

assured that this claim shall not be forgotten amid the triumphs of advancing science."

The recommendations, we are confident, will meet with the approval of all moderate persons on both sides. Indeed, some may be inclined to think that Science has made too great concessions to popular feeling; that she has made concessions all who take the trouble to read the Report and evidence will allow. The reasonable opponents of vivisection will no doubt also be prepared to make concessions, as they must admit that, after the evidence adduced in this inquiry, its uncompromising suppression would be a calamity to humanity; and they must also admit that the outcry of "cruelty to animals" has had a very slender justification. We hope the Report will speedily be brought before Parliament, and the recommendations essentially adopted, so that both for the credit of science and for the satisfaction of popular feeling the practice may be carried on under well-defined and universally understood regulations.

"THE GEOLOGICAL RECORD"

The Geological Record for 1874. An Account of Works on Geology, Mineralogy, and Palæontology, published during the year. Edited by William Whitaker B.A., F.G.S., of the Geological Survey of England. (London: Taylor and Francis, 1875.)

THE late Sir Charles Lyell used to relate how, on the occasion of a visit which he paid to M. Deslongchamps at Caen, the eminent French palæontologist rose from the piles of books amid which he was working, and exclaimed, with a sigh of relief, "Let us devoutly thank Heaven that our lot is not cast with the next generation of geological workers!—for how they will manage to grapple with the ever-increasing literature of the science I am at a loss to conceive." The difficulty which Deslongchamps thus playfully anticipated is now a present and pressing one, which, it is not too much to assert, is almost painfully felt by every scientific student and worker. While, on the one hand, it is absolutely impossible that any man can read everything that issues from the press relating even to his own department of science, yet, on the other, no one can afford to neglect the results which are being obtained by his contemporaries. It is sad to remember that a large part of the energy of the illustrious Dalton was wasted—owing to his not being able to make himself acquainted with what other chemists of his day were accomplishing—in solving problems which had been already completely disposed of. And we are persuaded that the painful questions of priority in discovery which frequently arise between the workers in the same branch of science ought to be referred, not to the existence of petty jealousies or of a disposition to take unworthy advantages, but to the difficulty which each investigator finds in consulting the latest published results of his fellow-workers in the same paths of inquiry.

So far as relates to the scientific memoirs of past years, the Royal Society has conferred an inestimable boon on the labourers in every department of science by the publication of its admirable "Catalogue," for the appearance of the first supplement to which we are now anxiously looking forward. Aided by a grant from the British Association, too, the "Zoological Record" gives a yearly summary of the work which is being accomplished in that

department of science. It has long been felt as a serious and yearly increasing want—though one which has been already to some extent met by publications in France, Germany, and Switzerland—that no similar work of reference for the geological sciences has hitherto appeared in this country. We are now happy to inform the readers of NATURE that this want has been very admirably supplied by the volume, of which the title appears at the head of the present article.

In the preface to this work the editor gracefully notices the important services rendered by his fellow-workers, but he has not referred to the great difficulties which attended the first establishment of this important year-book of reference; for the overcoming of which difficulties we are mainly indebted to his own energy and perseverance. When the proposal for this work was first drawn up by Mr. Whitaker—whose well-known works on Tertiary Geology, and especially those relating to the vicinity of the metropolis, gave him such claims on the confidence of geologists—the Council of the British Association did not find itself in a position to accord to it immediately the same assistance as it annually gives to the "Zoological Record." Undeterred by this preliminary difficulty, however, Mr. Whitaker determined to proceed with his task unaided. A list of guarantors was formed, who agreed to indemnify the editor against pecuniary loss; and among those who thus signified their sense of the importance of the work, we find the names of Lyell, Poulett-Scrope, and Logan, who have not lived to witness its publication, together with those of almost all the leaders of geological science in this country. Happily, the sale of the work has sufficed, even during this its first year of publication, to cover all expenses; and a grant from the British Association will serve to remove any anxieties which the editor might have felt as to its future.

In the plan of the work we think that Mr. Whitaker has exercised a very wise discretion. He has not attempted anything like reviews or critical notices of the various books and memoirs which he catalogues. In the publications in which this has been done, like the "Die Fortschritte auf dem Gebiete der Geologie, 1872," edited by Dr. Hermann J. Klein, or the "Revue Géologique Suisse pour l'Année 1874" of Ernest Favre, we have nothing like the complete work of reference supplied by the publication of the "Geological Record." In the latter, the notices of the various contributions to geological science are confined to terse statements of the subjects treated in them, with an enumeration of the plates and maps by which they are illustrated. Where, however, a short account of recent discovery or a summary of a new classification could be given in a few lines, or the bearing of a memoir on the progress of science briefly indicated, this has been often well done in the work before us.

The difficult task of classifying the memoirs according to the various subjects of which they treat has been, on the whole, very successfully accomplished; and for the general superintendence of the work, Mr. Whitaker has secured the aid of a number of well-known cultivators of different departments of the science to act as sub-editors. Mr. Topley takes the departments of British and Economic Geology; Mr. Labour deals with the works relating to Europe, the Arctic Regions, and America; Mr. Drew with those on Asia; and Mr. Robert

Etheridge, jun., with those referring to Australasia. The important department of Physical Geology has been undertaken by Prof. Green, and those of Mineralogy and Petrology by Prof. Rudler; while the science of Palæontology has been equally well cared for—Mr. Miall taking the papers referring to the Vertebrata, Prof. Nicholson those relating to the Invertebrata, and Mr. Carruthers those on Fossil Plants. Besides the sub-editors, a number of other contributors have given their assistance in connection with this important work.

