

REVIEWS

A History of Comparative Anatomy. By F. J. Cole. (Macmillan & Co., Ltd., London), 1944. Pp. viii + 524. Price 30/-.

Dr. F. J. Cole has long been regarded as one of the foremost authorities on the history of comparative anatomy and almost immediately after his retirement from the Chair of Zoology in the University of Reading, he set himself to the stupendous task of making known the great debt our present knowledge of animal anatomy owes to the long array of pioneers who, from the time of Aristotle down to the eighteenth century, have contributed to the growth of this science. He has left much of the eighteenth century and later out of his consideration, for, this comparatively recent aspect of the history of anatomical research is fairly well known and has commanded the attention of a considerable number of recent students. It is the old giants that claim Dr. Cole's attention. In this history of anatomy, as in the history of most branches of knowledge, there is a dark period extending over the first fourteen hundred years in the Christian era, which is blank and unproductive and which contributed practically nothing to the growth of anatomy, so that, barring the early contributions like those of Aristotle and Galen, the scope of the work covers the productive effort of but a few hundred years.

Dr. Cole must have had the idea clear in his mind for a long time, even as a young teacher, to devote his energies to the historical side of zoological discovery and we will be surprised if his will not be last word on the subject. Imbued with a pardonable enthusiasm for his pet subject, Dr. Cole would desire that *History of Anatomy* be prescribed in the zoological curricula in our Colleges. It is doubtless that to the young student it may be an interesting escape from the rigours of routine dissections, to delve, however superficially, into the no longer mysterious past of anatomical discovery but to the actual worker, it is of very little consequence since he is not likely to be affected by the ancient and slightly ludicrous atmosphere which such books create. To the historian it has a definite usefulness, yes; but to the research worker, no; because if it is not an exclamation of wonder at the technical skill and painstaking labour of Swammerdam, it would be a smile at the credulous mistakes of Aristotle and both have no place in the pursuit or accumulation of knowledge.

The book differs from all others on a similar theme in putting the work of the man before the man himself, and if the man figures at all (in addition to the appendix where biographical notes are indicated), it is against the background of the contributions made by him. But often, especially in historical characters, it becomes a matter of difficulty to segregate the two and that difficulty Dr. Cole too experiences. But we would not have it otherwise. The young student and worker to whom the book is of special value would not

like to divorce one from the other and the personality of the man has as much a fascination for him as his work itself.

A critical examination of the work of the old masters of anatomy shows that any of them would stride like a Colossus in this our modern age as he did in his own, and one finds oneself reflecting whether our modern age could be said to produce more than what the old one did, so far as skill goes; for, skill is largely a matter of the mind and the hand, unlike technique, which is a matter of the machine and the tool. And it is hardly likely to be argued that the mind of the men in the 16th or 17th centuries or the centuries before Christ was any the inferior or less perspicacious than that of the men of the present century and Dr. Cole directs our attention to the masterly dissections of Swammerdam and observes that if Swammerdam could have commanded a binocular microscope, he would doubtless have saved himself much toil and strain but it is doubtful if he would have 'discovered' more.

Two sections of the book, more than the others, deserve the particular attention of the reader. The first, on the Societies and Academies, is a review of the important early publications of the Royal Society and its contemporaries, but more than that, the significant fact is that these Societies initiated a new kind of outlook and a new approach to Biological investigation, i.e., of Discussion and Co-operative effort. The usefulness of this type of approach has been borne out by the avidity with which the original idea has been borrowed by practically every country in the world—resulting more often than not, in an unnecessary and confusing multiplication! But that the idea was a good one has been justified by the results which have been most productive and encouraging and in fact it has completely superseded the old and effete idea of individual and private publication.

The other section is devoted to the history of the foundation and development of the Anatomical Museum which has come to be an integral part of anatomical teaching. Dr. Cole traces the development of the art of preservation of specimens and shows how the modern museum has evolved and diverged from the old.

