. In order to prevent relapses, Sydenham, who bled regularly for the disease, enjoined bleeding and purging for a few days on the year following, at the same time of the attack or

frequency amongst the Jews of chorea as an argument in favour of the existence of an hereditary tendency to the affection; and he has obligingly furnished me with the following CIRCUMSTANCES referring to this supposed prevalence of chorea among the Jews. He observes—

"1. In 1834 I heard the late Dr. Addison (Guy's) say, during some some bedside clinical remarks, that he had noticed 'chorea' to be very common in Jewish families.

"2. Dr. Stiebel says that chorea is particularly frequent amongst the Jews (vide 'Wochenschrift für die gesammte Heilkunde,' No. 1, 1837); also the 'Brit. and For. Med. Chir. Rev.,' October, 1837, p. 504.

"3. In 1842 I attended a family of Jews consisting of father, mother, and five children—four girls and one boy; all the four girls had 'chorea,' three of the number being attacked at one time. The mother had had chorea when a child, and the father's mother had also suffered from the same affection.

"4. An intelligent old Jew (gentleman), well up in the history and peculiarities of his nation, told me some short time before his death, which took place in 1865, that 'his people were often attacked with St. Vitus's dance, and that, when in Germany, he had known whole families to be affected with it.'"

[1] 'Gaz. des Hop.' 1863, No. 46.

earlier. Heberden also alludes to the fact that a "little tendency" to the recurrence of chorea in some cases has been felt every spring and autumn for three or four years.

Case No. 73 is a peculiar one, inasmuch as it was stated that the patient had "had some severe attacks three years previously, and never quite recovered from them." In several instances the attacks had been of long standing. Thus, in case 4, they had gradually been coming on for four years; in case 25, the symptoms had existed off and on for eighteen years; and in case 76, for six years. In none of these long-standing cases have we indications showing that any cerebral or spinal lesion had existed.

I will now pass on to consider such cases as presented any PECULIARITY IN THE SYMPTOMS which it seems desirable to take notice of. In addition to other interests, this inquiry might have special value with respect to the question as to whether the choreic symptoms had reference, in any cases, to organic disease of the central nerve organs.[1]

Taking into consideration the state of the MIND, in only two cases (Nos. 6 and 34) have we mention of any complication. Even in

[1] To the subject of choreic movements having their source, in some cases, in obvious disease of the brain or spinal cord, I alluded at pages 227-8, and said that I purposed to make an inquiry into such cases as I could find, in which organic lesion existed. I may here, in passing, allude to an interesting case, described by Youatt (op. cit., p. 122), of a dog which had chorea complicated with "fits," and also had a peculiar tendency to run "round and round." After death, neither inflammation nor softening of the brain were found, but two spicula of bone were met with, one sixth of an inch long, projecting from the inner surface of the parietal bone, near the sagittal suture. The brain was, to all appearance, natural in substance. In the footnote to page 228 I have alluded to the supposition of Skoda's, that an exudation in the nervous structure may be the cause of chorea. I find that a case of chorea in a man aged 19 is described in the 'Wien. Wochenbl.,' xvii, 1861, 35 and 36, by Stoffella, in which, along with softening of the spinal cord young connective tissue-formation was met with in the form of fine greyish-coloured opaque stripes, the grey substance of the cord being very fatty. It seems that Rokitansky found similar areolar-tissue-formation in the spinal cord in *certain cases of tetanus and of hyperæsthesia.* I have at hand notes of the following recently recorded cases of fatal chorea in which lesion of the brain or spinal cord was found after death, or suspected:—Bouchut ('Gaz. des Hop.,' August, 1863) describes a case of semi-chorea with incomplete hemiplegia in a child, following a fall upon the head and unconsciousness. The strabismus, deafness, loss of memory, and pains led to the supposition that cerebral congestion was the cause of the chorea. The patient recovered. At the Middlesex Hospital, in 1863, was a fatal case of chorea, under Dr. H. Thompson's care, the result apparently of fright. After death the substance of the brain generally was found much softened, especially the anterior pillars of the fornix and the septum lucidum, and the left side was more softened than the right. Considerable softening also existed of the spinal cord from the third or fourth to the sixth and seventh dorsal vertebræ, and the cervical swelling was softer than natural (see 'Med. Times,' July 25, 1863). The reader of Dr. Copland's 'Dictionary of Medicine' may remember that, in 1821, he recorded a case of chorea, complicated or alternating with rheumatism, and with metastasis to the heart and spinal membranes, which, after death, were found to be covered with coagulable lymph, &c.

case 6, complication is not quite clear, and in case 34 it was only in a former attack that the mind had been affected. In case 62, mental excitement, "as if she was going out of her mind," had existed at one time. This comparative immunity from any affection of the mind in these choreic cases is perhaps worthy of comment, as some authors have spoken of the not unfrequent alliance between the two.[1] In cases 44 and 80, the patients had been more or less liable to hysterical attacks; it may be remembered that in two of my fatal cases, hysteria had co-existed. Dr. Chambers also records a case (op. cit., p. 365) of chorea in which hysterical attacks had occurred.[2]

Regarding PARALYTIC symptoms, in eleven cases we have distinct mention of paralysis of some kind or other (viz., in cases 18, 19, 21, 43, 52, 58, 62, 66, 74, 75, and 79). In this category I have placed only those cases in which actual want of power in the muscles of the limbs or face existed, and not those cases in which muscular weakness resulted as a consequence of want of power of direction of and of harmonising the muscular action.

In cases 30 and 75, positive anæsthesia existed,[3] and in the latter

[1] Marcè, mentioning their frequent coincidence (see number of this 'Review' for July, 1859, p. 256), describes the association in a systematic manner as being of five varieties, as follows:—1. Troubles of moral sensibility, irritability of temper, sadness. 2. Troubles of intelligence, loss of memory, mobility of ideas, and inability to fix attention. 3. Hallucinations, between waking and sleeping, and of the sight chiefly. 4. Maniacal delirium, which, if recovery occur, may leave the mind affected. In the 'Year Book of the Sydenham Society for 1865,' p. 84, are related two highly interesting cases, recorded by Thore, and quoted from the 'Ann. Med. Psych.,' 1865, in which insanity followed chronic attacks of chorea; and allusions are made to the writings of several well-known authors, showing that various kinds of intellectual and emotional insanity may occur in cases of chorea, though it appears that Thore considers that these mental affections can hardly depend upon the choreic state, but are chiefly caused by coincident diseases, such as typhus, rheumatism, or chlorosis. Dr. Inman, in his 'Foundation for a New Theory of Medicine,' 1861, p. 153, observes that "in chorea we have at times a mental prostration, amounting almost to idiocy." Romberg, vol. ii, p. 57, observes that in chorea, "except in complications, no psychical disturbances are manifested." Trousseau, on the other hand, observes that in every case of chorea there is, with few exceptions, more or less marked impairment of the intellectual faculties.

[2] I have now a boy in St. George's Hospital with chorea, who has had two or three attacks of chorea, with long intervals previously, and his mother assures me that on each occasion he has during the attacks forgotten "all his learning," so that he actually had to be taught his alphabet afresh after each attack. He has never had any fright nor rheumatic attack, but has had ascarides.

[3] Trousseau speaks of diminution of sensibility existing in most cases of chorea, and of anæsthesia, when it exists, being greater on the most convulsed side. I have lately had related to me by Dr. Ilott, of Bromley, a case of chorea, in which the movement was confined to the right arm, which "was constantly in motion, unless strapped down to the body; when relieved, the movement would instantly begin. It was almost entirely *devoid of sensation* during the earlier part of the time. This want of sensation gradually improved, and the movement became less violent." It seems that "the improvement dated from a time when the patient had a peculiar thrill down his arm, similar in character to one he had at the commencement of the attack." From this time the move-

case there was loss of power in the left arm and left side of the face. The atrophy of the muscles and of the bones of the shoulder, in

ments were much "more under control, and it was only when he became excited that he had any twitching. He has now quite recovered, and is employed as a French polisher. The medical treatment consisted chiefly in the use of iron in various forms." The patient was an orphan boy, aged 13, and of average ability, as Mr. Cattlin, of Brighton, who knew him, informs me. He has also told me that the boy had paralysis during his first dentition, and also, he thought, had been the subject of tapeworm. He had been under Dr. Gull's care, at Guy's Hospital, and also under Dr. Hare's care. The case reminds one of those cases described by authors, in which the movements consist of "malleation." The following case, described in Dr. Charlton's book 'on the Bath Waters,' p. 53, may form a pendant to that of Dr. Ilott's:—A woman had a fright, which first brought on convulsions and great pain in the stomach. Afterwards she was the subject of a peculiar involuntary motion of the right arm. This movement was perpetual, "like the swing of a pendulum," raising the hand, at every vibration, higher than the head, and seemed to alternate with convulsive movements. The motion of the arm always ceased during sleep, but returned immediately on waking, and continued all day. She got well, as was supposed, under the influence of opium, given in considerable doses.

Dr. Parkes, in 1861, had a case under his care at University College, in which the movements were limited to the right arm, and were like those produced by electrical shocks. Sometimes there was *anæsthesia* of the affected arm, and once a tendency to twitching of the opposite arm. It was described as being like the cases recorded by Dr. Pignacca under the name of electrical chorea, given by Dubini, of Milan, and which are probably epileptic in character (see 'Lancet,' March 2, 1861, p. 214). Dr. Parke's patient recovered. A case of "chorea electrica traumatica" treated successfully by wet-sheet packing is quoted in 'Schmidt's Jahrbüch,' 1860, p. 305.

Along with these cases also may be quoted one described by Dr. Aspray, in the 'Lancet,' for July 15, 1865, p. 65, in which the patient, a female, was affected by violent choreic jactitations, first of the right arm, which was thrown upwards and downwards, from the face to the knee, occasionally changing to the rotatory motion, and then of the opposite arm. The patient had no return of the attacks. She had been suffering from constipation.

In connection with the above cases, mention may also here be well made of the case described by Dr. Sanders, in the 'Edinburgh Med. Journal,' for May, 1865, under the name of "pseudo-paralysis agitans," or "spinal chorea" (?) a case belonging to the class "tremores." "The case bore a general resemblance to those of chorea," but "really differed entirely from this affection," the movements being shaking, oscillating to and fro by the alternate action of antagonistic muscles, repeating themselves rhythmically and usually symmetrical. The predisposing cause of the affection seemed to be an accident some months previously, and the existing cause, fright, occasioned by a second fall; and Dr. Sanders thought that the affection depended on a weak and excitable condition of the motor centres in the spinal cord, due to anæmia of its grey substances. Sometimes no doubt the diagnosis between true chorea and other forms of morbid muscular movements is difficult. Dr. T. Thompson (op. cit.) quotes a case described by Dr. Dufour and Rennes, in which the choreic movements were "zigzag," in character, and were mistaken for those of drunkenness.

It has been remarked by Dr. Elliotson, that when the disorder is confined to the muscles of one arm or of the hand, and especially in the adult, he had never known the disease cured.

Although not an instance of chorea, but rather of hysteria, I may here record the following interesting case which I witnessed:—The patient, a young lady, had been watching her dying father, whose respirations were very loud and of rather a peculiar rhythm. After his death, the daughter, stunned as it were by her loss, and hardly realising it, could not shed tears, but for some time (three or four hours) continued pacing up and down the room with a peculiar movement of the head,

case 59, are worthy of notice; but, dating so far back as they do, they appear to have had no connection with the choreic state. In case 79, there was atrophy of the adductor muscles of the thumb on both sides.[1]

Looking at the condition of the PUPILS of the eyes, I found that in many cases dilatation of both pupils existed, as is commonly noticed by observers of chorea; but of this appearance I have not made special note in my cases. In the following cases, however, disparity between the two pupils was noted (a much more important phenomena, I need hardly say, than equal dilatation of both), viz., in cases 2, 20, 61, 71, and 74; and in all of these instances it is curious to note that it was the *right* pupil which was dilated more than the left.[2]

Respecting PAIN experienced, I observe that, excluding such pain in the limbs and joints as may be looked upon as being rheumatic, &c., we have notice in the following cases of distinct pain in the head, viz., in case 10 (in which, apparently, some syncope co-existed) in cases 16, 17, 19, and 64. In case No. 59 "much spinal tenderness" was complained of.

Regarding acknowledged affections of VISION, such seem to have existed in No. 17, where "something before the eyes was always noticed;" and in case 45, where dimness of sight of the right eye, along with headache, existed; and in No. 64, where "black spots" in the sight were spoken of.

As respects any connection between the affection and *sleep*, it will be admitted that in cases 16, 17, and 33, the choreic movements were wont, more or less, to continue during sleep; whilst in case 36 the patient was said "to plunge when asleep in bed;" and in case 43 the eyes would "twitch much" during sleep. In case 24, the patient was said to be "always worse in bed when first roused up from sleep."[3]

In case 60, "FOAMING at the mouth" was described as existing; and in case 40, a liability to CHOKING whilst eating. This, no doubt, is an exaggeration of the difficulty in swallowing, which, as well as difficulty of speech, is so common a symptom in

which, as did her footsteps, repeated and kept up the same time as the respiration of the dying man. At last this state had to be checked and arrested by friends.

[1] Rostan (quoted by Aitken, in his 'Science and Practice of Medicine,' vol. ii, p. 340) mentions the case of a woman, aged 50, who had been the subject of chorea, affecting the entire left side since she was a child, in whom the limbs on the *same* side were *atrophied*. After death no morbid appearances were met with in the brain.

[2] Youatt records the case of a dog with chorea, in which both pupils were much contracted.

[3] Dr. Fox of Clifton has told me of a case now under his care of an old lady in whom choreic movements of the right leg, hand, and arm, exist. They are most intense *during sleep*, but may be absent for a day together, and can almost always be controlled by a touch of any one's hand.

certain of the severer cases of the disease, or it may have been hysterical in its character.

Case 35 was remarkable, as exhibiting a tendency to RETENTION OF URINE, which sometimes lasted for twenty-four hours, Dr. Chambers, in his 'Lectures,' page 360, mentions the case of a boy, aged nine, with chorea, who was unable to retain his fæces or urine; and Trousseau alludes to cases of relaxation of the sphincters of the rectum and bladder. To the condition of the sphincters in chorea, I have already alluded in connection with one of the fatal cases described (see footnote, page 224). Dr. Levick, in his paper above quoted, states that Dr. Pepper, of the University of Pennsylvania, told him that he had known incontinence of urine to interchange with chorea of the external muscles and conversely.

In addition to the above cases of chorea, I have notes of one or two other remarkable cases, in which the symptoms were exceptional. Thus, three or four years ago, we had in our wards for a length of time a case of a lad aged eighteen, the son of a medical man, affected with a form of chorea in which, in addition to the more ordinary involuntary spasmodic movements, the most grotesque and at the same time alarming actions were exhibited, for he was constantly and violently throwing about and twisting his whole body and his head to and fro, and his arms in all directions, sometimes falling down as if dragged down by his own contortions; constantly "banging himself" against the bedstead, and making his face quite turgid, and putting himself out of breath by his exertions and jactitations, making also a peculiar grunting noise; all this time being made worse whenever he was noticed or questioned about it. It was said that he had caused the affection by masturbating habits, and that he had been treated by caustics applied to the urethra.

He had been in St. Mary's Hospital, and most accidentally I found that it was the case described in Dr. Chambers' 'Lectures,' p. 378, as being under his notice in St. Mary's Hospital in 1860. The movements are well described as "coming on in paroxysms, principally affecting the muscles of the neck, and twisting his head so far round sometimes as to cause him to tumble down, screaming and barking." Among other remedies, morphia was tried subcutaneously injected at St. George's Hospital, and it was also tried, along with other things, at St. Mary's Hospital, but no good appeared to follow. He left London in much the same state as when he came, and eventually he was, as it turned out, placed under the care of my friend, Dr. Boyd, at the Wells Asylum, where I accidentally saw him several months afterwards, whilst on a visit at Wells. He was out in the garden, talking to himself among some bushes, and I was told that his habit was to be out much alone, which was permitted. He

recognised and was pleased to see me, and talked about St. George's Hospital. He was very much quieter than when I had seen him previously, though he still knocked about his head and body to a great extent. In a letter received from Dr. Boyd in December last, he says, with reference to him—"The young man with chorea, now aged twenty-four, is still here. He has not been under any course of medical treatment lately, but he still uses the cold douche himself or the shower-bath. He is rational, and in very good health, but still has spasms affecting the muscles of the face and neck principally; he stammers, and the spasms increase when spoken to, especially by strangers. During the summer he was able to join at cricket, also in the weekly dances, and he assist the attendants out of doors occasionally. He has always cared little for cold air, but heat oppressed him. He has a large appetite for food. He might now engage in some suitable occupation."

In the case of a young woman, with deformity of the fingers and toes, who was in our hospital with an hysterico-choreical attack about two years ago, and who often visits the wards now, the chief symptom consisted of spasm of the neck-muscles, a peculiar jerk of the head, accompanied by a remarkable squeaky noise formed in the larynx, reminding one of that made by a guinea-pig, as if the breath were suddenly and involuntarily propelled by some spasm of the expiratory muscles.[1] A similar jerking back of the head from chorea of the neck-muscles is related by Dr. Barker in the 'Medical Times and Gazette' for 1863, July 25th. No other muscles of the body were affected; the patient recovered. On the same page (92), a case of chorea under Dr. Brown-Séquard is recorded, in which GREAT HYPERTROPHY of the muscles of the neck was caused by their constant action. The above-mentioned peculiar sound or squeaking noise recalls to mind a remarkable case of chorea related by Dr. Thompson, of Bideford, in the 'British Medical Journal' for February 11, 1865, in which, along with a variety of other odd symptoms, the patient had "a peculiar convulsive voice-sound, somewhat resembling hiccough, repeated with almost the rapidity of time-seconds, and accompanied by an agitation of the neck much resembling paralysis agitans."

In another case, which was under my care as an out-patient at the

[1] Romberg, in vol. ii, p. 55 of his work (Sydenham edition), relates the case of a female, æt. 48, with chorea of eight years' standing, in whom "inspiration was often accelerated, and accompanied by a loud *whistling* sound;" also that of a child, æt. 8, in whom dyspnœa, *whistling* inspiration, and palpitation existed; and a third one, a child, in whom was observed a "rapid and short concussion of the thorax," "invariably accompanied by a brief snapping noise," the result of an affection of the inspiratory, specially intercostal muscles, and a spasmodic condition of the glottis. Trousseau speaks of the voice being altered in some cases of chorea, and the patients uttering "a kind of a bark," and also of the voice "coming out in inspiration, instead of expiration."

hospital, the patient (a woman) was constantly *rotating* the head as fast as she possibly could; the velocity of this movement was excessive, but it appeared to have no important effect upon the patient, whereas on trying myself to execute it with the same rapidity, I became quite giddy at once, and unable to proceed. The patient had been subject to the affection for some months, and never appeared at the hospital without this rotation of the head going on.[1] After a time I quite lost sight of this patient. In another case, apparently of chorea combined with hysteria, related lately to me by a non-medical friend, during the attacks the patient would rotate round her own axis with great quickness, somewhat reminding one of those singular and rare cases of disease and injuries of the different parts of the cerebrum proper, also of the pons Varolii, medulla oblongata, aad cerebellum, or its peduncle,[2] in which rotatory movements are at times

[1] Flourens, in his 'Experiments on the Respective Independence of the Cerebral Functions,' related to the French Academy, April 1, 1861, found that section of the semicircular canals produced brusque motions of the head in various directions, according to the canal injured.

[2] It may be of interest here to refer a little to these rotatory motions. Authorities, chiefly French, as to the cause of such movements are mentioned by various writers of past years, but the reader will find more recent interesting observations, by Gratiolet and Leven, related to the French Academy, on rotations on the axis of the body, produced experimentally, recorded in the 'Archives Gén. de Méd.,' vol. i, 1861, p. 112. They found that vertical section in the centre of the lateral lobes caused the animal instantly to rotate, and when the rotatory movements were arrested for a time the least noise or movement produced their return. The observers came to the conclusion that in the uninjured animal all the muscular equilibriums were in accord and harmonious, whilst after lesion of the cerebellum there was a manifest dissociation of these equilibriums,—this effect constantly resulting from every lesion of the lateral parts of the organ where resides the sense of co-ordination of the movements of the body. In the 'Journal de Physiologie,' 1861, Wagner, in his observations on the functions of the brain, details the results especially of experiments on the cerebellum. In addition to other consequences he found that injuries on one side of the cerebellum produced movements of rotation sometimes on the side of the injury, at others on the opposite side; but these movements after a time disappeared. In the same journal is a note by Brown-Sequard on rotatory movements *àpropos* of a case of "mouvement de manége" in a cat, the result of hæmorrhage into the pons Varolii, in which he suggests that rotatory movements are the result of convulsions localised in certain groups of muscles, and that some direct or indirect irritation is the cause of these convulsions. In the 'Comptes rendus,' 1860 and 1861, the results of observations, by Flourens and Czermak, on the peculiar movements of the head, caused by injury of the semicircular canals, will be seen. A highly interesting case of epilepsy in which unmeaning laughter, tetanoïd spasm, and peculiar rotatory movements, chiefly from right to left, has been described by Dr. Paget, of Cambridge, in the 'British Medical Journal.' In Dr. Brown-Séquard's 'Lectures on the Phys. and Path. of the Central Nervous System,' 1860, remarks exist (p. 192) about the production of these rotatory or vertiginous movements, which vary "according to the place injured and the depth and size of the injury," and are the result of spasm of certain muscles, or of anæmia or irritation of distant nerves,—injuries of the different parts of the optic thalamus, the crus cerebri, the tubercula quadragemina, processus cerebelli, auditory and facial nerves, and the neighbourhood of insertion of the cervical roots of the par vagum, according to the experiments of himself, of Flourens, Schiff, Magendie, Lafargue, M. Magron, &c., being quoted. The various theories regarding such rotatory

manifested.[1] Trousseau, among other varieties of chorea, speaks of chorea rotatoria and chorea oscillatoria.

Similar cases are mentioned by Dr. T. Thompson, who alludes (op. cit.) to instances of involuntary movements of the whole or of parts of the body, and observes that rotation of the head had been noticed by Drs. Conolly and Crawford, and Mr. Hunter, and others; he especially quotes also a case of Dr. Watt's, in which a girl was wont to spin round on her feet like a spinning-top, or to roll rapidly in bed from one side to the other sixty times a minute. Dr. Winn, in the 'Med. Times and Gaz.,' 1855, records the case of a child who, being nine years old, had had from infancy constant rotatory movements of the body from left to right. Sometimes these movements are doubtless the results of habit. A child with dropsy and disease of the kidneys, under my care in the hospital lately, had clearly the habit (without any disease causing it) of rolling the head on the pillow constantly from side to side. Another child in the next bed, under the care of my colleague, Dr. Barclay, had this movement also, but in her case the patient was subject to remarkable epileptiform attacks, which could be at any moment excited by a sudden (unexpected or not) tap on or shake of the head. Dr. Barclay will publish this interesting case, I believe, but allows me to mention it.

