

THURSDAY, MARCH 19, 1874

THE CHEMICAL SOCIETY'S JOURNAL

THE man who jokingly said that he had to give up the study of chemistry when the science became so bulky that its Handbook required a wheelbarrow for its conveyance, expressed a truth which has been painfully felt by many scientific workers. With continual fresh additions to our knowledge, anything like a comprehensive grasp of a large science must become daily more and more difficult; but while this difficulty is generally felt, it occurs with special force in the science of chemistry. Chemistry, of all sciences, has perhaps the most unlimited capacity for development. Its subject is enormous, including the whole of nature, animate as well as inanimate. Nor is the chemist satisfied with studying the properties of matter as they are exhibited in the natural operations of the world around us, even this wide and attractive field of observation does not content him; he has made the grand discovery that the elements are his servants; that he can at will take to pieces in his laboratory the compounds found in nature, and construct therefrom a multitude of new bodies. Chemistry may thus be said to produce the matter upon which it feeds; the extent to which the production of new compounds can be carried seems practically unlimited, and these become, in most cases, the starting points of fresh investigations. We have here the principal cause of the wonderful development of modern chemistry; armed with such power, it cannot but abound in valuable discoveries, and furnish, at all times, copious results. As a consequence of this rapid development of the science, it has become a matter of the greatest difficulty for the investigator, the teacher, or the manufacturer, to keep pace with the daily progress of discovery; and improvement, and ignorance of the results already obtained in any department, naturally necessitates a loss of valuable time and labour to those engaged on the subject. The bulk and variety of chemical literature are not, however, the only obstacles to the student; the difficulty is greatly increased to an Englishman by the fact that the greater part of this literature is published on the Continent, and appears in a variety of languages with which the average Englishman has but little acquaintance.

With such difficulties to encounter, the individual student has certainly little prospect of successfully keeping abreast with modern chemistry. We are therefore exceedingly glad to find that the matter has been taken up by the Chemical Society of London, and that they now publish in their monthly journal* carefully prepared abstracts of all the original papers which appear in foreign and English periodicals. The abstracts are classified for facility of reference, and are divided into Physical, Inorganic, Mineralogical, Organic, Physiological, Agricultural, Analytical, and Technical Chemistry; it is, therefore, quite easy to ascertain what has been recently done in any department of the science. When we mention that the volume for last year consists of 1,300 pages, and contains, besides the papers and lectures read before the

* "The Journal of the Chemical Society," containing the papers read before the Society, and Abstracts of Chemical Papers published in other Journals. Edited by H. Watts, F.R.S. (J. Van Voorst, 1873.)

Society, about 1,500 abstracts of chemical papers published in other journals, we shall give some idea of the magnitude of the work which the Society has undertaken.

Looking carefully through the journal we find that nearly 40 periodicals are regularly abstracted; and as many of these periodicals reprint papers from other less known publications, the extent of literature brought under contribution is very considerable. The periodicals abstracted are German, French, Italian, American, and English, the first two preponderating. The preparation of the abstracts is of course laborious, and demands considerable care. It is accomplished by a body of twenty-six abstractors, chiefly Fellows of the Society, whose initials are appended to their respective work. We are bound to say that the abstracting so far as we have had an opportunity of judging, is exceedingly well done.

A work of this kind is far too expensive to be permanently carried on by a Society destitute of endowment, unless the scientific public in our own and other countries cordially support the enterprise. We understand that the sale of the journal outside the circle of the Society is at present very small, and that the expenses of publication are largely borne by a guaranteed fund raised to give the journal a fair start, and also by a grant from the British Association. We feel sure that the enterprise needs only to be widely known to obtain the support of all lovers of Science. What the Chemical Society is now doing is indeed exactly what we most need in the present day to assist the multitude of workers who are employing scientific facts and methods. It is a kind of work which must sooner or later be carried further, and extended to all the principal sciences, if ourselves and successors are to cope with the ever-increasing accumulation of facts. While such abstracts are, from their early intelligence and their widely gathered and condensed information, an unspeakable boon even to the independent and educated philosopher, they are of still greater value to the ordinary worker, who has not the advantages of a large and costly library, or of an education embracing many languages; to him these abstracts, obtainable at moderate cost in his own language, supply as far as possible the absence of fuller means of information. The work which the Chemical Society has taken up receives, therefore, on many grounds our warmest sympathy. It would indeed be a disgrace to the intellect of our country if such a genuine effort were allowed to drop for lack of support. We would especially invite the attention of our American readers to this monthly journal; supplying, as it does, in their own language a summary of the chemical literature of Europe, we should think it would exactly meet their wants. The Germans have long had a yearly volume of abstracts treating of chemistry and its allied sciences; up to the commencement of the present publication the German *Jahresbericht für Chemie* was indeed the only available work giving a summary of recent investigations. This annual periodical has lately fallen so behind in date (the volumes for 1870 were only obtainable in the middle of last year), that it has really become a chronicle of the past, rather than of the present state of science, and can hardly compare with the new English work. The subscribers to the "Journal of the Chemical Society" possess indeed at the

present time abstracts of about 4,000 papers, all of later date than those noticed in the last German *Jahresbericht*. Our German fellow-workers may therefore, with advantage to themselves, give their support to this English work.

