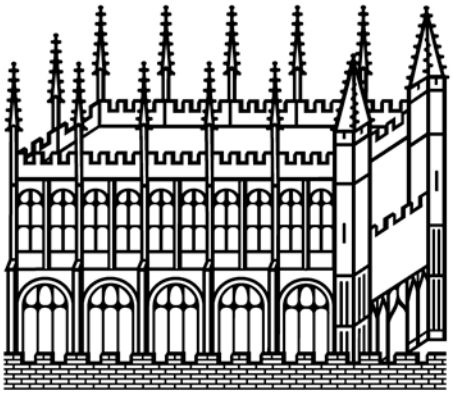


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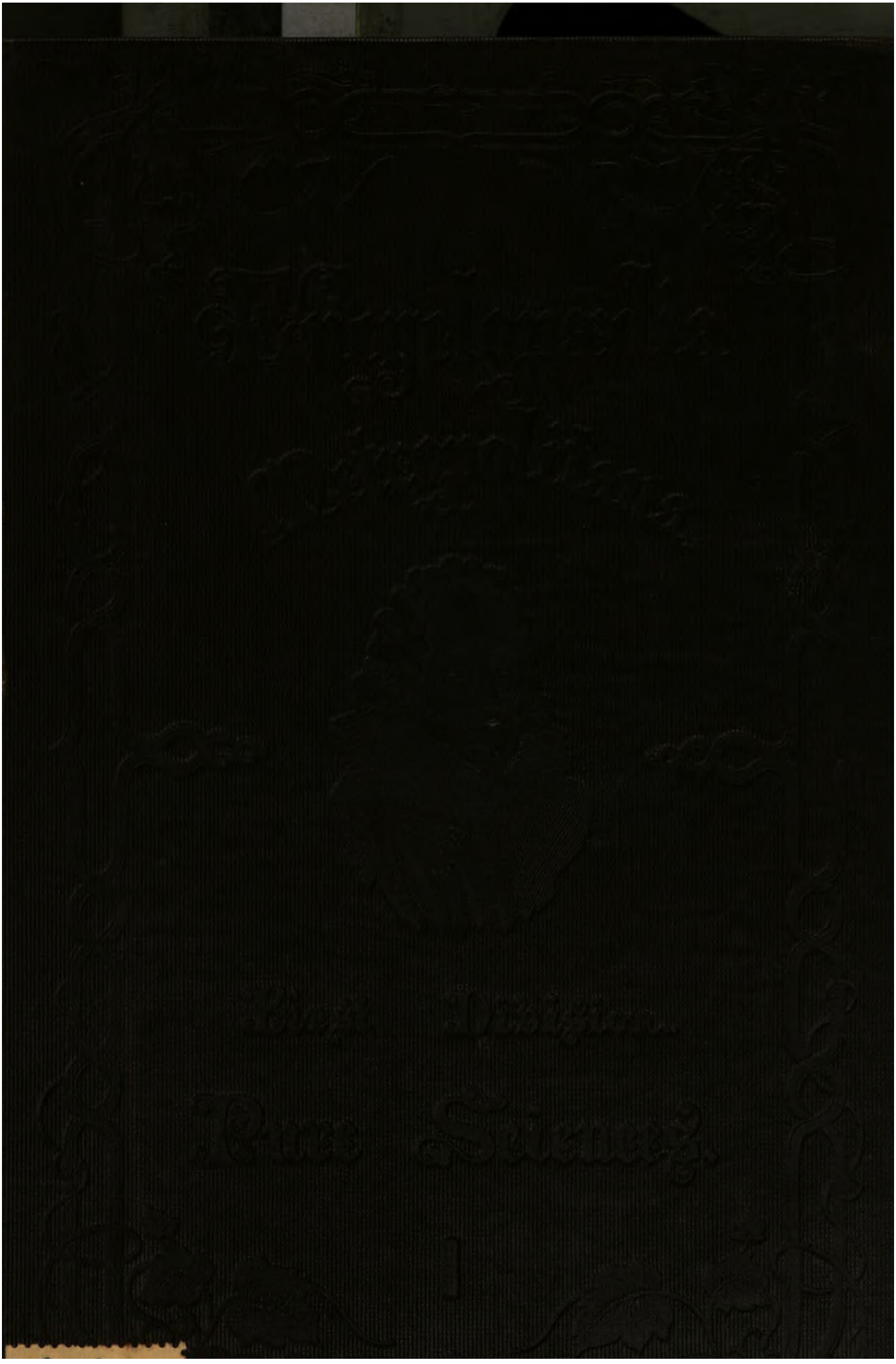
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ΠΛΑΤΩΝ· Παρμενιδης.

"The strength of all sciences, which consisteth in their harmony, each supporting the other, is, as the strength of the old man's faggot, in the band. FOR WERE IT NOT BETTER FOR A MAN IN A FAIR ROOM TO SET UP ONE GREAT LIGHT, OR BRANCHING CANDLESTICK OF LIGHTS, THAN TO GO ABOUT WITH A SMALL WATCH CANDLE INTO EVERY CORNER?"

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1849.

PROSPECTUS.

1. AN ENCYCLOPÆDIA is indispensable to every library, as a *concentration* of human knowledge; while to the voyager, the naval and military officer, the colonist, and that numerous class of enterprising Britons whose want of a settled residence may isolate them from the world of letters, it is the only possible *substitute* for all other books. Works of this description are therefore among those few literary projects which have uniformly secured the patronage of the public. The reason is obvious: an Encyclopædia is to the rising education of the country at once a reservoir and a fountain—it receives perpetual accessions of knowledge from the genius of the age, which it yields again in willing abundance to posterity.

2. With the ancients, the term Encyclopædia, explained itself. It was really *Instruction in a cycle, i. e.* the cycle of the seven liberal Arts and Sciences, that constituted the course of education for the higher class of citizens. Unfortunately, the inapplicability of a strictly *scientific* method to a modern Encyclopædia, such as shall include the whole of its contents, has led to the abandonment of all principle of *rational* arrangement; and it may be safely asserted of all our universal dictionaries hitherto, that the chief difference between them, in respect of their *plan*, consists in the more or less complete disorganization of the Sciences and Systematic Arts; now retaining certain integral portions of the system as integers, forming each an entire treatise, but resigning these treatises to the places severally assigned to them by the accident of their initial letters; and now splintering all alike into their fractional parts, with an arrangement merely alphabetical. Nor has the imperfection rested here. This very alphabetical position was but too frequently determined by the caprice or convenience of the compiler; inasmuch as the division of parts into minor parts had no settled limit. Thus, one technical or scientific term included as its subordinates, and to be explained in the same article, sometimes more, sometimes fewer, other terms: and the arrangement became neither properly scientific, nor properly alphabetical. It had the inconveniences of both, without the advantages of either.

3. The results are such as might have been expected, in part from the necessity of such plans, and in part from the interference of individual whim, carelessness, and procrastination, to which it afforded the amplest opportunities, and even frequent temptation. Numerous articles of important information are found where the reader could have least expected to find them; while articles of equal interest are in many cases not to be found at all.

4. A second result is, that an Universal Dictionary so constructed, equally with an Encyclopædia the most methodically arranged, requires alphabetical references; but with a twofold inconvenience, from which the latter would be free. First, the references, instead of being collected in one appropriate index, or at least in some known portion of the work, are scattered throughout the whole; and this is no slight annoyance, when a scientific term happens to have many synonyms, as, for instance, Azote, Nitrogen, Phlogisticated Air, &c. Secondly, the references must eventually lead the reader through as many volumes, as those other words happen to be placed in, which are necessary to be *previously* understood in order to a tolerable comprehension of the term first sought.

5. A third evil, resulting from the same causes, is the utter want of all proportion in the space occupied by each article, relatively either to the importance of the particular subject, or to the promised limits of the whole work. Hence, too, it arises that the proprietors are frequently reduced to a choice of evils. The work must be extended far beyond the first expectation of the purchasers, or the articles assigned to the latter volumes must be crowded in scanty and superficial abridg

ments. They contract to give the public an Universal Dictionary of the Arts and Sciences, but the execution outgrows the plan. Either openly then, or in the form of supplementary volumes (bearing perhaps a large proportion to the whole work), this pledge must be redeemed. In both cases the disorder and dislocation, and in many instances the deficiencies, remain unremedied.

6. The fourth ill consequence of this arbitrary arrangement calls for a somewhat fuller consideration. It requires but a moment's reflection to be convinced, that the most voluminous Encyclopædia which has yet appeared, is incomparably too narrow to contain an Universal History of Knowledge in its present state; and that the authors and compilers will have satisfied all rational expectations if only nothing shall be found excluded from any other cause than the higher importance of that which has been admitted; in order that on *all* subjects the ends of *general* information at *least* may be accomplished. Where, therefore, selection is so imperiously required, there must be an equal necessity that certain fixed and intelligible principles should be pre-established. An Encyclopædia neither is, nor can reasonably be considered as, the book which a man of profound science is likely to consult for those things in which he is himself eminent. He will seek for accessions to his knowledge in the works of contemporaries employed like himself in extending the pomœria of science, and will often be most interested in *speculations*, the worth and stability of which are yet undetermined. But an Encyclopædia is a *History* of human knowledge, in which therefore these intellectual embryos, which at best are (as it were) but truths in the *future* tense, have no rightful or beseeming place. This, indeed, we hold to be a principle of such paramount importance, that we take the earliest opportunity of avowing our determination of a strict and systematic adherence to it; and we here give our public pledge that the ENCYCLOPÆDIA METROPOLITANA shall be so far *historical* in all respects, that only what has been *established*, or is at least already *publici juris*, and to be found in the records of Science and Literature, shall form the main body of every article; and that any opinions or speculations of the writer himself shall be declared to be such, and be given distinctly as a mere appendix of the article to which they belong.

7. We shall now particularize the evil to which we have been referring. From the licence which the planless plan of former works allows to the separate writers—in one place, instead of a systematic history of the received truths and established discoveries in the department of knowledge, which was to have been exhibited, the larger portion of the space is filled up with the individual writer's own crude conceptions and prolix argumentation—while in another, on some subject of the highest interest, lo! in tarnished fragments over the numerous volumes, an old work torn asunder by all the letters of the alphabet! and reminding the classical reader of the decrepit Pelias, whose credulous daughters were induced by the artifices of Medea to cut his aged limbs in pieces, as the sole and certain means of restoring him, like another Æson, to the blooming honours of youth.

8. The SCHEME which we propose to substitute, or the principal outlines of the ENCYCLOPÆDIA METROPOLITANA, we now lay before the reader, as follows:—The work will consist of four main divisions. The first, which for the sake of distinction we have called the Philosophical part, comprises the Pure Sciences; and the second, or Scientific part, the Mixed and Applied Sciences. The third, or Biographical part, is devoted to Biography chronologically arranged, History, Chronology, and Geography; and the concluding or Miscellaneous part, besides being referential and supplementary to the preceding volumes, will have the unique advantage of presenting to the public, for the first time, a Philosophical and Etymological Lexicon of the English language; the citations selected and arranged chronologically, yet including all the purposes of a common Dictionary. The volume of Index will complete this division. It will be instantly seen that the first two divisions of a work, thus arranged, will grow naturally out of each other; the needful references will therefore be generally *retrospective*, and rarely made to future volumes. In our Biographical department we shall teach the same truths by example, that have been evolved in the former divisions, and stimulate to the exertions that have developed them;—while in our Miscellaneous

portion or in the Index, every word will be found in its usual alphabetical place, as in any other Dictionary, with a plain reference to the volume and page containing its full explanation in the present work; together with a variety of interesting articles, either illustrative of the former divisions, or in their own nature miscellaneous. Each division of the work will be separately paged.

9. Such is the general outline of the proposed Scheme. The Table at page 13 places the principal subdivisions, likewise, before the reader's eye, with as much detail as is compatible with the limits, or requisite for the purposes, of a Prospectus. It will be seen, too, that a more particularized and systematic justification of the principles, on which the Scheme has been constructed, will be afforded in the Preliminary Treatise, or General Introduction to the Encyclopædia.

10. When the work is completed, it will appear as an orderly Digest of all the great points of human knowledge, and, notwithstanding its comparatively moderate extent and price, must form the most perfect system of intellectual instruction and entertainment, that has been hitherto submitted to the friends and patrons of Art, Science, History, and general Literature in Great Britain.

11. We would place our claims to the favourable attention and patronage of the public, on two grounds: 1. That the great outline of our plan is free from the numerous defects and inconveniences *involved* in the plan of all preceding works of the kind, or occasioned or permitted by it. 2. That the plan now substituted possesses great *positive* advantages, peculiar to itself.

12. From what has been already seen of our plan, in the necessary discussion of its relative merits, we presume that we appropriate to the work the title of an Encyclopædia by an especial right, and that of a Philosophical System on a plea of superior propriety. But we cannot neglect the argument for such a work as the present, which is derivable from the peculiar circumstances of our times. The political changes of the world have not been more wonderful than the scientific and moral revolutions that have occurred within the last few years. The new views, new discoveries, and fresh facts, especially in all the different branches of Experimental Philosophy, which every year has brought with it, are unparalleled in the history of human knowledge; and the accessions have not seldom been of such a nature as no mere supplementary postscript can embrace. For in many instances they affect the whole theory and consequent arrangement of the Art or Science to which they belong. Our project is in this respect therefore singularly fortunate in point of time. It will have to collect and combine the rich but scattered elements of future Science; while a still more important argument for our plan and for the period of its execution, will be found in the manifest tendency of all the Arts and Sciences at present, from the most purely intellectual even to the labours of the common mechanic, to lose their former insulated character, and organize themselves into one harmonious body of knowledge. The civilized world is now doing that which the ENCYCLOPÆDIA METROPOLITANA is preparing to do; and for which it is providing a correspondent repository.

13. The Proprietors have not disguised from themselves that their undertaking is of the most *arduous* kind. The mass of ability requisite, will be great in proportion to the originality of our plan; and the perseverance, harmony, and punctuality, that are indispensable conditions of its success, must be commensurate with the difficulty of uniting variety with system, and of reconciling selectness and calculated proportion with universality as a whole, and fulness in each component part. If, in addition to this, the amount of capital demanded and already dedicated to the one purpose of securing this coalition, and of overcoming these difficulties, be considered; with the number and high character of the artists, the men of science, and men of letters, on whose zealous co-operation, now pledged to us, we rest our pretension to the first acts of the public favour, and our confident hopes of continued support—not forgetting the relief and moral influence of a regular employment afforded during all seasons of the year to so many industrious mechanics as must necessarily be engaged on this work—the Proprietors of the ENCYCLOPÆDIA METROPOLITANA dare promise themselves, that by no reflecting reader will the present prospectus be deemed too serious.

14. Having explained the *Principles* on which the Encyclopædia Metropolitana was founded, we proceed to state a few facts, in reference to the manner in which the FIRST EDITION of the work was executed, and the *Modifications* now intended to be made in the SECOND EDITION.

15. The Encyclopædia Metropolitana was projected by the late eminent poet and philosopher, S. T. COLERIDGE. It differs in its plan from other Dictionaries of Universal Knowledge in being strictly methodical. The contributions of the scientific and learned men by whom it was composed, are arranged, not according to the letters of the alphabet which happen to form the initials of the English *names* of the Treatises, but in agreement with a PHILOSOPHICAL SYSTEM, based on the *nature* of the Subjects,—a method which causes the entire work to become a rational exposition of the state of human knowledge, and the mutual dependence and relative importance of its different branches. In virtue of this classification, the work forms both a course of study for the scholar, and a book of reference for the man of business: the former has the principles of the sciences laid before him in the philosophical order of their natural sequence; the latter is enabled to find readily the specific information he requires on any subject that interests him.

16. The system, projected by Mr. Coleridge, was ably executed by the Editors * and Authors to whom the execution of the scheme was confided. To confirm the truth of this assertion, it is sufficient to refer to the names of the Authors, and to state the fact, that many of the Treatises have been admitted by the Learned throughout Europe to be of the highest order of merit, and to have enlarged the boundaries of the scientific world, and placed their authors in the first rank of men of science in the present age.

17. The following ABSTRACT OF THE CONTENTS OF THE QUARTO EDITION, taken from the GENERAL PREFACE, will show in what manner the early professions of the projector of the work were realized.

We shall speak of the four great divisions of the Encyclopædia separately.

PURE SCIENCES.

18. The order in which these sciences are exhibited, and the plan on which the MATHEMATICAL portion of the *Encyclopædia* is conceived, resemble considerably the series of Elementary Treatises projected many years ago for the University of Cambridge by Dr. Wood, the late Dean of Ely, and Professor Vince; but with this difference, that the present volumes are far more comprehensive in the subjects they embrace, and far more elaborate and scientific in their execution. But this very similarity shows that the *Encyclopædia Metropolitana* has attained one of its professed objects,—systematic instruction and scientific information, conveyed—not in a confused mass, but in the natural sequence of the sciences.

Indeed this portion of the work has met with a degree of approbation in many quarters, but especially in the University of Cambridge, which no other Encyclopædia has ever yet received. The student who has really mastered these sciences in the systematic form in which they are arranged here, will never in the course of the longest life find occasion to *un*learn any portion of what he has here acquired, and will find no difficulty whatever in adding to his stores any new results which the mental energy and labour of mankind may hereafter develop from principles now known. It may, indeed, be safely affirmed, that any person of good mathematical abilities, who shall follow the course of Mathematical treatises in this Encyclopædia, which are so arranged that a student may pursue them even without the assistance of a tutor, may become by that means a mathematician of very high character, and be enabled to master the most difficult and delicate speculations of continental mathematicians.

19. The names of the authors of the Treatises on *Pure Mathematics* are suffi-

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The EDITORS of the original edition of the Encyclopædia Metropolitana were—The Rev. EDWARD SMEDLEY, M.A., late Fellow of Sidney College, Cambridge; the Rev. HUGH JAMES ROSE, B.D., late Principal of King's College, London; and the Rev. HENRY JOHN ROSE, B.D., late Fellow of St. John's College, Cambridge.

cient to prove that the *Encyclopædia* is worthy of the present state of science, and that its most important articles are contributed by those who have themselves been foremost in the onward march of science. The elaborate Treatise on ARITHMETIC, by the present Dean of Ely (Dr. Peacock), Lowndian Professor of Mathematics in the University of Cambridge, is interesting alike to the scholar, the mathematician, and the speculator in metaphysics. The brief but comprehensive Treatise on TRIGONOMETRY, by Professor Airy, now Astronomer Royal, is of considerable value from the general elegance of its demonstrations. The publications of the Rev. H. P. Hamilton on ANALYTICAL GEOMETRY and CONIC SECTIONS, and that of Professor Barlow on the THEORY OF NUMBERS, are so highly esteemed, that any eulogium on their papers on these subjects would be superfluous. The Treatises of Professor Levy on the DIFFERENTIAL and INTEGRAL CALCULUS are calculated to carry the student to a very high point of proficiency. The GEOMETRY, ALGEBRA, and GEOMETRICAL ANALYSIS complete the Volume in a manner worthy of the treatises with which they are associated.

20. These sciences are, however, in some degree elementary; and although by them the student would be so far advanced as to enter upon the works of some of the ablest analysts, it would be unworthy of such a publication as the Encyclopædia Metropolitana to leave untouched or imperfectly treated, the more refined applications of the higher Calculus. It will be found, accordingly, that the highest branches of mathematical analysis have been treated by writers conversant with all its intricacies, and the mathematical student is furnished in them with results of far greater variety and of a more subtle nature than can at present be used in the application of analysis to Mixed Mathematics.

21. The CALCULUS of VARIATIONS, and the CALCULUS of FINITE DIFFERENCES by Professor Hall, are distinguished by the clearness peculiar to his treatment of these refined and subtle portions of analysis. The CALCULUS of FUNCTIONS and the THEORY of PROBABILITY are the work of Professor De Morgan. The latter (on a subject which has exercised the talents of the greatest mathematicians, even down to the times of Laplace) is, as might be expected, one of the most complete in any language. The Treatise on DEFINITE INTEGRALS completes the series of these elaborate surveys on the higher branches of Mathematical Analysis. The name of Professor Moseley is a sufficient warrant that his Essay is also of the highest character.

22. Without wishing, therefore, to offer any undue eulogium on the Treatises enumerated above, we confidently ask that portion of the public which is qualified to judge of their merits, to compare the whole system of *Pure Mathematics* here presented to them with that in any similar work, whether of this country or of the Continent, on the grounds of *arrangement*, *clearness*, *ability*, and *completeness*.

23. We must now allude to such of the Pure Sciences as are not included in the Mathematical department. Sir John Stoddart has given a lucid and able summary of the General Principles of GRAMMAR, or the Philosophy of Language. The LOGIC and RHETORIC of Archbishop Whately require no commendation here, as they have long since been published in a separate form, and have taken their place among the standard works of our language. The Treatise on LAW is the work of Richard Jebb, Esq., Professor Graves, and Archer Polson, Esq. It embraces one of the most difficult portions of Philosophy—the general foundations of Law and Morals; and the Editor is happy to state that testimony from the very highest quarters has been given both to the profoundness of the views entertained, and the ability with which they are developed.

24. In the present state of metaphysical knowledge, it would be presumptuous to put forth any *system* of Metaphysics; but a general HISTORY OF MORAL AND METAPHYSICAL PHILOSOPHY affords the most convenient opportunity for displaying the principles on which the greatest philosophers have hitherto endeavoured to form their systems, for pointing out their difficulties, and for marking how far each has contributed to the progress of the science. Such a sketch, however, required the hand of a master; and the Editor confidently believes that the Treatise on Moral and Metaphysical Philosophy which is here given is calculated fully to sustain the

deservedly high reputation of the Rev. F. D. Maurice. Of the Outlines of THEOLOGY, it does not become the Editor to say more than to acknowledge with gratitude the very able assistance of Professor Corrie, to whom two chapters are due. He has endeavoured to render this Treatise as practically useful as possible, not only to avoid passing controversies, but to bring forward the sound and genuine doctrines of the Church of England; and perhaps he may be allowed to add that, in pursuance of this object, he has spared no pains or labour.

MIXED AND APPLIED SCIENCES.

25. From *Pure Mathematics* we proceed in natural order to their application to physical phenomena. Of these sciences, some belong to the elementary branches of physical knowledge, and others to a higher and more advanced stage. Now, the treatises on MECHANICS, HYDRODYNAMICS, PNEUMATICS, OPTICS, and PLANE ASTRONOMY, have been written by Professor Barlow with an express view to this distinction. They are elementary enough to enable any student, with a competent knowledge of Pure Mathematics, to overcome their difficulties; and yet they are so based on scientific principles, that they will also prepare him to enter readily on the higher branches of Mixed Mathematics. In *Mechanics*, more especially, a foundation is laid for the succeeding investigations of Physical Astronomy, which is, in fact, only one of the higher branches of Analytical Physics.