Among these anomalous cases of chorea or chorea-like affections few are more singular, perhaps, than those which, consisting of bowing movements, have been termed "eclampsia nutans," and by the late Sir C. Clarke "salaam convulsions." Of this affection I have only seen one instance, and that was in a child whom I attended along with Dr. Marshall Hall, who has described this form of disease. In this, the patient, a child, was from time to time affected by a peculiar slow and measured to-and-fro motion of the entire body. Levick (op. cit.) speaks of this variety, and describes two cases of it which he had seen, one in a child, and another in an adult. He quotes several authors who have described or given cases of this singular affection.[2]

movements are also considered in connection with experiments upon the tadpole, by Velpeau, in the 'Gaz. Méd. de Paris,' 1862, No. 20. Friedberg, of Berlin, communicated to the Academy of Sciences the case of a patient who was trephined for fracture of the right parietal bone, and who subsequently became affected with diabetes, then the rotatory or "manége" movements in the longitudinal axis of the body, then hemiplegia on the right side, and then paralysis of the par vagum. He takes occasion to make several propositions regarding the conditions for the production of this rotatory movement. Mesnet also, *àpropos* of a curious case, has a paper in the 'Archives Gén. de Méd.' for May, 1862, upon the so-called "circular" or gyratory, and the manége movements, which he likens to the staggers in sheep, except that they are not the result of the presence of cænuri.

[1] This movement has been noticed in the chorea of dogs.

[2] West, Barton, Bird, Newham, Wiltshire, Faber. In the 'American Journal of Medical Science' for April, 1843, a case of "salaam convulsion" is related by Dr.

The following case of anomalous chorea was under my care some months ago :—

Emma F—, æt. 11, one of seven sisters, of whom all others were healthy, though the family was phthisical, was admitted into St. George's Hospital, October 4th, 1864, with chorea. She had been ill twelve months, and done no work all that time. Her illness was described as having begun with symptoms of cold and swelling of the knees, and when admitted there was some enlargement of the inner condyles of both tibiæ, and some œdema of the legs. The heart's sounds were natural. There was a little cough and pain in the head. The urine was phosphatic and turbid and contained a slight amount of albumen. The patient left the hospital on the 24th, in the same condition as when she came in; and it was said that she had a brother who died after an eighteen months' illness of the same disease, but without the St. Vitus's dance.

She was again admitted February 27th, 1867, under my care, but in a much worse state than when she left the hospital, having for five months QUITE LOST HER SPEECH. The catamenia had never appeared.

When admitted, it was found that she would lie in bed without changing her position, but having almost continual choreic movements over the whole body; when the movements ceased the limbs were rigid. She was quite unable to articulate, but understood all that was said to her. She was apparently suffering pain, and she was frequently putting her fingers into her mouth. The pupils were rather dilated, but equal in size, and acted well to light; no strabismus existed. There was complete paralysis of the sphincters of the rectum. The limbs were all, as before said, rigid, and when moved they would remain in *the same position in which they were placed*, and the head was generally drawn over to the left owing to spasm of the right sterno-cleido-mastoïd muscle. The pulse was 160 per minute and the skin very perspiring and 99° F. of temperature. She had an oil and assafœtida enema, and scammony calomel, at the same time.

In the evening the temperature was 101 F.°, and on the following morning 99·8°. Large crepitation was found in both lungs, and two or three days later the left hand was spasmodically contracted, and she had been very noisy and delirious, requiring the subcutaneous injection of morphia, which was afterwards from time to time repeated. Quinine, and steel, and valerian, and stimulants, were

Bennett. Dr. John Clarke informs me he has seen one case of this affection in a child with mesenteric disease: the movement of the head was from side to side, and existed hardly without intermission for three weeks. After death, congestion of the cerebral membranes and softening of the brain with effusion of serum in the spinal canal were found.

given. About a week after admission, the pupil of the *left* eye was found from time to time to be *smaller* than the other one, but not always so. The lungs continued loaded, but there was no dyspnœa.

The temperature continued very high, generally about 101·6°. Continual recumbency on the right hand had produced some soreness and vesication. It was observed that the extensor muscles of the right arm seemed partly paralysed, whilst those of the left arm and of the toes of the right foot were spasmodically contracted. She took strychnia subsequently, along with steel. She varied much both as to taking food and sleep, sometimes requiring the morphia injection; at times she was also much noisier than at others. The profuse perspirations were treated by opium and sulphuric acid, though not with much success. On the 11th of March, it was noticed that an abscess had formed at the left temple owing to the head being so much drawn to that side. At the end of March, it is reported that her appearance was improving, and that she continued to take food well. Both knees were drawn up to the abdomen constantly as before, the bed-sores looking better. Moist sounds existed extending in both lungs. The temperature was then generally 98·6°. The tincture of Cannabis Indica and shower-baths were prescribed. Throughout, the pupils were very dilated. About April 5th, she spoke a few words occasionally. The bed-sores continued to do well; the Cannabis was increased, and subcutaneous injections of morphia and atropine were given. On the 20th she went out having from time to time spoken a few words. I have heard nothing of her since.

The high temperature in the above case is of interest, though perhaps not so much so as if the case had been less complicated. No doubt it must be considered as resulting from the quickening of the heart and circulation, consequent upon the muscular activity. In many ordinary cases of chorea I have failed to meet with any positively increased temperature.[1]

In connection with this subject, as a result of muscular movements, I may here allude to the high *specific gravity* of the urine, and the amount of *urea* in that excretion spoken of by some as exciting in cases of chorea. The reader will know that I allude to the observations of Walshe (see Lectures on Clinical Medicine, 'Lancet,' 1849, vol. i, p. 85), Bence Jones, Todd, and others. For myself, in a great many ordinary cases of chorea, I have been unable to find anything of the kind beyond what would doubtless be produced by the comparatively high feeding which chorea patients are subject to. In many cases, even where much food was taken, the

[1] My friend Dr. Fox tells me that he has found the temperature in chorea to be "99·3° and 100°, and even rather more at night, and that was so in cases where there was not much muscular movement." He thinks it probable that temperature in chorea is higher in cases in which rheumatic element exists.

urine did not range above 1019 or 20°, but lithates were very abundant.

No doubt under the light of former physiological knowlege it was naturally expected that an increased excretion of urea would take place as an inevitable result of tissue metamorphosis in chorea. Present teaching, however, shows us that we ought neither to have found nor sought for such increase of urea in chorea. On this matter see the 'Ed. Med. Journal,' Feb. 1866, wherein Dr. K. Anderson describes the daily amount of urea in the second week of typhus, as being "decidedly below the standard of health, notwithstanding that the patients were in a state of high fever with the temperature and pulse much above the normal state." See also the experiments of Bischoff, and Voit, and Fick, and Wislicenus of Zurich, corroborated by Professor Frankland, from which it appears that muscular power is derived from the oxidation of hydro-carbonaceous material mainly, though not entirely. Frankland thinks the mechanical force of the muscles is derived from the oxidation of matters contained in the blood, and not from that of the muscles themselves. Dr. Parkes (see 'Proc. Royal Soc.,' Jan., 1867), from experiments, came to the conclusion that unless nitrogen be found to disappear through the skin, it must be supposed that muscular force is derived from the carbo-hydrates, the amount of nitrogen excreted during active exercise being lower than that excreted during a period of rest, though in the period of rest following work, it is slightly increased. Pettenkofer and Voit noticed recently that muscular work seems to have no influence on the amount of urea excreted.

I will now add the details of a case which was not under my care, but of which I have been favoured with the following notice. I have alluded to it at foot-note to page 232.

It was that of a boy who lived in Derbyshire. He had had some kind of "fever" and was inefficiently nursed, and, subsequently, became severely affected by chorea; during sleep he was perfectly quiet, but on waking would at once commence singing and shouting vociferously, and jumping and "working about" as friends described it, until he was quite exhausted. He would jump violently, and scream loudly, and by jerking motions eject the spittle to an enormous distance. For some time he was unable to swallow any substance, and at last became in consequence "so frantic for food" that he swallowed everything whole directly he put it into his mouth. In this condition he continued for several weeks, and was treated by T. Fentem, Esq., of Eyam, who, in addition to other treatment, applied a blister at the back of the neck. At last, it was determined to take him to the Sheffield Infirmary. To the boy's delight (expecting cure at the Infirmary), a carriage was procured for him, and he was conveyed thither a distance of several miles. He jumped

about and was unmanageable in the vehicle for some time as usual, but when they arrived at the Infirmary with him it was ascertained that he was now all but well.[1] They kept him in the Infirmary for two weeks and treated him with tonics, good food, &c., and he left it still remaining quite well; and since then he has married, and has had no return of the affection. It was the conviction of himself and his friends that he was cured by the shaking of the carriage. This case somewhat reminds one of those cases analogous to chorea termed "epilepsia saltatoria."[2]

[1] I have previously (specially when referring to this fact as a reason against the supposition of serious injury to the nervous centres existing in such cases) alluded to the rapid removal of chorea which sometimes takes place. I may here quote the case of a girl, A. H—, who was admitted into St. George's Hospital with chorea, under the late Dr. Page's care, not long ago. She became the subject of scarlet fever, and the chorea almost entirely departed, apparently in consequence of this attack. I find in the 'British Medical Journal,' August 1st, 1863, p. 121, a case, quoted from the 'Gaz. des Hôp.,' of chorea cured, and permanently so by an attack of fever caught in the hospital. Dr. Painter, of Beaufort Gardens, has lately informed me of a case of aggravated hysterical paralysis, which was singularly cured in his presence by the "fright" produced by the sight of a leech on the ground. Many readers may remember the case of paralysis cured by Sir H. Davy, merely by the daily placing the thermometers under the tongue.

[2] The reader will find the details of a fatal case of chorea in a girl, æt. 13, related by Dr. Inman, of Liverpool, in his work on 'Neuralgia,' 1860, p. 249. The patient appears to have died of exhaustion; the choreic motions ceased some hours before death. "The post-mortem showed as healthy a body as it was possible to examine." This case is also related along with another fatal case, in which the symptoms "resembled those of tetanus and chorea, but were identical with neither," in his work the 'Foundation of a New Theory,' &c., p. 466. In Schmidt's 'Jahrbücher,' 1865, Bd. 137, ser. 2, p. 169, are quoted two cases of so-called "chorea magna," of which one proved fatal. This case had been under the care of E. Vecchietti, in the Ospedale Maggiore at Bologna, and was that of a boy, aged 13, who had had acute rheumatism. The choreic movements commenced in the right arm, and then extended to the entire body. Among other symptoms pressure on the vertebral column was painful. The *temperature was increased*, and the skin greatly perspiring. After death, in addition to other appearances, the veins of the vertebral canal were found distended with blood, the cellular tissue injected, especially about the first dorsal vertebra; and the veins and capillary vessels of the cerebral membranes were injected. The spinal cord opposite the first dorsal vertebra was greatly softened, and of a reddish colour. The *other* case of "chorea magna" did not prove fatal, and was communicated by Dr. Frangue of Munich. The patient was a boy 11 years old, who after a fright from a blow on the shoulder lost his speech for six weeks. Speech returned afterwards for a single day, and then disappeared again, choreic movements coming on. Speech again returned, but the choreic movements became worse, and eventually of a most violent kind. With intervals of intermission the disease continued above two years. Much urate of ammonia was passed, and on two examinations abundance of SUGAR was found in the urine. Frangue says that in a female choreic patient he had found sugar in the urine which was not there before, or in the intervals, after every attack. Other cases of so-called "magna chorea" are on record, chiefly in German literature, and it seems to bear the name with some authors of "Chorea Germanorum." As far as I can learn, Skoda first used the name chorea magna, which he described ('Allg. Wien. Med. Zeitung,' 1858, 36) as being distinguished from so-called "chorea minor" only by its paroxysm-like invasion: the movements may be, however, of a springing, revolving character, and generally are very violent, but not trembling, as in paralysis agitans. Among such instances of chorea magna, two cases are particularly interesting, one described by Mossler,

In bringing to a close these observations upon chorea, I will (in reference to the questions connected with the history of the fatal cases which I have already given) add the notes of yet other *fatal* cases,[1] two of which have not been yet placed on record. Of these, that already published by Dr. Day, in his 'Clinical Histories with Comments' (see p. 101), is so interesting that I may be pardoned giving a brief abstract of it. The case was that of a boy, aged nine years, who had had acute rheumatic fever two years previously (? with any heart mischief), and who experienced a second attack. Four days after the commencement of the second attack chorea set in. Pericarditis came on, and he died eventually completely exhausted, retaining consciousness to the last. It was remarkable that the choreic spasms were not arrested (only lessened) during sleep; and also that the acid perspirations were confined to different parts of the body at a time, sometimes to one side only, or to a particular limb. After death, in addition to old-standing valvular roughnesses, the fleshy columns and tendinous chords of the heart were covered with "*lymph-like exudations.*" The brain was healthy, but the vessels of the spinal membranes were very distended with blood, and in some cases had given way. The spinal nerves over a large extent of the chord, where emerging from the intervertebral notches, seemed pinched, their membranous covering being "at least four times as thick as it normally should be, so that it appeared to form a complete stricture, whilst both before and behind this constriction there was ample evidence of inflammatory action." Moreover, large discoloured spots were found under the skin of the body in many parts. Dr. Day alludes to Dr. Stiebel's opinions (see 'Wochenschrift f. d. Gesamm. Heilk,' 1837, No. 1.; also, 'Brit. and For. Med.-Chir. Rev.,' Oct. 1837, p. 504), that chorea was entirely occasioned by spinal-nerve-irritation, the result of turgescence of the membranes of the spinal cord or medulla oblon-

of Giessen ('Deutsche Klinïk,' 1860, p. 30) in a girl aged 12, apparently connected with menstrual efforts, and ending in hysterical convulsions; and another, described by Roth, of Bamberg (see 'Jahrbüch,' vol. cxix, p. 294), in a child aged 11, who became insane and epileptic.

[1] Dr. Fox, of Clifton, has quite recently sent me the note of the following case of complicated chorea. It was "that of a girl who had been epileptic for some years. In spite of this she went to school, and was much impressed by the sayings and doings of a curate with Revivalist tendencies. She was brought to the infirmary with violent choreic and jactitations of the sides, and spent several days and nights in screaming, praying, and swearing. She considered me an impersonation of Satan, and on one occasion bit me severely. In fact, she resembled some of the worst cases of Revivalist hysterical mania, with the element of chorea superadded. In a few days she became more calm, and the chorea gradually left her, but, against my orders, the curate was allowed to see her during her convalescence, and a recurrence of all her symptoms, choreic and other, was induced. She recovered entirely after a complete separation from the religious exciting cause. She died some years afterwards of fever, having been convulsed almost without interruption for forty-eight hours before death, and no lesion of the spinal cord or brain was detected."

gata, and that possibly such other causes as "injuries to the spine and metastasis of rheumatic inflammation" may exist, which causes would of course produce the above-named spinal-nerve-irritation. He, however, unlike Dr. Stiebel, denies that all cases of chorea are dependent on one universal and unalterable cause, and suggests "that in the milder and more yielding forms of the affection, there is mere functional disturbance," while in the "graver attacks there is ALWAYS going on a local lesion of a severe character." In passing, it may be recollected that in choreic cases we often have pain produced by pressure on the vertebræ. Dr. Day observes that in the milder cases the movements were rather like exaggerated natural motions with a shade of "CONTROLLABILITY," whilst in the severe forms "all control is evidently gone, and the spasmodic affection seems to partake almost of the nature of tetanus."

Dr. Day adverts also to the suggestion of Dr. Stiebel, that in the milder cases of chorea, which generally occur amongst young growing persons, it is probable that, as the spinal marrow and the origin of its nerves lie within a bony canal, there may be during development "some want of due relation between the bones and the enclosed part of the nervous system, the cavity not corresponding to the increasing marrow, and then a constriction or pressure may for a time produce an irritating effect." I need hardly say that such an anatomical cause would hardly be consistent with the changing and transitory character, and the rapid curability or removal of the affection in many cases. Dr. Stiebel remarks that of the nearly one hundred cases of chorea which he had seen, in not one was there wanting the evidence of an irritation of the spinal nerves, few of the patients not having had pain in some one of the vertebræ during the course of the disease. I would suggest that such pain need not of necessity indicate any irritation of spinal nerves; it might have been rheumatic, and connected with the fibrous structures about the vertebræ. In connection with this symptom a case related by Dr. Marshall and quoted by Dr. T. Thompson (op. cit.) is interesting, in which symptoms resembling chorea were apparently produced by lightning, and these symptoms were much aggravated by pressure at certain points of the spine. Dr. Day, in alluding to the discoloured spots under the skin in his fatal case, takes occasion to comment on the connection established by some authors between "nerve lesions" and certain eruptions and morbid appearances of the skin. I will here refer to the mention made by Dr. T. Thompson (loc. cit.) of cutaneous diseases, such as urticaria and roseola, co-existing along with chorea and probably resulting from the same state of the nervous system. He quotes one case of chorea of a remarkable kind, in which diffused patches of a bright-red eruption came out near the elbows, on the day the motion ceased, and lasted three days. It came on afterwards again on the arms, when the eruption recurred. I find that Dr.

Bright noticed the coincidence of roseola with chorea (loc. cit. p. 489).

Dr. Day has obligingly lately sent me the notes of the following case which proved fatal.

"A young woman, in the third month of pregnancy, was admitted into the (Stafford) infirmary, suffering from occasional attacks of chorea. The involuntary movement of the voluntary muscles were strange and grotesque, but at first not violent; they soon, however, became so, and so uncontrollable, that she was placed in a ward by herself, all the furniture being removed and the floor being covered with bedding to prevent her injuring herself. No treatment seemed to benefit her, and I was requested to see her a few days before she died. I suggested that the uterus should be emptied; this was not assented to. I had ice bags applied to the spine (there was considerable spinal tenderness) but this did not make matters any better. I then succeeded in bringing her under the influence of chloroform, and she got some rest and *disturbed* sleep; upon waking, the movements commenced as violently as before. She obtained rest and sleep every now and then from the chloroform, but at last died thoroughly exhausted, retaining her consciousness to the last. Post-mortem examination disclosed everything natural except the membranes of the spinal cord, which showed evidence of intense inflammation."

The third and last additional fatal case of which I spoke was as follows. It quite recently occurred at the Somersetshire Asylum, and for its particulars I have to thank my friend Dr. Boyd.

C. C—, æt. 23, married, was six months pregnant with her second child. She was the subject of most severe spasmodic action of the limbs and neck; the cheeks were reddened from friction caused by jerking of the face against the bedding. She was able to answer questions but with great efforts. The tongue was moist and white. The pulse could not properly be counted owing to the jerking of her arms. Bowels confined; the swallowing of food was difficult. She was labouring also under severe bronchitis and her breathing was difficult. The œdema had existed three weeks when premature labour occurred, the fœtus having apparently been dead two or three days; on the following morning she died. She had sleep from an opiate the night before her death, but for several nights previously had had no sleep.

After death the brain, which weighed forty-four ounces, was found congested but natural in structure. The spinal cord was soft and pulpy throughout its entire length. It was examined for me by Mr. Lockhart Clarke, who has sent me the following notes of the specimen: "The spinal cord was slit through longitudinally; only the lower part of the lumbar enlargement remained entire, and this was

not sufficiently hardened to admit of making thin sections. The lower portion of the dorsal region which had been slit through was evidently softened; small fragments examined under the microscope exhibited, however, chiefly an admixture of granules, with some compound granular corpuscles, without any remarkable alteration in the condition of the nerve-fibres. This condition resulted no doubt from an early stage of softening in which a granular fluid exudation was poured out. Just below the middle of the lumbar enlargement the tissue was perfectly pulpy—of the consistence of cream; and a small portion of this picked out and placed on a slide with as little disturbance as possible, showed under the microscope scarcely anything but broken nerve-fibres mixed with granules and some compound granular corpuscles. Almost every fibre had assumed the form of the well-known globular or oval masses of myalin or white substance, of different sizes; so that under a low power the arrangement resembled the cellular structure in a section of wood or stem of plant. In the lower part of the lumbar enlargement that had not been slit the grey substance was evidently in a state of disintegration." The lining membrane of the bronchial tubes was red and coated with reddish mucus. The abdominal organs were healthy.

Thinking it might be interesting to search out what might have been the number of deaths from chorea returned and registered, as having occurred in England and Wales during a series of years, I found that from the year 1839, the first year of our present national plan of registration, they were as follows:

	Deaths from Chorea.		Deaths from Chorea.		Deaths from Chorea.
1839	54	1851	77	1859	55
1840	25	1852	73	1860	66
1841	28	1853	67	1861	71
1842	19	1854	48	1862	52
1847	39	1855	69	1863	63
1848	38	1856	59	1864	73
1849	34	1857	44	1865	88
1850	60	1858	53		

The number of deaths in the various years is very unequal; it would be interesting to try and find out if this difference could fairly be attributable to any peculiar atmospheric or climatic cause. Many authors (this is mentioned by Bond) have found chorea to prevail much more in cold weather and winter than in summer, and certain observers practising in tropical climates have never met with it. Others again, as quoted by Dr. T. Thompson (op. cit.), consider it to be more common in summer.

Corrigenda.—At page 229, in the third line from the bottom, in the place of "the exit of," *read* "altering"; and in the line below, *read* "are," in place of "being." Also, at page 233, in the second line from the top, in place of "and universally interrupted," *read* "and almost universally uninterrupted."

PART FOURTH.

Chronicle of Medical Science.

(CHIEFLY FOREIGN AND CONTEMPORARY.)

REPORT ON SURGERY.

By John Chatto, M.R.C.S.E.

On the Earliest Treatment of Syphilis.—Professor Sigmund, of Vienna, draws attention here to the importance of attacking, by local treatment, the very earliest signs of syphilis, which are usually overlooked or neglected. To wait until the sore or chancre is formed is to wait until the disease has got possession of the absorbents, and is then rarely to be arrested by such measures. Long before this there are changes to be discovered consisting in mere excoriations, fissures, vesicles, pustules, circumscribed redness and puffiness, or increased secretion. Slight as these may sometimes be, they are the precursors of the more tangible symptoms which are developed after intervals that are sometimes considerable, all these early signs having perhaps first disappeared. The important point is that if these latter be promptly treated by caustics, the disease now being really local, its further manifestation will in a great number of cases be prevented. Professor Sigmund founds this statement upon two series of observations he has conducted. The first of these has been made on persons who have become accidentally the subjects of syphilis in the pursuit of their avocations, as physicians, accoucheurs, nurses, &c., and whose cases admitted of the most exact observation with regard to the period of infection, &c. Of 110 cases of this kind which came under his notice, he has been able to utilise only 57, the others coming too late under observation; and, of these 57, 35 were cauterised between the 1st and the 10th days after exposure to infection, and 22 left to themselves. Among the former 22 per cent., and among the latter 50 per cent. became the subjects of syphilis. But of 24 of the 35 who were cauterised between the 1st and 3rd day, only 12 per cent. had syphilis, while of the 11 who were cauterised between the 5th and 10th days, 63 per cent. contracted it, showing that to prove its real utility the cauterisation should be practised within three or four days after infection.