When we reflect on the immense body of literature on the different branches of the natural sciences which is yearly published, we shall find good reason to be satisfied with the approximately complete character already attained by this, the first volume of the "Geological Record." It is only necessary to refer to the yearly increasing activity of our great scientific societies, the continual formation of new local associations and field-clubs (whether connected with particular districts or with our Universities and public schools), most of which publish their own transactions, to show the difficulty of making a complete catalogue even of the scientific publications which appear yearly in the British Islands alone. But when we add to these the prolific publications of the different State surveys and the numerous scientific institutions of the United States and of our own colonies and dependencies; when we bear in mind the scientific activity exhibited by the French, German, and Italian speaking populations of Europe, and the books and journals written in languages, which of course few scientific men are able to read, such as the Russian, Danish, Dutch, Scandinavian, Hungarian, Bohemian, Serbian, &c.; and when we recollect that geological memoirs are published even in Japan and Tahiti!—we may have some idea of the magnitude and difficulty of the task with which the conductors of the "Geological Record" have to grapple.

In illustration of the energy which has been brought to bear upon this task, we may mention that the first volume of the "Geological Record" extends to nearly 400 pages; that the journals of which the contents, so far as they relate to geology, have been given in abstract, number nearly 200; and that the separate entries of books, memoirs, and maps exceed 2,000.

Henceforward, the yearly volumes of the "Geological Record" must find a place on the shelves of every scientific library; and in congratulating the editor on the manner in which he has surmounted the first and greatest difficulties of his arduous undertaking, we find only one cause for complaint. So far as the title-page shows, no arrangements have been made with agents residing abroad for the circulation of the work in America, the colonies, and on the Continent. We are persuaded, so very general is the use of the English language among the scientific men of all parts of the world, that so soon as this omission is remedied, the foreign circulation of the "Geological Record" will equal or even exceed that which it already has at home; while most valuable aid will be given in the preparation of the future volumes of the work by the secretaries of foreign societies and the editors of Continental and American journals sending copies of their publications, immediately that they appear, to the conductors of this important work of reference.

J. W. J.

OUR BOOK SHELF

Lessons on Rigid Dynamics. By the Rev. G. Pirie, M.A. (London: Macmillan and Co., 1875.)

THIS work treats of the geometry of motion, D'Alembert's principle, reduction of the expressions for the effective forces, moments and products of inertia, energy, precessional motion, and certain differential equations which occur in treating of the subject of Rigid Dynamics. There is an excellent selection of exercises, many of which are worked out, and the answers are in many cases accompanied by useful hints. The book appears to us to be in every respect an admirable one, and to be a good introduction to the study of this difficult branch of natural philosophy. We agree with Mr. Pirie in thinking that much of the difficulty students find in this subject arises from the explanations which are given in the ordinary text-books being for the most part brief and often, in consequence, obscure. We believe the author's hope that his book may be useful not only to students of natural philosophy, but also to engineers, is likely to be realised. We cordially recommend the book.

The Secret of the Circle, its Area Ascertained. By Alick Carrick. (London: H. Sotheran and Co. Chiswick Press, 1876.)

ONE more contribution to the long list of works on the Circle, put forth with the usual assurance that now the question must be set at rest. "Dedicated with great deference to the different schools of learning and to the intelligence of the public generally in this and other countries, in the confident hope and full belief that the truth pointed out in these pages will soon be acknowledged." There is a prefatory notice taking us down to page 16 (there are 48 pages in the pamphlet), from which we learn that the author's name is an assumed one, and that he is now dead. "Introductory" takes us to page 39. "The Secret of the Circle, its Area Ascertained," occupies the rest of the book. The Rule given is, "Diameter \times radius \div four-sevenths" (*sic*), hence our friend π is equated to $\frac{22}{7}$. There are ten figures, some

pretty to look at, but there is a dearth of letters, and it is often hard to make out what parts are intended in the demonstration. There is much that is true and not new; for instance, that the inscribed dodecagon is equal to the inscribed square and half that square; what is new is not proved to be true. Thus to get the result, the circular segment bounded by the side of the dodecagon ought to be for his purpose $\frac{1}{84}$ (radius)², and this is not shown on

pp. 44, 45, for it is not proved there that Q contains the nine segments which it is said to contain. Hence we are led to say that the truth about the Circle is *not* to be found *here*.

Australian Heroes. By Charles H. Eden. (Society for Promoting Christian Knowledge).

MR. EDEN has written a very interesting book. As might be surmised from the title, he has brought into prominence the adventures of the explorers of Australia rather than the results of their explorations. Australia is unlike almost any other country which has been the field of exploration; its sameness, the dreary tameness of the bulk of the continent, the comparative paucity and low state of the aborigines, deprive an explorer's narrative of many of the points of interest to be met with in the case of other countries—Africa, for example, South America, or even the Arctic regions. Still this little book shows that during the comparatively brief period that Australia has been a field for exploration, there have been plenty of deeds of daring and determination and self-sacrifice in the cause of scientific knowledge, to render any skilfully