26. Some of the treatises in the volumes devoted to the Mixed Sciences demand a separate notice, as enlarging the boundaries of our scientific knowledge. Of this class are the Treatises on LIGHT and SOUND, by Sir J. F. W. Herschel. The Treatise on LIGHT, by Sir J. F. W. Herschel, from the position it has already obtained in the scientific world, both in England and on the Continent, cannot require any recommendation here. The simple mention of Sir J. F. W. Herschel's name is a sufficient recommendation to the Treatise on PHYSICAL ASTRONOMY, and proves at once that it must be an Essay of the highest order of merit, and worthy of the present state of the Science; and the conductors of this *Encyclopædia* may justly be proud that that distinguished writer has contributed so largely to its pages. But although Plane and Physical Astronomy had been thus ably treated, it was considered that something more was required; and the late Captain Kater kindly furnished the very useful and able Treatise on NAUTICAL ASTRONOMY, a subject with which his acquaintance was at once profound and practical.

27. MAGNETISM and ELECTRO-MAGNETISM are treated by Professor Barlow with the same ability and research which he has displayed in the other Essays contributed by him; and GALVANISM, by Dr. Roget, whose scientific character is too firmly established to leave any doubt as to the merit of his contributions. The author of the Treatises on ELECTRICITY, HEAT, and CHEMISTRY, the late Rev. F. Lunn, was one whose merits as an experimental philosopher and chemist were not so extensively known as they deserved to be; but at Cambridge his acquirements were acknowledged to be of the highest order. The treatises themselves, it is believed, will amply justify their favourable anticipations.

28. The Third Volume of *Mixed Sciences* is chiefly devoted to the FINE ARTS; but there are two or three Essays in the early part of the Volume which belong to the more exact sciences, viz., the Essay on the FIGURE OF THE EARTH, by Professor Airy, the present Astronomer Royal, and his Treatise on the TIDES. With regard to the former much novelty was hardly to be expected; but it is presumed that this Treatise contains the most complete combination and discussion of observations relating to the subject hitherto produced in England. The treatise into which this great mathematician has thrown all his power is the Theory of the Tides. The terms in which some of the most distinguished mathematicians of Cambridge have spoken of this treatise prove that they consider it to have greatly advanced the knowledge of this difficult subject. Every previous treatise on the theory of the tides is entirely superseded by this production, and it will supply, for many years to come, the only sound foundation of our knowledge upon this subject.

29. The Treatise on POLITICAL ECONOMY was written by N. W. Senior, Esq.

30. The Treatises on BOTANY and HORTICULTURE are supplied by G. Don, Esq.,

whose profound acquaintance with every department of knowledge which belongs to the vegetable kingdom is known to all botanists and florists. The ZOOLOGY combines GENERAL PHYSIOLOGY with COMPARATIVE ANATOMY, and is the work of J. F. South, Esq., Surgeon of St. Thomas's Hospital (assisted in one portion of Physiology by Mr. Clark and Mr. Solly). The descriptions in this Treatise possess the very unusual and peculiar merit of being given by Mr. South, in every practicable instance, *from the specimens themselves*. Of the ANATOMY, by Mr. South and Mr. Le Gros Clark, and the MATERIA MEDICA, by Dr. G. Johnson, it may be said that their names are a sufficient pledge that these Treatises are of first-rate character. The Treatise on MEDICINE, by Dr. Robert Williams, of St. Thomas's Hospital, is an attempt to give a more philosophical view of the classification of disease than has hitherto been taken in any work of modern date. To W. Bowman, Esq., the Encyclopædia is indebted for an able outline of SURGICAL PRACTICE. The medical volume is closed by a comprehensive Treatise on VETERINARY ART, by W. C. Spooner, Esq.

31. The METEOROLOGY of the late Mr. Harvey, and the CRYSTALLOGRAPHY of Mr. Brooke, have been referred to respectively with especial commendation by Professor Forbes and Dr. Whewell. The names of Mr. Phillips and Dr. Daubeny will sufficiently recommend the Treatise on GEOLOGY, as exhibiting an adequate representation of that science at the time of its publication. The Treatise on MINERALOGY by Mr. Brooke; the Essays on CARPENTRY, by P. Nicholson, Esq.; on FORTIFICATION, by Major Mitchell and Captain Procter; and on NAVAL ARCHITECTURE, by the late Mr. Harvey, must not be passed over. The names of these writers guarantee the value of their contributions.

32. In this class of *Mixed Sciences* a novel feature is exhibited in the Sixth Volume of the series, viz., *A Systematic Account of the* ARTS *and* MANUFACTURES *of Great Britain*. There is probably no writer who would be able to do such ample justice to so extensive a range of matter, requiring both theoretical and practical knowledge, as its author, Mr. Barlow; but that nothing might be wanting to the completeness of this portion of the work, Professor Babbage supplied a Preliminary Discourse on the *Principles of Manufactures;* and it may confidently be asked, to what other source could the conductors of the work have appealed with equal confidence on so difficult and multifarious a subject?

HISTORICAL DIVISION.

33. It is not possible, in this rapid sketch, to specify all the papers in this portion of the work; but as nearly every contribution is assigned to its proper author at the beginning of each volume, such a course is unnecessary either for the information of the public, or as a tribute of respect to the distinguished authors themselves. Ample care has been taken to enlist among the contributors to this department writers not only of splendid endowments, but also of the highest attainments in different classes of historical knowledge. There will be found among the numerous writers in this division contributions from Bishop Blomfield, Dr. Whewell, Mr. Justice Talfourd, Dr. Arnold, Dean Hinds, Rev. J. A. Jeremie, Rev. G. C. Renouard, Rev. J. H. Newman, Bishop Russell, Archdeacon Hale, Dean Lyall, Rev. J. B. S. Carwithen, Bishop Hampden, Rev. R. Garnet, Major Mountain, Rev. J. H. B. Mountain, Captain Procter, Rev. J. E. Riddle, Archdeacon Ormerod, T. Roscoe, Esq., W. Macpherson, Esq., Rev. R. L. Browne, Rev. H. Thomson, Rev. J. G. Dowling, Rev. J. W. Blakesley, Rev. J. B. Ottley, W. Lowndes, Esq., Q.C.

34. A good work on General History has long been a great desideratum in our literature. The summaries of Tytler and Russell are too brief, and the Universal History, independently of the heavy manner in which it is written, is too long. It is presumed that the Historical Volumes of the *Encyclopædia Metropolitana* will be found to meet this want in an efficient manner. They are written by men of undoubted ability; they exhibit the history of the world at first in a series of biographical sketches, and then in a continuous history of each remarkable country, combined with an Ecclesiastical History remarkably full and rich in the most interesting epochs of the Christian Church. Dissertations of great importance in a

philosophical point of view, such as those on Ancient Philosophy and Literature, on the Crusades, the Feudal System, and the Scholastic System, are introduced into the text at the most convenient periods, for the illustration of the respective subjects.

MISCELLANEOUS PORTION.

35. Although the *Miscellaneous Division* of this *Encyclopædia* occupies a larger number of volumes than any other, it requires a less extended notice. It appears, however, desirable to explain in some degree the *principle* on which this portion of the work was executed, and to indicate the authors of some of the most remarkable series of papers.

The leading features in this division of the *Encyclopædia* are—

1. The English Lexicon.
2. The Geography.
3. The Natural History.
4. The Miscellaneous Articles.

The universal approbation with which the Lexicon, compiled by Dr. Richardson, has been received, precludes the necessity of enlarging either on the plan itself or on the gigantic labour involved in its execution. The plan of giving the quotations of each word *chronologically* has the advantage of embodying in a philosophical Lexicon a *History of our own Language.*

36. For the whole of the Articles on Geography, the proprietors feel that they may fairly advance the claim of having obtained the co-operation of persons more than competent to bring forward whatever is most valuable for a work like this from all usually accessible sources of information. In this respect, the *Encyclopædia Metropolitana* claims to take a high station among similar works; and the names of the contributors of the Articles on *European* and *American Geography* are a sufficient pledge of the ability and care with which they are executed, viz.:—T. Myers, Esq., Captain Bonnycastle, R.E., C. Vignoles, Esq., C.E., H. Lloyd, Esq., G. H. Smith, Esq., A. Jacob, Esq., W. D. Coolie, Esq., and Cyrus Redding, Esq.

One class of Geographical Articles demands especial mention, and may be said to be wholly without a rival in any similar work in our language, viz.: those on *Ancient, Oriental,* and *African Geography,* which were entirely supplied by the Rev. G. C. Renouard (of Cambridge, formerly Chaplain at Smyrna), and evince the most extensive familiarity with every variety of language, ancient and modern. The Editor believes that if these essays were collected together, and published as a system of Oriental Geography, they would surpass in accuracy and value anything at present existing in our own or any other European language.

37. The section of Natural History is divided chiefly into *Botany* and *Zoology.* In these two sciences the *Genera* will be found described in their alphabetical order, while their scientific arrangement and the principles of the sciences form part of the treatises in the volumes devoted to the *Mixed Sciences.* For these two departments, the services of several eminent naturalists were engaged. In *Botany*, T. Edwards, Esq., and G. Don, Esq., &c. In *Zoology*, T. Bell, Esq , F.L.S., &c., J. E. Gray, Esq., F.L.S., &c., of the British Museum ; J. F. Stephens, Esq., and J. F. South, Esq.

38. The highly-gifted individual to whom this Encyclopædia owes so many of its attractions—the late Rev. Edward Smedley,—enriched the Miscellaneous Division with a series of articles which embody a vast store of curious and recondite information, communicated in a manner at once instructive and agreeable. Besides these articles, the *Geographical Gazetteer* and the *Dictionary* of *Law* and *Political Philosophy,* a large number of very important and valuable articles will be found scattered through the volumes of the *Miscellaneous Division.* Attention may be called, amongst a variety of others, to the *Biblical Articles,* by the Rev. T. H. Horne; to the *Philological* and *Oriental,* by the Rev. G. C. Renouard; the *Scientific Articles,* (as *e. g., Dialling, Surveying, Weights and Measures, &c.*) by Mr. Barlow; *Meteoric Stones,* by Professor Miller; *Stove and Ventilation,* by C. Hood, Esq., F.R.S.; *Stucco,* by T. L. Donaldson, Professor of Architecture in University College, London; the *Theological Articles,* by Archdeacon Hale; Essays on *Engineering,* by C. Vignoles, Esq., C. E.; and *Writing,* by the Rev. R. Garnet.

The Plates are for the most part the work of those two eminent engravers

Messrs. Lowry. They require only a simple inspection to prove their beauty and excellence.

The GENERAL INDEX was, at an early period in the publication of the *Encyclopædia*, intrusted to the Rev. J. Hindle, and occupied the attention of this very competent person for several years. It will be found to contain ample reference to all that is most important and interesting.

From this review of the FIRST EDITION of the Encyclopædia Metropolitana, we proceed to describe the peculiarities of the projected SECOND EDITION.

39. THE SECOND EDITION of the ENCYCLOPÆDIA METROPOLITANA will be handsomely printed in a series of CABINET VOLUMES, in CROWN OCTAVO, in the style shown by the SPECIMENS on pages 14 and 15.

40. The whole work will be THOROUGHLY REVISED; many NEW TREATISES will be added; and the Articles will all be provided with comprehensive INDEXES, or with analytical TABLES of CONTENTS.

41. It will be abundantly illustrated by Maps, Woodcuts, and Engravings.

42. It will be published in WEEKLY PARTS, PRICE ONE SHILLING, and in MONTHLY VOLUMES, varying in price according to the number of Parts contained in each.

43. METHODICAL ARRANGEMENT OF THE SECOND EDITION.—In preparing the SECOND EDITION of this Encyclopædia for publication, very little change will be made in its SYSTEM. The peculiar characteristic impressed upon it by Mr. Coleridge—ITS METHODICAL ARRANGEMENT—will be followed strictly. Indeed, the chief difference that will appear between the arrangement of the Second Edition and the First, will proceed from a more rigid adherence in the Second Edition to the *principles of Method* established by Mr. Coleridge, than it was possible to attain in the First Edition. The work being wholly original and composed by more than a hundred Contributors, it happened, during the first publication, that many of the articles, either because they were not produced in proper time to be incorporated in their systematic places, or for other unexplained reasons, were cast into the great "*Alphabetical, Miscellaneous, or Supplementary Division*," where they are connected together by no stronger scientific bond than their alphabetical initials. But now that we have the whole work before us, complete (as respects the First Edition), and capable of re-arrangement, we propose to rectify these accidental departures from the true method of the Encyclopædia, and to transfer, from the Alphabetical Miscellany, every article that is capable of transference, to its appropriate position in the Philosophical Classification. Thus, the Article GEOGRAPHY, properly organized, will form a new division, complementary to that on History, as was originally intended, see § 8; the details of NATURAL HISTORY will be grouped with the General Treatise on that science; the art of Diplomacy will be subjoined to the science of the Law of Nations; and so on. What remains in the Alphabetical Division, after this effective re-arrangement has been made, will form a SERIES of DICTIONARIES, Lexicographical, Classical, Theological, Technological, &c.

44. REVISION AND ENLARGEMENT.—Though the changes contemplated in the *General System* of the Encyclopædia are not important, the improvements to be made in the *details* will be considerable. In all possible cases, before the articles are reprinted for the Second Edition, they will be thoroughly revised, either by their authors or other competent persons, and Indexes and Tables of Contents will be added; the Historical series will be completed and re-arranged; the Treatises on the Natural and Experimental Sciences will either receive important amendments,

or be replaced by others entirely new; while the Mechanical and Chemical Arts, and the applications of the sciences to affairs of public utility, will be treated of in the Second Edition, much more practically than they were in the First Edition.

45. PROPOSED EXTENT OF THE WORK.—The series of scientific and historical TREATISES on the important SUBJECTS comprehended in the philosophical scheme of this work (page 13), which form indispensable links of the great chain of human knowledge—the Series necessary to complete the *circumference* of an Encyclopædia—cannot be compressed into *fewer* than EIGHTY CABINET VOLUMES. That is the *minimum* extent. But since the methodical plan of the work, as developed in this Prospectus, will permit at all times of the incorporation of such additional Treatises, as may be requisite to keep its scientific principles and historical facts in accordance with the progress of the age,—a permission of which the conductors will freely avail themselves,—it is impossible to state what may be the *maximum* number of its volumes. An Encyclopædia intended to reflect always the existing state of human knowledge, "to act," (in the language of Mr. COLERIDGE,) "at once as a reservoir and a fountain,—to receive perpetual accessions of knowledge from the genius of the age, and to yield the knowledge again in willing abundance," —such a work can never be effectually "*completed.*" That word applies with as little propriety to such an Encyclopædia, as it does to the Times Newspaper or the Philosophical Transactions; for, like those celebrated journals, this Encyclopædia will be at all times ready to incorporate an account of every important Event and new Principle that Time and Discovery may furnish, and for which its philosophical system provides an adequate Repository.

46. IMPROVED PLAN OF PUBLICATION.—A great alteration, and, it is hoped, an important improvement, will be made in the METHOD OF PUBLISHING the Second Edition, as contrasted with the method adopted for the first edition of this Encyclopædia. The PARTS of the CABINET EDITION will not, like the Parts of the Quarto Edition, contain letter-press and engravings belonging to different subjects or different Divisions of the Encyclopædia, forming a heterogeneous and unreadable mixture of fragments of many Treatises; but *each* PART will relate only to *one subject;* and whenever it is possible, *each* VOLUME of the CABINET EDITION will embrace ALL that relates to one subject. That, however, will necessarily depend upon the nature of the Subjects and the consequent extent of the Treatises. Very frequently several will be comprised in one Volume, and occasionally an important subject,—the principles of a leading Science, or the History of a great nation,—will occupy two volumes. But care will be taken to ensure a due proportion in size among the several Treatises, to avoid unnecessary prolixity, to combine comprehensiveness in matter with convenience in form, and to avoid the incongruous binding together of Treatises on irrelative Subjects—such, for example, as occurred in Vol. 5 of the First Edition, where the Treatises on the FINE ARTS were combined with two profound MATHEMATICAL TREATISES belonging to the Department of ASTRONOMY.

47. ADVANTAGES TO THE SUBSCRIBERS.—Those who subscribed to the original edition, and who remember how it was contrived to convert the most *Methodical* of Encyclopædias into the most I*mmethodical* of Publications, will readily recognise the importance of an alteration, which INSURES TO THE SUBSCRIBER TO THE SECOND EDITION the possession of a complete readable portion of the work in recompense for every Subscription he is required to make.

48. ORDER OF PUBLICATION.—It seems not unnecessary to call the attention of intending Subscribers to the difference that exists between the *order* in which the SUBJECTS *occur* in the general system of this Encyclopædia and the *order* in which it may be *advisable to publish* the TREATISES on those subjects. In consequence of the different amount of corrections that will be required by the various Treatises that compose the Encyclopædia, and the circumstance that many Treatises on subjects that demand extensive investigation must be written entirely anew,—it would be impossible, without submitting to great delay and irregularity, to publish the revised Articles and new Treatises in Weekly Parts, in the exact order in which the subjects occur in Mr. Coleridge's methodical plan. Neither is it desirable

to adhere to that order pertinaciously, because it would not be agreeable to the great body of the SUBSCRIBERS to so comprehensive a work as this ENCYCLOPÆDIA, to receive, for months together, a series of WEEKLY PARTS relating solely to Mathematics, or to Geography, or to History, or indeed to *any* Department, in its order—*all other subjects being, for the time, systematically excluded.* A proceeding of that sort could hardly fail to excite dislike or indifference to the work in the FAMILIES of many of the SUBSCRIBERS. The Proprietors consider, therefore, that they will consult the general convenience, both of the Authors and the Subscribers, by publishing the Treatises in an indeterminate order,—giving History, Science, and Art alternately, but carefully indicating on the title-page of each Volume its exact place in the entire System, in accordance with the Plan given in page 13. In order, however, to prevent mistakes, every PART and VOLUME of the work, *as published*, will be marked with a running Number, simply to indicate the order of Publication, and irrespective of the ultimate Philosophical Arrangement of the articles. The Parts that constitute a Volume will be published as near together as circumstances permit, and, from time to time, General Title Pages and Tables of Contents will be supplied, to complete the Volumes of the several Divisions.

49. REGULARITY OF PUBLICATION.—The vast amount of original writing of the highest class, in every department of literature and science, which is comprehended in the First Edition of this Encyclopædia, and the proved excellence of its methodical plan, will so greatly facilitate the preparation of the CABINET EDITION, that the Conductors trust to be enabled to issue the WEEKLY PARTS in uninterrupted succession,—correcting in the work, as they go on, what requires correction; retrenching what is superfluous; and supplying what is deficient; so as to bring the whole more strictly into accordance with Mr. COLERIDGE's great idea of the essentials of an Encyclopædia, and producing, if possible, a "SYSTEM OF UNIVERSAL KNOWLEDGE," more philosophical in its plan, more ably executed in its details, more convenient in size, and more economical in price, than any work of the kind that has ever hitherto been produced.

50. We conclude this Prospectus with a short extract from the Preface to the First Edition of the Encyclopædia:—

"The foregoing enumeration of the principal parts of the Encyclopædia embodies all the observations which the Editor considers it necessary to make in recommending the work to the patronage of the public. The exertions made by the Proprietors to procure the just fulfilment of the high expectations formed of the work, and of the promises they had made, as well as the perseverance with which they have conducted this important publication to its completion, amidst the many obstacles which must necessarily arise in so extensive an undertaking, entitle them to high consideration from that portion of the Public which is interested in works of a sterling and substantial character. From the present position of Literature, and *the system now in fashion of publishing small and superficial works which may be cheaply produced, and are really of no intrinsic value*, it is probable that a long period must elapse before any similar undertaking will be entered upon, from the enormous outlay of capital it requires, and the uncertainty of remuneration which it offers. It is hoped, therefore, that this GREAT NATIONAL WORK, for such it really is, may meet with that patronage which the Proprietors feel confident it fairly and fully deserves. They feel assured that, whether it be viewed as a whole or in its separate divisions, *it embodies a mass of information at once extensive, accurate, and scientifically arranged, which must place it in a pre-eminent and triumphant position.* Whatever its measure of success may be in a pecuniary point of view, they may justly feel a high gratification in having been instrumental, under Providence, in bringing to a successful termination *a work which, whether its* LITERARY MERIT OR THE SOUNDNESS OF ITS MORAL AND RELIGIOUS VIEWS *be regarded, must ever be considered as an* INESTIMABLE BENEFIT TO THEIR COUNTRY AND A PERMANENT ORNAMENT TO ITS LITERATURE"

London, October, 1849.

PLAN OF THE ENCYCLOPÆDIA METROPOLITANA.

The INTRODUCTION.—On the Laws and regulative Principles of EDUCATION; or in the Language of the Schools, the Elements of METHODOLOGY.

FIRST DIVISION.

PURE SCIENCES.

Section I.
Formal Sciences.

Philosophy of Language.
Logic.
Rhetoric.
Mathematics:—
- Geometry.
- Arithmetic.
- Algebra.
- Geometrical Analysis.
- Theory of Numbers.
- Trigonometry.
- Analytical Geometry.
- Conic Sections.
- Differential and Integral Calculus.
- Calculus of Variations.
- Calculus of Finite Differences.
- Calculus of Functions.
- Theory of Probabilities.
- Definite Integrals.

Section II.—Real Sciences.

Moral and Metaphysical Philosophy.
Law:—
- General Principles of Law.
- Roman Law.
- English Law—
  - Laws of England.
  - Laws of Ireland.
  - Laws of Scotland.
  - Colonial Law.
- Canon Law.

Politics:—
- Law of Nations—
  - Diplomacy.
- Political Philosophy—
  - Statistics.
- Political Economy—
  - Commerce.

Theology:—
- Natural Theology.
- Evidences of Revelation.
- Scripture Doctrine.
  - Biblical Literature.
  - Biblical Antiquities.
  - Religions and Religious Customs.

SECOND DIVISION.

MIXED AND APPLIED SCIENCES.

Section I.
Mechanical Philosophy.
(*Mixed Mathematics*).

Mechanics.
Hydrostatics.
Pneumatics.
Optics.
Astronomy:—
- Plane Astronomy.
- Nautical Astronomy.
- Physical Astronomy.