The second series of observations is derived from Dr. Sigmund's clinical observations. He has practised cauterisation in 743 cases,

in which the contamination was due to connection with syphilitic women; and in 340 cases this cauterisation has been followed by syphilis. But he found that in 312 cases in which it was practised between the 1st and 3rd days only 86 patients, or about 27 per cent. became syphilitic, while when it was delayed to between the 4th and 14th days, in 431 patients it failed in 254, or about 59 per cent. As cauterising agents the author employs the Vienna paste, or a saturated alcoholic solution of corrosive sublimate, for the more superficial appearances, and the sulphate of copper when ulceration is present—taking care that the action of the caustic shall extend beyond the circumference. When the eschars are detached, the parts should be washed with strong solutions of chloride of lime.

Local applications of this kind, employed when chancre or induration have become established, Dr. Sigmund regards as useless, and as exerting no mitigating influence on the future progress of the disease. All they can do is to prevent the multiplication of infection by auto-inoculation or communication to others, and to favour the healing of the primary sores. In conclusion, he observes that this question of the prophylaxis of syphilis cannot be too much and too variously discussed, and endeavours should be made to correct the erroneous ideas which most patients and many practitioners entertain respecting it. Patients should be strongly impressed with the fact that the most insignificant appearance after a suspected connection is of importance, and practitioners must not rest contented without careful examination. If the application of caustic as a prophylactic is not always followed by the desired result, yet in a great many cases the progress of the disease will have been prevented. The public will gradually learn to make careful examination for slight appearances after suspicious intercourse, and to resort promptly to surgical assistance, and it will no longer be then believed that the primary form of syphilis once developed can ever be prevented pursuing its further development by mere local applications.—*Wiener Med. Wochenschrift*, 1867, Nos. 43, 44, 46, 53.

Dislocation of Tendons.—M. Jarjavay observes that, while it is obvious that in severe injuries of joints the displacement of tendons forms but one of the details of the general lesion, the question of whether these admit of displacement without coexisting fracture of the bones or dislocation of the joints is not so easily determined; most authors, however, answering it in the negative. A portion of the subject he has had opportunities of studying, and now presents the results.

1. *Displacement of the Long Tendon of the Biceps.*—After a critical examination of the supposed examples of this occurrence which have been published, and relating five analogous cases which have come under his own notice, he arrives at the following conclusions:—(1) The simple dislocation of the long tendon of the biceps has no existence, or at all events this has never been demonstrated. (2) That the lesion which has been mistaken for it is situated in the sub-acromial serous bursa. (3) This lesion consists in inflammatory swelling, caused by the contusion or rupture of the bursa; or, as a

consequence of the inflammation, in hypertrophy with induration of its parietes, and a fibrous transformation of the cellular lamellæ which traverse it. (4) The following are the symptoms observed: A sensation of displacement at the time of the accident; tumefaction of the point of the shoulder; pain which prevents the movements of the arm, especially abduction; flexure of the forearm on the arm, with consequent rigidity of the biceps, and a sense of fatigue at the bend of the elbow; increase of pain, and a noise beneath the acromion when the limb is raised in a state of abduction—that is when the tuberosity of the humerus is caused to slide beneath this apophysis (this noise, a kind of cracking, gives the idea of the reduction of something displaced, and is reproduced every time the bone is rotated while held in a horizontal position); a disappearance of the pain, and return of the movements of the part after rest, placing the forearm in a sling, and the application of resolvent lotions to the shoulder, the noise persisting even after the pain has disappeared and the movements of the part have again returned. (5) The application of electricity to the attachments of the deltoïd and supra-spinatus muscles is an excellent means of immobilising the scapula, while the arm is at the same time exercised.

2. *Dislocation of the Tendons of the Peronei Muscles.*—Of the reality of this lesion M. Jarjavy has no doubt, not only on account of cases which have been recorded by others, but also because of two well marked examples he has met with himself, the particulars of which he gives. Still it is a very rare accident, for he cannot agree with M. Demarquay that so obvious a lesion could have been often overlooked by competent surgeons. In two of the recorded cases the tendons of both the peronei were displaced, but in the others only that of one, which M. Jarjavy believes must have always been that of the longus. In almost all the cases the weight of the body in falling has borne upon one foot, the extremity of this being turned inwards. In such a case a fracture of the malleolus or a bad sprain from distension or rupture of the ligaments often results; but in other cases, when the groove of the malleolus is not very deep, a rupture of the sheath occurs and the tendons are luxated. Of eighty persons examined by M. Jarjavy, he found that in four the posterior edge of the malleolus only incompletely contained the tendon of the peroneus longus when he induced forcible contraction of the muscle. This would then act as a predisposing cause, the efficient one consisting in the energetic contraction of the muscles when, on a fall upon the anterior extremity of the foot turned inwards, an effort is made to replace it. The symptoms much resemble those of a severe sprain, the patients often being able to walk somewhat after the accident. There is swelling with or without ecchymosis, and in the midst of the infiltrated tissue the tendon is felt rolling under the finger. It is easily replaced by pushing it from before backwards, the displacement being reproduced at will by causing the peronei to contract, while the anterior extremity of the foot is fixed and directed inwards. In some cases it is displaced spontaneously with the greatest ease. With an appropriate starch

bandage applied, after the swelling has subsided, the cure is generally completed by about the 30th day.—*Gazette Hebdomadaire*, 1867, Nos. 21, 23, 25.

On the Healing of Penetrating Gunshot Wounds by the first intention.—Professor Simon of Rostock remarks that this is very seldom remarked, and its possibility denied by most surgeons. But this does not so much arise from the rarity of its occurrence, as from the fact that, during the first few days after a battle, the whole attention of the surgeons is taken up by the more complicated injuries. Simple gunshot wounds, if they have a healthy appearance, are scarcely noticed, or left to the nurses. The circumstances are quite exceptional for the number of surgeons to be sufficiently large to leave them leisure to examine the progress of the more simple cases. And yet several military surgeons of eminence have from time to time recorded the occurrence of this rapid healing. The author was placed during the late German war in favorable circumstances for examining at his leisure the condition of such wounds having had charge of one of the military hospitals at Berlin to which the wounded were transferred seventeen days after the battle of Königgratz. The good appearance of the wounds surprised all the surgical staff which was numerous enough to be able to pay minute attention to them. Most of the muscular wounds were completely cicatrized or completely closed in their entire course up to the orifice of the wound. Even when foreign bodies were present, as balls, splinters, portions of clothing, the wounds were often closed up, and only re-opened at a later period for the elimination of these. The cicatrices looked as if they had been long formed, not having the red appearance of recent scars, but differing in colour little from the surrounding skin. Numbers who saw these patients all agreed that these cicatrices must have resulted from healing by first intention. The patients declared themselves that their wounds had healed in a few days, the orifices of entrance only secreting a little pus. There is much more loss of substance at the orifice of entrance than of that of exit, where, as well as in the course of the wound, the parts become closely approximated enough to unite by adhesion, while at the entrance granulation is usually the process observed. Several surgeons who were on duty near the battle-fields, and saw the wounded soon after the engagements, informed Professor Simon that they had observed cases of undoubted healing by the first intention.—*Deutsche Klinik*, 1867, No. 28.

Sympathetic Ophthalmia.—Dr. E. Meyer observes that on surveying the numerous instances of this affection that have been published it is found that more than one half of them have been observed in cases in which the injured eye contained a foreign body. Of the other half two thirds are cases of penetrating wounds, and one third simple contusions. Generally the lesion involves the iris and ciliary region, inducing prolonged inflammation of the injured organ. It is comparatively rare to find this sympathetic affection succeeding an

operation. It is seldom met with in children, and its subjects are usually persons of a feeble, anæmic, or nervous constitution.

Of the two hypotheses which have been advanced to explain the pathogenic action excited by the injured eye upon the sound one, M. Meyer believes that while the optic nerve and its decussation may, in some instances, be the channel of transmission, this is, in a far greater number, to be sought for in the ciliary nerves. The affection by no means presents the same serious symptoms, and the same pathological changes in all cases, and may especially exhibit itself in three forms. 1. The most dangerous of these is that known as *malignant iritis* or *irido-cyclitis*, which, coming on days, weeks, or even months after the injury, leads to the deposition and organisation of false membranes behind the iris, uniting it in a very solid manner to the capsule, and producing complete immobility of the pupil. There is excessive sensibility in the region of the ciliary body, and eventually the globe softens, complete blindness ensuing. Treatment can here do little. Enucleation of the injured eye after the irido-cyclitis is developed is of no avail, and its only chance of success is its employment before any sign of inflammation is present. Iridectomy is of difficult execution and doubtful benefit.

2. Ordinary *serous iritis* is the second form observed, the pupil continuing to dilate, though perhaps somewhat irregular from slight adhesions. The aqueous humour is turbid, and the globe is rather tense. Although this form is very obstinate it does not lead to irido-cyclitis. The vitreous humour generally remains intact; and in these cases enucleation, being attended with complete success, should never be neglected.

3. The slightest form of the affection may be appropriately termed a *sympathetic neurosis*. It is characterised by considerable photophobia with consecutive spasm of the orbicularis, slight injection around the cornea, weeping, a want of energy in vision, and defective power of accommodation. Enucleation would here be also a remedy; but the author, acting on the suggestion of Von Graefe, has, in three instances which have come under his notice, resorted with complete success to the section of the ciliary nerves; and he recommends that this operation should be performed when, from the sensibility of the ciliary region to the touch, sympathetic ophthalmia is to be apprehended; practising it indeed before any symptom of the sympathetic affection has appeared.—*Annales d'Oculistique*, Septembre.

Arterial Cirsoïd Tumours.—Under this name M. Gosselin indicates an arterial lesion which occupies a place between the erectile tumours described by Dupuytien, and the cirsoïd aneurysm of Breschet; for while the first of these concerned the capillaries, and the second the large arterial branches, the lesion in question is an abnormal dilatation of the arteries near their termination, the arterioli or ramusculi of anatomical language. This dilatation produces circumscribed tumours, sometimes co-existing with the two lesions mentioned, which may give rise to very serious symptoms calling for surgical intervention. It is not meant to be asserted that

this dilatation of the subcutaneous ramusculi has not been noted by various authors; but it has not been sufficiently distinguished by them from venous tumours and arterial varices.

These tumours are almost exclusively found occupying some portion of the head, the pulsating vessels constituting them being in the subcutaneous cellular tissue, differing in that from nævus which is a dilatation of the vessels of the skin. The ramusculi undergo a remarkable development, some becoming as large as quills and others the size of earthworms, the flexures being also very numerous. The agglomeration of these dilated vessels into masses or packets under the skin give the tumour its peculiar character. Not very voluminous, it presents a rounded relief, without being very exactly circumscribed. As it increases in size it acquires adhesions with the skin, which after a while ulcerates, giving rise to dangerous hæmorrhage. Although the affection may sometimes be traced to a traumatic origin, it is in general developed spontaneously, depending upon some special but inexplicable aptitude. It usually coincides with a dilatation of neighbouring arterial branches, or varices properly so called, but the course of the two affections remains independent, the diminution or disappearance of the varices not influencing the condition of this tumour.

The tumours are only met with in subjects from eighteen to forty years of age; and if, as is certainly the case, they exist at a much earlier period of life, they are not sufficiently developed to give rise to deformity and hæmorrhage. The frequency and danger of such hæmorrhage calls for surgical interference, and, rejecting the various operative procedures that have been proposed, M. Gosselin recommends as an effectual mode of treatment the injection of the perchloride of iron into the tissue of the tumour. Wherever the perchloride penetrates, induration and cessation of pulsation ensue, and the injections have to be repeated at the intervals of ten or fifteen days, as many as six or eight being sometimes required. In two of M. Gosselin's three cases ulceration took place at the points of puncture, giving issue to small black and hard coagula. Small ulcers with sprouting granulations succeeded, and were very tedious in healing, notwithstanding the use of caustics. Their presence did not, however, interfere with the curative process. In another case suppurative inflammation followed the last injections, considerable hæmorrhage resulting. The tumour was laid open and the actual cautery applied. The details of the three cases are given.—*Archives Générales*, December, and *Comptes Rendus*, October 7.

On Union by the First Intention after Lithotomy.—Professor Bouisson maintains that this, although an exceptional occurrence, may be effected much oftener than might be supposed; and he relates four cases in which it took place from among those he has met with at the St. Eloie Hospital, Montpellier. Two of these were observed in adolescents, one in a boy six years of age, and the fourth in a man sixty-four years old—this last being of course an example of a very rare occurrence. In all of them complete cicatrization was accomplished within a week. Young and healthy subjects are those most

suited for a trial of the plan, but no particular mode of dressing the parts is resorted to, although some aid may be derived from observing a suitable position. The median operation is that most likely to be followed by this result, and it should be performed with as little contusion and laceration of the parts as possible. To this end, when he has to do with too voluminous a stone to admit of extraction through an incision of small dimensions, M. Bouisson, in place of using too great traction, prefers completing the operation by means of lithotrity. Another precaution taken is the prevention of the flow of urine through the wound by keeping a catheter of moderate size only in the urethra. In some cases this is not necessary, as the urine at once spontaneously passes by the natural channel or escapes through the wound in such small quantities as not to retard its healing.—*Gazette Médicale*, 1867, Nos. 46-52.

The Statistics of Amputation.—Professor J. F. Heyfelder furnishes a contribution to this subject derived from twenty-two years' (1841-63) hospital practice in three different places, viz., Erlangen, Helsingfors, and St. Petersburg.

1. In the surgical clinic of Erlangen, during the years 1841-54 there were performed 127 amputations, with 101 recoveries, and 26 deaths. Of these, 55, with 35 recoveries and 20 deaths, were amputations in continuity; and 72, with 66 recoveries and 6 deaths, were amputations in contiguity or disarticulations. Of the 55 amputations, 10 related to the arm, with 4 deaths, and 25 to the leg, with 8 deaths, 4 to the forearm, with no deaths, 16 to the thigh with 8 deaths. Of the disarticulations, the shoulder supplied 4 cases with two deaths, and the hip 8 cases with 4 deaths. The remainder were operations on the foot and hand, all terminating successfully.

2. In the Military Hospital at Helsingfors, the reporter performed during 1855-56, 39 amputations in continuity, with 14 recoveries and 25 deaths, viz., 4 of the arm with one death, 4 of the forearm with no death, 18 of the thigh with 15 deaths, and 13 of the leg with 9 deaths. There were also 24 disarticulations with 12 deaths, 15 of these being amputations at the shoulder-joints with 4 deaths, and 2 amputations at the hip-joint, both fatal.

3. In the First Military, Workmen's, and Children's Hospitals of St. Petersburg, there were performed during 1856-63, 61 amputations in continuity with 26 deaths, viz., 5 of the arm, with 2 deaths, 9 of the forearm, with no deaths, 14 of the thigh, with 10 deaths, and 23 of the leg, with 14 deaths. The disarticulations amounted to 43, with 18 deaths, among these there being 5 operations on the shoulder, with 2 deaths, 3 on the hip, and 6 on the knee, all fatal.

Viewed together, it results from these figures that (1) the issue of amputation of the forearm was highly favorable, since the whole 17 cases recovered. (2) Next comes that of the arm, 12 recovering and 7 dying of 19 cases; the mortality being 40 per cent. at Erlangen, and St. Petersburg, and 25 per cent. at Helsingfors. (3) Amputations of the leg were 61 in number, with 30 recoveries and 31 deaths; the mortality being 32 per cent. at Erlangen, 69 at Helsingfors, and 64 at St. Petersburg. (4) Amputations of the thigh

amounted to 48, with 15 recoveries and 33 deaths, viz., a mortality of 50 per cent. at Erlangen, 83 at Helsingfors, and 71 at St. Petersburg. (5) With respect to sex, of the 155 amputations 136 were performed on males, and 19 only on females; and the comparative mortality was at Erlangen 75 per cent. for the males, and 25 per cent. for the females. At Helsingfors they were all males, and the two females at St. Petersburgh both recovered. (6) The amputations were performed at Erlangen for traumatic causes in 14 cases, and for chronic organic disease in 41. The former ended fatally in 6 cases, or 42 per cent., and the latter in 14 cases, or 34 per cent. At the Helsingfors Military Hospital, 30 of the 39 amputations were performed for injuries, with a mortality of 25, or 64 per cent. At St. Petersburg, 30 of the 61 amputations were for injuries, with 26 deaths, or 86 per cent. The 25 amputations for disease all terminated well. (7) The ages of the patients are not specified, the reporter only mentioning that the young under 15 generally recover, while it is quite exceptional for a patient above 70 to do so. (8) The disarticulation of the shoulder-joint proved fatal at Erlangen in 50 per cent., at Helsingfors in 80 per cent., and at St. Petersburg in 40 per cent. That of the hip-joint did so in 4 out of the 8 cases at Erlangen, and in the 5 cases at the other hospitals, one of these, however, perishing from the cholera. The 7 cases of disarticulation of the knee all proved fatal. Of the 9 operations on the joints of the hand only 1 proved fatal; and of 20 tibio-tarsal operations all but 2 did well. Operations on the fingers and toes were nearly all successful.

To this statement Dr. Heyfelder adds another statistical abstract, derived, from cases observed (in private practice, we presume) in Finland and at St. Petersburg during the years 1855-62. From this it appears that 234 amputations furnished 151 recoveries, and 83 deaths, the mortality prevailing in the following proportions:—amputation of the arm, 33·3 per cent.; forearm, *nil;* thigh, 77·3; leg, 53·2; shoulder-joint, 66·5; hip and knee, 100; the hand, 9·1; and tibio-tarsal, 25·1.—*Berliner Klinische Wochenschrift*, September 23.

Summary.

Acupressure.—Billroth. On Acupressure. (Wien. Med. Woch., 1868, Nos. 1, 2, 3. Holds a very high opinion of the procedure.)

Amputation.—Heine. On Supra and Transcondylar Amputation of the Thigh. (Deutsche Klinik., Nos. 41, 42, 43. A new modification of the amputation, illustrated by a case.)

Aneurysm.—Vanzetti. Three Cases of Aneurysm treated by Digital Compression. (Gaz. des Hôp., No. 127.) — Porter. Aneurysm of the Right Subclavian, treated by Acupressure of the Axillary and Direct Pressure of the Innominata. (Dublin Journal, November.)—Cheevers. Case of Popliteal Aneurysm, treated by Acupressure. (Boston Med. Journal, October 17.)—Sarazin. New

Apparatus for making Alternate and Elastic Compression. (Gaz. Heb., 1868, No. 6.)

Antrum.—Fano. Treatment of Dropsy of the Antrum. (Union Med. No. 115. After discharging the fluid by perforating the alveolus a silver tube was left in the aperture.)

Bone.—Healey. Operation with a New Instrument for removing the débris of a Sequestrum through a small opening in the involucrum. (New York Med. Journ., October.)—Volkmann. On Caries Sicca of the Shoulder-joint. (Berlin. Klin. Woch., No. 43. Woodcuts.)

Bronchocele.—Hamburger. Operative Treatment of Cystic Bronchocele. (Wochenblatt d. Wiener Aerzte, Nos. 29 and 33. From extensive experience in Bohemia he finds the seton the most safe and efficacious means.)—Patruban. Treatment of Cystic Bronchocele. (Allg. Wien. Zeit., Nos. 51-53. Believes Hamburger's treatment highly dangerous, and recommends incising and emptying the sac and connecting by sutures with the integuments.)—Worms. Account of an Epidemic of Goitre. (Recueil de Méd. Mil., Oct. and Nov. Occurred in an infantry regiment stationed at Annecy, in Upper Savoy).

Chloroform.—Discussion on the Accidents from Chloroform in the Paris Surgical Society. (Bulletin, tome vii, pp. 244, 251, 273, 303, 314.)

Dislocations.—Vigenaud. Case of Intra-coracoïd Dislocation of the Humerus. (Rec. de Méd. Mil., August. Reduced thirty days after by a modification of Jarvis's Apparatus. Woodcuts of this, and of the bandage subsequently applied.)—Dauvé. Complete Dislocation of the Clavicle, Outwards and Forwards. (Ibid. Two cases at the camp at Chalons, one remaining irreducible).—Verneuil. Etiology of Congenital Dislocation of the Hip. (Bulletin de la Soc. Chirurgie, t. vii, pp. 252, 318, 329, with a discussion.)—Fanning. Dislocation of the Femur in a child thirty months old. (New York Med. Journ., Sept. Reduced on the tenth day.)—Boisnot. Simultaneous Dislocation of both Hip-joints. (American J. of Med. Sci., Oct. Reduced by manipulation.)—Sédillot. On the Removal of the Fractured Malleoli in Compound Dislocation of the Foot. Comptes Rendus, Oct. 14.)

Ear.—Gruber. Anatomy of the Temporal Bone in relation to Diseases of the Ear. (Wien. Med. Woch., No. 73. Anatomical conditions of the Mastoid Process. Illustrated by Woodcuts.)—Ladreit. Instrument for Removal of Polypi from the Meatus. (Gaz. des Hôp. 139.)—Politzer. On Obturation of the Meatus Externus in Treatment of Catarrh of the Tympanum. (Wien. Med. Woch., Nos. 78 and 84.)

Ecraseur.—Nielson. On an Improved Ecraseur (Glasgow Jour., Nov.)

Elephantiasis.—Vanzetti. Treatment of Elephantiasis of the Leg by Digital Compression. (Gaz. des Hop., No. 144.)

Excisions.—Gritti. Intrabuccal and Subperiosteal Excision of the Lower Jaw by a New Procedure. (Gaz. Med. di Lombardia, No. 38.)—Volkmann. Case of Excision of the Knee consequent on a Burn. (Deutsche Klinik., No. 43.)—Thomas. Three Cases of Excision of the Shoulder-joint. (Australian Med. Journ., July.)—Cheevers. Two Cases of Successful Excision of the Femur in Hip-joint Disease. (Boston Med. Journal, Nov. 7.)—Ollier. Subperiosteal Excision of the Elbow. (Gaz. Med. de Lyon, Dec. 15 and 22.)—Vanzetti. Two Cases of Successful Excision of the Knee. (Gaz. des Hôp., 1868, No. 8.)—Stokes. Cases of Excision of the Ankle and Knee and Sub-periosteal Excision of the Elbow. (Dublin Journ., Feb.)—Phillippeaux. On Excision in Grave Cases of Coxalgia. (Gaz. Med. de Lyon, 1868, Nos. 5 and 6.)