We trust that the appreciation of all interested in chemical science for this most useful work will be so decidedly shown that the Chemical Society will soon have no further anxiety as to the success of their undertaking. The circle of readers appealed to is a very wide one; not only is it an absolute necessity for those who work at Science and those who profess it, but the medical man, the agriculturist, the manufacturer, and the geologist will all find an abundance of matter interesting to their special pursuits.

TODHUNTER'S "MATHEMATICAL THEORIES OF ATTRACTION"

A History of the Mathematical Theories of Attraction and the Figure of the Earth from the time of Newton to that of Laplace. By I. Todhunter, M.A., F.R.S. Two vols. (London: Macmillan, 1874.)

I.

THE late Prof. de Morgan, in his "References for the History of the Mathematical Sciences," divides the written histories into two classes, those which are written on the plan of Montucla, Bossut, &c., in which a general account is framed out of the writer's notes or remembrances of miscellaneous reading; or in that of Delambre, Woodhouse, &c., in which the successive writings of eminent men are examined and described one after the other, so that each chapter or section is a description of the progress of Science in the hands of some one person, and is complete in itself. This latter plan is the one he considers the most favourable to accuracy and the most interesting to students who are desirous of being the critics of the historians, and of amending their works, if need be. The admirable two volumes before us would certainly be placed under this head. As to the utility of such works, our author remarks: "A familiarity with what has been already accomplished or attempted in any subject is conducive to a wise economy of labour; for it may often prevent a writer from investigating afresh what has been already settled; or it may warn him, by the failure of his predecessors, that he should not too lightly undertake a labour of well-recognised difficulty." Mr. Todhunter is no novice in this style of writing; his "History of the Calculus of Variations" appeared in 1861, and at once placed him in the foremost rank of mathematical historians; this work was followed, in 1865, by the "History of the Theory of Probability." The principles upon which these earlier works were written have been adopted in the work under consideration. Experience has improved his already first-rate powers of analysis and of graphic representation of the contents of the works he considers; all that he wants is leisure; possibly a time may come when the University of Cambridge will appoint an historian (or historians) to fill up the painfully patent void which now exists in this department of literature. The acknowledged high merits of his published histories would suggest Mr. Todhunter as a most fitting first occupant of such a chair; the liberality of the syndics of the University Press in defraying

the expenses of the printing of this last work affords evidence that the work is appreciated. In his recent volume of "Essays" (p. 151), our author mentions his taste for the history of Mathematics; we heartily hope that the union of such taste and mathematical powers will result in the begetting a numerous progeny all equally comely with, and of as good disposition as, the elder members of the family.

There is one feature in these histories that especially commends them to our own mind, and that is the writer's candour. We cannot better express our own views upon this point than by citing the following passage from the late Sydney Smith's writings: "There is nothing more beautiful in science than to hear any man candidly owning his ignorance. It is so little the habit of men who cultivate knowledge to do so—they so often have recourse to subterfuge, nonsense, or hypothesis, rather than to a plain manly declaration, either that they themselves do not understand the subject, or that the subject is not understood—that it is really quite refreshing to witness such instances of philosophical candour, and it creates an immediate prepossession in favour of the person in whom it is observed."* It is the absence of this candour which has been productive of so much confusion in this subject of mathematical history: the straining after completeness leads to the insertion of second- and third-hand descriptions; the right rule seems to be that of De Morgan and our author, "to give no opinion or account of any book whatever unless such as is derived from personal acquaintance with its contents." Extreme care and painstakingness are manifest throughout without any sign of flagging. Interesting as Mr. Todhunter's histories are, even to the general student, from the many "sidelights" they contain, and which are especially numerous in the present work, they are exceedingly valuable to the special student, on account of the investigations with which they abound. These are not mere reproductions, but they translate, as it were, the old and now almost obsolete language of the earlier writers into the language of modern analysis: thus in § 443 it is remarked of D'Alembert's notation, "It is not very inviting, and he leaves it to explain itself." Some idea of the extent of these investigations may be got from the fact that 475 out of the 1,632 articles are devoted to them.

The author's design is to write the history of the Mathematical Theories of Attraction and of the Figure of the Earth; for this purpose, he says, he has endeavoured to include all the memoirs and works which relate to these subjects. Such has been his diligence in his seven years' research, that we should suppose few books have escaped his notice: certainly none that would materially affect the conclusions he has arrived at. That he would have added a few to his list had he consulted the British Museum library, or had access to that bequeathed by the late Mr. Graves† to University College, we shall probably show in the course of this notice.

Mr. Todhunter shows that the subjects treated of are of no common importance and influence. Researches into both theories have been fertile in yielding new resources for mathematicians: it will suffice to instance

* "Conduct of the Understanding."

† We are informed that the liberality of a gentleman who has already been a great benefactor to the College will shortly enable students to get an accurate idea of the treasures contained in the above library.