Figure of the Earth.
Tides and Waves.

Section II.
Experimental Philosophy.

Magnetism.
Electro-Magnetism.
Electricity.
Galvanism.
Heat.
Light.
Chemistry.
Sound.
Meteorology.

Section III.—The Fine Arts.

Architecture.
Sculpture.
Painting.
Heraldry.
Numismatics.
Poetry.
Music.
Engraving.

Section IV.
The Useful Arts.

Agriculture.
Horticulture.
Floriculture.
Arboriculture.
Carpentry and Joinery.
Fortification.
Engineering.
Naval Architecture.
Manufactures.
Mechanical Arts.
Chemical Arts.

Section V.
Natural History.

Inanimate:—
- Crystallography.
- Mineralogy.
- Geology.

Insentient:—
- Botany.

Animate:—
- Zoology.
- Physiology.
- Comparative Anatomy.
- Vertebrals:
  - Mammalia. | Reptiles.
  - Birds. | Fishes.
- Invertebrals:
  - Molluscs. | Spined Skins.
  - Insects. | Sea Nettles.
  - Crustaceans. | Infusories.
  - Arachnidans. | Polyps.
  - Myriapods.

Section VI.—Applications of Natural History.

Anatomy.
Materia Medica.
Pharmacy.
Medicine.
Surgery.
Veterinary Art.

THIRD DIVISION.

HISTORY AND BIOGRAPHY.

Introduction:—
- On the Uses of History.
- Chronology.
- Chronological Tables.

Archæology.

Ethnology.

Ancient History:—
- Sacred History.
- The Jews.
- Greece.
- Greek Literature.
- Greek Philosophy and Art.
- Ancient Oriental Nations.
- Rome.
- Roman Literature.
- Roman Philosophy.
- Classical Antiquities.
- Heathen Mythology.

Middle Ages.

Modern History:—
- The Christian Church.
- Greek Empire.
- Ottoman Empire.
- The Crusades.
- Italy.
- Germany.
- France.
- Spain.
- Portugal.
- Netherlands.
- Switzerland.
- Britain.
- America.
- India.

FOURTH DIVISION.

GEOGRAPHY.

Physical Geography.

Political Geography:—
- European.
- American.
- Oriental.
- African.
- Classical.

British Topography.

FIFTH DIVISION.

LEXICOGRAPHICAL.

English Lexicon, &c. &c. &c.
See Prospectus, § 43.

GENERAL INDEX.

derived from them the greatest encouragement to carry on the war against Darius, not doubting but that he was the person described in the prophetic books.

Alexander's favour to the Jews.

At his departure these circumstances so effectually recommended the Jews to the favour of Alexander, that when they petitioned him to allow them to live under their own laws, and in the free exercise of their religion, and further to be exempted from tribute every seventh year, because their law forbade them to cultivate the soil in the year of the sabbath, he immediately complied with their request. The Jews further implored his protection for their brethren whom he would find settled in Babylon; and many of them, won by his kindness, enlisted as soldiers in his service, and accompanied him on his expedition.

His behaviour to the Samaritans.

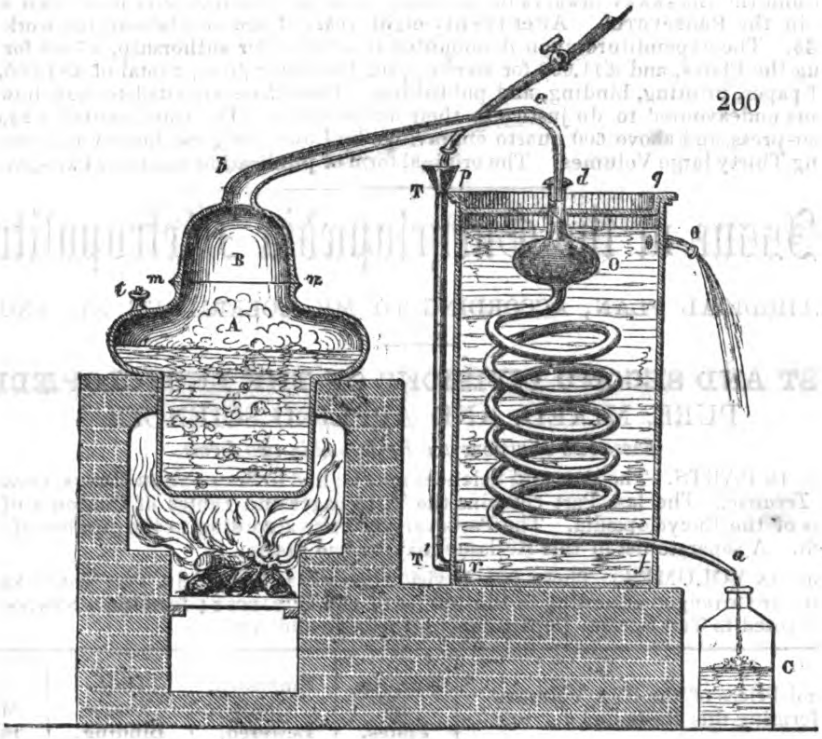
The Samaritans envying the Jews the favour they had so unexpectedly gained, and jealous of the distinction conferred upon them, thought by a similar line of conduct to gain as much influence with the king. They met him as he returned from Jerusalem in a solemn religious procession, and professing their kindred with the Hebrews, sought from him a grant of the same privileges which he had given to their brethren. Alexander excused himself from paying attention to their request till after his return from Egypt; but, during his absence, a rebellion taking place in the city, in which Andromachus, the governor, perished, at his return he caused all those who were concerned in the disturbance to be put to death, and driving out the Samaritans, planted their city with Macedonians: those who survived retired to Shechem, under Mount Gerizim, which from that time became the metropolis of the Samaritan sect, and continues so to this day. The eight thousand Samaritans who had joined Alexander at Tyre, and had been with him ever since, he settled in Thebais, the remotest province of Egypt, lest their presence in Samaria should revive the mutinous spirit of their countrymen. This treatment contrasts strikingly with that which the Jews subsequently received, for when Alexandria was built, he settled therein many of that nation, giving them great privileges, and allowing them not only the use of their own laws and religion, but also the enjoyment of equal franchises and liberties with his own people, the Macedonians.

Influence of the preceding events upon Alexander's conduct.

It does not fall within our province to pursue the narration of Alexander's conquests, or to trace him in his rapid progress to the highest pinnacle of martial glory; one part, however, of his character is so closely connected with the occurrences related to have taken place on his arrival at Jerusalem, that we cannot forbear stopping to direct the reader's attention to it. It has often created surprise that a man of Alexander's strength of mind, should have been guilty of such folly and weakness as to feign himself to be the son of Jupiter Ammon, and to undertake a most laborious expedition to his Temple, which was situated in the midst of the deserts of Lybia, and twelve days journey from Memphis, for no other purpose than that of procuring himself the title of son of Jupiter.

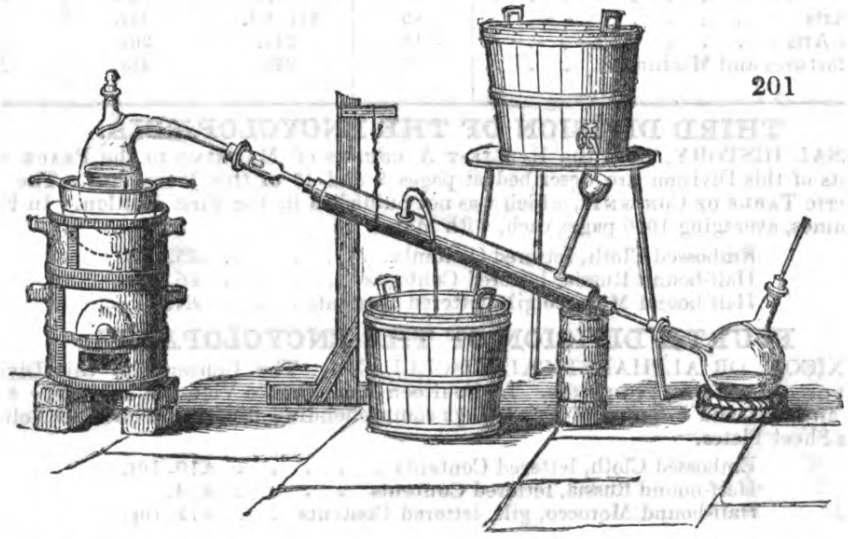
The water to be distilled is poured into the Still at the opening marked *t*. The water of the Condenser is continuously renewed by the supply-pipe T T′, and when heated by the steam, it is suffered to run off by the escape-pipe *o*.

200



It is frequently necessary, in the laboratory, to distil volatile liquors, in which case the condensing power must be very effective, that loss be not occasioned by the escape of uncondensed vapour. For such operations, the apparatus represented by fig. 201 is employed. The

201



liquor to be distilled is placed in a glass Retort, the neck of which is connected, by means of an adapter, to a straight Condenser, consisting

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The PLAN and the LITERARY MERITS of the Encyclopædia Metropolitana have been sufficiently dwelt upon in the PROSPECTUS. After twenty-eight years of arduous labour, the work was completed in 1845. The expenditure upon it amounted to £26,000 for authorship, £7000 for designing and engraving the Plates, and £11,000 for stereotyping the letter-press, a total of £44,000, exclusive of the cost of paper, printing, binding, and publishing. These facts are cited to show how earnestly the Proprietors endeavoured to do justice to their undertaking. The work contains 23,000 quarto pages of letter-press, and above 600 quarto engravings by Lowry, of great beauty and accuracy; the whole forming Thirty large Volumes. The original form of publication was in 59 Parts, at 21*s*. each.

Re-Issue of the Encyclopædia Metropolitana,

ON A METHODICAL PLAN, ACCORDING TO MR. COLERIDGE'S ARRANGEMENT

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GENERAL INTRODUCTION

TO THE

ENCYCLOPÆDIA METROPOLITANA;

OR,

A PRELIMINARY TREATISE

ON

METHOD.

BY

SAMUEL TAYLOR COLERIDGE.

Non simpliciter nil sciri posse; sed nil nisi certo ordine certâ viâ sciri posse.—BACON.

THIRD EDITION.



265. f. 48.

SYNOPSIS.

SECTION I.

ON THE PHILOSOPHICAL PRINCIPLES OF METHOD.

Page

From disregard of the Principles of Method no Encyclopædia has ever yet been methodically arranged - - - - - - - - - - - - 13

It is fit to commence the present work by an explanation of the Principles, and an application of them to the chain of the Arts and Sciences - - - 14

This work claims to be a Methodical Compendium of human knowledge - - 14

The word *Method*, derived from the Greek, signifies *a way of transit*. Method implies unity with progression. Method must be an act of the Mind itself, which alone unites or makes many one. An universal Method must be sought in the very centre of the Human Intellect. Method is never arbitrary 14

Relations of things are the materials of Method, which is the way of transit from one to the other of related things - - - - - - - - - - 15

Relation of Law is that whereby we understand that a thing *must be;* Relation of Theory that whereby we perceive that it *is* - - - - - - 15

Relations of Law belong to the Pure Sciences, which deal with necessary truths, predetermined by the Mind itself, and ever existing in and for the Mind alone; and in a looser sense, to the Mixed Sciences, in which truths originating in the Mind are applied to the world without, and constitute the great Laws of Nature - - - - - - - - - - - - - - - 16

Relations of Theory are subservient to the Scientific Arts, such as Medicine, Chemistry, Physiology - - - - - - - - - - - - 16

The Method of the Fine Arts lies between Law and Theory. In it Laws of Taste predominate, but it contains other Laws dependent on external objects 16

Tinkling verse and the Harmonica are alike unsatisfactory, because in them the material encroaches on the mental, a proof how truly the Fine Arts involve Laws of the Mind and Relations of Law - - - - - - - - 16

Method implies a uniting and a progressive power. Law and Idea are correlative terms; the one (Law) is the laying down of the rule or mode of union, the mental act; the other (Idea) is the rule laid down, the mental object. Thus Idea and Law differ as Being and Truth; the mind objective and subjective, *i. e.*, considered as self-beheld and beholding, the subject being that which, in all workings and movements, of which we are conscious, is *inferred*, as the agent, *quod jacet subter*, which lies under what appears: the object that in us, whence the subject is inferred, *id quod jacet ob oculos* - 17

Page

The Idea may exist in a distinct form, or as an unconscious impulse - - 17

Language is well adapted to lead from the vague sense to the clear beholding of the Idea - - - - - - - - - - - - - - 17

The Progression in Ideas, which is true Method, starts from a rightly chosen Initiative - - - - - - - - - - - - - - 18

The habit of Method results from a certain education. Objects of sense stimulate the mind, which again acts on the food received from without - - 18

Excess in methodizing is opposed to the accumulation of fresh material of thought - - - - - - - - - - - - - - 19

According to the true Laws of Method, ideas of Reason and Faith must be held paramount, those of Physical Experience subordinate. This subordination is independent of immediate practical utility, which is determined by circumstances of the moment - - - - - - - - - - - 19

Ideas have a certain relative rank among themselves - - - - - - 20

Metaphysical Ideas relate to the *essence* of things as possible, and are independent of actual existence; these are of the highest class. Physical Ideas concern the nature of things actually existing - - - - - - - 20

The word Nature signifies either the reality of a thing as existent, or the sum of sensuous things; a physical Idea, or a sensible Impression - - - 21

Mere arrangement is not Method - - - - - - - - - - 21

Summary - - - - - - - - - - - - - - - 21

Method is founded on Relations. There are relations of Law and of Theory. The Method of the Fine Arts comprises both. The Principles of Method are Union and Progression. Progress requires in the Mind a due mean between passiveness under outward impression and activity of abstract reflection - 21

SECTION II.

ILLUSTRATION OF THE PRECEDING PRINCIPLES.

The Principles already stated are to be tested by particular references - - 23

Method is important generally, not in processes of intellect alone, but equally so in the ordering of active and domestic life - - - - - - - 23

The truly methodical man gives a life to Time, distinguishing its parts, which would otherwise glide on massed together like a stream; realizing its ideal dimensions, giving individuality to its moments - - - - - - 24

Method in discourse is the sign of mental power and cultivated intellect - - 24

There must be Method in the performance of Moral Duty - - - - 25

Method in speculative meditation is conducive to worldly interest in the promotion and regulation of useful discovery - - - - - - - 25

Page

Columbus was led to success by a guiding Idea - - - - - - - 25

In the strength of this Idea he conquered at last, though his noble hope was long contemned, both by Princes and the common People - - - - 26

An Initiative, or previous mental act, is indispensable in physical, as well as in mathematical studies - - - - - - - - - - - - 26

In Mathematics the perfect Idea *makes* the object; the definition *precedes* the reasoning: in Physics the definition is representative not constitutive, and *follows* the reasoning - - - - - - - - - - - - 27

Discoveries of Experimental Philosophy, till they lead to some Law, are insecure and unproductive - - - - - - - - - - - 27

The Idea of the Theory of Electricity is one and sure amid various and insecure hypotheses. On this depends the method of arranging the phænomena.

The Law of Polarity operates in all Electrical phænomena - - - - - 28

Magnetism is contrasted with Electricity in furnishing no Idea, leading to no Law, and hence to no Method. There is an hypothesis which considers Magnetism, Electricity, and Galvanism, as results of one power essential to all material construction - - - - - - - - - - - 28

The Fictions of the Electrician contain an idea; the Suppositions of the Magnetists do but repeat the same fact in a magnified form. This leads us to recognise the importance of the enlightening fact, which proclaims an Idea. One fact is often as good as a thousand - - - - - - - - - 30

Zoology was without unity or system till Hunter, in the preparations for his Museum, announced, though imperfectly, an Idea, and thereby led to noble results - - - - - - - - - - - - - - - 31

An Idea is wanted indispensably for methodical arrangement in Botany - - 31

Botany is obliged to Linnæus for a serviceable scheme of arrangement. But for lack of an Initiative Idea, the true Idea of Sex and of Vegetation itself, he was unable to systematize the Vegetable with the Animal and Mineral Kingdoms - - - - - - - - - - - - - - 32

Want of insight into the Idea of Sex precludes a perfect methodical arrangement of vegetable productions. With all the multitude and variety of particular informations on the subject, brought together by numerous able investigators, Botany remains merely a vast nomenclature and catalogue, from default of a methodizing Idea - - - - - - - - - - 33

The Idea which has occurred to some, that the harmony between the Vegetable and Animal Worlds rests upon contrast, not likeness, if proved an objective truth, would produce scientific Method - - - - - - - - 33

The charm of Chemistry consists in the anticipation of a Law, whereof the variety of substances, assumed to be indecomposable, are exponents. It is a pursuit after unity of principle through variety of forms - - - - - 34

There is a correspondence between Physical Science and Poetry, Nature being idealized by the Poet, Poetry substantiated by the Natural Philosopher - 35

Page

The position that Poetry is capable of Method is founded on the very Philosophy here set forth, and is evidenced in the Plays of Shakspeare - - 35

Shakspeare's information has been shown to be extensive. But his knowledge was no rude mass, it was methodized by a perception of Relations. He studied Mankind in the Idea of the Race, and followed out that Idea into its varieties by a guiding Method - - - - - - - - - - 35

Compare Mrs. Quickly's account of Falstaff's debt, with Hamlet's narration to Horatio of what took place in his voyage to England - - - - - 36

Both discourses are immethodical in *form;* but that of the hostess wants order resulting from power of thought, while that of Hamlet is governed by reflection. The former is a mere report of passive impressions; the latter is interrupted by the propensity to generalize - - - - - - - - 38

Mrs. Quickly's want of method is common in real life; and, on the other hand, many intelligent men, from the disposition to generalize in excess, are apt to overlook the relation of objects to the apprehension and sympathies of hearers - - - - - - - - - - - - - - - 38

The habit of Method brings the Remote into Contiguity; the absence of it produces distance and disconnection between the parts of a discourse treating of things near in Time and Space - - - - - - - - - - 39

Not only is there consistency in Shakspeare's Characters: his just display of Passion arose from the contemplation of Ideas. It was not in the former only that he followed an accurate philosophic Method - - - - - - 39

Condemnatory criticism on Shakspeare may, for the most part, receive two answers; first that, working from an Idea, he better understood the fit mode of expressing Passion,—had a more methodical sense of Harmony, than his critics: secondly, that he pursued two Methods at once, the poetical and the psychological - - - - - - - - - - - - - - 40

Shakspeare's moral conceptions are guided by philosophic Method. He exhibits crime in union with intellectual vigour, never, like less methodic moralists, conjoined with magnanimity, or as part of a character upon the whole amiable and admirable - - - - - - - - - - - - 41

Shakspeare is methodical in his style. No other man ever so exquisitely adapted the discourse of poetic personages to wide varieties of rank and character. It was *Method* that led him to the choice of such happy words and idioms, still fresh as in their first bloom - - - - - - - - 41

Shakspeare has been called "not methodical in the structure of his Fable;" but the contrary may be proved. He has been said to have violated the unities of time, place, and action. But Unity is the subject of Ideal Law, and this is Shakspeare's own peculiar ground, the ground of Idea. Who could alter the plan of one of his great plays, or transpose its parts, without destroying the sublime and moving effect of scenes and passages? - - - - - 42

If the wondrous excellence of Shakspeare, in all provinces of the poetic drama, was thus attributable to Method, let it never be said that Poetry is independent of philosophical principles of Method - - - - - - - 43

Page

Philosophy, to which belongs the education of Mind, is herself wholly conversant with Method - - - - - - - - - - - - 44

The Ancients had their spurious intellectual Methods. But their Philosophers pursued a different course from the Sophists. The species, Philosophy, is sufficiently exemplified by two varieties, Plato and Bacon - - - 44

The object of the better works of Plato is to teach the art of Method. This is the clue to guide us through his labyrinth. His aim was not so much to teach any particular truth, as to clear the way for the reception of Truth at large; to excite in the soul those faculties, by the operation whereof it becomes self-enriched, rather than to fill it with knowledge from without. Plato and Shakspeare dealt with ideas, but were only so much the more awake to actual existences. Plato's philosophy was most wrongfully accused of neglecting fact and experience; he pursued the false intellectualism of the Sophists, even oftener and more vehemently than the usurpation of the Senses - - - - - - - - - - - - - - - 45

Lord Bacon, though he is strangely cited as authority against Plato, followed the Platonic method in his own scheme - - - - - - - - - 46

Cicero, the great Philosopher of Rome, venerated Plato. Bacon's detraction from him is easier to explain than to justify. He was influenced by the Fathers of the Reformation and by misinterpreters - - - - - - - - 46

Bacon was invidious also to his contemporaries. But we are here concerned with his philosophical principles only - - - - - - - - - 47

The superficial talkers about Bacon's Philosophy form a wrong and inadequate estimate of it, from considering only those parts the soundness of which may be fairly disputed - - - - - - - - - - - - - 47

Bacon collected Particulars in order to concentrate them into Universals; but by these means it would have been impossible to have arrived at Law, the sole object of bringing them together - - - - - - - - - 48

Bacon performed a worthier task by constructing a methodical system developed in his *Novum Organum*. If we extract from Plato and from Bacon what constitutes the true philosophy of each writer, we shall find it identical in regard to the Science of Method; although in both authors, from imperfect acquaintance with the laws of nature, the inductions are often erroneous and the proposed applications impracticable - - - - - - - - 49

Bacon, as much as we, demands *the mental initiative*,—namely, as the motive and guide of philosophical experiment, some well-grounded purpose, some distinct impression of the probable results. With him, as with us, an Idea is an experiment proposed; an experiment is an Idea realized - - - - 49

What forms the purpose and adapts thereto the experiment? The understanding of the experimenter—*lux Intellectus*. This light, he argues, is obscured by idols or false opinions. He distinguishes the various kinds of idols, and, like Plato, prescribes remedies for the blindness they produce: he shows that Idols are empty notions, whilst Ideas are the very impresses of Nature, corresponding perfectly to the outward things to which they belong. Bacon's style betrays in some respects a faulty Method - - - - - - 50

Page

Bacon teaches that there are innate idols or mental fallacies; that as the mind in every individual is more or less enfeebled and impaired, it misrepresents, like an imperfect mirror, what is presented to it; that consequently man is led to take the mechanism of his own reflective faculty for the measure of Nature and of Deity. According to Plato, as well as to Bacon, so long as forms merely subjective are taken for the moulds of objective truth, no fruitful and secure method can be expected - - - - - - - 50

Bacon suggests that the imperfection of the human Intellect may and must be remedied by a higher power. He assumes that the evidence of the Judgment, beset with Idols, may be corrected by the Judgment, enlightened by Ideas. This corrector and purifier is one and the same light of truth, the condition of all pure science. Hence Plato calls Ideas living Laws: Bacon names the Laws of Nature Ideas. What Plato extolled under the title of *Dialectic*, is the discipline whereby the human mind is cleansed from Idols, and raised to the contemplation of Ideas, or *distinguishable powers self-affirmed* - - 52

Plato treated principally of Truth as manifested in the world of Intellect; Bacon of the same Truth in the world of Sense. The one cultivated Metaphysics most; the other Natural Philosophy. Both proceeded on the same principles of Unity and Progression, and alike followed Method as here described - - - - - - - - - - - - - - 52

That the Method treated of is founded in the laws and necessary conditions of human existence, may be inferred from the History of the Human Race, which has its Infancy, Youth, Manhood, and Middle Age - - - - - - 54

In the first period the *Obedience of the Will* was taught to Man. Some in that Early Age cultivated the Moral Sense, gained spiritual knowledge and spiritual hopes, and therefore cared little to acquire Arts and Sciences and improve earthly possessions. The latter exclusively observed outward things as the sole realities. The vicious of Mankind receded from cultivation, while they hurried toward civilization. They worshipped the material elements, and finally bowed down before material Idols. Here were two opposite Methods; that of looking for the good and the true within the mind, and that of finding it only in the material - - - - - - - - - - - - 54

In the second period Providence awakened Man to the pursuit of an idealized Method in the development of his faculties. Bards began to spiritualize Polytheism. Hence the Mysteries shaped themselves into Epic Poetry and History on one hand,—on the other into Tragedy and Philosophy. The Fine Arts shot up at once to perfection by a Method founded on a Mental Initiative. The progress of the Ancients in all things that originate in Mind was contrasted with their slow advance in Natural History and Philosophy - 55

The Romans were mere imitators of the Greeks in Science and Art. The Dark Ages, which brought the sensual Barbarians from the North to meet the influences of Christianity in the South, require no long consideration. But one effect of that influence must be noticed, namely, the gradual abolition of domestic slavery. The Idea of a Human Being, as a Person, in opposition to a Thing, excludes the Idea of property in that Being - - - - - 56

Page

The Leaders of the Reformation were advocates of the Ideal and Internal against the External or Imaginative. The Revolution of Thought and its effects on the Science of Method became visible beyond the pale of the Church or the Cloister. Bacon's attempt to introduce a new method into Learning was completely successful - - - - - - - - - - - 57

A complete and genuine Philosophy can only exist when one and the same Ideal Method is applied to external nature and to intellectual existence. The work of Bacon, in its general scope, contemplates physical Ideas. This fact, together with some of his expressions, misled many of his followers into the belief that he held the things of sense to be the only worthy objects of Man's attention. Hence the modern French school of Philosophy and the monstrous puerilities of Condillac and Condorcet, whose pupils are important only by their number - - - - - - - - - - - - - 57

SECTION III.