Eye.—Galezowski. Changes in the Retina in the Tubercular Diathesis. (Archives Générales, Sep. With Ophthalmoscopic Designs.)—Wilson. On Morbid Changes in the Optic Nerve. (Dublin Journ., Nov.)—Castorani. Treatment of Opacities of the Cornea. (Gaz. Médicale, Nos. 40, 41, 43. Gaz. des Hôp. 143. A saturated solution of iodide of potassium is the chief agent.)—Treatment of Purulent Ophthalmia. (Discussion at Paris Surgical Society. Bulletin, tome vii, p. 57 *et seq.*)—Bowen. Ophthalmia at the Industrial Schools. (Australian Med. Journ., Sept.)—Stellwag *v.* Carion. Treatment of Convergent Strabismus. (Wien. Med. Woch., Nos. 82, 84.)—Meyer. On a New Operation for Conical Cornea. (Gaz. Hebd., 1868, No. 9.)—Taylor. On a New Method of Extraction in Cataract. (Edin. Med. Journ., Feb.)—Martialis. On Hemeralopia. (Annales de Med. Navale, Jan.. With Ophthalmoscopic designs.)

Foreign Bodies.—Adelmann. On Foreign Bodies in the Pharynx and Œsophagus. (Prag. Viertel., 1867, B. 4. An elaborate statistical compilation.)

Fractures.—Berenger-Feraud. Suture of Bones. (Gaz. Hebdomadaire, Nos. 39-41. Summary of 66 cases of this applied to ununited fractures, most of which have been already published.)—Packard. Some points relating to Fracture of the Neck of the Femur. (American Journ. Med. Sc., Oct. Especially relating to the anatomical relations, and to the union of intra-capsular fracture. Woodcuts.)—Levi. Case of Fracture of the Right Clavicle. (Rec. de Méd. Militaire, August. Occurred while raising a burden to his head.)—Pacquet. Apparatus in Fracture of the Clavicle. (Bull. de Thérap., Nov. 30. Constructed of gutta-percha, into which peroxide of iron has been incorporated. Woodcuts.)—Lotzbeck. Fracture of the Neck of the Scapula. (Deutsche Klinik, Nos. 45-47.)—Tait. Treatment of Fracture of the Thigh. (Dublin Journal, Feb. Eleven cases treated by Buck's method.)

Hip-joint Disease. Beauclair. On the Utility of Sudden Adjustment in Acute Coxitis of Children. (Gaz. des Hôp., No. 112. Three

cases given confirmatory of the value of the practice introduced by Bonnet, of Lyons.)

Jaw.—Borelli. On Fungous Alveolar Gingival Tumours. (Gaz. Med. di Torino, Nos. 45 and 46.)

Laryngoscopy.—Tobold. Discision of Colloïd Cysts of the Vocal Cords. (Berlin. Klin. Woch., No. 46. Three cases, and woodcut of the lancet-knife employed.)—Rossler. Instrument for passing a thread through, and Fixing the Larynx. (Wien. Med. Woch., No. 80. Woodcuts.)

Lingual Artery.—Demarquay. On Ligature of the Lingual Artery. (Archives Gén. Fev. Relates four cases in which, in imitation of Moore, he tied this for palliation of cancer of the tongue.)

Mouth.—Hart. Case of Excessive Contraction of the Mouth. (New York Med. Journ., Sept. Relieved by an operation providing also a new lower lip.)

Ovariotomy.—Giraldès. Fatal Case. (Gaz. Méd., No. 38. The tumour weighed 3950 grammes, and was an example of fœtal inclusion.)—Margueritte. Fatal Case at Havre. (Gaz. Hebdom., No. 41. General adhesions, the patient dying exhausted during their separation.)—Koeberlé. Several Cases. (Gaz. des Hop., Nos. 110, 114, 117, 142, and 1868, Nos. 7 and 12.)—Dumenil. Successful case at Rouen. (Union Méd., No. 149.)—Balassa. Successful Case at Pesth. (Wien. Méd. Woch., Nos. 85 and 86.)—Dumreicher. Two Successful Cases at Vienna. (Allg. Wien. Med. Zeit., No. 42. After several failures at Vienna, six successful cases have now been recorded.)—Schröeder. Three Cases at the Bonn Clinic. (Berlin. Klin. Woch., Nos. 40 and 41. Two proved fatal and one recovered.)—Thulesius. Fatal Case. (Deutsche Klin. No. 44. Pyæmia appeared on the tenth day.)—Spiegelberg and Waldeyer. An Experimental Contribution to Ovariotomy. (Centralblatt, No. 39. An attempt to illustrate the behaviour of the pedicle after ovariotomy by removal of portions of the uterus in bitches!)—Davies. Successful Case. (Australian Med. Journ., August. Performed in 1852, consequently the first case at the Antipodes.)—Keith. Fourteen Cases. (Ed. Med. Journ., Nov. and Dec.)—Krassovysky. Ovariotomy in Russia. (Ibid., Dec.)—Vanzetti. Three Unsuccessful cases. (Gaz. des Hôp., 1868, No. 5.)—Boinet. Successful case. (Gaz. Hebd., 1868, No. 9.)—Bockenheimer. Two cases at Frankfort. (Deutsche, Klin., No. 49. One recovery.)—Storer. Pocketing the Pedicle. A New and Successful mode of treating the Ovarian Stump. (American Journ. Med. Science, Jan.)—Bulloch. Case in which the Wire tying the Pedicle was left to become Sacculated. (Ibid.)—Lücke. Two fatal cases. Virchow's Archiv., Band xli, Heft 1. Very careful autopsies by Klebs.)—Spiegelberg. Four cases. (Monats. für. Geb., Dec. Three fatal.)

Polypus.—Houel. Case of Naso-Pharyngeal Polypus. (Gaz.

des Hôp., No. 119. Maxillary bone removed. Woodcuts of apparatus afterwards applied.)—Borelli. On Naso-pharyngeal Polypi. (Gaz. Med. di Torino, Nos. 43 and 44. Based on twenty-nine cases, ten in females, and nineteen in males.)—Verneuil. Treatment of Naso-Pharyngeal Polypi. (Bulletin de la Soc. de Chir., tome vii, pp. 18 and 34. With a discussion.)—Gouley. Case of Polypus of the Larynx. (New York Med. Journ., Sept. Operation of laryngotracheotomy performed twice.)—Desgranges. On the mode of operating for Naso-Pharyngeal Polypi. (Bull. de Thérap., Feb. 15. Woodcuts.)

Spleen.—Koeberlé. Case of Extirpation of the Spleen. (Gaz. Hebd., No. 43. Patient died of hæmorrhage.)—Péan. Case of Successful Extirpation of the Spleen. (Union Med., Nos. 41 and 44.)

Syphilis.—Fournier. Clinical Investigation of Primary Syphilitic Induration. (Archives Générales, Nov.)—Boulongue. Treatment of Hypertrophied Inguinal Glands by Enucleation. (Recueil de Méd. Militaire, Oct.)—Fournier. On Gummy Syphilide of the Velum Palati. (Gaz. des Hôp., No. 144.)—Lücke. On Syphilitic Dactylitis. (Berlin Klin. Woch. Nos. 50 and 51.

Testis.—Sistach. On a new variety of Parenchymatous Fungus of the Testis. (Gaz. Méd., Nos. 42 and 45.)—Lefort. On Cystic Tumours of the Testis. (Bulletin de la Soc. Chir., tome vii, pp. 343 and 371. With discussion.)

Tetanus.—Busch. Observations on Tetanus. (Berlin. Klin. Woch., Nos. 42 and 43. Cases occurring in the late war in Bohemia.)

Urinary Organs.—Grynfeltt. On Professor Alquié's Procedure in Lithotomy. (Rev. Méd., Aug. 15. States that the late M. Alquié was in the habit of performing the same operation as that described by Mr. H. Lee; but that he died before his work on the subject was completed.)—Hirschberg. Case of combined Lithotomy and Lithotrity. (Deutsche Klinik., No. 32. Occurred in Prof. Simon's [of Rostock] practice, two very large stones having been removed by an operation that lasted two hours and a half.)—(Lee.) Pathology and Treatment of Urethral Calculi. (New York Journ., Nov.)—Dittel. On Hypertrophy of the Prostate. (Med. Jahr. d. Wien. Ges., Heft. 6. With Lithographs.)—Squire. Improvements in the Treatment of Stricture. (Boston Journal, Dec. 19. Woodcuts.)—Garden. Abstracts of 891 Cases of Calculi treated during 18 years. (Indian Annals, Jan.)

Wryneck.—Eulenberg. On an Apparatus for Wryneck. (Berlin. Klin. Woch., No. 34. Woodcuts.

REPORT ON MATERIA MEDICA AND THERAPEUTICS.

By Robert Hunter Semple, M.D.

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I. *On the Treatment of Lead Colic by the internal use of Sulphur.* By Dr. Margueritte, of Havre. The employment of sulphur in lead colic has been recommended by M. Lutz, and Dr. Margueritte has been induced to follow the example, both because this substance seems preferable, for internal administration, to the drastic medicines generally used, and because chemical analogy leads to the belief that it is an antidote to lead. Sulphur also is quite harmless as a medicine, and it may be administered in large doses. An epidemic of lead-colic in Havre, from the use of adulterated cider, offered Dr. Margueritte the opportunity of collecting some details of cases in which the symptoms were relieved by means of flowers of sulphur mixed in equal parts with honey. Nearly thirty cases of lead-colic were thus treated, and in order to avoid all sources of fallacy, the remedy was employed only in those instances where the bluish border of the gums proved, beyond all doubt, the presence of lead in the system. Nine of these cases are related at length by Dr. Margueritte, but the actual number of them which fell under his observation was thirty-four, including relapses. In almost all, sulphur was the principal if not the only remedy employed to restore the patients to health. The results appear to justify Dr. Margueritte in drawing very favourable conclusions in respect to the remedial powers of sulphur in lead-colic, and he lays down the following deductions from his observations:—1. Sulphur may of itself dissipate the symptoms of lead-colic, but it must be given in rather large doses, those hitherto employed being insufficient. It is necessary to give at once fifty or sixty grammes of sulphur, which may be done without any danger. 2. The dose of sulphur should always be large on the very first day. Dr. Margueritte sometimes found that when he gave only a moderate dose on the first day the disease rather increased than diminished, and he was able to regain lost time only by making the patient take on the next day a much larger dose of the sulphur. 3. When the remedy is administered in a suitable manner and under the most favorable circumstances, the first evacuation ensued in general only on the evening of the second day, or about thirty-six hours after the first spoonful of the sulphur mixture had been swallowed by the patient. The first stools were scanty and difficult, but became more abundant and easy on the third day, and as soon as the stools began to appear there was a notable diminution of pain and vomiting. 4. Although the sulphur when employed alone would ensure these results, yet certain adjuvants may be employed at the same time, such as inunctions of oil of henbane on the abdomen, poultices, and injections. The mixture

of honey and sulphur generally recommended is taken with difficulty by the patients, and therefore Dr. Margueritte combines it with tea and milk. By this plan the sulphur is taken more easily, and its laxative power is increased by the addition of the milk and tea. In the case of a person attacked with lead-colic, Dr. Margueritte recommends the following plan of carrying out the sulphur treatment. The sulphur mixture (sulphur and honey) to be taken in table-spoonfuls every hour diluted with milk and tea; in the evening an enema with bran and honey; inunction of the abdomen with oil of henbane and then linseed-meal poultices; and lastly broth and bitter infusion. This plan is to be repeated the next day, and the day after, and perhaps also the fourth day, after which the dose may be gradually diminished, though the sulphur may require to be administered perhaps for a fortnight or three weeks.—*Bulletin Général de Thérapeutique*, Oct. 30, 1867.

II. *On Epispastics as Exciting and Depressing Agents, and their Influence on the Pulse and Animal Heat.* By Dr. O. Naumann, of Leipsic.—In former investigations Dr. Naumann had arrived at the conclusions, 1. That the therapeutical action of cutaneous irritants is brought about only in a reflex manner; 2. That a proportionately powerful irritation of the skin diminishes the power of the heart and arteries, and acts hyposthenically; 3. That a proportionately feeble irritation of the skin increases the power of the heart and arteries, and acts hypersthenically; 4. That the place where the irritant is applied is, for the most part, a matter of indifference in regard to the result required; and 5. That in general an amount of irritation corresponding to the circumstances alone regulates the therapeutical effects. In the present communication Dr. Naumann relates the results he has obtained by the aid of the hæmodynamometer prepared by himself. He finds that an intense irritation of the skin very rapidly produces a diminution of the frequency and especially of the strength of the pulse. This diminution of the pulse is usually preceded by a stage of excitement, which, however, is soon passed. The diminution of the pulse in several cases attains its maximum, during the irritation, but often only after it has ended, but it continues a long time after the irritation has ceased. The frequency of the pulse is, for the most part, somewhat increased at the commencement of a powerful irritation of the skin, but during the irritation and sometimes after it, it is retarded, and this retardation often continues for a long time after the irritation has ceased; but this occurs much less frequently than a diminution in the strength of the pulse. In reference to the changes of temperature, it was observed as a constant result that a powerful irritation of the skin produced a remarkable diminution of the animal heat. But generally this cooling is preceded by a greater or less elevation of the temperature, the duration of which seems to depend on individual peculiarities, and may be extended beyond the time of the irritation before cooling begins. The above-mentioned changes produced by cutaneous irritation take place in the normal conditions of the body, but still greater alterations are to be expected in cases of disease. In the so-called syno-

chal diseases, the irritability of the body, and the reaction from irritants is usually increased, and is exhibited, for instance, on the application of a mustard-poultice, in a well-marked cutaneous inflammation visible to the eye. The reverse is the case in the so-called asthenic conditions, in which the operation of epispastics is much weaker, or is not exhibited at all, and thus it may be explained how the same cutaneous irritant may act in very different ways, and may operate as a depressing agent in so-called synochal diseases, and as a stimulating one in asthenic cases, as in threatening collapse. The results of the present investigations made by Dr. Naumann are summed up by him in the following manner ;—1. The changes produced by an irritation of the skin continued for a long time, last also for a long time after its discontinuance, and in general the length of the time corresponds to the long continuance of the irritation, and in healthy persons the changes may be observed half to three-quarters of an hour after the irritation. 2. The weakening of the pulse caused by a powerful cutaneous irritation often attains its maximum during the irritation, but often only at the end of it. 3. The exciting action of the proportionately feeble cutaneous irritants also continues for a long time after their discontinuance, but is at last equally followed by weakness which, however, appears much later, and in a much less degree than after the application of a strong irritant. 4. After powerful irritation of the skin, there constantly arises, for the most part after a longer or shorter interval of heating, a diminution of the animal temperature, which has often not reached its termination half an hour after the discontinuance of the irritation. 5. The interval of heating differs very much in its duration, and the cooling often occurs during the irritation, and often immediately after its cessation.—*Schmidt's Jahrbücher der Gesammten Medicin*, March, 1867.

III. *On the Pharmacology of the Cinchona Alkaliods.* By Professor Wenzel, Bernatzik.

1. *On a strongly saturated Solution of Quinia for Subcutaneous Injections.*—The difficult solubility of the preparations of quinia, and even of the acid sulphate, in water, does not allow much more than a grain at a time to be introduced beneath the skin by the usual mode of injection. The addition of acid does not remove the inconvenience, and it causes severe pain to the patient. It is, therefore, recommended, in those cases where an energetic action of quinia is desirable, to employ ether as a solvent instead of water. Ether is far less irritating than diluted acids, alcohol or chloroform, and its diffusive power is checked by its intimate combination with the resin of the quinia.

2. *On the Medicinal Value of Quinidine, and the Preparations most suitable for its Therapeutical Application.*—Quinidine obtained as an amorphous dark brown precipitate in the preparation of sulphate of quinia from the mother-liquor, after carbonate of potash and has been added to the latter, possesses the basic properties of quinia, and has the same composition, but is not crystallizable, and is therefore called amorphous quinia. It is the product of the action of heat and light

on the cinchona alkaloïds, and is contained in the bark, especially when it has been much exposed to the sun, and it is also formed in the preparation of quinia, if heat and light are not withdrawn as far as possible. Since quinidine is chemically identical with quinia, it may be considered to be of equal therapeutical value, and the reason why it is proportionally less employed is attributable only to the circumstance that the commercial quinidine is seldom pure, because, instead of being precipitated, the evaporated mother-liquor is sold as quinidine. According to some late researches of De Vry, quinidine may be obtained pure without much trouble or expense by boiling commercial quinidine in an iron vessel with neutral oxalate of ammonia until no more ammonia is liberated, and after dilution, filtration, and cooling, excess of caustic soda is added, and the precipitate is washed with distilled water and dried. Tried by this process the common quinidine was found to be very impure, and different specimens contained very various and sometimes very small proportions of real quinidine. As quinidine is of a dark colour the goodness of the commercial article may, in some measure, be estimated by the presence of that character. The salts of quinidine are also amorphous, of a brown colour very hygroscopic and very bitter. From their solubility they are especially well adapted for subcutaneous injections. Their internal use is also sometimes more suitable than that of the strong alcoholic tincture of quinidine. The use of the pure quinidine in powder is likewise recommended, since by its less solubility it causes only a slightly bitter taste.

3. *Carbolate of Quinia.*—Carbolic acid, which in solution acts as a poison upon the lower animal organisms, is borne in proportionate, though large doses, by the higher animals and man, when introduced into the body in a diluted state. It was administered to some animals with advantage in their food in England at the time of the rinderpest. With bases, even weak ones such as quinia, carbolic acid loses in a great degree its irritating properties at the point where it is applied; when combined in the proportion of two equivalents of the acid to one of quinia, the compound is characterised by a slight sharpness, and a decidedly bitter taste. Professor Bernatzik proposes a preparation composed in this manner, and he hopes that it will prove an energetic disinfectant for internal use. G. Braun has given it with benefit in puerperal diseases, and Duchek in several typhous cases, and in one of pyæmia. Pills containing 1 grain of quinia with ·6 of a grain of carbolic acid were given repeatedly without causing the slightest inconvenience, and according to these statements 3 to 6 grains of carbolic acid were given daily without injury. The compound was prepared by dissolving 60 parts of carbolic acid with 100 of quinia, in 300 of highly rectified spirit, filtering the solution, distilling and evaporating to the consistence of turpentine, and then mixing some extract of acorus and powdered cassia. —*Jahrbücher der Gesammten Medicin*, Aug. 28, 1867.

IV. *On the Treatment of Porrigo Favosa by Carbolic Acid.* By Dr. Prior, of Bedford.—Porrigo Favosa is a rare disease in this country, and Dr. Prior has seldom met with it, but it is distinguished

from other scalp diseases by the shape and the colour of the eruption and by the microscopical appearances of the parasitic fungus which forms its essential character. The case related was that of a young woman, belonging to the lowest class, a patient in the Bedford workhouse, and the disease covered nearly three-fourths of the scalp. The carbolic acid was used as a lotion, in the proportion of one part to six of water, applied by means of a little mop daily to the fungoid eruption. The effect was remarkable, and in less than a week the crust began to come off in large flakes. Within a fortnight nine-tenths of the disease were obliterated, and in four months the patient left the house with only a few suspicious-looking patches. But, being purposely left without treatment, the disease returned, occupying about one-half the extent which it did when first treated. The use of the carbolic acid was now resumed with the same success as before, the disease being reduced to one-tenth of its extent, but it does not appear that it was entirely cured, and Dr. Prior thinks that the treatment can be carried out with complete success only in a public institution, under immediate medical supervision. He recommends epilation in addition to the use of the carbolic acid, and he believes that without any poultice, or any other remedy, the disease may be thoroughly cured in two months. A shorter period is insufficient because the mycelium penetrates the surrounding tissues, and one neglected spot may rapidly extend the disease again over the entire scalp. Carbolic acid appears to Dr. Prior the safest and surest parasiticide for Achorion Schönleinii, and since reporting the above case, he has met with three other cases which have been similarly treated, and which, at the date of the report, all apparently promised well.—*British Medical Journal*, Oct. 26, 1867.

V. *On the Therapeutical Employment of Alcohol in Children.* By Dr. P. Gingeot, of Paris.—In the first part of his paper Dr. Gingeot passes in review the different opinions and modes of practice, in reference to the use of alcohol in the treatment of disease, of the modern English and French school of medical practitioners; and he decidedly inclines to the belief that the doctrines of Dr. Todd, with certain modifications, are founded upon truth and justified by experience. He admits that the alcoholic treatment has been frequently pushed too far, but still he thinks that the results obtained in England deserve the most serious consideration. In France this mode of treatment has been lately adopted with success in the diseases of children, especially by MM. Barthez and Rilliet, who employ it in acute suffocative bronchitis; by MM. Trastour and Gatterre, who give alcohol in large quantities even to infants; by M. Cazin, who orders hot wine in certain adynamic forms of smallpox; and by M. Bricheteau, who employs alcoholic drinks to a great extent in infectious diphtheria. But until very lately, says Dr. Gingeot, no one in France has employed the alcoholic treatment in children in the manner indicated by Dr. Todd, and therefore he conceives that his own results will be received with interest. In prescribing alcohol to several patients, Dr. Gingeot has not confined his treatment specially to cases of a manifestly adynamic character,

but has administered brandy in well-marked sthenic cases, as well as in those where depression was a prominent feature. The mode of administration was in gum-julep or in sugared water. The cases so treated were eight of pneumonia, of which seven were cured, and one died; one of typhoïd fever, ending in recovery; one of capillary bronchitis, following whooping cough, and ending in death; two of pulmonary tuberculosis, following whooping cough, and ending in death; two of measles in a severe form, one being followed by a cure, the other by death. In reference to the general effects of this treatment, Dr. Gingeot finds that the alcohol has never caused any serious disturbance of the digestive system, and that in many cases the appetite has been increased, and the tongue and the mouth have been cleaned and rendered moist. In certain cases there was diarrhœa or constipation, but these symptoms could not be referred to the treatment, inasmuch as they ceased upon the daily dose being increased. As to the circulatory apparatus, one of the most frequent effects of the alcoholic treatment was to lower the pulse, and a record of cases is given to show the precise effect of the use of alcohol in this respect; and the temperature in several instances was lowered in a sensible manner, although the lowering of the pulse did not always coincide with the diminution of heat. The nervous symptoms, such as cephalalgia, heaviness of the head, restlessness, sleeplessness, and delirium, were very considerably relieved by the use of brandy, and in no case did brandy produce them. Stupor and singing in the ears yielded in the same manner, as well as subsultus tendinum, and never did the least symptom betray itself of any intoxication or subsequent depression. There was no difficulty in ascertaining the beneficial influence of the treatment on the restoration of the strength and the rapidity of the convalescence, for as soon as the patients were able to get up, the greatest part of them were firm on their legs. Of all the peculiarities evinced by Dr. Gingeot's patients, the most worthy of attention was perhaps the morbid tolerance of the alcohol; and he remarks upon the extraordinary facts, that a girl of fourteen should drink 250 grammes of brandy, and children of two years, or two years and a half old, should take 60 or 80 grammes without showing any sign of intoxication, or betraying the smell of alcohol in the breath. As to the *modus operandi* of alcohol, employed therapeutically, Dr. Gingeot thinks that it can be explained upon the theory that it prevents the waste of the tissues. The most general indication in therapeutics is to maintain the strength of the patient until the disease has accomplished its spontaneous evolution, and this indication is often fulfilled by alcohol; but whether it acts as a direct or indirect food, or whether it repairs specially the nervous substance, the deterioration of which is the cause of the nervous prostration, are matters of which we are still in ignorance. As to the efficacy of alcohol in fever, Dr. Gingeot believes that it diminishes the fever by exciting the medulla oblongata, and he adduces some theoretical considerations in support of this view. Other substances, such as tartar emetic and veratria, also reduce fever, but their mode of

action is very different from that of alcoholic fluids, for, far from exciting any part of the cerebro-spinal system, they depress the whole of it, thus allowing free liberty to the vaso-motor nerves to contract the small vessels, to increase vascular tension, and to lower the pulse. This property, according to Dr. Gingeot, renders these drugs serviceable in pulmonary inflammations,but it tends also to produce nervous depression from anæmia and the development of suppuration.—*Bulletin Général de Thérapeutique*, Aug. 15 and 30, 1867.

VI. *On the supposed existence of Iodine in the Air and in different articles of Food.* By G. Nadler.—Iodine is found in sea-water, but in larger quantities in plants and animals living in the sea, and scarcely at all as a saline combination, but as a constituent of the organic substance, for Sommer was able to extract only one part of iodine from sea-sponges by means of water, while another part was recognised after the decomposition of the sponge. Hopfer de l'Orme and Hausmann found iodine in fish-oil, L. Gmelin found none in seal's blubber, but some in pure oil from the liver; but, according to De Jongh, iodine forms an elementary constituent of the fat in pure liver-oil, for it may be detected when the soap prepared from the fat has been decomposed by heat. In a large quantity of salt herrings Jonas found very small traces of iodine. The air was first tested for iodine by Chatin, and he states that he found in 4000 litres about 0·002 milligrammes of iodine. Fourcault also has found iodine in the air. Marchand and Niepce confirmed the statement of Chatin, and the latter extended it still further in carrying out his theory of scrofula. On the other hand Lohmeyer, Macadam, Martin, Lucca, Kletzinsky, and Cloez, do not confirm the statements made as to the existence of iodine in the air, although they examined thousands of litres, and only Van Ankum arrives at any positive result. Chatin states that he has found iodine also in milk, eggs, and wine, but Lohmeyer and Macadam have been unable to confirm the statement. The methods of investigation employed by Chatin are described, but they failed to exhibit evidence of iodine in the air, or in spring-water from the mountain of Zurich, or in the lake of Zurich. Some water-plants also from the lake of Zurich contained no iodine, and none was found in bread made from the flour of the *Triticum Spelta*, or in cows' and goats'-milk. In fifty and twenty eggs no trace of iodine could be detected, but, on the other hand, in an experiment made with the albumen of eighteen eggs, very small, but distinct traces were present. Three kinds of liver-oil were also examined. 250 grammes were saponified, the acids were removed by hydrochloric acid and washed, and the alkaline solution, as well as the fatty acids, were separately examined. Only the alkaline solution of the third kind contained iodine, but the acids of all contained it. In reference to the presence of iodine in animal fluids, after the administration of that element, Liebig found iodine in the whey of the milk of a cow which had drunk the Wildbad waters, but he failed to find it in the whey of a cow and of a nurse to whom a drachm to half an ounce of iodide of potassium had been admi-

nistered; and hence he inferred that the iodide of potassium only passes into the animal fluids when it is introduced in a state of great dilution. Nadler gave to a goat half a gramme (about seven and a half grains), of iodide of potassium; the first milk drawn after twenty-four hours contained a considerable quantity of iodine in the whey, but there was less in the whey of the milk drawn after twenty-four hours, and less still in the milk drawn after thirty six hours; that drawn after forty-eight hours contained very slight traces, and that drawn after sixty hours contained none at all. Iodide of potassium was given to three others; one had one-fifth of gramme, the two others had half (about seven and a half grains). The first hen laid an egg after twenty-four hours, and the solution pressed out from the coagulated albumen contained a large quantity of iodine, but the albumen itself contained only slight traces, and the yolk none at all; the second egg (in sixty-four hours), contained in the solution pressed out from the albumen only some traces of iodine; and the yolk none. The two other hens laid an egg each after twelve and thirty-six hours; in the solution pressed from the albumen in the first eggs, there was a considerable quantity of iodine, but none in the yolk; the second eggs contained only traces of iodine.—*Schmidt's Jahrbücher der Gesammten Medicin*, January, 1868.

VII. *On the Therapeutical Applications of Peroxide of Hydrogen.* By Dr. Stöhr, of Wurzburg.—Thénard, who, in 1818, discovered peroxide of hydrogen, found that it was decomposed by the fibrine of blood into water and oxygen. A. Schmidt observed that coloured proteinaceous matters act in the most energetic manner as catalytic agents on the peroxide, but albumen, globulin, and fibrin, much less so, and moreover he found that it is of great importance to the catalytic operation of these substances, whether their solutions have a neutral, acid, or alkaline reaction. Dr. Stöhr describes his experiments made by the external use of peroxide of hydrogen, which was obtained by the decomposition of peroxide of barium, by means of hydrochloric acid.

1. *Action of the Peroxide of Hydrogen on the Living Organism in General.*—The strongest solutions applied to the back of the hand or the tip of the tongue caused no great sensation of pain, but only a slight tingling. Applied to the conjunctiva of a rabbit, they caused irritation and inflammation. When freshly drawn venous blood was brought in contact with the peroxide, there was violent effervescence, and the solution became suddenly yellowish-red, then pale yellow, and lastly, after five or six minutes, colourless and opalescent. The blood corpuscles are changed in various ways according to the concentration of the solutions. In a weak solution they shrivel, become jagged and otherwise irregular, and no longer arrange themselves in rouleaux. When the peroxide is poured on pus, a considerable quantity of gas is developed, but not so much as in the case of blood. When sprinkled on the epidermis, there is a burning sensation of pain, and a small vesicle is formed, which soon disappears. When applied to bleeding surfaces, a yellowish red scum is formed, and with weaker solutions an unpleasant itching,

but with stronger ones a short burning pain. Similar phenomena are observed in the case of blistered surfaces and humid eczema.

2. *Experiments with the Peroxide of Hydrogen in the Healing of Ulcers.*—In these experiments the poison of chancre was employed. Seven male patients with soft multiple sores on the genitals were inoculated on both thighs from their own sores, and these places exhibited in three days the characteristic appearances of inoculated chancre. Half of these sores were now touched three times a day with a strong solution of peroxide of hydrogen, and also bound up with charpie moistened with a dilute solution. At first only a slight itching was complained of, and after four or five hours each sore was covered with a thin whitish film which coloured the surrounding epidermis in a similar manner. The development of gas ceased after repeated moistening of the inoculated chancre with the peroxide, but began again after the whitish film covering the sore had been mechanically removed. On the third day of this treatment the sores appeared almost larger than those which were bound up dry, but they healed rapidly, and on the eleventh day they exhibited only excoriations. The sores which were bound up dry exhibited the usual appearances of such inoculated spots, two became phagedenic, and were cauterised, and the rest were bound up with solution of acetate of copper. The healing of the sores treated with peroxide of hydrogen was accomplished on the average within twelve days, but the others only within twenty-three days. Other cases are recorded in which the results were equally favorable, and the conclusions drawn on the whole subject by Dr. Stöhr are the following:—The peroxide of hydrogen decidedly accelerates the healing process in virulent ulcers, especially in the soft multiple chancre. It changes the secretion in such a manner that the inoculability is lost, and it takes from the sore its specific character. A considerable amount of the peroxide is necessary for the destruction of the inoculability. The remedial operation of the peroxide is most remarkable in diphtheritic sores. The peroxide is not a corrosive agent in the ordinary sense, since it does not destroy the tissues, and probably only influences the fluids, such as pus, &c. But the secretion of sores, and the exudations of croup and diphtheria are directly and remarkably altered by the peroxide in their morphological as well as in their chemical constitution.—*Schmidt's Jahrbücher der Gesammten Medicin*, January, 1868.

VIII. *On the Employment of Injections, especially those of Iodine, in the Treatment of Ascites.* By Dr. Ernest Besnier, of Paris.—Most of the authors who have treated of the use of iodine injections in ascites have discussed at length the mechanism of the cure, some arguing that the development of an adhesive peritonitis is the condition of the definitively favorable termination of the case, while others speak of a physical or functional modification of the serous membrane without any inflammatory affection; and others again suppose that the combination of iodine with the elements of the ascitic serosity modifies its molecular composition in such a manner as to facilitate at once the absorption of the effusion and its elimi-

nation out of the system. But it is admitted that in a certain number of cases the injection of iodine causes purulent peritonitis, acute in its course and rapidly fatal; and even in less unfavorable cases, the post-mortem examinations have shown that inflammation has been the cause of more or less extensive and solid adhesions. There is, however, another category of cases in which the cure is obtained without the appearance of any really inflammatory action; and if this claas of cases could be extended, the utility of iodine injections would be universally admitted. Dr. Besnier thinks that the reason why injections of iodine are harmless in certain cases is because they are attenuated by their mixture and combination with the fluid left in the peritoneum after the operation of tapping. Then the question arises, whether the injections preserve their remedial action when they have been so neutralised and decomposed as to render them harmless? The reply appears to be in the affirmative, according to the observations of Teissier, of Lyons, whose method consists in leaving in the peritoneal cavity a part of the serosity, in examining the nature of the liquid removed by tapping, and in causing the injection to be more or less charged with medicinal principles, according as the fluid is found neutral or alkaline, as it contains more or less of albumen, as it is clear or thick, or as it contains blood or pus: the injection ought to be made slowly and gently, so as not to be thrown upon the visceral peritoneum. Dr. Teissier objects therefore to iodine injections made according to a fixed formula, and he gives the following rules for the composition and the measurement of the injections:—When the liquid is clear, yellowish, slightly alkaline, and slightly albuminous, he injects into the peritoneum 20, 25, or 30 grammes of tincture of iodine, and 2 grammes (a gramme is 15 grains) of iodide of potassium. When the serosity is decidedly albuminous, gangrenous, or purulent, or very alkaline, then he injects 40 to 50 grammes of the tincture, and 4 grammes of iodine. Lastly, when the effusion is very glutinous (which, however, is very rare), when it contains a considerable quantity of albumen or of muco-extractive matter, he injects a watery solution made with 100 grammes of water and 6 or 8 grammes of iodine, or a strong solution of iodide of potassium (20 grammes to 100 of water). The success which has attended the use of iodine injections in the manner recommended by Teissier, seems to indicate that this method of treatment may be considerably extended in the cure of ascites. Although these injections are almost entirely contra-indicated in all cases of chronic ascites connected with incurable organic lesions, it is evident that they may be employed more extensively and at an earlier period in cases where ordinary treatment has been unsuccessful, but where the nature of the pathogenic condition remains doubtful and its curability uncertain. Nevertheless, says Dr. Besnier, the importance of this mode of treatment must not be exaggerated, and it must not be forgotten that, even according to the admission of its most ardent advocates, the treatment can only be advised in idiopathic cases, or at least in those which are unaccompanied by any actually serious lesion.—*Bulletin Général de Thérapeutique*, July, 1867.

IX. *On the Influence of the Alpine Climates on Pulmonary Consumption.* By Dr. Hermann Weber.—It is well known that consumption is rare in some elevated regions, and that consumptive persons are sometimes improved by removal from low to high localities. But the degree of elevation necessary for producing immunity from tubercular phthisis seems to vary in different latitudes, and appears to be lower in the temperate than in the tropical regions. In the latter, phthisis may be regarded as becoming rare above 7000 feet, but in Switzerland the frequency of the disease diminishes above 3000 feet, and in the mountains of central Germany above 1400 feet. But elevation alone does not appear to cause the exemption, for many other circumstances assist or counteract its influence, as the geological structure of the soil, the exposure to wind, the hygrometric condition of the atmosphere, the degree of sunshine which the locality enjoys, and many other conditions of a like nature. Dr. Weber thinks that the treatment of consumption by removal to Alpine regions has been unduly disregarded by the medical men of Europe, and he discusses the principal objections which may be offered to such a plan. The chief of these are the coldness and roughness of the Alpine climates, the great rarefaction of the air at elevated regions, and the difficulty of finding a proper mountain residence for the invalid. The first objection is refuted by the facts, that cold countries are not those in which phthisis is most prevalent, and that cold in temperate countries is only injurious so far as it compels ill-fed, ill-clothed, and delicate persons to remain in-doors, often in ill-ventilated and otherwise insalubrious rooms. To the second objection it is replied, that the tendency to hæmoptysis said to be caused by mountain air has been either very much exaggerated, or is unfounded in fact; for although, under special and peculiar circumstances, hæmoptysis may have occurred, yet such bleeding is almost or altogether unknown to the Alpine guides who accompany travellers in their mountain ascents, and at all events it is unlikely to happen, as the result of the climate, to quiet invalids living in elevated valleys. The third objection has some foundation, and in the mountains of Great Britain there are no houses where invalids can obtain the necessary comforts, with society, occupation, and amusements, although such localities may be found in the mountain ranges of the British colonies, as in the Himalaya range. In Europe itself there were until lately no arrangements for the wintering of delicate persons in elevated situations, but at present there are in some of the valleys of the Grisons not only villages and inns to live in, but trustworthy medical men to superintend the cases. One of these valleys is that of the upper Engadin, and another is the Davos, at an elevation varying from 4500 to 5000 feet. It appears that in the village of Davos am Platz there are two medical men who devote themselves particularly to pulmonary affections, and keep accurate notes of the progress of the cases under their charge. According to Dr. Sprengler, one of the medical men alluded to, there is no endemic disease in the valley of the Davos, and scrofulous diseases introduced from abroad are

favorably influenced by a prolonged residence in the mountains. There is an entire absence of tubercular diseases of the lungs among the natives who have never left the valley; and cases of consumption have been mentioned as having occurred abroad, which have been cured on a timely return. Dr. Weber relates several cases, from his own practice, showing that persons from mountainous regions, who had become consumptive in England, were either cured or very much benefited by a return to their native homes, and in two of his cases the disease recurred, and was fatal by an injudicious return to England. Dr. Unger, the other medical practitioner of Davos am Platz, was himself consumptive, but derived great benefit from a residence in that place. Dr. Weber thinks that the evidence in favour of the beneficial influence of mountain regions in the treatment of consumption is too strong to be further resisted, and he adduces some theoretical considerations to show that the rarefaction of the air, by increasing the expansive power of the lungs, must act in a salutary manner in the treatment of tubercular phthisis.—*British Medical Journal*, July 20 and 27, and Aug. 24, 1867.

X. *On the Treatment of Dysentery and Dysenteric Paralysis by Nux Vomica.* By Dr. de Savigny.—Dysentery, according to Dr. de Savigny, is in great measure due to intestinal paralysis; and in a treatise he has published on the former disease, he has shown that its proximate cause depends upon a lesion of the spinal cord, which paralyses the excito-motor nerves of the muscular layer of the large intestine, as well as the vaso-motor nerves of the capillaries spread over the mucous membrane. According to this method of viewing the nature of dysentery, its principal phenomena, and the modifications they undergo by favorable treatment, are explained much better than by any other theory. Dr. de Savigny finds that the powder of nux vomica is the best preparation, if it is desirable to act specially upon the intestine, to restore its contractility, and to diminish the number and to change the morbid nature of the evacuations. He gives it in the dose of from 20 to 60 and 75 centigrammes in a day, but he advises that the quantity given daily should not exceed a gramme (15 grains), and he mixes it with powdered canella. He has employed this treatment especially in cases of the most severe kind, namely, those brought from hot countries, and it has therefore sometimes failed; but he has been struck with certain effects produced by the remedy which confirm his views as to the nature of dysentery, namely, the return of tonicity and intestinal contractility, very distinctly perceived by some intelligent patients, and demonstrated moreover by the disappearance of the involuntary evacuations, or by the power of resisting a little better the manifestation of the imperious necessity of evacuation. At the same time he found that the muscular depression of the limbs diminished and the digestion improved, and the nutrition was more complete, so that the natural alvine evacuations were restored.—*Bulletin Général de Thérapeutique*, Sept. 15, 1867.

REPORT ON PATHOLOGY AND PRINCIPLES AND PRACTICE OF MEDICINE.

By Francis C. Webb, M.D., F.L.S.,
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On the Ophthalmoscope in the Diagnosis of Meningitis.—M. Bouchut has published a large series of cases illustrative of the value of ophthalmoscopic observation in the diagnosis of tubercular meningitis. The following is a condensed account of a case in which the diagnosis in a great measure depended on the facts revealed by that instrument.

V. M—, æt. 7, brought to L'Hôpital des Enfants, July 24, 1866. The only history that can be obtained is that the child has vomited for four days. But for twenty-four hours the vomiting has ceased, and she has not been purged. She complains of frontal headache; does not scream; is not drowsy; the abdomen is a little retracted; pulse, unequal, irregular, intermittent, 72. Examination by the ophthalmoscope. In the fundus of the left eye are observed some discolouration of the choroid, or choroidal atrophy; dilatation of some of the veins of the retina; some atrophy of the papilla, and in the inferior part two white elongated granulations which seem beneath the retina, for the vessels are seen anteriorly to them. A third granulation is noticed externally, and there is a mass of smaller granulations in the fundus of the retina. In the right eye there is papillary hyperæmia with some serous infiltration externally. The child continued much in the same state for several days; at one time there was divergent strabismus, but no general convulsions, or paralysis. Before death the pulse ceased to be irregular or intermittent, and became excessively rapid. She died on August 6th. Autopsy twenty-four hours after death. Brain seems tumefied and compressed in the dura mater; the layers of the arachnoid are extremely dry, and glued the one to the other. Pia mater red and injected, especially on the outer side of the hemispheres; meningeal veins numerous and distended with blood. Sinuses filled with liquid blood. Convolutions flattened, adherent to pia mater, and slightly softened on the surface. There is capillary hyperæmia of the grey matter, and considerable injection of the white, but no appreciable softening of the latter. Lateral ventricles not distended. In the fissure of Sylvius on both sides, and at the base of the brain, in the cerebral hexagon, and on the upper part of the cerebellum the pia mater is infiltrated with greenish-yellow pus; it contains here and there grey semi-transparent granulations, which are also numerous in the choroid plexuses, and there are some scattered on the external surface of the brain in the neighbourhood of the middle lobe. A microscopical examination of the eyes was made by M. Ordonez. The left eye presented a well-marked choroidal atrophy; the internal layer no longer existed, but was represented by a few cells almost entirely depigmented. The external layer existed throughout, but was paler than natural. In the retina there were three small yellowish masses

around the papilla, visible to the naked eye. They were found to be composed of fatty granules and globules. The different layers of the retina present nothing remarkable, unless it be the layer of "myelocites" in the middle of which some of the elementary bodies are three times the normal size, almost transparent and perfectly spherical. In the right eye the veins are gorged with blood, and the circulation interrupted in places. M. Bouchut, after noticing the value of the ophthalmoscope in this case, where it enabled him to decide on the existence of tubercular meningitis, remarks that the microscopic examination of the eye showed for the first time the structure of the white patches on the retina—that they are composed of fatty granulations due to the repression of the normal elements.—M. Bouchut, *Gazette Médicale de Paris*, Fev. 22, 1868.

On Pseudo-hypertrophic Muscular Paralysis or Paralysie Myo-Sclérosique.—Dr. Duchenne, of Boulogne, in a very elaborate memoir on this disease, states that the principal morbid phenomena which he has observed in its course in children and young persons may be arranged in the following order. 1. In the commencement feebleness of the lower extremities. 2. Separation of the limbs, and lateral balancing of the trunk in walking. 3. Lumbo-sacral curvature (*ensellure*) in standing or walking, preceded in the early stage by a slight inclination of the trunk backwards, but becoming more and more pronounced, until it produces a kind of *ensellure* or lumbar lordosis. 4. Equinism—bilateral club-foot is one of the constant symptoms of pseudo-hypertrophic paralysis. 5. Visible muscular hypertrophy; augmentation of the volume of the muscles producing the enfeebled movements, accompanied, in the cases M. Duchenne has observed, by a diminution in the development of other muscles. All the paralysed muscles, however, are not always visibly hypertrophied, and the degree of paralysis is not in proportion to the hypertrophy. 6. A stationary state lasting some years. 7. Generalisation and aggravation of the paralysis. With regard to the pathological anatomy of this disease in a case published by Eulemburg and Cohnheim no alteration could be detected by the microscope in the nervous centres. The condition of the hypertrophied muscles has been examined by excising (by harpoon) small portions in the living, by Griesinger and Bilroth, Wernich and Heller. These observers failed to discover any change in the muscular structure. The author's observations, however, led him to a different conclusion. He has observed that the muscular fibres are less numerous, and mixed with a large quantity of interstitial tissue. Some of the muscular fibres were thinned, and in some the transverse striation had disappeared, and in others longitudinal striation was visible.—*Arch. Gén. de Méd.*, Fev. 1868.

Paralysis Glosso-pharyngo-labialis.—Dr. Huber reports as a contribution to the clinical history of the malady, a case of Duchennes disease which was apparently complicated with progressive muscular atrophy, but, unfortunately, the post-mortem examination was very imperfectly made.

A labouring man's wife was, in the autumn of 1864, affected with weakness of the right arm, without other symptoms. Six months

later there was disorder of articulation, and next disturbance of deglutition. A year after the commencement of her illness her condition was as follows: The muscles of the face, and the senses, were in a normal state, only as regards the parts supplied by the facial nerve the muscles round the mouth and nose were enfeebled; the naso-labial furrows were strongly expressed, but she could neither blow, whistle, nor spit; morsels of food collected between the cheeks and the teeth, the soft palate was imperfectly raised, and the uvula turned somewhat to the right; the vertical movements of the lower jaw were normal. Faradisation excited moderately strong contraction in the muscles of the face. The tongue lay motionless on the floor of the mouth (? atrophied), and fibrillary movements were noticed in it. Speech was almost unintelligible; of the vowels only *a* could be distinctly, and of the consonants, g, k, d, t, m, l, and r, could not be at all, pronounced.

The urine was normal, and the sphincters acted naturally. The right arm was entirely paralysed, not atrophied; there were frequent fibrillary quiverings in it, especially in the biceps; sensibility was materially diminshed, and electrical contractility almost abolished. In the left arm there was paresis, sluggishness of circulation, and great diminution, almost abolition, of electrical contractility There was entire absence of brain-symptoms.