APPLICATION OF THE PRINCIPLES OF METHOD TO THE GENERAL CONCATENATION AND DEVELOPMENT OF STUDIES.

A savage Indian, unacquainted with letters, attempting to make use of the Bible, in the sense that his fate is in some way connected with its contents, may represent Arrangement guided by no Idea, Orderliness without Method - 59

When the Missionary, arriving, explains to him the nature of written words, he communes with the *spirit* of the volume. Thenceforth his vain Arrangement is discarded; the results of *Method* are to him light and truth - - - 60

The attempt to bind together the whole body of the Sciences has been, in some instances, worse than immethodical. The insinuation of sceptical principles into works of Science is full of danger to posterity - - - - - - 60

The Encyclopædia Metropolitana has been projected to keep up an interest in the principles of Method - - - - - - - - - - 61

An Universal Dictionary of Knowledge is not undertaken in this work, but to build, by a philosophical Method, the Useful on the Essential in Science,—the Elegant and Agreeable on both - - - - - - - - - - 61

This Method consists in subordinating particular things to a preconceived Idea, or to some lower form of the latter - - - - - - - - - 61

The Moral Origin and Tendency of true Science is the master thought of the plan - - - - - - - - - - - - - - - - 61

The Pure Sciences are built on the Relations of Ideas to each other; the Mixed or Applied on the Relations of Ideas to the External World - - - 62

The Pure Sciences represent pure Acts of Mind - - - - - - - 62

In them we distinguish between Formal and Real. The former teach the Forms of Thinking; the latter treat of Being itself, the true nature and existence of the External Universe, of the Guiding Principles within us, and of the Great Cause of all - - - - - - - - - - - 62

Page

The Formal Sciences are Grammar, Logic, Mathematics; the Sciences that deal with substantial realities are Metaphysics, Morals, Theology. These Sciences are conversant about relations of Law, therefore have all the purity and certainty of the positive and absolute. In the proper philosophical Method the speculative knowledge of Metaphysics is united with the reality of ethical sentiments, and both are consummated in Theology - - - 62

The Mixed and Applied Sciences, as they concern our relations to the external world, not pure acts of mind alone, depart from Law to embrace Theory, and thus require a Method adapted to themselves - - - - - - - 64

Physical Theories, the materials of which they are constructed being supplied from without, continually change form, and are imperfect because necessarily progressive. The Initiative in such cases is supplied by an Hypothesis, an actual fact represented as universally present, or a fact imagined, being placed, as it were, centrally, to the support of other facts arranged by the theory into a certain form - - - - - - - - - - - 65

True Theory is always a *locum tenens* of Law. A Law occupying the centre, the circumference may be extended without derangement of the entire scheme, or alteration of its character - - - - - - - - - - 65

This will show the connexion of the Mixed and Applied with the Pure Sciences, and the reference of the former to the Human Mind. The terms Science and Law, however, are used in a less strict sense in reference to the Mixed and Applied Sciences than to the Pure, since they cannot have the absolute certainty of the others. The former might best be entitled Studies - - 66

The Mixed Studies or Sciences are those in which certain Ideas of the Mind are applied to the general properties of bodies, as Mechanics, Hydrostatics, Optics, and Astronomy - - - - - - - - - - - - 67

The Applied Sciences are those in which Ideas or Images that represent them are applied, not to the investigation of the general and permanent properties of all bodies, but of certain changes in those properties, or of properties existing in bodies partially. Such are Magnetism, Electricity, Galvanism, the laws of Light and Heat, &c. The uncertainty of the first principles in these Studies has already been shown - - - - - - - - - - 68

The Fine Arts are Sciences applied to the purposes of Pleasure through the Imagination. They are Poetry, Painting, Music, Sculpture, Architecture. In these the Mental Initiative must proceed from within; in the Mixed and in the first class of Applied Sciences it may have been received from without. The Method to be observed in them, as before stated, lies between that of Law and that of Theory. As operating by sensible impressions, they belong to the outward world; and yet the true Poet is impelled by an inward power, an impulse, which gradually brightens into an Idea - - - 68

The Useful Pursuits—Political Economy, Agriculture, Commerce, Manufactures—are reducible to Method, and refer to Ideas, being dependent on the Sciences already named - - - - - - - - - - - 69

The failure of Linnæus in fixing the three great kingdoms of Natural History on a firm basis is owing to the want of precision in the first Ideas of his Theory 70

Page

Natural History is a rule for the dependent pursuits, such as Medicine, Surgery, and Anatomy. The desire to improve these should be regulated by a due regard to the place each holds in the circle of the Sciences, and by observing the only proper method that can be pursued in its cultivation - - - 70

The plan of this Encyclopædia embraces the History of the Human Race. The great end of History is to acquaint us with the History of Man, and this end is best answered by giving the most exact portrait. But there must be some mode of grouping and connecting the Individuals, who are themselves the great landmarks in the map of Human Nature. Accordingly History will sometimes be presented in the form of Biography. The Uses of History will be treated in an Introduction, and there will be inter-connecting Chapters on the events of distinguishing periods, as well as on Political Geography and Chronology - - - - - - - - - - - - - 70

These views relate to the Philosophical and Historical branches of the Work. Of the Miscellaneous and Alphabetical it is not necessary to make any detailed statement - - - - - - - - - - - - - - 72

To the Philosophical, as most important, every other part of the arrangement is subordinated. The Philosophical governs and regulates the Alphabetical - 73

Trade and Literature, the one of which has for its object the wants of the body, the other the wants of the mind, are the two great impulses of Modern times. Without these combined there can be no Nation; without Commerce and Science no bond of Nations. Our Method embraces this two-fold distinction of human activity - - - - - - - - - - - - 74

This conducts us to the distinguishing object of the present undertaking, in explaining which we have dwelt on Method, the main characteristic of every just arrangement of Knowledge. To convey methodically the pure and unsophisticated knowledge of the Past, so as to aid the progress of the Future, has been already announced as the distinguishing claim of the Encyclopædia Metropolitana.

SECTION I.

ON THE PHILOSOPHICAL PRINCIPLES OF METHOD.

THE word ENCYCLOPÆDIA is too familiar to Modern Literature to require, in this place, any detailed explanation. It is current amongst us as the title of various Dictionaries of Science, whose professed object is to furnish a compendium of Human Knowledge, whatever may be their plan. But to *methodize* such a compendium has either never been attempted, or the attempt has failed, from the total disregard of those general connecting principles, on which Method essentially depends. In presenting, therefore, to the Public an entirely new Work, intended to be Methodically arranged, we are not insensible to the difficulties of our undertaking; but we trust that we have found a clue to the labyrinth in those considerations which we are now about to submit to the reader.

Nature of the Work.

As METHOD is thus avowed to be the principal aim and distinguishing feature of our publication, it becomes us at the commencement, clearly to explain in this Introduction what we mean by that word; to exhibit the Principles on which alone a correct Philosophical Method can be founded; to illustrate those principles by their application to distinct studies and to the History of the Human Mind; and lastly to apply them to the general concatenation of the several Arts and Sciences, and to the most perspicuous, elegant, and useful manner of developing each particular study. Such are the objects of this Essay, which we conceive must form a necessary Introduction to a Work, that is designated in its title from the

The Encyclopædia Metropolitana to be a *Methodical* Compendium of Human Knowledge.

place whence it originates,—ENCYCLOPÆDIA METROPOLITANA; but claims from its mode of execution to be also called "*a* METHODICAL *Compendium of Human Knowledge.*"

The word Method.

The word METHOD (μέθοδος) being of Grecian origin, first formed and applied by that acute, ingenious, and accurate People, to the purposes of Scientific arrangement, it is in the Greek Language that we must seek for its primary and fundamental signification. Now, in Greek, it literally means *a way, or path, of transit.* Hence the first idea of Method is *a progressive transition* from one step in any course to another; and where the word Method is applied with reference to many such transitions in continuity, it necessarily implies a Principle of UNITY WITH PROGRESSION. But that which unites, and makes many things *one* in the Mind of Man, must be an act of the Mind itself, a manifestation of intellect, and not a spontaneous and uncertain production of circumstances. This act of the Mind, then, this leading thought, this "key note" of the harmony, this "subtile, cementing, subterraneous" power, borrowing a phrase from the nomenclature of legislation, we may not inaptly call the INITIATIVE of all Method. It is manifest, that the wider the sphere of transition is, the more comprehensive and commanding must be the initiative: and if we would discover an *universal Method,* by which every step in our progress through the whole circle of Art and Science should be directed, it is absolutely necessary that we should seek it in the very interior and central essence of the Human intellect.

The Science of Method.

To this point we are led by mere reflection on the meaning of the word Method. We discover that it cannot, otherwise than by abuse, be applied to a dead and arbitrary arrangement, containing in itself no Principle of progression. We discover, that there is a *Science of Method;* and that *that* Science, like all others, must necessarily have its *Principles*; which it therefore becomes our duty to consider, in so far at least as they

may be necessary to the arrangement of a Methodical Encyclopædia.

Its Objects and Relations.

All things, in us, and about us, are a Chaos, without Method: and so long as the mind is entirely passive, so long as there is an habitual submission of the Understanding to mere events and images, as such, without any attempt to classify and arrange them, so long the Chaos must continue. There may be transition, but there can never be progress; there may be sensation, but there cannot be thought: for the total absence of Method renders thinking impracticable; as we find that partial defects of Method proportionably render thinking a trouble and a fatigue. But as soon as the mind becomes accustomed to contemplate, not *things* only, but likewise *relations* of things, there is immediate need of some path or way of transit from one to the other of the things related;—there must be some law of agreement or of contrast between them; there must be some mode of comparison; in short, there must be Method. We may, therefore, assert that the *relations of things* form the prime objects, or, so to speak, the *materials of Method;* and that the contemplation of those relations is the indispensable condition of thinking Methodically.

Of these relations of things, we distinguish two principal kinds. One of them is the relation by which we understand that a thing *must be:* the other, that by which we merely perceive that it *is*. The one, we call the relation of LAW, using that word in its highest and original sense, namely, that of *laying down* a rule to which the subjects of the LAW must necessarily conform. The other, we call the relation of THEORY.

Relation of Law.

The relation of LAW is in its absolute perfection conceivable only of GOD, that Supreme Light, and Living Law, "in whom we live and move, and have our being;" who is ἐν πάντι, and πρὸ τῶν πάντων. But yet the Human Mind is capable of viewing

some relations of things as necessarily existent; that is to say, as predetermined by a truth in the Mind itself, pregnant with the consequence of other truths in an indefinite progression. Of such truths, some continue always to exist in and for the Mind alone, forming the *Pure Sciences*, moral or intellectual; whilst others, though originating in the Mind, constitute what are commonly called the great Laws of Nature, and form the groundwork of the *Mixed Sciences*, such as those of Mechanics and Astronomy.

Relation of Theory.

The second relation is that of THEORY, in which the existing forms and qualities of objects, discovered by observation, suggest a given arrangement of them to the Mind, not merely for the purposes of more easy remembrance and communication; but for those of understanding, and sometimes of controlling them. The studies to which this class of relations is subservient, are more properly called *Scientific Arts* than Sciences. Medicine, Chemistry, and Physiology are examples of a Method founded on this second sort of relation, which, as well as the former, always supposes the necessary connection of cause and effect.

Middle or compound Method of the Fine Arts.

The relations of Law and Theory have each their Methods. Between these two, lies the Method of the FINE ARTS, a Method in which certain great truths, composing what are usually called the *Laws of Taste*, necessarily predominate; but in which there are also other Laws, dependent on the external objects of sight and sound, which these Arts embrace. To prove the comparative value and dignity of the first relation, it will be sufficient to observe that what is called "tinkling" verse is disagreeable to the accomplished Critic in Poetry, and that a fine Musical taste is soon dissatisfied with the Harmonica, or any similar instrument of glass or steel, because the *body* of the sound, (as the Italians phrase it,) or that effect which is derived from the materials, encroaches too far on the effect derived from the proportions of the notes, which proportions

are, in fact, Laws of the Mind, analogous to the Laws of Arithmetic and Geometry.

Principle of Union.

We have stated, that Method implies both an *uniting* and a *progressive* power. Now the relations of things are not united in Human conception at random—*humano capiti—cervicem equinam;* but there is some rule, some mode of union, more or less, strictly necessary. Where it is absolutely necessary, we have called it a relation of Law; and as by Law we mean the laying down the rule, so the rule laid down we call, in the ancient and proper sense of the word, an *Idea;* and consequently the words Idea and Law are correlative terms, differing only as object and subject, as Being and Truth. It is extremely necessary to advert to this use of the word Idea; since, in Modern Philosophy, almost any and every exercise of any and every mental faculty has been abusively called by this name, to the utter confusion and *unmethodizing* of the whole Science of the Human Mind, and indeed of all other Knowledge whatsoever.

Ideas,

Definite or Instinctive.

The Idea may exist in a clear, distinct, definite form, as that of a circle in the Mind of an accurate Geometrician; or it may be a mere *instinct,* a vague appetency towards something which the Mind incessantly hunts for, but cannot find, like a name which has escaped our recollection, or the impulse which fills the young Poet's eye with tears, he knows not why. In the infancy of the Human Mind all our ideas are instincts; and Language is happily contrived to lead us from the vague to the distinct, from the imperfect to the full and finished form: the boy knows that his hoop is round, and this, in after years, helps to teach him, that in a circle, all the lines drawn from the centre to the circumference are equal. It will be seen, in the sequel, that this distinction between the instinctive approach toward an Idea, and the Idea itself, is of high importance in Methodizing Art and Science.

There is a principle of progression in Ideas.

From the first, or initiative Idea, as from a seed, successive Ideas germinate. Thus, from the Idea of a triangle, necessarily follows that of equality between the sum of its three angles and two right angles. This is the *Principle* of an indefinite, not to say infinite, *Progression;* but this progression, which is truly Method, requires not only the proper choice of an initiative, but also the following it out through all its ramifications. It requires, in short, a constant wakefulness of Mind; so that if we wander but in a single instance from our path, we cannot reach the goal, but by retracing our steps to the point of divergency, and thence beginning our progress anew. Thus, a ship beating off and on an unknown coast, often takes, in nautical phrase, "a new departure;" and thus it is necessary often to recur to that regulating process, which the French Language so happily expresses by the word *s'orienter, i. e.* to find out the East for ourselves, and so to put to rights our faulty reckoning.

State of Mind adapted to Method.

The habit of Method should always be present and effective; but in order to render it so, a certain training, or education of the Mind, is indispensably necessary. Events and images, the lively and spirit-stirring machinery of the external world, are like light, and air, and moisture, to the seed of the Mind, which would else rot and perish. In all processes of mental evolution the objects of the senses must stimulate the Mind; and the Mind must in turn assimilate and digest the food which it thus receives from without. Method, therefore, must result from the due mean, or balance, between our passive impressions and the Mind's reaction on them. So in the healthful state of the Human body, waking and sleeping, rest and labour, reciprocally succeed each other, and mutually contribute to liveliness, and activity, and strength. There are certain stores proper, and, as it were, indigenous to the Mind, such as the Ideas of number and figure, and the logical forms and com-

binations of conception or thought. The Mind that is rich and exuberant in this intellectual wealth, is apt, like a miser, to dwell upon the vain contemplation of its riches, is disposed to generalize and *methodize* to excess, ever philosophizing, and never descending to action;—spreading its wings high in the air above some beloved spot, but never flying far and wide over earth and sea, to seek food, or to enjoy the endless beauties of Nature; the fresh morning and the warm noon, and the dewy eve. On the other hand, still less is to be expected, toward the Methodizing of Science, from the man who flutters about in blindness, like the bat; or is carried hither and thither, like the turtle sleeping on the wave, and fancying, because he moves, that he is in progress.

Excess in methodizing opposed to the accumulation of fresh material of thought.

The paths in which we may pursue a Methodical course are manifold: at the head of each stands its peculiar and guiding Idea; and those Ideas are as regularly subordinate in dignity, as the paths to which they point are various and eccentric in direction. The world has suffered much, in modern times, from a subversion of the natural and necessary order of Science: from elevating the terrestrial, as it has been called, above the celestial; and from summoning Reason and Faith to the bar of that limited Physical experience, to which, by the true laws of Method, they owe no obedience. The subordination, of which we here speak, is not that which depends on immediate practical utility: for the utility of Human powers, in their practical application, depends on the circumstances of the moment; and at one time strength is essential to our very existence, at another time skill: and even Cæsar in a fever could cry,

Proper direction of Method.

> Give me some drink, Titinius,
> As a sick girl.

In truth there is scarcely any one of the powers or faculties with which the Divine Goodness has endowed his creatures, which may not in its turn be a source of paramount benefit and

usefulness; for every thing around us is full of blessings: nor is there any line of honest occupation in which we would dare to affirm, that by a proper exercise of the talent committed to his charge, an individual might not justly advance himself to highest praise. But we now allude to the subordination which necessarily arises among the different branches of Knowledge, according to the difference of those Ideas by which they are initiated and directed; for there is a gradation of Ideas, as of ranks in a well-ordered State, or of commands in a well-regulated army; and thus above all partial forms, there is one universal form of GOOD and FAIR, the *καλοκάγαθον* of the Platonic Philosophy. Hence the expressions of Lord Bacon, who in his great Work, the *Novum Organum*, speaks so much and so often of the *lumen siccum*, the pure light, which from a central focus, as it were, diffuses its rays all around, and forms a lucid sphere of Knowledge and of Truth.

Gradation of Ideas.

We distinguish Ideas into those of essential property, and those of natural existence; in other words, into Metaphysical and Physical Ideas. Metaphysical Ideas, or those which relate to the essence of things as possible, are of the highest class. Thus, in accurate language, we say, the *essence* of a circle, not its nature; because, in the conception of forms purely Geometrical, there is no expression or implication of their actual existence: and our reasoning upon them is totally independent of the fact, whether any such forms ever existed in Nature, or not. Physical Ideas are those which we mean to express, when we speak of the *nature* of a thing actually existing and cognizable by our faculties, whether the thing be material or immaterial, bodily or mental. Thus, the laws of memory, the laws of vision, the laws of vegetation, the laws of crystallisation, are all Physical Ideas, dependent for their accuracy, on the more or less careful observation of things actually existing.

Metaphysical and Physical Ideas.

In speaking of the word Nature, however, we must dis-

tinguish its two principal uses, *viz.* first, that to which we have adverted, and according to which it signifies whatever is requisite to the reality of a thing as existent, such as the nature of an animal or a tree, distinguished from the animal or tree itself: and secondly, the sum total of things, as far as they are objects of our senses. In the first of these two meanings, the word Nature conveys a Physical *Idea*, in the other only a material or sensible *Impression*.

Two uses of the word Nature.

Even natural substances, it is true, may be classed and arranged for various purposes, in a certain order. Such *mere* arrangement, however, is not properly Methodical, but rather a preparation toward Method; as the compilation of a Dictionary is a preparation for classical study.

Mere arrangement is not Method.

The limits of our present Essay will not allow us to do more than briefly to touch the chief topics of a general dissertation on Method; but enough we trust has here been said, to render intelligible the principles on which our Methodical Encyclopædia must be constructed. We have shown that a Method, which is at all comprehensive, must be founded on the *relations of things*: that those relations are of two sorts, according as they present themselves to the Human Mind as *necessary*, or merely as the result of *observation*. The former we have called relations of Law, the latter of Theory. Where the former alone are in question, the Method is one of necessary connection throughout; where the latter alone, though the connection be considered as one of cause and effect, yet the necessity is less obvious, and the connection itself less close. We have observed, that in the Fine Arts there is a sort of middle Method, inasmuch as the first and higher relations are necessary, the lower are only the results of observation. The great principles of all Method we have shown to be two, viz. *Union* and *Progression*. The relations of things cannot be united by accident: they are united by an *Idea* either definite

Summary.