In the course of the next six months the paralysis extended to all the extremities, and was absolute, sensibility also being lost; only the muscles of the trunk were moderately useful, the head sank forwards, the arms became œdematous; fibrillary movements were observable over the extremities and the trunk; the sphincters retained their power, and the intellect its clearness to the very end; difficulty of respiration came on a year and a half after the commencement of the malady.

Post-mortem examination.—The brain, the pons Varolii, and the diamond-shaped space, the medulla oblongata, at a section made below the olivary bodies, and these bodies themselves, were all normal, and the nerve trunks at the base all clear white. The microscopical examination, which unhappily left much to be desired, extended only to these last; in the hypoglossal nerves were numerous degenerated granular fibres, besides most of the fibres having cloudy and granular contents (scholligem und krümligen Inhalte); the facial nerve presented similar appearances in contrast to the normal state of the trigeminal nerve; in the vagus nerve, which seemed somewhat attenuated, were a few healthy fibres, but mostly broad streaked bundles.

The spinal cord and its nerves, and the muscles, were not examined; the arteries of the base were healthy.—Dr. Huber, Memmingen ('Deutsch. Arch. f. Klin. Med.,' II, 4 and 5, p. 520, 1860) 'Schmidt's Jahrb.,' Band 133, p. 163, 1867.

Injurious Influence of Nitrate of Silver in Tabes Dorsalis.—Dr. Hitzig had under observation a case of tabes with strongly marked anæsthesia of the feet, very considerable disturbance of the co-ordination power in the legs, some diminution of muscular power, and partial amaurosis, but without any pain. It seemed to have originated in prolonged residence in cold and damp places.

The patient took daily one grain of nitrate of silver. After a short use of this, symptoms of irritation of the digestive and the genital organs came on, and necessitated a suspension of the exhibition of the medicine. Later it was given again, but in smaller doses. Still the same symptoms returned, though more slowly; perfect paraplegia of the legs, and almost absolute palsy of the muscles of the spine came on. At the same time, the anæsthesia spread upwards almost to the armpits, and constipation and fever were present. The use of the nitrate of silver was then abandoned, and in its place iron was given, and galvanism employed twice a day (it is not mentioned in what form). Under this treatment the patient in three months recovered so far as to be able to walk short distances with the help of a stick. He always felt better after the galvanization.

Dr. Hitzig declares that among numerous cases of disease of the spinal cord, he has only twice, in cases of slow and typical course, noticed any improvement under the nitrate of silver treatment, and that he has observed affections of the bladder, but otherwise either no effect or deterioration, especially disorder of the digestive organs.

In order to avoid evil consequences he advises that the nitrate be given only when the patient can be closely watched, and that at first only small doses, such as the twelfth of a grain, should be exhibited.—By Dr. Ed. Hitzig, 'Berl. Klin. Wchnsch.,' iv, 31, 1867. 'Schmidt's Jahrb.,' Band 136, p. 22, 1867.

The Symptomatic Value of Herpes Zoster.—Dr. W. Moore relates two cases of herpetic eruption which occurred in patients labouring under thoracic aneurism. He accepts the theory of Von Barensprung that herpetic inflammation depends upon abnormal irritation of the nerves, and he finds in the pressure produced on the nerves by intra-thoracic tumours a probable cause of herpes, the occurrence of which he believes may assist us in the diagnosis of such tumours.—Dr. W. Moore, *Dublin Quarterly Journal Med. Science*, Feb. 1868.

Pyopneumothorax without Perforation.—M. E. Boisseau, in an elaborate memoir, endeavours to establish the occasional occurrence of pneumothorax without perforation, complicating purulent pleuritic effusions. He has collected a number of cases from different authors in proof of his position, and relates an instance, of which the following is an abridged account:—X—, æt. 38. Admitted at Val-de-Grâce, January 12th, 1867. His state was too grave to admit of much examination, but it was found that he had been suffering for several months from oppressed breathing, which had become rapidly worse in the preceding night. There was extreme dyspnœa, with a cyanosed condition of the face and lips. The left side was manifestly dilated; at the level of the nipple it measured three centimetres more than the right, On the left side there, behind, was absolute dulness to about an inch below the spine of the scapula. In front, under the clavicle, there was exaggerated resonance. Behind, there was large tubular breathing, but no amphoric breathing, and no râles. In front respiration was very feeble. On the right side there was puerile respiration; the heart deviated to the right. As the oppression was extreme, tho-

racentesis was determined on. On placing the patient on his right side, and percussing, to assure himself of the dulness at the point at which he wished to puncture, M. Boisseau was astonished to find at the level of the fifth rib, at the posterior part of the base of the axillary space, a sound elicited of metallic "timbre," in fact, a true "bruit hydro aérique." On listening, a sound was heard resembling metallic tinkling. A diagnosis of tuberculous perforation was made, and the operation was relinquished. The man died on the morning of the 13th.

Autopsy. By puncturing the fourth intercostal space, and introducing a trocar, a large quantity of very fetid gas, producing a well marked *sifflement*, was evacuated. The left pleural cavity contained a large quantity of purulent matter (more than two litres); the left lung was free from all adhesion to the parietal pleura. The visceral pleura was covered with false membranes, very soft, thickish, and easily detached. The surface of the pleura itself was perfectly smooth, and presented neither tearing nor ulceration. The lung was condensed and flattened. Nothing particular was noted on the right side of the chest. Insufflation was practised with great care and perseverance before the removal of the thoracic organs, and afterwards under water. The left lung was distensible, but not the smallest perforation could be found. On cutting it there was no tubercular granulation, or pneumonic spot, or any other lesion which could be supposed to give rise to perforation. The following are M. Boisseau's conclusions:—1. That pneumothorax without perforation may complicate purulent pleural effusions is incontestible, although it is a rare occurrence. 2. The gas produced is the result of fermentation of the effused fluids in the pleura. 3. It is possible to distinguish this pneumothorax from that which accompanies broncho-pleural fistula (by the history of the case, *e. g.*, one of tubercular phthisis, and by the exceedingly sudden dyspnœa and pain produced by perforation; also by the respiratory bruits, which are more clear and accented, the respiratory being replaced by an amphoric bruit, and by the ease with which metallic tinkling is produced by breathing and voice as well as by cough, in the case of perforation). 4. The operation of thoracentesis is always indicated when we are certain that no communication exists between the pleura and the air in its cavity.—Prof. M. E. Boisseau, *Archives Générales de Médecine*, Juillet et Aout, 1867.

On Dilatation of the Bronchi or Bronchiectasis. By Dr. T. Grainger Stewart.—True bronchiectasis must be distinguished from the following lesions, which may be confounded with it, viz.—1. A general dilatation of the bronchi from hooping-cough or from capillary bronchitis. 2. Dilatation from stricture of bronchi, taking place on one or both sides of the stricture, and manifestly connected with it. 3. Slight, local dilatations from long-standing indurations of lung-substance, tubercular or inflammatory. 4. Spurious bronchiectasis, the remains of chronic tubercular cavities or abscesses in the lung-tissue. Of true bronchiectasis there are two forms—The general or uniform, and the saccular or ampullary. These, however,

constantly co-exist in the same lung, and even in the same tube—the whole course being dilated, but special sacules projecting from the side here and there. When dilatations exist in neighbouring bronchi, it frequently happens that communications become established between them, and thus several bronchial tubes may at last open into one common cavity.

In some dilatations the mucous membrane is natural; in others the membrane is thickened and opaque, the epithelial elements, though still distinct and characteristic, are granular and swollen, and the vessels are congested. In yet others the membrane presents a velvety appearance, numerous villous processes projecting from the surface. In this condition the epithelium is more altered, though still distinctly characteristic. In others ulcerative or necrotic destruction of the membrane is seen; superficial or deep, limited or extensive abrasions existing. These conditions are met with in successive stages of the affection, and the author refers the changes in the mucous membrane, not to a morbid action originating in itself, but to the effect of changes in the contents of the tubes, especially to the decomposition of retained mucus. "In the earlier stages the membrane is unaltered, but as the secretion accumulates it becomes granular and opaque; further accumulation and decomposition of the retained material produces, of course, greater irritation, the villous condition, and ulceration." There is distinct wasting of the muscular and elastic coats of the bronchi. With high powers the tissues appear granular and indistinct, so that the individual elements of the muscular and elastic fibres can scarcely be recognised. "The atrophy sometimes advances in a very remarkable manner, particular portions of the wall wasting, and others retaining their natural volume; the latter parts form bands or ridges, elevated above the surrounding mucous membrane. As the atrophy of the neighbouring parts advances, these become more and more prominent, drawing gradually closer till they resemble a mesentery connecting the unatrophied band with the bronchial wall. At length, apparently, by gradual absorption, the mesentery-like membrane disappears, and the band is left as a bridge stretching across the lumen of the dilated tube." The author believes that communications between neighbouring bronchiectases are formed by a process identical with the above, neighbouring dilatations expanding until two of them come into contact. Through their walls an opening forms, which gradually enlarges without any truly ulcerative process. The mucus contained in the dilated tubes is found in different cases in different conditions:—*a*. There may be copious yellow mucus, free from fetor, not differing from the natural secretion microscopically. *b*. An inspissated mucus of a grey-yellow and rather opaque colour, usually free from disagreeable odour, containing some altered cells, but mostly composed of granular and fatty matter. *c*. Casts of tubes opaque and greyish in colour, and, as pointed out by A. Gamgee, assuming a purplish hue on the application of iodine. These casts are usually accompanied by fetor, and under the microscope show innumerable fine crystals of margarin.

d. Fragments of pulmonary tissue are sometimes mingled with the foregoing, such as are commonly seen in the contents of tubercular vomicæ. *e.* The contents sometimes become inspissated and calcareous. These varieties, excepting the fourth, may be produced by changes in the natural bronchial secretion. The chemical nature of the fetid sputa in bronchiectasis is not yet satisfactorily determined. The lung-tissue surrounding the dilatations may be unaltered, or it may be collapsed or atrophied; it is not spongy and does not crepitate, but it is not indurated and no excess of the fibrous element can be detected in it. In other cases the tissue is consolidated; the lung-substance is in a state of cirrhosis or fibroid degeneration. In others the surrounding tissue forms an abscess, in the centre of which the thin walls of the dilated bronchus may be seen. In others the walls of the bronchi and the surrounding lung-tissue are destroyed by gangrenous inflammation. All these conditions of the lung-tissue are referable to changes within the bronchi. The author draws the following conclusions from his own observations:—"1. That the essential element of bronchiectasis is atrophy of the bronchial wall; that the cause of such atrophy is not yet ascertained, but may, perhaps, be connected with constitutional peculiarities. 2. That the walls, being so thinned and weakened, readily yield to the pressure of air, it may be in deep and sudden inspirations or during violent muscular exertions, certainly in the sudden expiratory effort made while the glottis is closed in the act of coughing. 3. The enfeebled and dilated condition of the bronchi favours the accumulation of the mucus secreted by the bronchial membrane. 4. That the mucus, accumulating and undergoing decomposition in the dilatations, irritates the mucous membrane, leads to inflammation, and the formation of villous processes from it, to the formation of increased connective tissue in the walls, to irritation of the cartilages, and frequently to consolidation of the surrounding lung-tissue and pleuritic adhesions, sometimes also to abscess or to limited gangrene." In many cases this affection of the bronchi comes on insidiously, and in the majority of cases the disease tends to a fatal result. The author appends to his paper eight illustrative cases.—*Edinburgh Medical Journal*, July, 1867.

Chorea, Rheumatism, and Diseases of the Heart in Children.—According to M. Henri Roger, rheumatism is entirely exceptional before the ages of three and five years; in the second period of childhood it is almost as frequent as in adults; but at this age neither the acuteness of the disease, nor its extension to a number of articulations, are in the same degree as in the adult. Altogether cardiac complications at this age are sufficiently frequent to warrant us in saying that, as a rule, the coincidence of rheumatism and cardiac affections is fatal. Often to the cardiac complication is added a left pleurisy, and often a double pleurisy. Cerebral rheumatism is less frequent and less grave in children than in adults. The intimate connections which unite rheumatism and chorea are proved—1. By the occurrence of rheumatism with chorea; the one appearing during convalescence, or a little after the cure of the other. 2. By rheumatism

being complicated by chorea during its commencement or progress. 3. By cases of the coincidence and alternation of rheumatism and of chorea. It is, however, slight rheumatism which is complicated with chorea. There is a kind of antagonism in severity of phenomena between the one disease and the other. Acute polyarticular rheumatism is complicated, at its commencement, or in its course, by cardiac inflammations, and not by chorea; and the latter, when it occurs, is partial, slight, or not of long duration. Inversely, slight rheumatism is complicated by more severe and longer attacks of chorea.—M. Henri Roger, *Archives Génerales de Médecine, and Gaz. Méd. de Paris*, Mars 7, 1868.

On a Case of Acute Yellow Atrophy of the Liver.—Dr. A. Christy Wilson records a case of acute yellow atrophy of the liver, in which the temperature was very high, until shortly before the patient's death. According to Frerich's, the temperature is only raised during the premonitory febrile stage, or when delirium and convulsions are excessive. The patient was admitted into the Edinburgh Royal Infirmary on December 6th. For several months previously she had suffered from occasional vomiting; but her appetite continued good until three weeks before her admission, when she noticed symptoms of jaundice. When admitted she answered incoherently; she was drowsy; her skin and conjunctivæ were of a bright yellow; hepatic dulness; measured little more than one inch vertically in the mammary line; the left lobe of the liver could not be discovered on percussion. She died on December 10th, having previously had hæmorrhage from the bowels and vagina; muscular rigidity and slight opisthotonos. Temperature on December 9th and 10th was 104°—105°. Urine contained balls of leucine, acicular crystals of tyrosine, fusiform crystals of creatinine and numerous fatty casts.

Autopsy.—Liver weighed less than two pounds; much of its substance was of a bright ochre yellow colour; many of the hepatic cells were in a state of fatty degeneration, and many were completely broken up. Some were swollen and opaque. The destruction was most advanced at the periphery of the lobules. The kidneys were also diseased. The cortical substance was dense and opaque, and the tubules were full of dense opaque matter—cells swollen and opaque, or fatty, or completely broken down.—Dr. A. C. Wilson, *Edinb. Med. Journ.*, Feb., 1868.

Case of Gastritis Phlegmonosa.—Dr. T. Grainger Stewart gives a case of this rare disease, in which it was accompanied by inflammation and gangrene of the bladder. E. W—, æt. 28; in general healthy, but had twice suffered from gall stones. After an insufficient diet, she went to live in a family where she was plentifully supplied. She then began to complain of pain in her left side, and had constant craving for food, especially butcher's meat. She was first seen on Monday, October 14th. Her symptoms were, vomiting of green and yellow bile, flatulent distension, and pain in the upper part of the abdomen, neither acute nor aggravated on pressure. These symptoms were at first relieved by treatment, but on the 19th October she had a relapse. She was taken to the Infirmary on the 25th, where she was under the care of Dr. Balfour, and died on the 29th. Her symptoms were flatulent

distension; vomiting; pain, not increased on pressure, which extended into the throat, and in the latter part of the case the symptoms of exhaustion.

Autopsy.—Body well nourished; no icterus, nor œdema; lungs congested and slightly œdematous; peritoneal cavity contained serum and pus; coils of intestines were connected together by recent lymph, and there were recent adhesions between the liver, diaphragm, and stomach. Gall bladder was thickened and indurated, with a gangrenous opening in its anterior wall, which communicated with the peritoneal cavity; it was filled with biliary calculi, and a few similar concretions were found in the ramifications of the hepatic duct. Stomach of its natural size, distended with air; contained a small quantity of fluid. Its walls were throughout greatly thickened—the thickening tolerably uniform. On section, pus escaped from the cut surface, mostly from the sub-mucous cellular tissue. The mucous membrane was thickened, dense, and almost coriaceous, of a reddish-grey colour. Its tubules and stroma contained pigment, but did not appear otherwise altered. The muscular coat was in some parts firm and continuous, in others partially disorganised. The peritoneal coat was inflamed and thickened. There was no pus in the sub-peritoneal cellular tissue; in the submucous it was in parts infiltrated, in parts collected in little sacs of various sizes. Intestines natural, except the peritoneal surface. Kidneys natural.—Dr. Grainger Stewart, *Edinb. Med. Journ.*, Feb., 1868.

The Histological Development of Epithelial Tumours (*Cancroid*).—Drs. Ranvier and Cornil state that they have carefully observed the manner in which cutaneous cancroid is developed at the expense of the sudoriparous glands. They found in the lower layers of the healthy epidermis, either occupying the place of the glomeruli of the glands, or around tubes which were in a normal state, an anastomotic network of epithelial cylinders, the diameter of which varied from 0·05 to 0·1 millemeters. These cylinders presented pavement cells much larger than the nuclei and small cells of the normal glands, which filled the lumen of the tube from which the hyaline membrane had disappeared. There was an abundant multiplication of the elements of connective tissue around the epithelial masses. The authors are disposed to think that a disposition of the epithelium in anastomosing cylinders in tumours of the skin always originates in the sudoriparous glands. Passing to the study of the development of cutaneous cancroid at the expense of sebaceous glands, MM. Ranvier and Cornil show that the first modification which occurs in these glands, in the neighbourhood of cancroid, consists in an increase of the number of the layers of the small pavemental cells of the periphery of the cul-de-sac. In proportion as these multiply they push towards the centre of the cul-de-sac, the sebaceous cells, which at last disappear. The pavemental epithelium thus accumulating in the centre, takes on the globular form. But at this period the sebaceous glands have lost their proper wall, but retain their dimensions, and have only become more globular. On a fine section we find these masses occupying the situation of the sebaceous glands around the sheath of the hair. The neighbouring dermis is

normal. Later they extend considerably, at the same time that the papillæ elongate, and the Malpighian network penetrates between them. Lastly the authors have studied cancroid developed at the expense of the Malpighian network, by enlargement of the interpapillary spaces, and the advancement of the cells of the mucous layer between the papillæ.—Drs. L. Ranvier and V. Cornil, *Journal de l'Anatomie et de la Physiologie Normales et Pathologiques* and *Gazette Méd. de Paris,* Fevrier 8, 1868.

Cryptogamic Origin of Syphilitic Diseases.—Dr. J. H. Salisbury believes that he has discovered the specific cause of syphilis and gonorrhœa, in two new algoid vegetations. His microscopic studies connected with syphilis were commenced in 1849, but it was not until 1860 that he made any progress "for plants of this character had been but little studied on account of their habitat, their resemblance to connective tissue filaments, and their extreme minuteness." The plant which he believes is the cause of syphilis he terms *Crypta* Syphilitica. No substantial progress was made by the examination of pus from primary sores alone, although it was observed that the pus contained small highly refractive spheroid bodies, which were afterwards found to be the spores of the *Crypta Syphilitica.* By dissecting the beds of chancre, and subjecting the tissue to careful microscopic examination, a peculiar filament was discovered running in all directions, singly and in bundles, through and among the diseased connective tissue elements. This organism was found to be algoid; it was found in multitudes, and in all stages of development, from the spore to the mature filament. The author states that he has found it in one hundred cases. When the disease has become constitutional it is found in the blood, and he believes its presence or absence in the blood is a sure guide for continuing or discontinuing treatment. The following is the author's description of this minute organism:—*Genus,* Crypta (Salisbury).—Minute, transparent, highly refractive algoid filaments, which develop in living organic matter from spores. *Species,* C. Syphilitica, (Salisbury).—A homogeneous filament, with extremities obtusely rounded The filaments are of such uniform structure throughout that no trace of transverse markings are visible save in their early stage of development; neither can the contents be distinguished from the outside wall of the filament. The filaments are either straight, coiled, or arranged in curves. They develop from spores, which may be active or inactive in the connective tissue, and may be transplanted from one individual to another by inoculation, or by contact with mucous membranes. The connective tissues, cartilage and bone, furnish a fertile soil for the development and propagation of this plant. When the spores are planted on a mucous surface, they vegetate, the filaments making their way through the basement membrane, instead of extending laterally in the epithelial tissue. The epithelial tissue, in the primary disease, is only destroyed immediately over where the plants first penetrate the glue tissue beneath." A somewhat similar cryptogam the author believes to be the specific cause of gonorrhœa. It occurs as spores in the pus, and among and in the epithelial cells, and as filaments, single and in knots, in all stages of development. In the embryonic filaments

a moniliform structure could be observed, exhibiting the outlines of the individual spores, while the more advanced and mature filaments were usually homogeneous throughout their entire length. To this plant the author gives the name *Crypta Gonorrhœa*. It limits its invasion to the epithelial tissue, whilst the Cypta Syphilitica confines itself mainly to the connective, cartilaginous and osseous tissue.—J. H. Salisbury, M.D., *American Journal of Med. Sciences*, Jan. 1868.

On the Diffusion of Trichina spiralis. By Dr. T. S. Cobbold.—The author performed numerous experiments by feeding various animals with trichinous flesh. His results correspond very closely with those obtained by investigators on the Continent. Thus, H. A. Pagenstecher and C. J. Fuchs found that ingested muscle trichinæ acquired sexual maturity within the intestinal canal of birds; but they never found young trichinæ in the muscles of birds, nor did they perceive any evidences of an attempt on the part of the escaped embryos to effect a wandering or active migration on their own account. So seven experiments performed by the author on birds gave negative results. No trichinæ were found either in the muscles or in the intestinal canal. Not a few persons entertain the notion that trichinæ are liable to infest all kinds of warm-blooded and even also many kinds of cold-blooded animals, such as reptiles and fishes. Certain nematodes found in earthworms have been described as trichinæ, and, consequently, pigs and hedgehogs were said to become trichinous through eating the annelids. The minute flesh-worms (described by Bowman) from the muscle of the eel are not true trichinæ, any more than the somewhat similar parasites (*Myoryktes Weismanni*) which Eberth found to infest the muscles of the frog. The negative results obtained may therefore fairly be taken as positive, in one sense, inasmuch as they help, with the aid of other experiences, to define the area of distribution legitimately assignable to *Trichina spiralis*. The author obtained positive results in dogs, cats, pig, guinea-pig, and hedgehog. "Carnivorous mammals, and especially those which subsist on a mixed diet, appear to be most liable to entertain trichinæ; nevertheless it is quite possible to rear flesh-worms in herbivora. Pagenstecher and Fuchs succeeded in rearing muscle trichinæ in a calf, and they found three female intestinal trichinæ in a goat, but apparently no muscle flesh-worms, although twenty-seven days had elapsed since the first feeding with trichinized rabbit's flesh. In three sheep experimented on by the author no trace of trichinæ could be found. In their natural state it is clear that herbivorous mammals can seldom have an opportunity of infesting themselves, whilst the reverse is the case with swine, carnivorous mammals, and man. Other parasites, the common fluke, for instance, are limited to a larger or smaller number of hosts; whilst, on the other hand, in not a few cases, the territory occupied is that of the body of a single species. The two most common cestodes liable to infest man have a very limited distribution; and the same is true of nematodes, *Oxyuris vermicularis* being confined, as far as is known, to man. The author adds that in England ordinary precautions will suffice to prevent the introduction of trichiniasis. English swine are almost

entirely, if not absolutely, free from this disease, and not a single case of trichiniasis in the living human subject has been diagnosed in the United Kingdom. Some twenty or thirty cases have been discovered post mortem; but it is most probable that all these individuals had contracted the disease by eating German sausage or other preparation of foreign meat.—*From the Proceedings of the Linnean Society*, vol. ix, No. 36, Sept. 14, 1867.

The following papers and memoirs are cited by title only, as want of space prevents a more extended notice of them.

Case of Empyema with Inequality of the Radial Pulses, and Paralysis of the Diaphragm. By James Cuming, M.A., M.D., &c. *Dub. Quart. Journ.*, Feb. 1, 1868.

Two Cases of Epilepsy. By G. W. Balfour, M.D. *Edin. Med. Journ.*, March 1868.

Functional Hemiplegia. By J. H. Kidder, M.D., &c. *American Journal of Med. Sciences*, Jan. 1868.

Cases of Inflammation occurring under Peculiar Conditions, with some Thoughts and Reflections on the Nature, Constitution, and Purposes of this Organic Process in the Animal Organism. By Samuel Jackson, M.D. *American Journal of the Medical Sciences*, Jan. 1868.

On Double Facial Paralysis. By Dr. Pierreson. *Arch. de Médecine*, Aug. 1867.

Remarks on the Etiological Analogies of Pulmonary Tubercular Phthisis. By Dr. Jules Arnould. *Gaz. Médicale de Paris*, Mars 7, 1868.

On Two Cases of Sub-meningeal Hæmorrhage. By R. Lepine. *Gaz. Méd. de Paris*, Nov. and Dec., 1867.

On the Treatment of Croup by Humid Vapour of the Sulphide of Mercury. Gaz. Méd. de Paris, Sept. 1868.

On Cholera. By Dr. Nicaise. *Gaz. Méd. de Paris*, Fev. 1868.

On Abdominal Tumours. By Dr. J. Guipon. *Gaz. Méd. de Paris*, Janvier, 1868.

Rupture of an Aneurism of the Ascending Aorta into the Pericardial Cavity, By Dr. E. R. Hun. *New York Med. Journ.*, Jan. 1868.

On Tuberculous Disease in North-Western Texas. By Dr. E. M. Morse. *Ibid.*

Niemeyer's Views on Tubercle, a résumé of. By Dr. W. T. Lusk. *Ibid.*, Dec., 1867.

On Tuberculosis of the Lungs: a review of the more important German, French, English, and American contributions to the Pathology and Therapeutics of this affection; from the year 1855 *to* 1863. By Drs. P. Kersten, and Ed. Friedrich, of Dresden. *Schmidt's Jahrb.*, Bd. 133. 1867.

On Poisoning by Phosphorus: a notice of recent communications on acute Phosphor-poisoning. By Dr. Otto Schraube, Querfurt. *Ibid.*, Bd. 136. 1867.

A Résumé of Knowledge and Opinions about Gonorrhœal Rheumatism. By Dr. Edm. Güntz. *Ibid.*, Bd. 136. 1867.

Report on Epidemic Cerebro-Spinal Meningitis, gathered from the latest observations and investigations. By Dr. H. Meissner, of Leipzig. *Ibid.*, Bd. 129; and Bd. 136. 1867.

REPORT ON MIDWIFERY

By Robert Barnes, M.D., F.R.C.P.,

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I. The Non-Pregnant State.

1. *On Polypus Uteri.* By Dr. Dyce.
2. *The Nerves of the Uterus and their Termination in the Smooth Muscular Fibres.* By Dr. F. Frankenhauser.

1. Dr. Dyce records the result of forty cases of polypus uteri treated by him. Several cases of special interest are described. One point he insists upon is the importance of always plugging after removal of a polypus by excision. In one case a patient nearly died from hæmorrhage.—*Ed. Med. Journ.*, Dec., 1867.

2. Dr. Frankenhaüser, in an elaborate memoir, not only traces the nerves in their course into the uterus, but discovers their terminations in the nuclei of the muscular fibres. He also gives a careful historical review of the subject. He says the best and truest account is that in Walter's tables, Berlin, 1783. He extols Hunter's description of the uterine sympathetic nerves, and also Tiedemann's. The results of Robert Lee's researches are contradicted by Snow Beck; but Snow Beck is incomplete and erroneous in his description. The histological investigation of the genital nerves has made little progress since Franz Kilian's time; but ganglia have been discovered in the substance of the uterus by Frankenhaüser, Kohrer and Korner. Jena, 1867.

II. Pregnancy.

1. *The Decidua Menstrualis.* By Dr. Hausmann.
2. *A Case of Jaundice fatal in the Seventh Month of Pregnancy.* By Dr. Paul Davidson.

Dr. Hausmann gives an historical review of the researches hitherto made on this subject. He then explains the conclusions he has arrived at after examination of many specimens and histories, for which he is indebted to Professors Martin and Virchow. He says he has never observed an entire cast of the uterine cavity, the membranes having always been expelled in three or more pieces. The membranes were from one to four centimètres long, of variable width, and usually thinner at the margin of transition from the anterior to the posterior wall of the cavity, at times only hanging together by a few shreds. The inner wall showed a smooth surface, and upon more minute examination several crossing forks, already described by Follin, enclosing, when recent, in their midst, deeply red areas. These last, as well as partially translucent spots, depend upon an unequal thickness of the detached mucous membrane, as may be easily seen by sections made through these spots. Within these larger crossings the inner surface shows a number of punctate, small

openings, which are the expanded mouths of the uterine glands, an appearance which made Hunter call the membrane the *membrana cribrosa*. The outer surface was rough from hanging shreds. The microscope made manifest the uterine glands, accompanied by capillary network; broad, rounded cells, mostly having a large nucleus and nucleolus, which sometimes was elongated and pointed at one or both ends, giving a spindle shape. With these cells were a few free nuclei; and near the outer surface was an abundant, loose, fibrous connective tissue.

As to the origin of this casting of the uterine mucous membrane, Dr. Hausmann contends that it is the result of impregnation. He disputes the statement that the membrane is shed every four weeks. He says it commonly occurs after intervals longer than ordinary; that it occurs only in married women, or in women exposed to sexual intercourse. He calls attention to the fact that women who before marriage never had anything of the kind begin to expel these membranes afterwards, and cites a case from Tyler Smith of a patient who, whilst single, had been healthy, who from the date of her marriage to the death of her first husband had observed membranes of this nature at irregular intervals, who again became free whilst a widow, and again dishacrged these membranes six months after a second marriage. Hence he concludes that these membranes are abortions of some days or weeks, the mucous membrane of the uterus converted into decidua being expelled, after the perishing or escape of the ovum. This occurs preferably at a menstrual epoch, and thus may favour the idea that it is a simple menstrual decidua; but often the interval is longer than four weeks. The membrane is expelled commonly within six to twenty-four hours after the beginning of the hæmorrhage, sometimes later, and generally after pains. There are probably various causes of the abortion, but probably the premature destruction of the embryo precedes it. The frequent catarrh of the uterine mucous membrane and chronic metritis associated with this condition are generally the consequence of it. The treatment is divided into that which is indicated for the abortion and into that proper for the disease. The most essential rule is abstinence from sexual relations for several months.—*Monatsschr. f. Geburtsk*, Jan., 1868.

2. Dr. Paul Davidson adds a case to those illustrating the interesting subject of jaundice in pregnancy. A single woman, æt. 26, was brought into the Breslau Clinique in labour. She was a large, robust primipara. She had recovered from an attack of cholera when three months pregnant. For the last five or six days she felt depressed and weak, headache, loss of appetite, constipation, but went about her work. Three days ago a yellow tinge of face appeared, and at the same time the urine became like brown beer. The day before admission she had vomiting, and labour-pains set in. Some blood was discharged from the vagina during the night. The water broke, and a child was quickly expelled. The placenta soon followed. There was little blood. The uterus contracted. The child, which had died in utero, was about twenty-five weeks old. It was deeply

stained yellow, without sign of decomposition. The woman was now intensely icteric; pulse 78, respiration 18, temperature 36·5 C.; pupils natural; answers correctly. Percussion in region of the liver was not painful. The dulness began in the fifth intercostal space, and ended with the edge of the ribs. A profuse atonic metrorrhagia set in an hour after labour. It was arrested by cold injections. The uterus continually showed a disposition to relax. Soon vomiting set in; at first of watery clear fluid, with excitation, thirst; then of black, coffee-like fluid. Blood appeared in the vomited matter. Six ounces of urine, drawn by catheter, was turbid, dark brown, with yellow foam, copious sediment of uric acid salts; a marked biliary motion; no albumen, no cylinders. Vomiting continued; blood always in the ejecta. Pulse remained at about 70. Percussion showed a marked diminution in size of the liver. The urine was almost suppressed. Death ensued after increasing collapse and coma, within twenty-four hours after delivery.

The urine, carefully examined, showed abundance of biliary salts and leucin-globules.

Autopsy.—The pericardium contained a considerable quantity of jaundice-coloured serum; some small punctated ecchymoses in the muscular substance of the heart near its base; the papillary muscles showed similar ecchymosis, and the muscular fibres were in a state of fatty degeneration. The contracted liver had shrunk quite an inch above the rib cartilages; the cells were in advanced degeneration; the ductus choledochus was plugged with mucus; both kidneys were swollen; the parenchyma soft, stained yellow, and in a state of fatty degeneration; spleen enlarged. The uterus reached above the symphysis. In the broad ligaments were some extravasations of blood. Blood was found in the intestines.—*Ibid.*, 1867.

III. Labour.

1. *On Obstetrical and Gynæcological Measurements and Weights.* By Dr. Carl Martin.
2. *A Case of Carcinomatous Sarcoma of both Ovaries; Premature Twin Labour.* By Otto Spiegelberg.
3. *On Turning in Narrow Pelvis.* By Prof. E. Martin.

Dr. Carl Martin contributes an elaborate memoir on obstetric and gynæcological weights and measurements. In 1700 measurements he found the distance between the anterior superior spinous processes of the ilia to give a minimum of 18·9 centimeters, a maximum of 31·5, and a mean of 25·4. Out of 1500 measurements this diameter in 451 cases was above 24 and below 25; in 757 it was over 25. He concludes that the proper diameter is 25 centimeters = 9¼ inches.

The distance between the crests of the ilia gave a minimum of 24, a maximum of 33·8, and a mean of 28·5. The standard distance he concludes to be 28 centimèters = 10½ inches.

The distance between the trochanters justified a standard of 31 centimeters or 11½ inches, closely agreeing with the measurements of Michaelis and H. F. Naegele.

The external conjugate showed in 1700 measurements a minimum of 16·4, a maximum of 25, and a mean of 20 centimèters = 7′ 5″. This he takes as the standard.

The right external oblique diameter gave in 1500 cases a minimum of 19, a maximum of 27, and a mean of 22·6. The left external oblique diameter gave somewhat smaller measurements; the maximum was only 26·5, the mean only 22·5. The mean of the two oblique diameters must be taken at 22·5 centimèters.

The conjugata vera he has determined on 16 dead subjects. He took 4 inches as the standard. The transverse diameter of the brim he found in 25 dissections of narrow pelvis to be 13·2, in 34 middling and large pelvis to be 13·8, in the whole 54 to be 13·58. He adopts 13·5 centimèters, = 5 inches, as the standard. The oblique diameter he obtains is 12·5 centimèters = $4\frac{2}{3}$ inches. The sacro-cotyloid diameters measure 9 centimèters = $3\frac{1}{3}$ inches.

In 560 mature boys he found a mean weight of 3330 grammes = $6\frac{2}{3}$ pounds: and in 500 mature girls a mean of 3220 grammes = $6\frac{1}{2}$ pounds.

He found a mean length in both sexes, from head to breech, of 35 centimeters; from head to heels of 50 centimeters.

The following are the head measurements:—1st. The anterior transverse diameter, *i. e.* at the lower ends of the coronal suture = 8 centimeters = 3 inches. 2nd. The posterior transverse diameter, *i.e.* between the tubera parietalia = 9 centimeters = $3\frac{1}{2}$ inches. 3rd. The straight diameter from the glabella to the hindermost point of the occiput = 11·5 centimeters = $4\frac{1}{4}$ inches. 4th. The long oblique diameter from chin to the furthest point of the occiput = 13·5 = 5 inches. 5th. The short oblique diameter from the foremost point of the neck to the furthest point of the forehead = 9·5 centimeters = $3\frac{1}{2}$ inches.

In 200 cases of mature birth he weighed the afterbirths; he obtained for the whole afterbirth a minimum of 350, a maximum of 870, and a mean of 585 grammes; for the length of the cord a minimum of 35, a maximum of 102, and a mean of 56 centimeters.—*Ibid.*, Dec., 1867.

2. Dr. Spiegelberg relates an interesting case of ovarian tumour complicating pregnancy. A woman, æt. 36, primipara, was delivered prematurely of twins. Soon after almost sudden stupor and delirium set in. Albumen was found in the urine. Diarrhœa followed. A tumour, the size of the fist, was felt in the right side. The abdomen became painful and meteoric. Rigor appeared. The pulse and temperature rose. Exhaustion and death on the third day. A large quantity of green, turbid, bad-smelling fluid, mixed with yellow exudative fluid, was found in the abdominal cavity. A tumour covered with blood and layers of fibrine lay in the iliac fossa; it was connected with the broad ligament by a pedicle. No trace of a normal ovary was found. Dr. Spiegelberg is of opinion that the stimulus to growth of the ovarian tumour caused by pregnancy caused thrombosis in its structure, with apoplectic and necrobiotic foci, the rupture of which occasioned the fatal peritonitis.

3. Professor E. Martin discusses the use of turning in contracted pelvis. He denies the proposition that the head enters the brim with more facility base first, if the child is living. He insists that when the vault presents moulding may go on gradually and safely for hours; whereas if the base come first, the moulding must be effected by force, and within five minutes, in order to save the child. He points to the importance of getting the smaller or bi-temporal diameter of the head into the contracted conjugate diameter, and the occiput with the greater or bi-parietal diameter into the larger side of the pelvis. This may be effected in three ways:—1st. By a fitting position of the woman. Let her lay on that side towards which the forehead is directed; the fundus of the uterus will gradually sink with the pelvic end of the child to this side; the spine draws down the occiput to the opposite side of the pelvis, and the forehead goes more deeply towards the middle of the brim. Martin refers to a case in which he successfully executed this, the pelvis measuring only three inches. 2nd. The forceps is a means of releasing the engaged posterior or larger transverse diameter from being locked in the conjugate. This explains the frequent easy extraction when a little traction is made. This method is indicated when signs of exhaustion or of need for delivery exist; but it must not be trusted to overmuch. We must be prepared to perforate. 3rd. Turning by the feet. When this has been done, Martin has always found the depression caused by the promontory to be on the temporal bone. In many of these cases he found, after some hours, signs of blood-effusion in the cranium, ex. gr. convulsions in the face. He thinks turning is advisable only when the transverse diameter of the pelvis is great enough to allow the occiput to pass by the side of the promontory.

In the case of one-sided distortion of the pelvis, turning is hardly admissible. Martin refers to cases in which the occiput descending in the narrow half of the pelvis, delivery had to be accomplished by perforation; whereas, when the occiput was turned to the normal side of the pelvis, the forceps delivered easily. This occurred in the same patient. He also gives cases in which the occiput, being unfavorably situated, a face-presentation was developed. This happened twice in the same woman, under his own observation.

The indication for turning in narrow pelvis occurs when it is possible to bring the smaller anterior diameter of the head into relation with the narrowed conjugata, and the occiput into the larger half of the pelvis; and when this more favorable position of the head comes to be effected by placing the woman in a fitting position. He then asks, Can the head be so placed by turning? In consequence of the known law, that in incomplete foot-presentation the foot that is drawn down always comes under the pubic arch, if the fœtus is not abnormally small or the pelvis too large, in drawing down the right foot the child's back and also its occiput will come into the right half of the uterus, and *vice versâ*.—*Ibid.*

IV. The Puerperal State.

1. *The Intra-Uterine Pessary as a Hæmostatic in the Puerperal State.* By Dr. Hertz.
2. *A Case of Inversion of the Uterus.* By Dr. Schnorr.
3. *On the Production of Inverted Uterus.* By Dr. Matthews Duncan.
4. *Observations on the Contagion of Puerperal Fever carried by a Midwife.* By Dr. Kauffman.
5. *Case of Suppression of Urine fatal on the thirteenth day.* By Dr. John Miller.

1. Dr. Hertz having to treat a case of repeated and profuse secondary hæmorrhage after labour, finding there was ante-version and flexion of the uterus, introduced an india-rubber intra-uterine pessary in the sixth week. The hæmorrhage ceased. The patient wore the instrument for ten days without inconvenience, and without return of bleeding. Professor E. Martin, commenting upon the case, cautions against the use of the sound to correct flexions of the uterus in women so early as six weeks from labour.—*Monats. f. Geb.*, Aug., 1867.

2. A primipara was delivered by forceps of a child presenting in first position. After pressing upon the fundus uteri to drive down the placenta, and drawing upon the cord, the placenta came down attached to the inverted uterus. Dr. Schnorr separated the placenta, and immediately reduced the uterus. The uterus then contracted. The patient had slight peritonitis, from which she recovered, to die later of phthisis.—*Ibid.*, July, 1867.

3. The reference made in a former report to Dr. Duncan's views on inversion of the uterus was so imperfect as to occasion misinterpretation. As these views are important they are now cited more fully. Four kinds of inversion occur after delivery:—1. Spontaneous passive uterine inversion. 2. Artificial passive. 3. Spontaneous active. 4. Artificial active inversion. The only uterine condition essential to the production of all these kinds is paralysis or inertia, or complete inaction. This is the condition of the whole organ at the time of the production of the two first kinds. In the two last kinds it is accompanied by uterine activity, *i.e.* there is partial activity, partial inertia. Activity of the whole of the uterus makes inversion impossible. Activity of a part of the uterus renders introcession of that part impossible. There must, therefore, be paralysis of the whole or a part before inversion can be begun. The paralysed part that falls in is generally the placental seat. Action takes place below this in the form of an hour-glass contraction. Hour-glass contraction cannot exist unless the parts above the contraction are in a state of inertia, for were the higher parts of the uterus in even moderate action the hour-glass contraction would soon be overcome. Dr. D.'s account of the passive forms of inversion does not differ materially from those generally known. Spontaneous active inversion occurs in the following way:—Bearing down presses the paralysed portion of the uterus into the cavity; this is seized by the adjacent

contracting segments of the uterus, is pushed down, and expelled through the uterus.—*Edinb. Med. Journ.*, May, 1867.

4. *Observations on the Contagion of Puerperal Fever through a Midwife.* By Dr. KAUFMANN.—Dr. Kaufmann relates the following history: In Durkheim, at a time when there was no other epidemic present, a man had diphtheritis, and was convalescent, when at the end of April a young primipara was delivered in his house. Two days afterwards she sickened with puerperal fever. She was attended by a midwife, M—. She died. Exsudation in the abdomen, and diphtheritic endometritis found. Within the last fortnight four other women were attacked, all of whom had been attended by the same midwife. During the month of May M— attended six women, five took the fever, and four died. During the same time two other midwives attended twenty-one cases, all without accident.—*Monatssch. f. Geburtsk.*, April, 1867.

5. *Case of Suppression of Urine, fatal on the thirteenth day.* Dr. JNO. MILLER.—A pluripara had mammary abscess. At the end of a fortnight from labour there was suppression of urine. Towards the end there was intense pain in the region of the kidneys. Intelligence unaffected. Little or no œdema. No convulsion. Serum drawn from a blister gave urea. Kidney exhibited numerous oil-globules. A thin section presented the appearance of stearosis, intermingled with that of inflammatory epithelial degeneration of the tubules. (The case appears to be analogous to acute atrophy of the liver. R. B.)—*Edin. Med. Journ.*, June, 1867.

The following are referred to by title only for want of space:

A Case of Abdominal Gestation; spontaneous Perforation of the Abdominal Wall; gradual Expulsion and Extraction of the Fœtus; Recovery. By Dr. JACUBOWITZ.—*Wien. Med. Presse*, 1867.

Experiences of Eclampsia during the Reproductive Period of Women. By Dr. WEBER.—*Ibid.*

Absence of Uterus.—RISCH.—*Berlin Klin. Wochschr.*, 1866.

An Ovariotomy in 1701. E. KOEBERLE.—*Gaz. Hebdomad.*, 1866.

Two Successful Ovariotomies performed in the separate Wards of the Royal Lying-in Institution of Berlin. E. MARTIN.—*Berl. Klin. Wochensch.*, 1866.

One-sided Hæmatometra with a Double Genital Canal. SCHROTER.—*Ibid.*

The Significance of the Levator Ani Muscle in the use of Pessaries. Dr. HILDEBRANDT.—*Mon. f. Geburtsk.*, April, 1867.

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REPORT ON TOXICOLOGY, FORENSIC MEDICINE, AND HYGIÈNE.

By Benjamin W. Richardson, M.D., F.R.S.

I. Toxicology.

Micro-Sublimation.—We have twice before reported on micro-sublimation, and have again to direct attention to the same subject. Mr. Waddington, following in the steps of Helwig, Guy, and Sedgwick, records:—

The results obtained by the method that he has adopted are so at variance with much that has been described in various chemical works that they must, if substantiated, tend in some degree to modify existing ideas on this subject.

The statement so commonly met with in the descriptions of the behaviour of alkaloids when submitted to heat, that they partly sublime and partly decompose, is decidedly open to objection. It cannot mean that the sublimation of a part is dependent upon the decomposition of a part, and yet it is difficult to put any other construction upon it. He supposes it must be admitted, almost as an axiomatic principle, that what is true of a part is true of the whole, or, more correctly, the properties possessed by a part must also be possessed by the whole; and therefore if a part is capable of sublimation the whole is so too.

No substance can sublime and decompose at the same temperature: partial sublimation and partial decomposition must be owing to the mechanical defect of the substance being unequally heated. That the subliming and decomposing points of many substances approximate very closely is most probable, as, when the heat has been most carefully applied, a sublimate has been contaminated with coloured matter, which could only have arisen from decomposition. And in many instances the range of temperature at which a substance sublimes is very limited; the addition of one or two degrees of heat being quite

sufficient to decompose it, while the deficiency of one or two degrees prevents any sublimation taking place. Thus in subliming from papavarine, he was unsuccessful for eight or ten hours, owing to the temperature being defective or excessive, but at another time he obtained a sublimate in as many minutes.