Union and Progression are the principles of Method.

or instinctive. Their union, in proportion as it is clear, is also progressive. The state of Mind adapted to such progress holds a due mean between a passiveness under external impression, and an excessive activity of mere reflection; and the progress itself follows the path of the Idea from which it sets out; requiring, however, a constant wakefulness of Mind, to keep it within the due limits of its course. Hence the orbits of Thought, so to speak, must differ among themselves as the initiative Ideas differ; and of these latter, the great distinctions are into *Physical* and *Metaphysical*. Such, briefly, are the views by which we have been guided, in our present attempt to Methodize the great mass of Human Knowledge.

SECTION II.

ILLUSTRATION OF THE PRECEDING PRINCIPLES.

Test of the accuracy of the principles already stated.

THE Principles which have been exhibited in the preceding Section, and in respect to which we claim no other merit, than that of having drawn them from the purest sources of Philosophy, ancient and modern, are, we trust, sufficiently plain and intelligible in themselves; but as the most satisfactory mode of proving their accuracy, we proceed to illustrate them by a consideration of some particular studies, pursuits, and opinions; and by a reference to the general History of the Human Mind.

General importance of Method,

And first, as to the general importance of Method;—what need have we to dilate on this fertile topic? For it is not solely in the formation of the Human Understanding, and in the constructions of Science and Literature, that the employment of Method is indispensably necessary; but its importance is equally felt, and equally acknowledged, in the whole business and economy of active and domestic life. From the cottager's hearth or the workshop of the artisan, to the Palace or the Arsenal, the first merit, that which admits neither substitute nor equivalent, is, that *every thing is in its place.* Where this charm is wanting, every other merit either loses its name, or becomes an additional ground of accusation and regret. Of one, by whom it is eminently possessed, we say proverbially, that he is like clockwork. The resemblance extends beyond the point of regularity, and yet falls short of the truth. Both do, indeed, at once divide and announce the silent and otherwise

in the ordering of active and domestic life.

Character of the truly methodical man.

indistinguishable lapse of time; but the man of Methodical industry and honourable pursuits, does more; he realizes its ideal divisions, and gives a character and individuality to its moments. If the idle are described as killing time, he may be justly said to call it into life and moral being, while he makes it the distinct object not only of the consciousness, but of the conscience. He organizes the hours, and gives them a soul: and to that, the very essence of which is to fleet, and *to have been*, he communicates an imperishable and a spiritual nature. Of the good and faithful servant, whose energies, thus directed, are thus methodized, it is less truly affirmed, that he lives in Time, than that Time lives in him. His days, months, and years, as the stops and punctual marks in the records of duties performed, will survive the wreck of worlds, and remain extant when Time itself shall be no more.

Method in discourse the sign of mental power,

Let us carry our views a step higher. What is it that first strikes us, and strikes us at once in a man of education, and which, among educated men, so instantly distinguishes the man of superior Mind? Not always the weight or novelty of his remarks, nor always the interest of the facts which he communicates; for the subject of conversation may chance to be trivial, and its duration to be short. Still less can any just admiration arise from any peculiarity in his words and phrases; for every man of practical good sense will follow, as far as the matters under consideration will permit him, that golden rule of Cæsar—*Insolens verbum, tanquam scopulum, evitare.* The true cause of the impression made on us is, that his mind is

and of cultivated intellect.

methodical. We perceive this in the unpremeditated and evidently habitual arrangement of his words, flowing spontaneously and necessarily from the clearness of the leading Idea; from which distinctness of mental vision, when men are fully accustomed to it, they obtain a habit of foreseeing at the beginning of every instance how it is to end, and how all its

parts may be brought out in the best and most orderly succession. However irregular and desultory the conversation may happen to be, there is *Method* in the fragments.

Method in the performance of moral duty.

Let us once more take an example which must come "home to every man's business and bosom." Is there not a *Method* in the discharge of all our relative duties? And is not he the truly virtuous and truly happy man, who seizing first and laying hold most firmly of the great first Truth, is guided by that divine light through all the meandring and stormy courses of his existence? To him every relation of life affords a prolific *Idea* of duty; by pursuing which into all its practical consequences, he becomes a good servant or a good master, a good subject or a good sovereign, a good son or a good father; a good friend, a good patriot, a good Christian, a good man!

Method in speculation conducive to worldly interest in the promotion and regulation of useful discovery.

It cannot be deemed foreign from the purposes of our Disquisition, if we are anxious, before we leave this part of the subject, to attract the attention of our readers to the importance of speculative meditation (which never will be fruitful unless it be methodical) even to the *worldly* interests of mankind. We can recall no incident of human history that impresses the imagination more deeply than the moment, when Columbus, on an unknown ocean, first perceived that startling fact, the change of the magnetic needle! How many such instances occur in History, where the *Ideas* of Nature (presented to chosen minds by a Higher Power than Nature herself) suddenly unfold, as it were, in prophetic succession, systematic views destined to produce the most important revolutions in the state of Man! The clear spirit of Columbus was doubtless eminently *methodical*. He saw distinctly that great leading Idea, which authorized the poor pilot to become "a promiser of kingdoms:" and he pursued the progressive development of the mighty truth with an unyielding firmness, which taught him to "rejoice in lofty labours." Our readers will perhaps excuse us for

Columbus led to success by a guiding Idea.

quoting, as illustrative of what we have here observed, some lines from an Ode of Chiabrera's, which, in strength of thought and lofty majesty of Poetry, has but "few peers in ancient or in modern Song."

COLUMBUS.

In the strength of an Idea he conquers, at last, though long contemned both by Princes and the Populace.

Certo da cor, ch' alto destin non scelse,
Son l'imprese magnanime neglette;
Ma le bell' alme alle bell' opre elette
Sanno gioir nelle fatiche eccelse:
Nè biasmo popolar, frale catena,
Spirto d'onore, il suo cammin raffrena.
Così lunga stagion per modi indegni
Europa disprezzó l'inclita speme,
Schernendo il vulgo, e seco i Regi insieme,
Nudo nocchier, promettitor di Regni;
Ma per le sconosciute onde marine
L'invitta prora ei pur sospinse al fine.
Qual uom, che torni alla gentil consorte,
Tal ei da sua magion spiegò l'antenne;
L'ocean corse, e i turbini sostenne,
Vinse le crude immagini di morte;
Poscia, dell' ampio mar spenta la guerra,
Scorse la dianzi favolosa terra.
Allor dal cavo pin scende veloce,
E di grand' orma il nuovo mondo imprime;
Nè men ratto per l' aria erge sublime,
Segno del Ciel, l'insuperabil Croce;
E porge umile esempio, onde adorarla
Debba sua gente. CHIABRERA, P. I. 12.

An initiative or previous mental act indispensable in physical as well as in mathematical studies.

We do not mean to rest our argument on the general utility or importance of Method. Every Science and every Art attests the value of the particular principles on which we have above insisted. In Mathematics they will, doubtless, be readily admitted; and certainly there are many marked differences between mathematical and physical studies; but in both a previous act and conception of the mind, or what we have called an *initiative*, is indispensably necessary, even to the mere semblance of Method. In Mathematics, the definition *makes* the object, and pre-establishes the terms, which alone can occur in the after reasoning. If an existing circle, or what

is supposed to be such, be found not to have the radii from the centre to the circumference perfectly equal, it will in no manner affect the Mathematician's reasoning on the properties of circles; it will only prove that the figure in question is not a circle according to the previous definition. A Mathematical Idea, therefore, may be perfect. But the place of a perfect Idea cannot be exactly supplied, in the sciences of experiment and observation, by any theory built on generalization. For what shall determine the mind to one point rather than another; within what limits, and from what number of individuals, shall the generalization be made? The theory must still require a prior theory for its own legitimate construction. The Physical definition follows and does not precede the reasoning. It is representative, not constitutive, and is indeed little more than an abbreviature of the preceding observation, and the deductions therefrom. But as the observation, though aided by experiment, is necessarily limited and imperfect, the definition must be equally so. The history of theories, and the frequency of their subversion by the discovery of a single new fact, supply the best illustrations of this truth.

In Mathematics the perfect Idea *makes* the object, the definition *precedes* the reasoning.

In Physics the definition is representative, not constitutive, and *follows* the reasoning.

But in Experimental Philosophy, it may be said, how much do we not owe to accident? Doubtless: but let it not be forgotten, that if the discoveries so made stop there; if they do not excite some master IDEA; if they do not lead to some LAW; (in whatever dress of theory or hypothesis the fashions and prejudices of the time may disguise or disfigure it;) the discoveries may remain for ages limited in their uses, insecure and unproductive. How many centuries, we might have said millennia, have passed since the first accidental discovery of the attraction and repulsion of light bodies by rubbed amber, &c. Compare the interval with the progress made within less than a century, after the discovery of the *phænomena* that led immediately to a theory of ELECTRICITY. That here, as in

Discoveries of experimental Philosophy valueless, till they lead to some Law.

Electricity. many other instances, the theory was supported by insecure hypotheses; that by one theorist two heterogeneous fluids were assumed, the vitreous and the resinous; by another, a plus and minus of the same fluid; that a third considered it a mere modification of light; while a fourth composed the electrical aura of oxygen, hydrogen, and caloric: all this does but place the truth we have been insisting on in a stronger and clearer light. For, abstract from all these suppositions, or rather imaginations, that which is common to, and involved in them all; and there will remain neither notional fluid or fluids; nor chemical compounds, nor elementary matter,—but the Idea of *two—opposite—forces*, tending to rest by equilibrium. These are the sole factors of the calculus, alike in all the theories: these give the *Law* and with it the *Method* of arranging the *phænomena*. For this reason it may not be rash to anticipate the nearest approaches to a correct system of Electricity from those Philosophers, who, since the year 1798, have presented the Idea most distinctly as such, rejecting the hypothesis of any material substratum, and contemplating in all Electrical phenomena the operation of a Law which reigns through all Nature, viz. the law of *polarity*, or the manifestation of one power by opposite forces.

Magnetism. How great the contrast between Electricity and MAGNETISM! From the remotest antiquity, the attraction of iron by the magnet was known, and noticed; but century after century it remained the undisturbed property of poets and orators. The fact of the magnet, and the fable of the phœnix, stood on the same scale of utility, and by the generality of mankind, the latter was as much credited as the former, and considered far more interesting. In the XIIIth century, however, or perhaps earlier, the *polarity* of the magnet, and its communicability to iron, were discovered. We remain in doubt whether this discovery were accidental, or the result of theory; if the former,

the purpose which it soon suggested was so grand and important, that it may well be deemed the proudest trophy ever yet raised by accident in the service of mankind. But still it furnished no genuine *Idea;* it led to no *Law,* and, consequently, to no *Method:* though a variety of phenomena, as startling as they are at present mysterious, have forced on us a presentiment of its intimate connection with other great agencies of Nature. We would not be understood to assume the power of predicting to what extent, or in what directions, that connection may hereafter be traced; but amidst the most ingenious hypotheses that have yet been formed on the subject, we may notice that which, combining the three primary Laws of Magnetism, Electricity, and Galvanism,[1] considers them all as the results of one common power, essential to all material construction in the works of Nature. It is, perhaps, more an operation of the Fancy than of the Reason, which has suggested that these three material powers are analogous to the three dimensions of space. Hypothesis, be it observed, can never form the groundwork of a true scientific method, unless when the hypothesis is either a true *Idea* proposed in an hypothetical form, or at least the symbol of an Idea as yet unknown, of a Law as yet undiscovered; and in this latter case the hypothesis merely performs the function of an unknown quantity in Algebra, and is assumed for the purpose of submitting the *phænomena* to a scientific calculus. But to recur to the contrast presented by Electricity and Magnetism, in the rapid progress of the former, and the stationary condition of the latter: What is the cause of this diversity? Fewer theories, fewer hypotheses have not been advanced in the one than in the other; but the theories and fictions of the Electricians contained an *Idea,* and all the same Idea, which has necessarily led to METHOD;

Hypothesis which considers Magnetism, Electricity, and Galvanism as results of one power essential to all material construction.

[1] See the experiments of Coulomb, Brugmans, and Goethe. To which may be added, should they be confirmed, the curious observations on crystallisation, first made in Corsica, and since pursued in France.

implicit indeed, and only regulative hitherto, but which requires little more than the dismission of the imagery to become constitutive, like the Ideas of the Geometrician. On the contrary, the assumptions of the Magnetists (as, for instance, the hypothesis that the earth itself is one vast magnet, or that an immense magnet is concealed within it; or that there is a concentric globe within the earth, revolving on its own independent axis) are but repetitions of the same fact or *phænomenon*, looked at through a magnifying glass; the *reiteration* of the problem, not its solution. This leads to the important consideration, so often dwelt upon, so forcibly urged, so powerfully amplified and explained by our great countryman Bacon, that one fact is often worth a thousand. *Satis scimus*, says he, *axiomata recté inventa, tota agmina operum secum trahere.* Hence his indignant reprobation of the *vis experimentalis, cœca, stupida, vaga, prærupta!* Hence his just and earnest exhortations to pursue the *experimenta lucifera*, and those alone; discarding, for their sakes, even the *fructifera experimenta.* The Natural Philosopher, who cannot, or will not see, that it is the "enlightening" fact, which really causes all the others to *be* facts, in any Scientific sense—he who has not the head to comprehend, and the soul to reverence this parent experiment—he to whom the εὕρηκα is not an exclamation of joy and rapture, a rich reward for years of toil and patient suffering—to him no auspicious answer will ever be granted by the Oracle of Nature.

Importance of "the enlightening fact" which proclaims an Idea.

Zoology.

We have said that improgressive arrangement is not Method: and in proof of this we appeal to the notorious fact, that ZOOLOGY, soon after the commencement of the latter half of the last century, was falling abroad, weighed down and crushed as it were by the inordinate number and multiplicity of facts and *phænomena* apparently separate, without evincing the least promise of systematizing itself by any inward combination of its

parts. JOHN HUNTER, who had appeared, at times, almost a stranger to the grand conception, which yet never ceased to work in him, as his genius and governing spirit, rose at length in the horizon of Physiology and Comparative Anatomy. In his printed Works, the finest elements of system seem evermore to flit before him, twice or thrice only to have been seized, and after a momentary detention, to have been again suffered to escape. At length, in the astonishing preparations for his Museum, he constructed it, for the Scientific apprehension, out of the unspoken alphabet of Nature. Yet notwithstanding the imperfection in the annunciation of the Idea, how exhilarating have been the results! It may, we believe, be affirmed, with safety, that whatever is grandest in the views of CUVIER, is either a reflection of this light, or a continuation of its rays, well and wisely directed, through fit media, to its appropriate object.

From Zoology, or the laws of animal life, to BOTANY, or those of vegetable life, the transition is easy and Natural. In this pursuit, how striking is the necessity of a clear *Idea*, as initiative of all Method! How obvious the importance of attention to the conduct of the Mind in the exercise of Method itself! The lowest attempt at Botanical arrangement consists in an artificial classification of plants, for the preparatory purpose of a nomenclature; but even in this, some *antecedent* must have been contributed by the Mind itself; some *purpose* must be in view; or some question at least must have been proposed to Nature, grounded, as all questions are, upon *some* Idea of the answer. As for instance, the assumption, Botany.

That two great sexes animate the world.

For no man can confidently conceive a fact to be universally true who does not proportionally anticipate its necessity, and who does not believe that necessity to be demonstrable by an insight into its nature, whenever and wherever such insight

Obligations of Botany to Linnæus for a serviceable scheme of arrangement.

can be obtained. We acknowledge, we reverence, the obligations of Botany to LINNÆUS, who adopting from Bartholinus and others the sexuality of plants, grounded thereon a scheme of classific and distinctive marks, by which one man's experience may be communicated to others, and the objects safely reasoned on while absent, and recognized as soon as and wherever they occur. He invented an universal character for the Language of Botany, chargeable with no greater imperfections than are to be found in the alphabets of every particular Language. The first requisites in investigating the works of Nature, as in studying the Classics, are a proper Accidence and Dictionary; and for both of these Botany is indebted to the illustrious Swede. But the inherent necessity, the true *Idea* of Sex, was never fully contemplated by Linnæus, much less that of vegetation itself. Wanting these master-lights, he was not only unable to discern the collateral relations of the Vegetable to the Mineral and Animal Worlds; but even in respect to the doctrine which gives name and character to his system, he only avoided Scylla to fall upon Charybdis: and such must be the case of every one, who in this uncertain state of the initiative Idea, ventures to expatiate among the subordinate notions. If we adhere to the general notion of sex, as abstracted from the more obvious modes in which the sexual relation manifests itself, we soon meet with whole classes of plants to which it is found inapplicable. If, arbitrarily, we give it indefinite extension, it is dissipated into the barren truism, that all specific products suppose specific *means* of production. Thus a growth and a birth are distinguished by the mere verbal definition, that the latter is a whole in itself, the former not: and when we would apply even this to Nature, we are baffled by objects (the flower polypus, &c. &c.) in which each is the other. All that can be done by the most patient and active industry, by the widest and most continuous researches; all

that the amplest survey of the vegetable realm, brought under immediate contemplation by the most stupendous collections of species and varieties, can suggest; all that minutest dissection and exactest chemical analysis can unfold; all that varied experiment and the position of plants and their component parts in every conceivable relation to light, heat, and whatever else we distinguish as imponderable substances; to earth, air, water; to the supposed constituents of air and water, separate and in all proportions—in short, all that chemical agents and re-agents can disclose or adduce;—all these have been brought, as conscripts, into the field, with the completest accoutrement, in the best discipline, under the ablest commanders. Yet after all that was effected by Linnæus himself, not to mention the labours of Cæsalpinus, Ray, Gesner, Tournefort, and the other heroes who preceded the general adoption of the Sexual system, as the basis of artificial arrangement—after all the successive toils and enterprises of HEDWIG, JUSSIEU, MIRBEL, SMITH, KNIGHT, ELLIS, &c. &c.—what is BOTANY at this present hour? Little more than an enormous nomenclature; a huge catalogue, *bien arrangé*, yearly and monthly augmented, in various editions, each with its own scheme of technical memory and its own conveniences of reference! The innocent amusement, the healthful occupation, the ornamental accomplishment of *amateurs;* it has yet to expect the devotion and energies of the philosopher. Whether the *Idea* which has glanced across some minds, that the harmony between the Vegetable and Animal World is not a harmony of resemblance, but of contrast, may not lead to a new and more accurate Method in this engaging Science, it becomes us not here to determine: but should its objective truth be hereafter demonstrated by induction of facts in an unbroken series of correspondences in Nature, we shall then receive it as a *Law* of organic existence; and shall thence obtain another splendid proof, that with the knowledge of Law

alone dwell power and prophecy, decisive experiment, and scientific Method.

Chemistry. Such, too, is the case with the substances of the LABORATORY, which are assumed to be incapable of decomposition. They are mere exponents of some one Law, which the Chemical Philosopher, whatever may be his Theory, is incessantly labouring to discover. The Law, indeed, has not yet assumed the form of an Idea in his Mind; it is what we have called an Instinct; it is a pursuit after unity of principle, through a diversity of forms. Thus as "the lunatic, the lover, and the poet," suggest each other to Shakspeare's Theseus, as soon as his thoughts present to him the ONE FORM, of which they are but varieties; so water and flame, the diamond, the charcoal, and the mantling champagne, with its ebullient sparkles, are convoked and fraternized by the theory of the Chemist. This is, in truth, the first charm of Chemistry, and the secret of the almost universal interest excited by its discoveries. The serious complacency which is afforded by the sense of truth, utility, permanence, and progression, blends with and ennobles the exhilarating surprise and the pleasurable sting of curiosity, which accompany the propounding and the solving of an enigma. It is the sense of a principle of connection given by the mind, and sanctioned by the correspondency of Nature. Hence the strong hold which in all ages Chemistry has had on the imagination. If in the greatest poets we find Nature idealized through the creative power of a profound yet observant meditation, so through the meditative observation of a DAVY, a WOLLASTON, a HATCHETT, or a MURRAY,

> By some connatural force,
> Powerful at greatest distance to unite
> With secret amity things of like kind,

we find poetry, as it were, substantiated and realized.

This consideration leads us from the paths of Physical

Science into a region apparently very different. Those who tread the enchanted ground of POETRY, oftentimes do not even suspect that there is such a thing as *Method* to guide their steps. Yet even here we undertake to show that it not only has a necessary existence, but the strictest Philosophical application; and that it is founded on the very Philosophy which has furnished us with the Principles already laid down. It may surprise some of our readers, especially those who have been brought up in Schools of foreign taste, to find that we rest our proof of these assertions on one single evidence, and that that evidence is SHAKSPEARE, whose Mind they have, probably, been taught to consider as eminently *immethodical.* In the first place, Shakspeare was not only endowed with great native genius, (which indeed he is commonly allowed to have been,) but what is less frequently conceded, he had much acquired knowledge. "His information," says Professor WILDE, "was great and extensive, and his reading as great as his knowledge of Languages could reach. Considering the bar which his education and circumstances placed in his way, he had done as much to acquire knowledge as even Milton. A thousand instances might be given of the intimate knowledge that Shakspeare had of facts. I shall mention only one. I do not say, he gives a good account of the Salic law, though a much worse has been given by many antiquaries. But he who reads the Archbishop of Canterbury's speech in *Henry the Fifth,* and who shall afterwards say that Shakspeare was not a man of great reading and information, and who loved the thing itself, is a person whose opinion I would not ask or trust upon any matter of investigation." Then was all this reading, all this information, all this knowledge of our great dramatist, a mere *rudis indigestaque moles?* Very far from it. Method, we have seen, demands a knowledge of the relations which things bear to each other, or to the observer, or to the state and

Poetry capable of Method,

evidenced in the plays of Shakspeare.

Shakspeare's knowledge methodized by his perception of relations.

apprehension of the hearers. In all and each of these was Shakspeare so deeply versed, that in the personages of a play, he seems "to mould his mind as some incorporeal material alternately into all their various forms."[2] In every one of his various characters we still feel ourselves communing with the same human nature. Everywhere we find individuality: nowhere mere portrait. The excellence of his productions consists in a happy union of the universal with the particular. But the universal is an *Idea*. Shakspeare, therefore, studied mankind in the *Idea* of the human race; and he followed out that Idea into all its varieties, by a *Method* which never failed to guide his steps aright. Let us appeal to him to illustrate, by example, the difference between a sterile and an exuberant mind, in respect to what we have ventured to call the Science of Method. On the one hand observe Mrs. Quickly's relation of the circumstances of Sir John Falstaff's debt:—

Comparison of Mrs. Quickly's relation of Falstaff's debt, with

FALSTAFF. What is the gross sum that I owe thee?