The statement that a substance sublimes without decomposition is, he thinks, equally objectionable; it is somewhat equivalent to saying that a substance remains stable without alteration. It may be, and no doubt is expressive, but it is hardly correct. Sublimation indicates stability, not decomposition, and, as he before remarked, a substance could not undergo both at the same temperature. It may be urged against this that some substances decompose when heated into other definite compounds, as tannin into metagallic and pyrogallic acids, but it would be as correct to say that tannin sublimed with decomposition as to say of any other substance that it sublimed without decomposition.

All sublimates from bodies unchanged by heat should possess the crystalline form of the original substance, and in every case he has not considered a sublimate satisfactory unless this result has ensued. Certain conditions are no doubt necessary to produce a sublimate in typical crystals, but the statement that many alkaloids sublimed in round granules is hardly correct. A sublimate, consisting of round granules, was more or less common to all organic sablimates. It was a modification which he believed admitted of explanation, but at present he had been unable to investigate it. If the process is cautiously continued, the sound granules generally disappear. Crystalline sublimates, more or less defined and typical, taking their place. This would be observed in many slides where the process has been stopped before the whole of the granules have disappeared. He was convinced that their production depends in some measure upon the heat of the receiving glass; the most perfect crystals are obtained when no granules appear, but if the glass became too hot these crystals melt and the granules again form.

Much doubt has existed as to whether the sublimates were identical in composition with the original substance. The sublimate of strychnine was identical with that substance itself, both as to its crystalline form, and also to its behaviour with various chemical tests; and although the fact of one or two alkaloids subliming unchanged cannot be taken as a proof that others will do the same, yet when coupled with the knowledge that perfect sublimates were obtained from nearly every alkaloid operated on, it affords strong grounds for supposing that they do. The fact that one or two alkaloids yielded no definite sublimate can hardly militate against this, as he has every reason to think that these may be sublimed when the heat is more effectively applied.

He thinks that by the method he describes, it is probable, nay more, almost certain, that during some of the process perfectly typical crystals of the substance operated on may be obtained, and that from quantities not exceeding the $\frac{1}{20}$th of a grain; for, as a rule, the smaller the quantity the better the result. Thus in submitting the $\frac{1}{20}$th of a grain of any sublimable substance to heat, the first sublimate will per-

haps possess little distinctive feature, the second will be better, and so on until the substance is nearly dissipated, when the crystals will generally be most perfect. Notwithstanding this, he must acknowledge that the variety of form occasionally produced on the sublimates, precludes at once any certain definition of their nature from the crystalline appearance. It may suffice to mention that he has obtained sublimates of codeine, strychnine, and santonin, so identical in form, that had they not have been labelled, it would have been impossible to separate the one from the other. The apparatus he has used consists of a spirit-lamp, a piece of thin iron plate, and a few glass rings. Three straight lines should be marked on the plate, one across the centre, the others an inch and a half on either side of it. This will be found of great use, as the centre of a slide is at once shown. There should be the merest possible curve in the centre of the iron plate, so that when a glass slip, 3 inches long, is laid upon it, the centre does not touch by the $\frac{1}{6}$ or $\frac{1}{8}$ of an inch. This has the decided advantage of never allowing the glass holding the substance to come into actual contact with the iron plate, thus modifying the heat considerably. He has entirely discarded the use of thin glass for receiving the sublimate, for two or three reasons. As a rule, much better sublimates are obtained upon hot than upon cold glass, and on account of the small bulk of the circles of thin glass they cool too rapidly. They are inconvenient to use, as they cannot be manipulated by the fingers alone; and when the sublimate is upon a slide, it is much more convenient for examination, and, if necessary, for applying liquid tests. In subliming arsenious acid, for instance, he could never obtain such good sublimate upon the thin glass as upon the slide itself. Very long directions have been given for obtaining sublimates of arsenic, but, with two pieces of glass and a glass ring, sublimates of arsenic may be obtained which cannot be surpassed.

A ring is placed on a glass slip, a minute quantity of arsenic put into the centre of it, and the slip placed on the iron plate before mentioned, and heat applied. When the arsenic begins to sublime, another piece of glass, which has been laid on the iron plate or allowed to become warm by any other means, is placed over it to receive the sublimate, the glass ring being its only support. If the glass slip be hot enough, the arsenic will sublime in regular octahedral crystals, not at all crusted, but leaving a good margin between each crystal. If the result of the sublimation, owing to the glass being insufficiently heated, is crusted, it should be rapidly wiped off and returned to its place, and this process may be repeated until a satisfactory result is obtained. The glass, by this means, continually increases in heat, each successive sublimate being an improvement on its predecessor. It may be thought somewhat unnecessary to give such a detailed account of the sublimation of arsenic, a subject by this time nearly exhausted, but he has done so because it may be taken as the type of all other sublimates. The only modification of it consists, in some substances having been mixed with powdered glass and then sublimed. Powdered glass possesses some advantages over sand, which was recommended in the case of theine by Dr. Stenhouse; it is more easily cleaned, it can be obtained in a

finer state of division, and on account of its perfect whiteness the least change of colour may be well observed. Its use is a great advantage in many, but not in all cases.

The heat requires very carefully regulating, but as the iron plate is of some little size, different degrees of heat may be obtained by moving the slides to the right or left. The flame of the spirit lamp should not be immediately under the substance subliming, but a little on one side of it. He has tried the method of keeping the receiving-glass cool, by means of blotting-paper constantly wetted, but he could not speak favorably of it. The great point seemed to him to get the receiving-glass only a few degrees lower in temperature than the glass from which the substance is sublimed.

A cold slide should never be placed to receive the sublimate after heat has been applied. It may be so before, but not after, and for this reason, that when a cold slide is approached to the subliming substance a portion of it is often attracted by it, possibly by the two glasses being in a different electrical condition.

A somewhat curious feature is often observed in sublimation by this process, that many substances in subliming are deposited on the glass in curved lines, which at first present no crystalline appearance. As the sublimation proceeds, crystals form at all points of these lines. Morphia seems to have a tendency to sublime in this way; he has obtained sublimates of this alkaloid consisting of nothing but curved lines, commencing at the segment of a circle, and progressing through subsequent stages, until a perfect figure 8 is obtained. For some time he could not but imagine that this was owing to the glass being imperfectly cleaned, and he accounted for the circular shape by supposing that the cloth used had become soiled, and that in the act of wiping circles had been described on the glass. This does not hold good for two reasons; first, the circular figures are so small as to preclude all possibility of their being hand-made; secondly, that upon one occasion, when endeavouring specially to guard against this phenomenon, he took care to wipe the glass from end to end, precisely the same result ensued.

Many substances yield two sublimates differing, he believes, only in form and not in composition. The second sublimate will be found as very thin platy crystals, perfect in shape, with the peculiar feature, that, instead of being attached to the slide superficially, they are pendent by a single angle. Owing to their extreme tenuity and their angular position, they decompose light considerably; so much so, that the field of the microscope is often entirely obscured. They may be removed with facility, by allowing another glass slide to touch them; even if this rests upon them, they suffer little damage.

For obtaining larger quantities of sublimates I find that the best method is to mix with powdered glass, and to sublime from a flat surface on to a shallow watch-glass. This answers much better than double watch-glasses; but the process is very precarious and tedious, and the sublimate is generally contaminated with coloured matter.

To obtain a sublimate from strychnine a quarter of a grain was

mixed with five or six times its bulk of powdered glass, and a small portion of this mixture submitted to heat in the manner described for arsenious acid. A slide made warm was placed over it, and the whole left until the sublimed crystals appeared of sufficient size. If the crystals were small, the slide was returned to its place; but if they were crusted or otherwise unsatisfactory, a fresh slide (of course made warm) was commenced. By this means very perfect and typical crystals were obtained. Strychnine appears to sublime within a few degrees of the heat at which it commences to change colour and decompose, as with very careful treatment the mixture of glass and strychnine turns brown and the sublimate sometimes appears slightly coloured. When heated to decomposition, strychnine emits a most suffocating odour, resembling the smell of asphalte. By operating upon larger quantities of strychnine, half a grain of sublimate was obtained, and upon submitting this to the usual tests, the characteristic reactions of strychnine resulted.

Salicin sublimes with comparative ease in needles, small plates, and other forms. If the process is continued for an hour and a half or two hours (being carefully watched that the receiving glass does not become hot enough to fuse the sublimate), there will be found the secondary sublimate in thin plates before mentioned.

All the cinchona alkaloids yield sublimates which possess little, if any, similarity.

Quinine.—By careful manipulation, quinine yields a crystalline sublimate. About the tenth of a grain of quinine was mixed with four or five times its bulk of powdered glass, and heated in the usual way. The first sublimate was obtained at too great a heat, and when removed from the fire appeared as a drop of fluid, as it cooled it solidified, and when examined under the microscope it was distinctly crystalline. By more carefully regulating the heat a sublimate in very small granules was obtained, this was kept in its place for some time, and it gradually gave way to a crystalline sublimate, which slowly spread over the whole surface in flowery patterns. Upon leaving it still longer the quinine began to sublimate in long filaments (I can hardly call them needles), and wherever a piece of dust formed a nucleus, the sublimate crystallizing round it assumed a more definite shape. When the slide was removed the sublimed quinine had completely filled the glass ring, and could be lifted off in a single flake.

Cinchonine may be sublimed very easily and without the least change of colour. It bears a considerable amount of heat, and sublimes in very perfect crystals.

Picrotoxin.—Some difficulty is experienced in obtaining a sublimate from this substance. It bears a considerable amount of heat, and may be sublimed without powdered glass. The round granules are first produced, it being requisite to continue the heat five or six hours before a crystalline sublimate entirely takes their place.

The alakloids of opium yield crystalline sublimates which bear little resemblance to one another.

Morphine sublimates readily either with or without powdered glass, but a slight elevation of temperature causes it to change colour. Mor-

phine seems to possess in a great degree the peculiarity of subliming in curved lines, it being almost impossible to obtain a sublimate which is wholly free from it. The sublimate crystallizes at all points of these curved lines, the predominating form being thin plates which polarize light.

Narcotine sublimes with some little difficulty in regular crystals. He has exposed narcotine to a heat sufficient to sublime it for three hours without observing the least trace of decomposition.

Narceine yields a crystalline sublimate with difficulty, the round granules are first produced; with very careful manipulation these give place to needly crystals similar to those deposited from solution.

Codeine may be easily sublimed in regular crystals.

Papaverine sublimes when cautiously heated. He has exposed it to a heat sufficient to sublime it for nine hours, and the last sublimate has been as uncoloured as the first. The sublimate consists of perfect crystals, or when more rapidly sublimed of fan-shaped groups.

Meconin.—A sublimate is obtained with comparative ease, and without the least change of colour. It consists of perfect crystals, and if too great heat has been used, of round granules, which, on cooling, crystallize in tufts.

Thebaine yields a sublimate with as much ease as morphine or strychnine. When heated after melting it increases in colour; kept in this condition it sublimes readily.

Piperin, when heated, melts at a comparatively low temperature, crystallizing again on cooling. It sublimes under favorable circumstances in perfect crystals.

Cholesterin.—When heated, it melts and sublimes in crystals precisely similar to those deposited from solution; a few perfect crystals are obtained, but the general sublimate is in large tabular pieces.

Atropine and Daturine.—On account of the great similarity between these two substances, it will be as well to speak of them together. Atropine is described by Gmelin as partly volatilizing. Pereira says that daturine and atropine both melt at 190° F. without losing weight or undergoing decomposition; at a higher temperature both are decomposed. Atropine and daturine present, when submitted to heat, precisely similar features; they melt and remain perfectly colourless, and sublime in perfect crystals; the two sublimates closely resembling each other.—*Pharmaceutical Journal and Transactions*, March, 1868, p. 409.

MEDICAL INTELLIGENCE.

The subjoined Memorial shows in the clearest manner how strongly the profession recognise the necessity there is for a thorough and comprehensive examination, by a competent tribunal, of the vexed subject of quarantine. When we see the Presidents of the Colleges of Physicians and of Surgeons, the President of the Medical Council, the medical chiefs of the Army and Navy, and the medical officer of the Board of Customs, together with such men as Sir James Clark, Sir Thomas Watson, Sir Ranald Martin, and others of the highest note and experience, associated with several influential members of the Legislature (including the Members for Liverpool, Southampton, and Sunderland), urging such an inquiry, there can be but one opinion as to its desirableness and importance.

From the publication of the great Report of the French Academy of Medicine, 'Sur la Peste et les Quarantaines,' in 1845, which first dissipated most of the old errors and prejudices respecting the Plague, and pointed out the need of reform in the modes of quarantine then existing, there has been no little discrepancy of opinion in the profession as to the wisdom or suitableness of the whole system as it has generally been enforced. The repeated visitations of other forms of pestilence since that date have served to afford abundant opportunities of observing the effects of its operation in different countries, and of the results which have been obtained therefrom, both at home and abroad. But, as yet, no endeavour has been made on the part of any Government to collate and compare this large and accumulating mass of available evidence for the purpose of determining to what practical conclusions it should lead in respect of a question which is confessedly not only of high scientific interest, but also of very great national importance. The attempt which has been twice made, of recent years, to solve the problem by means of a costly international conference having not succeeded, it may reasonably be presumed that the Government of this country, which is unquestionably far more concerned in the matter than any other, will, upon such a representation as the Memorial sets forth, not hesitate to accede to the petition that a Royal Commission should be forthwith appointed for the investigation of this important subject in all its bearings, affecting, as these do, the public health, commercial and social intercourse, and the interests of our army and navy.

MEMORIAL ON QUARANTINE.

Addressed to the Lord President of the Privy Council.

1. During the last twenty years the subject of quarantine has, on several occasions, engaged the attention of Government and of the public in this country and on the Continent.

2. In 1848, on the approach from the East of the *second* visitation of epidemic cholera, several of the European governments, as well as our own, refused to re-adopt the rigorous restrictions which had been imposed on freedom of intercourse in the *first* visitation of the pestilence in 1831-2. These had signally failed as a means of defence, and they had, moreover, inflicted serious inconvenience and distress, especially upon the poor and working class of the communities.

3. The General Board of Health in this country presented to Parliament in that year a report recommending the substitution of sanitary precautions in respect of merchant shipping and of maritime ports, for the ordinary quarantine detention of infected or suspected arrivals.

4. As much difference of opinion continued to prevail throughout Europe respecting the necessity for quarantine, as hitherto carried into effect in regard not only to cholera, but also to yellow fever and the plague,—the three diseases against which it is specially directed—the French Government, in 1850, proposed that an international conference should be held for the examination of the subject by delegates, medical and consular, from all the leading countries of Europe.

5. The conference, which consisted of twenty-four members from twelve of the chief states of Europe, was held in Paris in 1851, and continued its sittings for eight months. From the discordance of opinion among the members on various topics which were discussed, the Conference separated without having arrived at unanimous conclusions on several very important points, and the British Government declined to accede to the report agreed upon by the majority of the delegates.

6. At the end of 1852, when yellow fever was prevailing in the West Indies, several of the royal mail steamers suffered from attacks of the disease on the voyage from St. Thomas to Southampton, and, in some instances, had cases on board at the time of their arrival. None of the infected vessels were sent to the "Mother Bank" or were detained in quarantine at Southampton for more than two or three days. The healthy passengers and crew were permitted to land, and the sick and convalescent were removed to suitable accommodation on shore. No detriment to the public health appears to have followed, either in Southampton or elsewhere.

7. On the occasion of the *third* European epidemic of cholera in 1854-55,

quarantine restrictions were almost everywhere suspended in consequence of the war in Turkey and the Crimea. It remains, therefore, to be ascertained whether this suspension led to a wider dissemination of the disease, and to a greater mortality from it in Continental countries.

8. In 1857, in consequence of the outbreak of a malignant fever (which had existed for many weeks before it was officially declared to be the plague), at Benghazi, on the north coast of Africa, between Alexandria and Tunis, freedom of intercommunication throughout the whole of the Mediterranean and the adjoining maritime countries was, for more than two months, interrupted by the quarantine that was generally established. The disease never extended beyond the Arab district, where it broke out, and it speedily ceased upon the adoption of simple hygienic measures among the wretched starving population who were affected.

9. The outbreak of Cholera at Mecca and other places in Arabia in the early summer of 1865, and the subsequent extension of the pestilence, as the season advanced, to Egypt and thence to Exrope, so strongly impressed the public mind in many Continental countries that the Emperor of the French deemed it necessary to propose that an international conference should be assembled, with the special view of determining what measures ought to be adopted to prevent, if possible, the recurrence of a like calamity. The conference—which consisted of twenty-four delegates, medical and diplomatic, representing the chief European states—was held at Constantinople at the beginning of 1866, and continued its sittings throughout that year.

10. The results of the labours of the conference are embodied in a voluminous report which has recently been made public. A rigorous and lengthened quarantine is strongly insisted upon as an indispensable measure for the exclusion of the disease in future; and, for this purpose, it is recommended that a comprehensive scheme of lazarets and of health-police be instituted at every large commercial port in all the maritime countries throughout Europe.

It is manifestly of national importance that the soundness, or otherwise, of these doctrines be duly investigated, as professional opinion both in this country and abroad is known to be far from unanimous on the subject.

11. At no former time have quarantine restrictions against epidemic cholera been carried into effect, in the south of Europe, with such extreme rigour or to so great an extent, as during the last two years and a half, and there appears to be at the present time a marked disposition generally to the re-institution of more stringent external precautions than have, for many years past, been deemed necessary for the protection of public health.

12. In the course of the winter of 1866-67, and again during the last few months, restrictive measures have been ordered by the Government in respect of several of the royal mail steamers, arriving at Southampton from the West Indies, so much more rigorous than were adopted, under apparently similar circumstances, in 1852-53, that it is most desirable that the public should be made acquainted with the nature of the proceedings which are in future to be taken, and with the reasons for their adoption.

13. During last session of Parliament, it was officially declared in the House of Commons that quarantine in this country was resorted to not on medical or public health grounds, but solely on commercial grounds, and to meet the requirements of foreign Governments; by

Lord Robert Montague, April 4, 1867.
" " " May 3, "
Mr. Cave May 21, "

14. Much of the uncertainty and obscurity which have always surrounded, and which still surround, the quarantine question is owing to the want of authentic evidence as to the working and the results of the system in those places where it has been most rigorously carried into effect.

15. No committee of either house of the legislature has examined the subject since 1824; and there has been no publication of official correspondence relating to it since 1843-46, with the exception of a short document in 1860 having reference to the practice of quarantine in Turkey.

16. The detailed evidence respecting the practice of quarantine in Malta and Gibraltar during 1865 and 1866, contained in the recently-published reports from the War Office on the visitation of cholera in these colonies, affords a strong argument as to the necessity for a comprehensive investigation of the whole subject.

17. No country is so deeply concerned in the right solution of this difficult question of state medicine as Great Britain with her colonies. Besides the magnitude of her commercial relations with every part of the world, the interests of her army and navy, scattered as these are over the face of the globe, and liable to be subjected, by the operation of quarantine regulations, to serious inconveniences in moving from one place or station to another, demand such an inquiry at the present time.

18. It is, moreover, confidently believed that the well-considered expression of opinion by this country, after a searching investigation, could not fail to have great influence with most Continental States, as well as with all our colonies, and would eventually lead to the adoption of a more judicious system of defence against the introduction of foreign disease than is at present generally relied upon.

19. In view of the above considerations, it is submitted that it is extremely desirable, in the interests of the national welfare that a thorough examination of the subject of quarantine—in its bearings on public health, commerce, and the military and naval services—should be made by a Royal Commission, which could call for and collect evidence from all suitable sources, and after mature deliberation, might thus be enabled to adopt such practical conclusions as would serve for safe guidance in future.

S. R. Graves, M.P.
Thomas Bazley, M.P.
D. McLaren, M.P.
Russell Gurney, M.P.
Thomas Chambers, M.P.
John Candlish, M.P.
H. W. Acland, M.D., F.R.S., Regius Prof. of Med., Oxford.
James Alderson, M.D., F.R.S., President of R. Coll. Physicians.
A. Bryson, M.D., C.B., F.R.S., Director-Gen. Navy Med. Department.
G. Burrows, M.D., F.R.S., Presidens of the Medical Council.
James Clark, Bart., M.D., F.R.S., Physician in Ordin. to the Queen.
Walter Dickson, M.D., R.N., Med. Inspector to Board of Customs.
William Farr, M.D., D.C.L., F.R.S., General Register Department.
Douglas Galton, Capt., F.R.S., Ass. Under Sec. of State, War Dept.
John Hilton, F.R.S., President R. Coll. Surgeons.
William Jenner, Bart., M.D., F.R.S., Physician to the Queen; Pres. Epidem. Soc.
T. G. Logan, M.D., C.B., Director-Gen. Army Med. Department.
J. R. Martin, C.B., F.R.S., Phys. to Secretary of State for India.
Gavin Milroy, M.D., Med. Commiss. in Jamaica, 1851, and in Crimea, 1855-6.
E. A. Parkes, M.D., F.R.S., Prof. of Hygiene, R. Victoria Hospital.
R. Partridge, F.R.S., Ex-President R. Coll. Surgeons.
J. Sutherland, M.D., War Office, Mem. of Internat. Conf. on Quar., 1851.
A. Tweedie, M.D., F.R.S., Consult. Phys. Fever Hospital.
T. Watson, Bart., M.D., D.C.L., F.R.S., Ex. President R. Coll. Physicians.

A deputation, consisting of the President of the College of Physicians, the Director-General of the Medical Department of the Navy, Sir William Jenner, Drs. Tweedie, Dickenson, and Milroy. had an interview, on the 17th inst. (March), with the Duke of Marlborough at the Privy Council Office. Lord Robert Montague was also present. After listening attentively to the reasons [set forth in the Memorial] alleged by the members of the deputation, viz., the great discrepancy of opinion and practice on the subject in this country and abroad, the unsatisfactory issue of the two international conferences held at Paris in 1851, and at Constantinople in 1866, and the magnitude of the public interests which now suffer from the unsettled state of things—his Grace stated that the question of quarantine in reference to the

Royal Mail steamers which suffer from yellow fever on the voyage from the West Indies has recently been under the consideration of the Privy Council, and that steps were at the present time being taken to obtain evidence which might guide the Government in respect of the measures to be hereafter adopted. If such evidence should not be found sufficient, then he was very much of the opinion of the deputation, that the whole subject should be examined into by a Royal Commission. The duke also alluded to the extreme difficulty of arriving at any general agreement among the different European governments as to the nature and extent of the quarantines to be imposed, and mentioned Spain in particular as a country which stood much in the way of any relaxation being effected. The deputation informed him that it was for this very reason that they sought to make the proposed inquiry rather a *national* than an *international* one, and that paragraph 18 of the Memorial had been framed with this object, the nonsuccess of the two Conferences at Paris and Constantinople having shown that it is in vain at present to look for concordance of sentiment on many points of practice among some of the nations of Europe.

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