Mrs. QUICKLY. Marry, if thou wert an honest man, thyself and the money too. Thou didst swear to me upon a parcel-gilt goblet, sitting in my dolphin chamber, at the round table, by a sea-coal fire, on Wednesday in Whitsun week, when the prince broke thy head for likening his father to a singing man in Windsor—thou didst swear to me then, as I was washing thy wound, to marry me and make me my lady thy wife. Canst thou deny it? Did not goodwife Keech, the Butcher's wife, come in then and call me gossip Quickly?—coming in to borrow a mess of vinegar: telling us she had a good dish of prawns—whereby thou didst desire to eat some—whereby I told thee they were ill for a green wound," &c. &c. &c.

(*Henry IV. P. I. Act II. Scene I.*)

On the other hand consider the narration given by Hamlet to Horatio, of the occurrences during his proposed transportation to England, and the events that interrupted his voyage. (*Act V. Scene II.*)

a narration of Hamlet to Horatio.

HAM. Sir, in my heart there was a kind of fighting
That would not let me sleep: methought I lay
Worse than the mutines in the bilboes. Rashly,
And prais'd be rashness for it——*Let us know*,

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[2] ὁ τὴν ἑαυτοῦ ψυχὴν ὥσει ὕλην τινα ἀσώματον μορφαῖς ποικιλαῖς μορφώσας. THEMISTIUS.

Our indiscretion sometimes serves us well,
When our deep plots do fail: and that should teach us
There's a Divinity that shapes our ends,
Rough-hew them how we will.

HOR. That is most certain.

HAM. Up from my cabin,
My sea-gown scarf'd about me, in the dark
Grop'd I to find out them; had my desire;
Finger'd their packet; and, in fine, withdrew
To my own room again: making so bold,
My fears forgetting manners, to unseal
Their grand commission; where I found, Horatio,
A royal knavery—an exact command,
Larded with many several sorts of reasons,
Importing Denmark's health, and England's too,
With ho! such bugs and goblins in *my* life,
That on the supervise, no leisure bated,
No, not to stay the grinding of the axe,
My head should be struck off!

HOR. Is't possible?

HAM. Here's the commission.—Read it at more leisure.
I sat me down;
Devis'd a new commission; wrote it fair.
I once did hold it, as our statists do,
A baseness to write fair, and labour'd much
How to forget that learning; but, sir, now
It did me yeoman's service. Wilt thou know
The effect of what I wrote?

HOR. Ay, good my lord.

HAM. An earnest conjuration from the king,
As England was his faithful tributary;
As love between them, like the palm, might flourish;
As peace should still her wheaten garland wear,
And many such like As's of great charge—
That, on the view and knowing of these contents,
He should the bearers put to sudden death,
No shriving time allowed.

HOR. How was this sealed?

HAM. Why, even in that was heaven ordinant.
I had my father's signet in my purse,
Which was the model of that Danish seal:
Folded the writ up in the form of the other;
Subscribed it; gave't the impression; plac'd it safely,
The changeling never known. Now, the next day
Was our sea-fight; and what to this was sequent
Thou knowest already.

Both discourses immethodical in form.

If, overlooking the different value of the matter in these two narrations, we consider only the form, it must be confessed that both are *immethodical*. We have asserted that Method results from a balance between the passive impression received from outward things, and the internal activity of the mind in reflecting and generalizing; but neither Hamlet nor the Hostess holds this balance accurately. In Mrs. Quickly, the memory alone is called into action, the objects and events recur in the narration in the same order, and with the same accompaniments, however accidental or impertinent, as they had first occurred to the narrator. The necessity of taking breath, the efforts of recollection, and the abrupt rectification of its failures, produce all her pauses, and constitute most of her connections.

That of Mrs. Quickly wants order resulting from the power of thought.

That of Hamlet governed by reflection.

But when we look to the Prince of Denmark's recital the case is widely different. Here the events, with the circumstances of time and place, are all stated with equal compression and rapidity; not one introduced which could have been omitted without injury to the intelligibility of the whole process. If any tendency is discoverable, as far as the mere facts are in question, it is to omission: and accordingly the reader will observe that the attention of the narrator is called back to one material circumstance, which he was hurrying by, by a direct question (HOW WAS THIS SEALED?) from the friend to whom the story is communicated. But by a trait, which is indeed peculiarly characteristic of Hamlet's mind, ever disposed to generalize, and meditative to excess, all the digressions and enlargements consist of reflections, truths, and principles of general and permanent interest, either directly expressed or disguised in playful satire.

Instances of the want of generalization are of no rare occurrence; and the narration of Shakspeare's Hostess differs from those of the ignorant and unthinking in ordinary life, only by its superior humour, the poet's own gift and infusion, not by

its want of Method, which is not greater than we often meet with in that class of minds of which she is the dramatic representative. Nor will the excess of generalization and reflection have escaped our observation in real life, though the great Poet has more conveniently supplied the illustrations. In attending too exclusively to the relations which the past or passing events and objects bear to general truth, and the moods of his own mind, the most intelligent man is sometimes in danger of overlooking that other relation, in which they are likewise to be placed to the apprehension and sympathies of his hearers. His discourse appears like soliloquy intermixed with dialogue. But the uneducated and unreflecting talker overlooks *all* mental relations, and consequently precludes all Method that is not purely accidental. Hence, the nearer the things and incidents in time and place, the more distant, disjointed, and impertinent to each other, and to any common purpose, will they appear in his narration: and this from the absence of any leading thought in the narrator's own mind. On the contrary, where the habit of Method is present and effective, things the most remote and diverse in time, place, and outward circumstance, are brought into mental contiguity and succession, the more striking as the less expected. But while we would impress the necessity of this habit, the illustrations adduced give proof that in undue preponderance, and when the prerogative of the mind is stretched into despotism, the discourse may degenerate into the wayward, or the fantastical.

The Hostess' want of method common in real life.

Shakspeare needed not to read Horace in order to give his characters that Methodical *Unity* which the wise Roman so strongly recommends:—

Consistency of Shakspeare's characters.

> Si quid inexpertum scenæ committis, et audes
> Personam formare novam; servetur ad imum
> Qualis ab incœpto processerit, et sibi constet.

But this was not the only way in which he followed an accurate Philosophic Method: we quote the expressions of SCHLE-

His just exhibition of Passion arose from the contemplation of Ideas.

GEL, a foreign critic of great and deserved reputation:—"If Shakspeare deserves our admiration for his characters, he is equally deserving of it for his exhibition of *Passion*, taking this word in its widest signification as including every mental condition, every tone, from indifference or familiar mirth to the wildest rage and despair. He gives us the history of minds: *he lays open to us, in a single word, a whole series of preceding conditions.*" This last is a profound and exquisite remark: and it necessarily implies, that Shakspeare contemplated *Ideas*, in which alone are involved conditions and consequences *ad infinitum*. Purblind critics, whose mental vision could not reach far enough to comprise the whole dimensions of our poetical Hercules, have busied themselves in measuring and spanning him muscle by muscle, till they fancied they had discovered some disproportion. There are two answers applicable to most of such remarks. First, that Shakspeare understood the true language and external workings of Passion better than his critics. He had a higher, and a more Ideal, and consequently a more Methodical sense of harmony than they. A very slight knowledge of Music will enable any one to detect discords in the exquisite harmonies of HAYDN or MOZART; and Bentley has found more false grammar in the PARADISE LOST than ever poor boy was whipped for through all the forms of Eton or Westminster; but to know why the minor note is introduced into the major key, or the nominative case left to seek for its verb, requires an acquaintance with some preliminary steps of the Methodical scale, at the top of which sits the author, and at the bottom the critic. The second answer is, that Shakspeare was pursuing two Methods at once; and besides the Psychological[3] Method, he had also to attend to the

Condemnatory criticisms on Shakspeare answered.

His Methods, poetical and psychological.

[3] We beg pardon for the use of this *insolens verbum;* but it is one of which our Language stands in great need. We have no single term to express the Philosophy of the Human Mind: and what is worse, the Principles of that Philosophy are commonly called *Metaphysical*, a word of very different meaning.

Poetical. Now the Poetical Method requires above all things a preponderance of pleasurable feeling: and where the interest of the events and characters and passions is too strong to be continuous without becoming painful, there Poetical Method requires that there should be what Schlegel calls "a musical alleviation of our sympathy." The Lydian mode must temper the Dorian. This we call Method.

We said that Shakspeare pursued two Methods. Oh! he pursued many, many more—"both oar and sail"—and the guidance of the helm, and the heaving of the lead, and the watchful observation of the stars, and the thunder of his grand artillery. What shall we say of his Moral conceptions? Not made up of miserable clap-traps, and the tag-ends of mawkish Novels and endless sermonizing;—but furnishing lessons of profound meditation to frail and fallible Human Nature. He shows us Crime and Want of Principle clothed not with a spurious greatness of soul, but with a force of intellect which too often imposes but the more easily on the weak, misjudging multitude. He shows us the innocent mind of Othello plunged by its own unsuspecting, and therefore unwatchful confidence, into guilt and misery not to be endured. Look at Lear, look at Richard, look in short at every Moral picture of this mighty Moralist! Whoso does not rise from their attentive perusal "a sadder and a wiser man"—let him never dream that he knows anything of Philosophical Method.

Shakspeare's moral conceptions guided by philosophical method.

Nay, even in his style, how Methodical is our "sweet Shakspeare." Sweetness is, indeed, its predominant characteristic; and it has a few immethodical luxuriances of wit; and he may occasionally be convicted of words, which convey a volume of thought, when the business of the scene did not absolutely require such deep meditation. But pardoning him these *dulcia vitia*, who ever fashioned the English Language, or any Language, ancient or modern, into such variety of appro-

His style methodical.

priate apparel, from "the gorgeous pall of scepter'd tragedy," to the easy dress of flowing pastoral?

> More musical than lark to shepherd's ear,
> When wheat is green and hawthorn buds appear.

Who, like him, could so Methodically suit the very flow and tone of discourse to characters lying so widely apart in rank, and habits, and peculiarities, as Holofernes and Queen Katharine, Falstaff and Lear? When we compare the pure English style of Shakspeare with that of the very best writers of his day, we stand astonished at the *Method* by which he was directed in the choice of those words and idioms, which are as fresh now as in their first bloom; nay, which are at the present moment at once more energetic, more expressive, more natural, and more elegant, than those of the happiest and most admired living speakers or writers.

But Shakspeare was "not Methodical in the structure of his Fable." Oh, gentle critic! be advised. Do not trust too much to your professional dexterity in the use of the scalping knife and tomahawk. Weapons of diviner mould are wielded by your adversary: and you are meeting him here on his own peculiar ground, the ground of *Idea*, of Thought, and of inspiration. The very point of this dispute is Ideal. The question is one of *Unity:* and Unity, as we have shown, is wholly the subject of Ideal law. There are said to be three great Unities which Shakspeare has violated; those of Time, Place, and Action. Now the Unities of Time and Place we will not dispute about. Be ours the Poet,

Shakspeare's alleged violation of the Unities examined.

> *qui pectus inaniter angit*
> *Irritat, mulcet, falsis terroribus implet*
> *Ut magus, et* modo me Thebis, modo ponit Athenis.

The Dramatist who circumscribes himself within that Unity of Time which is regulated by a stop-watch, may be exact, but is not Methodical; or his Method is of the least and lowest class. But

> Where is he living clipt in with the sea,
> That chides the banks of England, Wales, or Scotland,

who can transpose the scenes of Macbeth, and make the seated heart knock at the ribs with the same force as now it does, when the mysterious tale is conducted from the open heath, on which the Weird Sisters are ushered in with thunder and lightning, to the fatal fight of Dunsinane, in which their victim expiates with life, his credulity and his ambition? To the disgrace of the English Stage, such attempts have, indeed, been made on almost all the Dramas of Shakspeare. Scarcely a season passes which does not produce some ὕστερον πρότερον of this kind, in which the mangled limbs of our great Poet are thrown together "in most admired disorder." There was once a noble Author, who, by a refined species of murder, cut up the play of Julius Cæsar into two good set Tragedies. Voltaire, we believe, had the grace to make but one of it; but whether his Brutus be an improvement on the model from which it was taken, we trust, after what we have already said, we shall hardly be expected to discuss.

Poetry owes its whole charm to Method.

Thus we have seen that Shakspeare's mind, rich in stores of acquired knowledge, commanded all these stores and rendered them disposable, by means of his intimate acquaintance with the great laws of Thought, which form and regulate Method. We have seen him exemplifying the opposite faults of Method in two different characters; we have seen that he was himself Methodical in the delineation of character, in the display of Passion, in the conceptions of Moral Being, in the adaptations of Language, in the connection and admirable intertexture of his ever-interesting Fable. Let it not after this be said that Poetry—and under the word Poetry we will now take leave to include all the Works of the higher Imagination, whether operating by measured sound, or by the harmonies of form and colour, or by words, the more immediate and universal repre-

sentatives of Thought—is not strictly Methodical; nay, does not owe its whole charm, and all its beauty, and all its power, to the Philosophical Principles of Method.

Philosophy wholly conversant with Method.

But what of Philosophy herself? Shall she be exempted from the Laws, which she has imposed on all the rest of the known Universe? *Longe absit!* To Philosophy properly belongs the EDUCATION of the Mind: and all that we have hitherto said may be regarded as an indication (we have room for no more) of the chief Laws and regulative Principles of that education. Philosophy, the "Parent of Life," according to the expression of the wise Roman Orator; the "Mother of Good Deeds and of Good Sayings," the "Medicine of the Mind," is herself wholly conversant with Method.

True it is that the Ancients, as well as the Moderns, had their machinery for the extemporaneous coinage of intellect, by means of which the scholar was enabled *to make a figure* on any and all subjects, on any and all occasions. They too had their glittering vapours, which (as the Comic Poet tells us) fed a host of Sophists—

> μεγάλαι θεαὶ ἀνδράσιν ἀργοῖς,
> αἵπερ γνώμην καὶ διάλεξιν καὶ νοῦν ἡμῖν παρέχουσι,
> καὶ τερατείαν, καὶ περίλεξιν, καὶ κροῦσιν, καὶ κατάληψιν.
> ΑΡΙΣΤΟΦ. Νεφ. 316.

> Great goddesses are they to lazy folks,
> Who pour down on us gifts of fluent speech,
> Sense most sententious, wonderful fine *effect*,
> And how to talk about it and about it,
> Thoughts brisk as bees, and pathos soft and thawy.

But the Philosophers held a course very different from that of the Sophists. We shall not trouble our readers with a comparative view of many Systems, but we shall present to their admiration one mighty Ancient, and one illustrious Modern, PLATO and BACON. These two varieties will sufficiently exemplify the species.

Of PLATO'S Works, the larger and more valuable portion

have all one common end, which comprehends and shines through the particular purpose of each several Dialogue; and this is, to establish the sources, to evolve the Principles, and to exemplify the Art of METHOD. This is the clue, without which it would be difficult to exculpate the noblest productions of the "Divine" Philosopher from the charge of being tortuous and labyrinthine in their progress, and unsatisfactory in their ostensible results. The latter, indeed, appear not seldom to have been drawn, for the purpose of starting a new problem, rather than of solving the one proposed as the subject of previous discussion. But with the clear insight that the purpose of the writer is not so much to establish any particular truth, as to remove the obstacles, the continuance of which is preclusive of all truth, the whole scheme assumes a different aspect, and justifies itself in all its dimensions. We see that the EDUCATION of the Intellect, by awakening the *Method* of self-developement, was his proposed object, not any specific information that can be *conveyed into it* from without. He desired not to assist in storing the passive Mind with the various sorts of knowledge most in request, as if the Human Soul were a mere repository, or banqueting-room, but to place it in such relations of circumstance as should gradually excite its vegetating and germinating powers to produce new fruits of Thought, new Conceptions, and Imaginations, and Ideas. Plato was a Poetic Philosopher, as Shakspeare was a Philosophic Poet. In the Poetry, as well as in the Philosophy, of both, there was a necessary predominance of Ideas; but this did not make them regardless of the actual existences around them. They were not visionaries, nor mystics; but dwelt in "the sober certainty" of waking knowledge. It is strange, yet characteristic of the spirit that was at work during the latter half of the last century, that the writings of PLATO should be accused of estranging the Mind from plain experience and substantial *matter-of-fact,* and of debauching it

Plato taught the art of Method.

Plato wrongfully accused of neglecting fact and experience.

by fictions and generalities. Plato, whose Method is inductive throughout, who argues on all subjects not only *from*, but *in* and *by*, inductions of facts! who warns us, indeed, against the usurpation of the Senses, but far oftener, and with more unmitigated hostility, pursues the assumptions, abstractions, generalities, and verbal legerdemain of the Sophists. Strange! but still more strange, that a notion so groundless should be entitled to plead in its behalf the authority of Lord BACON, whose scheme of Logic, as applied to the contemplation of Nature, is Platonic throughout! It is necessary that we should explain this circumstance at some length, in order to establish, by the concurrence of authorities, vulgarly supposed to be contradictory, the truth of a System which we have already maintained on so many other grounds.

Bacon.

What Lord Bacon was to England, Cicero was to Rome—the first and most eloquent advocate of Philosophy. It is needless to remind the classical scholar of that almost religious veneration with which the accomplished Roman speaks of Plato, whom indeed he calls, in one instance, *deus ille noster*, and in other places "the Homer of Philosophers;" their "Prince;" the "most weighty of all who ever spoke, or ever wrote;" "most wise, most holy, divine." This last appellation, too, it is well known, long remained, even among Christians, as a distinguishing epithet of the great ornament of the Socratic School. Why Bacon should have spoken detractingly of such a man,—why he should have stigmatized him with the name of "Sophist," and described his Philosophy (with the tyrant Dionysius), as *verba otiosorum senum ad imperitos juvenes*, it is much easier to explain than to justify, or even to palliate. He was, perhaps, influenced in part by the tone given to thinking Minds by the Reformation; the founders and fathers of which saw in the Aristotelians, or Schoolmen, the antagonists of Protestantism, and in the Italian Platonists (as they conceived) the

His depreciation of Plato.

secret enemies of Christianity itself. In part, too, Bacon may have formed his notions of Plato's doctrines from the absurdities of his misinterpreters, rather than from an unprejudiced and diligent study of his Works. Be it remembered, however, that this unfairness was not less manifested to his contemporaries; that his treatment of GILBERT was cold, invidious, and unjust; and that he seems to have disdained to learn either the existence or the name of Shakspeare. At this conduct no one can be surprised who has studied the life of this

wisest, brightest, meanest of mankind.

But our present business is not with his weaknesses, or his failings, but with those Philosophical Principles which, especially as displayed in the *Novum Organum,* have deservedly obtained for him the veneration of succeeding Ages.

Those who talk superficially about Bacon's Philosophy, that is to say, nineteen-twentieths of those who talk about it at all, know little more than his induction, and the application which he makes of his own Method to particular classes of Physical facts; applications which are at least as crude, for the Age of Gilbert, Galileo, and Kepler, as were those of Aristotle (whom he so superciliously reprehends) for the Age of Philip and Alexander. Or they may, perhaps, have been struck with his recommendation of tabular collections of particulars, and hence have placed him at the head of a Body of men, but too numerous in modern days—the Minute Philosophers. We need scarcely say that this is venturing his reputation on a very tottering basis. Let any unprejudiced Naturalist turn to Bacon's questions and proposals for the investigation of single problems; to his "Discourse on the Winds;" or to what may almost be called a caricature of his scheme, in the "Method of improving Natural Philosophy," by ROBERT HOOKE[4] (the

The Minute Philosophers.

[4] We refer particularly to p. 22 to 42 of the above-mentioned Work; and we would, above all, notice the following admirable specimen of confused and dis-

history of whose Philosophical life is alone a sufficient answer to all such schemes)—and then let him fairly say whether any desirable end could reasonably be hoped for, from this process—whether by this mode of research any important discovery ever was made, or ever could be made? Bacon, indeed, always takes care to tell us that the sole purpose and object of collecting together these particulars is to concentrate them, by careful selection, into universals; but so immense is their number, and so various and almost endless the relations in which each is to be separately considered, that the life of an antediluvian Patriarch would be expended, and his strength and spirits wasted, long before he could commence the process of simplification, or arrive in sight of the Law, which was to reward the toils of the over-tasked PSYCHE.[5]

orderly minuteness:—"The history of potters, tobacco-pipe-makers, glaziers, glass-grinders, looking-glass-makers or foilers, spectacle-makers and optic-glass makers, makers of counterfeit pearl and precious stones, bugle-makers, lamp-blowers, colour-makers, colour-grinders, glass-painters, enamellers, varnishers, colour-sellers, *painters*, *limners*, *picture-drawers*, *makers of baby-heads*, *of little bowling stones or marbles*, fustian-makers, (query, whether *Poets* are included in this trade?) music-masters, tinsey-makers, and taggers;—the history of school-masters, writing-masters, printers, book-binders, stage-players, dancing-masters, and vaulters, *apothecaries*, *chirurgeons*, *seamsters*, *butchers*, *barbers*, *laundresses*, *and cosmetics!* &c. &c. &c. (the true nature of each of which being exactly determined,) WILL HUGELY FACILITATE OUR INQUIRIES IN PHILOSOPHY!!!"

In parallel, or rather in contrast, with the advice of Mr. Robert Hooke, may be fairly placed that of the celebrated Dr. WATTS, which was thought by Dr. Knox to be worthy of insertion in the *Elegant Extracts*, vol. ii. p. 456, under the head of

DIRECTIONS CONCERNING OUR IDEAS.

"Furnish yourselves with *a rich variety of Ideas.* Acquaint yourselves with *things* ancient and modern, *things* Natural, Civil, and Religious; *things* of your native land, and of foreign countries; *things* domestic and national; *things* present, past, and future; and above all, be well acquainted with God and yourselves; with animal nature, and the workings of your own spirits. *Such a general acquaintance with things will be of very great advantage.*"

[5] See the beautiful allegoric tale of Cupid and Psyche in the original of Apuleius. The tasks imposed on the hapless nymph, through the jealousy of her mother-in-law, and the agency by which they are at length self-performed, are noble instances of that hidden wisdom "where more is meant than meets the ear!"

Had Bacon done no more than propose these impracticable projects, we should have been far from sharing the sentiments of respect everywhere attached to his Philosophical character. But he has performed a task of infinitely greater importance, by constructing that Methodical System, which is so elegantly developed in the *Novum Organum.* It is this which we propose to compare with the Principles long before enunciated by Plato. In both cases the inductions are frequently as crude and erroneous as might readily be anticipated from the infant state of Natural History, Chemistry, and Physiology, in their several Ages. In both cases the proposed applications are often impracticable; but setting aside these considerations, and extracting from each writer that which constitutes his true Philosophy, we shall be convinced that it is identical, in regard to the Science of Method, and to the grounds and conditions of that Science. We do not see, therefore, how we can more appropriately conclude this section of our inquiry than by a brief statement of our renowned Countryman's own Principles of Method, conveyed, for the greater part, in his own words; or in what more precise form we can recapitulate the substance of the doctrines asserted and vindicated in the preceding pages. For we rest our strongest pretensions to approbation on the fact, that we have only re-proclaimed the coinciding precepts of the Athenian Verulam and the British Plato.

Bacon's Novum Organum.

In the first instance, Lord Bacon, equally with ourselves, demands, as the motive and guide of every Philosophical experiment, what we have ventured to call the intellectual or mental *initiative;* namely, some well-grounded purpose, some distinct impression of the probable results, some self-consistent anticipation, the ground of the *prudens quæstio,* (the forethoughtful inquiry,) which he affirms to be the prior *half* of the knowledge sought, *dimidium scientiæ.* With him, therefore, as with us, an *Idea* is an experiment proposed, an experiment is an Idea

The common System of Plato and Bacon.

realized. For so he himself informs us:—*Neque scientiam molimur tam sensu, vel instrumentis, quam* experimentis; *etenim experimentorum longe major est subtilitas, quam sensus ipsius, licet instrumentis exquisitis adjuti. Nam de iis loquimur experimentis, quæ, ad intentionem ejus quod quæritur, perite, et secundum artem excogitata et apposita sunt. Itaque perceptioni sensus immediatæ et propriæ* non multum tribuimus: *sed eo rem deducimus, ut* sensus tantum de experimento, experimentum de re judicet. The meaning of this last sentence is intelligible enough, though involved in antithesis, merely because Bacon did not possess, like Shakspeare, a good Method in his style. What he means to say is, that we can apprehend, through the organs of sense, only the sensible phænomena produced by the experiment; but by the mental power, in virtue of which we shaped the experiment, we can determine the true *import* of the *phænomena.*

Bacon's Idols of the Mind.

Now, he had before said, that he was speaking only of those experiments, which were skilfully adapted to the intention or purpose of him who conducted the research. But what is it that forms the intention, or purpose, and adapts thereto the experiment? What Bacon calls *lux intellectús; viz.* the Understanding of the individual man, who makes the experiment. This light, however, as he argues at great length, is obscured by *Idols,* which are false and spurious notions. His peculiar use of the word Idols is again a proof of faulty Method in his style, for it gives a sort of pedantic air to his reasonings; but, in truth, he means no more by it than what Plato means by *Opinion,* (δόξα,) which the latter calls "a medium between knowledge and ignorance." So, Bacon distinguishes the Idols of the Mind into various kinds, (*Idola specus, tribus, fori, theatri,*) that is, Opinions derived from the passions, prejudices, and peculiar habits of each man's Understanding: and as these Idols, or Opinions, confessedly produce a sort of mental obscu-

rity, or blindness, so the ancient and the modern master of Philosophy both agree in prescribing remedies and operations calculated to remove this disease; to couch the "Mind's eye," and to restore it to the enjoyment of a purer vision. Bacon establishes an unerring criterion between the Ideas and the Idols of the Mind; namely, that the latter are empty notions, but the former are the very seals and impresses of Nature; that is to say, they always fit and cohere with those classes of things to which they belong; as the Idea of a circle fits and coheres with all true circles. His words are these: *Non leve quiddam interest inter humanæ Mentis* Idola, *et divinæ Mentis* Ideas, *hoc est, inter placita quædam inania, et veras signaturas atque impressiones factas in creaturis, prout ratione sanâ et sicci luminis, quam, docendi causâ, interpretem Naturæ vocare consuevimus, inveniuntur.*—Novum Organum, xxiii. and xxvi.

Difference between Ideas and empty notions.

Some Idols, says Bacon, are adventitious to the Mind; others innate. And here, we may observe, that he goes somewhat further than the mere doctrine of innate Ideas, by holding that of innate Idols. However, we say not this in disparagement of his *system*, which is clear and correct; nor, on the other hand, do we mean to espouse all its *parts*, which must be left to speak for themselves. What he means by innate Idols, he thus illustrates:—not only do the rays of Truth, from without, fall obliquely on the mirror of the Mind, but that mirror itself is not pure and plane; it discolours, it magnifies, it diminishes, it distorts. Hence, he uses the words *intellectus humanus, mens hominis*, &c. in a sense now peculiar, but in his day conformable to the language of the Schools, to signify not Intellect in general, or Mind in its perfection, but the Intellect or Mind of man, weakened and corrupted, as it is, more or less, in every individual. A necessary consequence of this corruption, is the arrogance which leads Man to take the forms and mechanism

of his own reflective faculty as the measure of Nature and of the Deity. Of all Idols, or of all Opinions, this is the most difficult to remedy or extirpate; and therefore, in this view, the Intellect of Man is more prone to error than even his Senses. Such is the sound and incontrovertible doctrine of Bacon; but herein he does no more than repeat what both Plato and Heraclitus had long before urged with most impressive argument. The forms of the reflective faculty are *subjective;* the truths to be embraced are *objective:* but according to Plato, as well as to Bacon, there can be no hope of any fruitful and secure *Method,* so long as forms, merely subjective, are arbitrarily assumed to be the moulds of objective Truth, the seals and impresses of Nature.

Bacon's way of rectifying the Human Intellect.

What then! Does Bacon abandon the hope of rectifying the obliquities of the Human Intellect; or does he suggest, that they will be remedied by the casual operation of external impressions? Neither of these. He considers that its weaknesses and imperfections require to be strengthened and made perfect by a higher power; and that this is possible to be done. He supposes, that the Intellect of the individual, or *homme particulier,* may be refined by the Intellect of the Ideal Man, or *homme général.* He assumes, that as the evidence of the Senses is corrected by the Judgment, so the evidence of the Judgment, beset with Idols, may be corrected by the Judgment, walking in the light of Ideas. It is surely superfluous to urge, that this corrector and purifier of all reasoning, this inextinguishable Pole-star—

> Which never in the ocean waves was wet:

whether it be called, as by Bacon, *lumen siccum,* or as by Plato, *νοῦς,* or *φῶς νοερὸν,* is one and the same light of *Truth,* the indispensable condition of all pure Science, contemplative or experimental. Hence, it will not surprise us, that Plato so often denominates Ideas living *Laws,* in and by which the

Mind has its whole true being and permanence; or that Bacon, *vice versâ*, names the Laws of Nature, *Ideas;* and represents the great leading facts of Science as signatures, impressions, and symbols of those Ideas. A distinguishable power self-affirmed, and seen in its unity with the Eternal Essence, is, according to Plato, an IDEA: and the discipline by which the Human Mind is purified from its Idols, and raised to the contemplation of Ideas, and thence to the secure and progressive investigation of truth and reality, by Scientific Method, comprehends what the same Philosopher so highly extols, under the title of *Dialectic.* According to Lord Bacon, as describing the same Truth, applied to Natural Philosophy, an Idea would be defined as—*Intuitio, sive inventio, quæ in perceptione sensus non est (ut quæ puræ et sicci luminis Intellectioni sit propria) Idearum Divinæ Mentis, prout in creaturis, per signaturas suas, sese patefaciant.* "That," saith the judicious HOOKER, "which doth assign to each thing the kind, that which determineth the force and power, that which doth appoint the form and measure of working, the same we term a LAW."

Difference between Plato and Bacon.

From all that has been said, it seems clear, that the only difference between Plato and Bacon was, that, to speak in popular language, the one more especially cultivated Natural Philosophy, the other Metaphysics. Plato treated principally of Truth, as manifested in the world of Intellect; Bacon of the same Truth, as manifested in the world of Sense; but far from disagreeing, as to the mode of attaining that Truth, far from differing in their great views of the *education of the Mind,* they both proceeded on the same principles of *unity* and *progression;* and consequently both cultivated alike the *Science of Method,* such as we have here described it. If we are correct in these statements, then may we boast to have solved the great problem of conciliating ancient and modern Philosophy.

Historical view.

That the *Method*, of which we have hitherto treated, is not arbitrarily assumed in any, or all of the pursuits, to which we have adverted; nor is peculiar to these in particular, but is founded in the Laws and necessary conditions of Human existence, is further to be inferred from a general view of the History of the Human race. As in the individual, so in the whole community of Mankind, our cogitations have an infancy of aimless activity; and a youth of education and advance towards order; and an opening manhood, of high hopes and expectations; and a settled, staid, and sober middle age, of ripened and deliberate judgment.

First period.

"The antiquity of time was the youth of the world and of knowledge," said Bacon. In that early age, the *obedience of the will* was first taught to Man. He was required to look up, in submission, to that Spirit of Truth, which, after all, we find to be at the head of wisdom. This innocent age was happily prolonged among those whose first care was to cultivate the Moral sense, and to seek in Faith the evidence of things not seen. To them were propounded a Spiritual Creator, and a Spiritual worship, and the assured hope of a future and Spiritual existence; and therefore they were less curious to watch the motions of the stars, or to become "artificers in brass and iron," or to "handle the harp and the organ." They were less wise in their generation than the "mighty men of old, the men of renown;" but their Ideas were plain and distinct; they were "just and perfect men;" and they "walked with God;" whilst, of the others, "every imagination of the thoughts of the heart was only evil continually." For the latter wilfully chose an opposite *Method:* they determined to shape their convictions and deduce their knowledge from *without*, by exclusive observation of outward things, as the only realities. Hence they became rapidly *civilized*. They built cities, and refined on the means of sensual

gratification, and the conveniences of courtly intercourse. They became the great masters of the agreeable, which fraternized readily with cruelty and rapacity; these being, indeed, but alternate moods of the same sensual selfishness. Thus, both before and after the Flood, the vicious of Mankind receded from all true cultivation, as they hurried towards civilization. Finally, as it was not in their power to make themselves wholly beasts, and to remain without a semblance of Religion, and yet, as they were faithful to their original maxim,—determined to receive nothing as true, but what they derived, or believed themselves to derive, from their senses, or (in modern phrase) what they could prove *à posteriori*,—they became Idolaters of the Heavens, and of the material elements; and finally, out of the Idols of the Mind, they formed material Idols: and bowed down to stocks and stones, as to the unformed incorporeal Divinity.

Second period.

A new era next appeared, representative of the youth and approaching manhood of the Human Intellect: and again, Providence, as it were, awakened men to the pursuit of an Idealized Method, in the development of their faculties. Orpheus, Linus, Musæus, and the other Mythological Bards, or perhaps Brotherhoods of Bards impersonated under individual names, whether deriving their light, imperfectly and indirectly, from the inspired writings of the Hebrews, or graciously visited, for high and important purposes, by a dawning of Truth in their own breasts, began to spiritualize Polytheism, and thereby to prevent it from producing all its natural, barbarizing effects. Hence the Mysteries and Mythological Hymns; which, on the one hand, gradually shaped themselves into Epic Poetry and History, and, on the other, into Tragedy and Philosophy: whilst to the lifeless Statuary of the Egyptians was superadded a Promethean animation; and the Ideal in Sculpture soon extending itself to Painting and to Archi-

tecture, the Fine Arts at once shot up to perfection by a Method founded wholly on a mental initiative, and conducted throughout its progress by the development of Ideas. This rapid advance, in all things which owe their existence and character to the Mind's own acts, intellectual or imaginative, forms a singular contrast with the rude and imperfect manner in which those acts were applied to the investigation of Physical Laws and phænomena. While Phidias, Apelles, Homer, Demosthenes, Thucydides, and Plato, had, each in his individual sphere, attained almost the summit of conceivable excellence, the Natural History and the Natural Philosophy of the whole World may be said to have lain dormant; especially if we compare them with the efforts which the Moderns made in these directions, in the very morning of their strength.

Romans. Of the Roman era it is scarcely necessary to speak at large, inasmuch as the Romans were confessedly mere imitators of the Greeks in everything relative to Science and Art. They sustained a very important part in the Civil, and Military, and Ecclesiastical History of Mankind; and their devotion to these objects was, in their own eyes, a sufficient apology for their want of originality in what they held to be far inferior pursuits.

> Excudent alii spirantia mollius æra:
> Credo equidem, vivos ducent de marmore vultus:
> Tu regere imperio populos, Romane, memento.

Dark Ages. Still less will it be expected, that we should devote much space to the consideration of those Dark Ages, which brought the countless hordes of sensual Barbarians from their Northern forests to meet, in the Southern and middle parts of Europe, the spiritualizing influence of Christianity: but one remarkable effect of that influence we cannot suffer to pass unnoticed. We allude to the gradual abolition of domestic slavery, in virtue of a Principle essential to Christianity, by which a *person* is

eternally differenced from a *thing*; so that the *Idea* of a Human Being necessarily excludes the Idea of property in that Being.

Reformation.

We come down, then, to the great period of the REFORMATION, which, regarded as an epoch in the education of the Human Mind, was second to none for its striking and durable effects. The defenders of a simple and Spiritual worship, against one which was full of outward forms and ceremonies; the partisans of Religious liberty, against the dominion of a Visible Head over the whole Christian Church; and, generally speaking, the advocates of the Ideal and internal against the external or imaginative,—maintained a zealous, and in great part of Europe, a prosperous conflict. But the revolution of Thought, and its effects on the Science of Method, were soon visible beyond the pale of the Church or the Cloister: and the Schoolmen were attacked as warmly in their Philosophical, as they had before been in their Ecclesiastical character. It is needless to dwell on the various attempts towards introducing into Learning a totally new Method. That of our illustrious countryman, BACON, was completely successful: and we have already shown that it was, in truth, the completion of the Ideal System, by applying the same Method to external Nature which Plato had before applied to intellectual existence.

Modern Philosophy.

It is only in the union of these two branches of one and the same Method that a complete and genuine Philosophy can be said to exist. To this consideration the great mind of Bacon does not seem to have been fully awake; and hence, not only is the general scope of his Work directed almost exclusively to the contemplation of Physical Ideas, but there are occasional expressions which seem to have misled many of his followers into a belief that he considered all Wisdom and all Science both to begin and to end with the objects of the senses. In this gross error are laid the foundations of the modern French

School, which has grown up into the monstrous puerilities of CONDILLAC and CONDORCET; men whose names it would be absolutely ridiculous to mention in a History of Science, if their pupils did not unhappily compensate, in number, what their Works want in common sense and intelligibility; and if upon such Writers, the French Nation did not mainly rest its pretensions to give the law to Europe in matters of Science and Philosophy.

SECTION III.

APPLICATION OF THE PRINCIPLES OF METHOD TO THE GENERAL CONCATENATION AND DEVELOPMENT OF STUDIES.

Systematic Ignorance illustrated.

WE have already dwelt so much on the general importance of Method—we have recurred to it so frequently—we have placed it in so many various lights, that we ought perhaps to apologize for venturing on one more attempt to illustrate our meaning, partly in the way of simile, and partly of example. Let us, however, imagine an unlettered African, or rude, but musing Indian, poring over an illumined manuscript of the inspired volume; with the vague, yet deep impression, that his fates and fortunes are, in some unknown manner, connected with its contents. Every tint, every group of characters, has its several dream. Say that, after long and dissatisfying toils, he begins to sort, first, the paragraphs that appear to resemble each other; then the lines, the words; nay, that he has at length discovered, that the whole is formed by the recurrence and interchange of a limited number of ciphers, letters, marks, and points, which, however, in the very height and utmost perfection of his attainment, he makes twenty-fold more numerous than they are, by classing every different form of the same character, intentional or accidental, as a separate element. And yet the whole is without soul or substance, a talisman of superstition, or a mockery of Science; or is employed perhaps, at last, to feather the arrows of death, or to shine and flutter amid the plumes of savage vanity. The poor

Indian too truly represents the state of learned and systematic ignorance—arrangement guided by the light of no leading Idea; mere orderliness without METHOD!

Orderliness without Method.

But see, the friendly missionary arrives! He explains to him the nature of written words, translates them for him into his native sounds, and thence into the thoughts of his heart: how many of these thoughts are then first unfolded into consciousness, which yet the awakening disciple receives not as aliens! Henceforward the book is unsealed for him; the depth is opened; he communes with the *spirit* of the volume, as with a living oracle. The words become transparent: he sees them, as though he saw them not; whilst he mentally devours the meaning they contain. From that moment, his former chimerical and useless arrangement is discarded, and the results of Method are to him life and truth.

If some particular studies are yet confessedly deficient in the vivifying power of Method, we much fear that the attempts to bind together the whole Body of Science have been, in certain instances, worse than immethodical. A slight glance at the particular department of Literature which we have chosen, especially as it has been filled on the Continent, from the memorable combination of Deistical talent in the *Dictionnaire Encyclopédique*, to a Work on the same principles, said to be now publishing in France, will demonstrate, that the best interests of Mankind have suffered serious injury from this cause; that the fountains of education may be poisoned, where the stream appears to flow on with increasing power and smoothness; and that the *insinuation* of sceptical principles into Works of Science is fraught with the greatest danger to posterity.

To oppose an effectual barrier to the rage for desultory knowledge, on the one hand, and to support that body of independent attachment to the best principles of *all* knowledge,

which happily distinguishes this country, on the other, the ENCYCLOPÆDIA METROPOLITANA has been projected.

Encyclopædia Metropolitana founded on the principles of Method.

We do not undertake, what the most gigantic efforts of Man could not achieve, *a Universal Dictionary of Knowledge*, in the most absolute sense of the terms. But estimating the importance of our task rather by the principles of *unity* and *compression* than by those of variety and extent, we have laboured to build upon what is essential that which is obviously useful, and upon both whatever is elegant or agreeable in Science; and this, we conceive, cannot be well and usefully effected, but by such a Philosophical Method as we have already indicated.

We have shown that this METHOD consists in placing one or more *particular* things or notions, in subordination, either to a preconceived *universal* Idea, or to some lower form of the latter; some class, order, genus, or species, each of which derives its intellectual significancy, and scientific worth, from being an ascending step toward the universal; from being its representative, or temporary substitute. Without this master-thought, therefore, there can be no true Method: and according as the general conception more or less clearly manifests itself throughout all the particulars, as their connective and bond of unity; according as the light of the Idea is freely diffused through, and completely illumines, the aggregate mass, the Method is more or less perfect.

The moral origin and tendency of true Science, the master-thought of the plan.

The first preconception, or master-thought, on which *our* plan rests, is the *moral origin and tendency* of all true Science; in other words, our great objects are to exhibit the Arts and Sciences in their Philosophical harmony; to teach Philosophy in union with Morals; and to sustain Morality by Revealed Religion.

There are, as we have before noticed, two sorts of relation, on the due observation of which all Method depends. The

first is that which the Ideas or Laws of the Mind bear to each other; the second, that which they bear to the external world: on the former are built the Pure Sciences; on the latter those which we call Mixed and Applied.

Pure Sciences.

The *Pure Sciences*, then, represent pure acts of the Mind, and those only; whether employed in contemplating the *forms* under which things in their first elements are necessarily viewed and treated by the Mind, or in contemplating the substantial *reality* of those things.

Formal and Real.

Hence, in the Pure Sciences, arises the known distinction of *formal* and *real:* and of the first, some teach the elementary forms, which the Mind necessarily adopts in the processes of reasoning; and others, those under which alone all particular objects can be grasped and considered by the Mind; either as distinguishable in quantity and number, or as occupying parts of space. The *real* Sciences, on the other hand, are conversant with the true nature and existence, either of the created Universe around us, or of the guiding Principles within us, in their various modifications and distinguishing movements; or, lastly, with the real nature and existence of the great Cause of all.

Grammar.

We begin, then, with that class of Pure Sciences which we have called *formal;* and of these, the first two that present themselves to us are *Grammar* and *Logic.* By Grammar we are taught the rules of that speech which serves as the medium of Mental intercourse between man and man; by *Logic,* the Mental operations are themselves regulated and bound together in a certain Method or order. As the communication of knowledge is the more immediate object of our present discussion, so we begin with that Science by which it is regulated in its forms. Grammar, then, apart from the mere material consideration of the sound of words, or shape of letters, and regarding speech only as a thing significant, teaches that there

are certain laws regulating that signification; laws which are immutable in their very nature; for the relation which a noun bore to a verb, or a substantive to an adjective, was the same in the earliest days μέροπων ἄνθρωπων, in the first intelligible conversations of men, as it is now; nor can it ever vary so long as the powers of Thought remain the same in the Human Mind. This, then, is a Pure Science proceeding from a simple or elementary Idea of the form necessary for the conveyance of a single thought, and thence spreading and diffusing itself over all the relations of significant Language.

Logic.

Grammar brings us, naturally, to the Science of *Logic,* or the knowledge of those forms which the conceptions of the Mind assume in the processes of reasoning. And it is manifest that this Science is no less subject than the former to fixed laws; for the reasoning power in Man can operate only within those limits which Almighty Wisdom has thought fit to prescribe. It is a discursive faculty, moving in a given path, and by allotted means. There is no possibility of subverting or altering the elementary rules of Logic; for they are not hypothetical, or contingent, or conventional, but positive and necessary.

Mathematics.

Under the general term *Mathematics* are comprised the Sciences of *Geometry,* which is conversant about the laws of figure, or limitations of space; and *Arithmetic,* which concerns the laws of number. Now these laws are purely Ideal. It is not externally to us that the general notion of a square, or a triangle, of the number three, or the number five, exists; nor do we seek for external proof of the relations of those notions; but on the contrary, by contemplating them as Ideas in the Mind, we discover truths which are applicable to external existence.

The Sciences which we have hitherto noticed relate to the forms of our Mental conceptions; but it is natural for Man to

seek to comprehend the principles and conditions of real existence, both with regard to the Universe in general, with regard to his own internal mover, or conscience, and, above all, with regard to the cause by which conscience and the whole Universe were called into being, and continue to exist, namely, GOD. Hence, as we advance from form to reality, the Sciences of *Metaphysics* and *Morals* first present themselves to view, and these lead us forward to the summit of Human Knowledge; for at the head of all Pure Science stands *Theology*, of which the great fountain is Revelation. It is obvious that both Metaphysics and Morals are conversant solely about those relations which we have called Relations of Law; for it would be a contradiction to say, that a real existence could be, at the same time, a mere theory or hypothesis. These Sciences have, therefore, all the purity and all the certainty which belong to that which is positive and absolute; and as far as they are distinctly apprehended by the Mind, they approach the nearest to that clear intellectual light which, in the peculiar phraseology of Lord Bacon, is called *lumen siccum*. In the proper Philosophical Method, the reality of our speculative knowledge, exhibited in the Science of Metaphysics, unites itself at last with the reality of our Ethical sentiments displayed in that of Morals; and both together are at once lost and consummated in Theology, which rises above the light of Reason to that of Faith.

Metaphysics, Morals, and Theology.

These are all the Sciences which embrace solely relations of Law: and it is plain that in these, not only the initiative, but every subsequent step, must be an act of the Mind alone. But when we descend to the second order of relations, namely, those which we bear to the external world, Theory is immediately introduced; new Sciences are formed, which, in contradistinction from the *Pure*, are called the *Mixed* and *Applied* Sciences; and in these, new considerations relative to Method necessarily find a place.

Mixed and Applied Sciences.

Physical Theories imperfect because necessarily progressive.

Every Physical Theory is in some measure imperfect, because it is of necessity progressive; and because we can never be assured that we have exhausted the terms, or that some new discovery may not affect the whole scheme of its relations. The discoveries of the ponderability of air, of its compound nature, of the increased weight of the calces, of the gases in general, of Electricity, and more recently the stupendous influences of Galvanism on the successive Chemical Theories; are all so many exemplifications of this truth. The doctrines of vortices, of an universal ether, of a two-fold magnetic fluid, &c., are *Theories* of Gravitation: but the Science of Astronomy is founded on the *Law* of Gravitation, and remains unaffected by the rise and fall of the Theories. In the lowest condition of Method, the initiative is supplied by an *hypothesis*; of which we may distinguish two degrees. In the former, a fact of actual experience is taken, and placed experimentally as the common support of certain other facts, as equally present in all: thus, that oxygen is *a* principle of acidification and combustion is an experienced fact, and became a hypothesis by the assumption that it is the *sole* principle of acidification and combustion. In the latter, a fact is imagined: as, for instance, an atom or physical point, preternaturally hard, and therefore infrangible, in the Corpuscular Philosophy; or a primitive unalterable figure, in some systems of Crystallisation.

True Theory a *locum tenens* of Law.

In all this we see, that Knowledge is a matter not of necessary connection, but of a connection arising from observation or supposition; that is, it consists not of Law, but of Theory or Hypothesis. True Theory is always in the first and purest sense a *locum tenens* of Law; when it is not, it degenerates into hypothesis, and hypothesis melts away into conjecture. Both in Law and in Theory there must be a mental antecedent; but in the latter, it may be an image or conception received through the senses, and originating from without;

yet even then there is an inspiring passion, or desire, or instinctive feeling of the truth, which is the immediate and proper offspring of the Mind. Now, we may consider the facts which are to be reduced to Theory, as arranged over the whole surface of a plane circle. If, by carrying the power of Theory to a near identity with Law, we find the centre of the circle, then, proceeding toward the circumference, our insight into the whole may be enlarged by new discoveries; it never can be wholly changed. A magnificent example of this has been realized in the Science of Astronomy; a recent addition of facts has been effected by the discovery of other Planets, and our views have been rendered more distinct by the solution of the apparent irregularities of the Moon's motion, and their subsumption under the general Law of Gravitation. But the Newtonian was not less a system before than since the discovery of the Georgium Sidus; not by having ascertained its circumference, but by having found its centre; the living and salient point, from which the Method of discovery diverges, the Law in which endless discoveries are contained implicitly, and to which, as they afterwards arise, they may be referred in endless succession.

Transition from the Pure Sciences to the Mixed and Applied Sciences.

These reasonings, it is hoped, will sufficiently explain the nature of the transition from the *Pure Sciences* to the *Mixed and Applied Sciences*, and will serve to trace the inseparable connection of the latter with the constitution of the Human Mind. And as each of these great divisions of Knowledge has its own department in the grand Moral Science of Man, it is obvious that a scheme, which, like our own, not only contains each separately, but combines both as indivisible, the one from the other, must present, in the most advantageous point of view, whatever is useful and beautiful in either. In speaking of the Mixed and Applied Sciences we must be permitted, however, to remark that the word Science is evidently used in

a looser and more popular form than when we denominate Mathematics, or Metaphysics, a Science; for we know not, for instance, the truth of any general result of observation in Nosology, as we know that two and two make four, or that a Human person cannot be identical with another Human person. And, in like manner, when the word Law is used with relation to the Mixed and Applied Sciences, as when we speak of any supposed Law of Vegetation, we use a more popular language than when we speak of a Law of the Conscience, which is not to be prevaricated. The strictness of ancient Philosophy, therefore, refused the name of Science to these pursuits; and it might at least be convenient, if in speaking generally of the Pure, the Mixed, and the Applied Sciences, we gave them the common name of Studies, inasmuch as we study them all alike, but we do not know them all with the same sort of knowledge.

Mixed Sciences.

Of these, then, (be they Studies or Sciences,) we call those *Mixed* in which certain Ideas of the Mind are applied to the general properties of bodies, solid, fluid, and aerial; to the power of vision, and to the arrangement of the Universe; whence we obtain the Sciences of *Mechanics, Hydrostatics, Pneumatics, Optics,* and *Astronomy.* It is matter, not of certain Science, but of observation, that such properties do really exist in bodies, that vision is effected in such or such a manner, and that the Universe is disposed in this or that relative position, and subjected to certain movements of its parts. Therefore, these Sciences may vary, and notoriously have varied; and though Kepler would demonstrate that Euclid *Copernicised,* or had some knowledge of the System afterwards adopted by Copernicus; yet of this there is little proof: and certainly, for many ages after Euclid, it was the universal opinion, that the Earth was the fixed and immoveable centre of the Universe. Nor have we here unadvisedly used

the word *opinion;* since, as we before showed, it is the ancient expression signifying a medium between Knowledge and Ignorance: and well did that acute Italian exclaim, *Opinione, regina del mondo!*—for, as it is impossible that Ignorance, which cannot govern itself, should govern anything else, so to expect that all the world should be wise enough to submit to the government of Wisdom, would be to show that we had followed very little Method in our study either of History, of living men, or even of ourselves.

Applied Sciences.

When certain Ideas, or images representative of Ideas, are applied still more particularly, not to the investigation of the general and permanent properties of all bodies, but of certain changes in those properties, or of properties existing in bodies partially, then we popularly call the Studies relative to such matters by the name of *Applied Sciences;* such are *Magnetism, Electricity, Galvanism, Chemistry,* the Laws of *Light* and *Heat,* &c. We have already so fully shown the uncertainty of the first Principles in these Studies, and have so distinctly traced the cause of that uncertainty, in every case, to a want of clearness in the first Idea or Mental initiative of the Science, that it will be unnecessary here to do more than refer to our preceding observations.

Experimental Philosophy.

Fine Arts.

We come now to another class of Applied Sciences, namely, those which are applied to the purposes of pleasure through the medium of the Imagination; and which are commonly called the FINE ARTS. These are *Poetry, Painting, Music, Sculpture, Architecture.* We have before said, that the Method to be observed in these, holds a sort of middle place between the Method of Law, or Pure Science, and the Method of Theory. In regard to the Mixed Sciences, and to the first class of Applied Sciences, the Mental initiative may have been received from without; but it has escaped some Critics, that in the Fine Arts the Mental initiative must necessarily proceed

from within. Hence we find them giving, as it were, recipes to form a Poet, by placing him in certain directions and positions; as if they thought that every deer-stealer might, if he pleased, become a Shakspeare, or that Shakspeare's mind was made up of the shreds and patches of the books of his day, which by good fortune he happened to read in such an order that they successively fitted into the scenes of *Macbeth, Othello, The Tempest, As you like it,* &c. Certainly the Fine Arts belong to the outward world, for they all operate by the images of sight and sound, and other sensible impressions; and without a delicate tact for these, no man ever was, or could be, either a Musician or a Poet; nor could he attain to excellence in any one of these Arts: but as certainly he must always be a poor and unsuccessful cultivator of the Arts if he is not impelled first by a mighty, inward power, a feeling, *quod nequeo monstrare, et sentio tantum;* nor can he make great advances in his Art, if, in the course of his progress, the obscure impulse does not gradually become a bright, and clear, and living Idea!

Useful Arts.

Pursuits of utility, we daily find are capable of being reduced to Method. Thus *Political Economy,* and *Agriculture,* and *Commerce,* and *Manufactures,* are now considered scientifically, or, as the more prevalent expression is, Philosophically. It may, perhaps, be difficult, at first, to persuade the experimental Agriculturist that he also pursues, or ought to pursue, an Ideal Method; nor do we mean by this that he must deal only in ideal sheep and oxen, and in the groves and meads of Fairy Land. But these Studies, soberly considered, will be found wholly dependent on the Sciences of which we have already stated. It is not, surely, in the Country of ARKWRIGHT, that the Philosophy of Commerce can be thought independent of Mechanics: and where DAVY has delivered Lectures on Agriculture, it would be folly to say that the most Philosophic

views of Chemistry were not conducive to the making our valleys laugh with corn.

Natural History.

We have already spoken of LINNÆUS, the illustrious Swede, to whom the three *kingdoms*, as they are aptly called, of *Natural History* are so deeply indebted; and if, with all his great talents, he yet failed in establishing the united empire of those three mighty monarchies on firm laws and a fixed constitution, we have shown, that it was only owing to a want of precision in the first Ideas of his theory.

Applications of Natural History.

Natural History itself becomes a rule for dependent pursuits, such as those of *Medicine* (under which are *Pharmacy* and the *Materia Medica*) and *Surgery*, in which is included *Anatomy*. That in these and the other theoretical studies so much still remains to be done, ought not to be a subject for regret, but, on the contrary, for a laudable and generous ambition. Yet that ambition should be regulated and moderated by a due consideration of the place which the particular pursuit in question holds in the great circle of the Sciences, and by observing the only proper *Method* which can be pursued for its improvement. If, in what we have here said, we have done anything towards the excitement, the regulation, and the assistance of that ambition; if we have faintly sketched an outline of the great laws of Method, which bind together the various branches of Human Knowledge, we may not improperly indulge a hope that the ensuing Work, in its progress, will be found conducive to the promotion of the best interests of Mankind.

History and Biography.

Our Plan would not completely meet the views of those to whom such Works as the following are eminently useful and agreeable, if, besides the Philosophic Method already described, we did not present some view of the actual History of Man kind. We have therefore devoted a large portion of our labours to the History of the Human Race, on a new, and, we

trust it will be found, an improved System. Biography and History tend to the same points of general instruction, in two ways: the one exhibiting Human Principles and Passions, acting upon a large scale; the other showing them as they move in a smaller circle, but enabling us to trace the orbit which they describe with greater precision. The one brings Man into contact with Society, actuated by the interests which agitate and stimulate him in the various social combinations of his existence; and Human Nature presents itself in the varied shapes impressed upon it by the different ranks which it occupies. The other brings before us the individual when he stands alone, his passions asleep, his native impulses under no external excitement; in the undress of one who has retired from the stage, on which he felt he had a part to sustain; and even the Monarch, forgetting the pomp and circumstance of his royalty, remembers here only that he is a Man. Assuredly the great use of History is to acquaint us with the Nature of Man. This end is best answered by the most faithful portrait; but Biography is a collection of portraits. At the same time there must be some mode of grouping and connecting the individuals, who are themselves the great landmarks in the Map of Human Nature. It has therefore occurred to us, that the most effectual mode of attaining the chief objects of Historical knowledge will be occasionally to present History in the form of Biography, chronologically arranged. This will be preceded by a general Introduction on the Uses of History, and on the line which separates its early Facts from Fable; and it will, in the course of its progress, be interspersed with connecting Chapters on the events of large and distinguishing periods of time as well as on Political Geography and Chronology. Thus will a large portion of History be conveyed, not only in its most interesting, but in its most philosophical and real form; while the remaining facts will be

interwoven in the preliminary and connecting Chapters. If in tracing thus the "eventful History" of Man, and particularly of our own Country, we should perceive, as we must necessarily do in all that is human, evils and imperfections, these will not be without their uses, in leading us back to the importance of intellectual Method as their grand and sovereign remedy. Hence shall we learn its proper national application, namely, the *education of the Mind,* first in the Man and Citizen, and then, inclusively, in the State itself.

Alphabetic arrangement.

Such are our views in the Philosophical and Historical branches of our Work. Of the Miscellaneous or Alphabetical Division we have little to add. But well aware that Works of this nature are not solely useful to those who have leisure and inclination to study Science in its comprehensiveness and unity, but are also valuable for daily reference on particular points, suggested by the desires or business of the individual, we could not hold ourselves dispensed from consulting the convenience of a numerous and most respectable class of Readers; while the preceding remarks will go to prove that, for many local and supplementary illustrations of Science, no other depository could be furnished.

As the Philosophical arrangement is, however, most conducive to the purposes of intellectual research and information; as it will most naturally interest men of Science and Literature; will present the circle of Knowledge in its harmony; will give that unity of design and of elucidation, the want of which we have most deeply felt in other Works of a similar kind, where the desired information is divided into innumerable fragments scattered over many volumes, like a mirror broken on the ground, presenting, instead of one, a thousand images, but none entire,—this Division must, of necessity, have that prominence in the prosecution of our design which our con-

viction of its importance to the due execution of the plan demands: and every other part of the arrangement must be considered as subordinate to this principal organization. With respect to the whole Work, it should be observed, that in what concerns *references* we are guided by principle, not by caprice; nor do we ever recur to them as our only means of escape from an exigency. Throughout the ENCYCLOPÆDIA METROPOLITANA, the Philosophical arrangement predominates and regulates the Alphabetical arrangement; and the references, whether to it or from it, are auxiliary. We never refer from the first and second Divisions to the fourth, or from the first to the second, for the explanation of a term, the establishment of a Principle, or the demonstration of a Proposition. The reference, whenever it occurs, unless it be *retrospective*, is not for the purpose of essential information, but for that which is collateral and subordinate. The theory of the *Balance*, for example, is given where it ought to be in the Treatise on Mechanics; but they who wish to acquaint themselves with the various constructions of Balances for the purposes of Commerce or Philosophy, knowing that these cannot be introduced into a Scientific Treatise without destroying the symmetry of its parts by a suspension of the Logical order, will naturally turn, whether there be a reference or not, to the Alphabetical Department of the Work. So again, the Principles of the *Telescope* are given in the Treatise on Optics; the varieties of construction in the Alphabetical Department: the Principles of the *Thermometer*, when treating of the effects of Heat; its varieties of construction in the Alphabetical Department. Practical detail, and niceties or peculiarities of construction, can seldom be interwoven with propriety among the regular deductions of a Methodical Treatise: in all cases where they cannot, our general Principle, as it comprehends proportion, accuracy, utility, and convenience, demands a reference, whether

The Philosophical arrangement governs and regulates the Alphabetical.

expressed or not, to the appropriate place for all that is subservient; that is, to the fourth or Alphabetical Division.

Trade and Literature essential to the existence of a Nation.

This final Division of our Work will bring the whole into unison with the two great impulses of Modern times, Trade and Literature. These, after the dismemberment of the Roman Empire, gradually reduced the conquerors and the conquered at once into several nations and a common Christendom. The natural Law of increase, and the instincts of Family, may produce Tribes, and, under rare and peculiar circumstances, Settlements and Neighbourhoods; and Conquests may form Empires. But without Trade and Literature combined, there can be no Nation; without Commerce and Science, no bond of Nations. As the one has for its object the wants of the body, real or artificial, the desires for which are for the greater part excited from without, so the other has for its origin, as well as for its object, the wants of the Mind, the gratification of which is a natural and necessary condition of *its* growth and sanity. In the pursuits of Commerce the Man is called into action from without, in order to appropriate the outward world, as far as he can bring it within his reach, to the purposes of his corporeal nature. In his Scientific and Literary character he is internally excited to various studies and pursuits, the groundwork of which is in himself.

Distinguishing object of the Encyclopædia Metropolitana.

This, again, will conduct us to the distinguishing object of the present undertaking, in endeavouring to explain which we have dwelt long upon General Principles; but not too long, if we have established the necessity of what we conceive to be the main characteristic of every just arrangement of Knowledge.

Our Method embraces the twofold distinction of Human activity to which we have adverted,—the two great directions of Man and Society, with their several objects and ends. Without advocating the exploded doctrine of *perfectibility*, we cannot but regard all that is Human in Human Nature, and all

that in Nature is above herself, as together working forward that far deeper and more permanent revolution in the Moral World of which the recent changes in the Political World may be regarded as the pioneering whirlwind and storm. But woe to that revolution which is not guided by the historic sense; by the pure and unsophisticated knowledge of the past: and to convey this Methodically, so as to aid the progress of the future, has been already announced as the distinguishing claim of the ENCYCLOPÆDIA METROPOLITANA.

January, 1818.

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Hydrodynamics.
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  Nautical Astronomy.
  Physical Astronomy.
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Tides and Waves.

SECTION II.

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Electro-Magnetism.
Electricity.
Galvanism.
Heat.
Light.
Chemistry.
Sound.
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Sculpture.
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Poetry.
Music.
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Reptiles.
Fishes.
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Arachnidans.
Myriapods.
Spined Skins.
Sea Nettles.
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Christisson's Agricultural Tables, - - - - 3
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Encyclopædia of Natural History, - - - - 7
Illustrations of Zoology, - - - - - 8
Mitchell's Agricultural Analysis, - - - - 6
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Encyclopædia of Fine Arts, - - - - - 4
——— Manufactures, - - - - - 6
——— Useful Arts, - - - - - 8
Graham's Compositor's Guide, - - - - 4
Hodge on the Steam Engine. - - - - - 5
Kerr on the Manufacture of Sugar, - - - 6
Napier's Electro Metallurgy, - - - - - 7
Narrien's Architecture, - - - - - - 7
Phillips's Metallurgy, - - - - - - 7

Biography.

Curiosities of Biography, - - - - - - 2
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Hale's History of the Jews, - - - - - 5
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Coleridge on Method, - - - - - - - 3
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History of Greek Literature, - - - - - 5
——— Greek, Roman, and Oriental Philosophy, 5
——— Roman Literature, - - - - - 7
Maurice's Moral Philosophy, - - - - - 6
Stoddart's Universal Grammar, - - - - 8
——— Glossology, - - - - - - - 8
Whately's Logic, - - - - - - - - 8
——— Rhetoric, - - - - - - - - 8

Medical.

Buchanan on Cholera, - - - - - - Page 2
Encyclopædia of the Medical Sciences, - - - 6
Hooper's Medical Dictionary, - - - - - 5

Mercantile.

Christisson's Ready Reckoner, - - - - 3
Gilmer's Interest Tables, - - - - - 5
Morrison's Book-Keeping, - - - - - 7
Reehorst's Commercial Dictionary, - - - 7
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Cowper's Poetical Works, - - - - - 3
Encyclopædia Metropolitana, - - - - - 4
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Eadie's Biblical Cyclopædia, - - - - - 3
——— Biblical Dictionary, - - - - - 3
Sacred Lyre, - - - - - - - - - 8
Todd's Works, - - - - - - - - - 8

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Airy's Figure of the Earth, - - - - - 2
——— Tides and Waves, - - - - - - 2
——— Trigonometry, - - - - - - - 2
Arago's Astronomy, - - - - - - - 2
Book of Nature, - - - - - - - - 2
Bryce's Astronomy, - - - - - - - 2
Encyclopædia of Astronomy, - - - - - 2
——— Experimental Philosophy, - - 4
——— Mechanical Philosophy, - - 6
——— Pure Mathematics, - - - 6
Griffin's Chemical Recreations, - - - - 5
——— Crystallography, - - - - - 5
——— Scientific Miscellany, - - - - - 5
Harvey's Meteorology, - - - - - - 5
Herschell's Physical Astronomy, - - - - 5
——— Light, - - - - - - - - - 5
——— Sound, - - - - - - - - - 5
Hunt's Photography, - - - - - - - 5
Liebig's Organic Analysis, - - - - - 6
Novelties in Science, - - - - - - 7
Von Kobell's Mineralogy, - - - - - 8

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- Music.
- Engraving.

SECTION IV.

THE USEFUL ARTS.
- Agriculture.
- Horticulture.
- Floriculture.
- Arboriculture.
- Carpentry and Joinery.
- Fortification.
- Engineering.
- Naval Architecture.
- Manufactures.
- Mechanical Arts.
- Chemical Arts.

SECTION V.

NATURAL HISTORY.

Inanimate:—
- Crystallography.
- Mineralogy.
- Geology.

Insentient:—
- Botany.

Animate:—
- Zoology.
- Physiology.
- Comparative Anatomy.

Vertebrals:
- Mammalia.
- Birds.
- Reptiles.
- Fishes.

Invertebrals:
- Molluscs.
- Insects.
- Crustaceans.
- Arachnidans.
- Myriapods.
- Spined Skins.
- Sea Nettles.
- Infusories.
- Polyps.

SECTION VI.

APPLICATIONS OF NATURAL HISTORY.
- Anatomy.
- Materia Medica:
  - Pharmacy.
- Medicine.
- Surgery.
- Veterinary Art.

Third Division.

HISTORY AND BIOGRAPHY.

INTRODUCTION:—
- Dissertation on the Uses of History.
- Chronology.
- Chronological Tables.

ARCHÆOLOGY.

ETHNOLOGY.

ANCIENT HISTORY:—
- Sacred History.
- The Jews.
- Greece.
- Greek Literature.
- Greek Philosophy and Art.
- Ancient Oriental Nations.
- Rome.
- Roman Literature.
- Roman Philosophy.
- Classical Antiquities.
- Heathen Mythology.

MIDDLE AGES.

MODERN HISTORY:—
- The Christian Church.
- Greek Empire.
- Ottoman Empire.
- The Crusades.
- Italy.
- Germany.
- France.
- Spain.
- Portugal.
- Netherlands.
- Switzerland.
- Britain.
- America.
- India.

Fourth Division.

GEOGRAPHY.

PHYSICAL GEOGRAPHY.

POLITICAL GEOGRAPHY:—
- European.
- American.
- Oriental.
- African.
- Classical.

BRITISH TOPOGRAPHY.

Fifth Division.

LEXICOGRAPHICAL.

English Lexicon, &c. &c. &c. See Prospectus, § 43.

GENERAL INDEX.