The most outstanding feature of the book is its illustrations. A book of this kind would be valueless if it were not set against the background of pictorial depiction of the development of anatomical thought and Dr. Cole has been able successfully to collect a great mass of illustrations which are mostly photographs of the original illustrations of the authors themselves,—illustrations which have never before been brought together in a single book and which are as much a credit to the technical skill and perfection of the photographer as to the selective ability of the author.

The book is a life's work, displaying a patient and painstaking accumulation of facts

and their assessment. It is often difficult for a scientist in the modern age to evaluate the work of one in the old but Dr. Cole has been free from this bias, and has brought to bear a searching and at once a sympathetic enquiry to his task. That he has been eminently successful is proved by the fact that he has produced an outstanding contribution to our knowledge of the history of anatomy,—a contribution which will stand unique and unparalleled for a long time.

B. R. S.

Metallurgical Analysis. By V. Gopalam Iyer, B.A., Asst. Prof. of Chemistry and Assaying, Benares Hindu University. Pp. 365. Price Rs. 12.

This book has been written primarily to meet the needs of the undergraduates in Mining and Metallurgy of the Benares Hindu University. A variety of analytical topics of industrial interest have been dealt with in this book. The first 200 pages are devoted mostly towards the analysis of industrial metals and their alloys like iron, nickel, gold, aluminium, silver and various types of steels. Special attention is paid towards the analysis of different varieties of slags. The next section of the book deals with some technical methods of organic analysis like the proximate and ultimate analysis of coal, carbonisation assay of coal, calorific power of coal, iodine value of castor oil and technical methods of testing lubricating oils. The last 50 pages are devoted to describe a number of miscellaneous topics like the analysis of zinc blende, aluminium alloys, qualitative analysis of alloying elements, sampling laboratory reagents, etc. In fact the book serves as a brief notes of the common methods of technical analysis as applied to the Indian Industries.

The book requires a good deal of improvement before it can give full satisfaction to the readers. It is very distressing to find that the book should have 300 items of errata in addition to many not corrected. In the copy sent for the review pp. 2, 3, 6 and 7 are missing while pp. 1, 4, 5 and 8 are duplicated. It can be hoped that the author will not allow these mistakes in the next edition. Some topics on pp. 5, 9, 12, 14, 21, 27 require careful modification. The value of the analytical methods can be improved by giving some common uses of the organic reagents in the estimation of metals.

M. R. A.

Soil Erosion. By Sir Harold Glover (Oxford Pamphlets on Indian Affairs, No. 23, Humphery Milford, Oxford University Press), 1944. Pp. 32. Price As. 6.

Erosion and the resulting decline in the fertility of the soil are among the foremost problems facing the subcontinent of India. Their effects are not confined to the land alone, man and animal suffering as well, due to a decrease in the capacity of the land to support life. There are no statistics of the extent of area affected by erosion, but, even at a low estimate, this will be well over half the total cultivated area of 330 million acres. It is therefore obvious that the control of soil erosion is a task of national importance. Happily, many of the provincial governments

have recently begun taking steps to check soil erosion by suitable preventive measures. Constant propaganda is, however, required for the effective carrying out of a progressive soil conservation policy as it is only then that the general body of the people become convinced of the menace of soil erosion. The booklet under review is very successful attempt in this direction. The author has given a lucid exposition of the main factors responsible for soil erosion and the remedial measures necessary to conserve the soil and maintain its productivity. Among the causes of soil erosion are the destruction, mostly by man and his animals, of the forests and of the vegetative covering of the soil, faulty methods of cultivation and the ploughing of unstable slopes. The cure of soil erosion lies in the restoration of the vegetation by afforestation and proper pasture management and in better agricultural practices like terracing, levelling, contour-bunding and the provision of adequate drainage for storm water. The suggestions made by the author for the proper management of forests, pastures and cultivated lands should form an excellent basis for long-term regional planning and this well-written pamphlet deserves therefore to be widely read.

A. SRENIVASAN.

The Indian Sugar Industry. (1943 Annual). By M. P. Gandhi. (Gandhi & Co., Sir Pherozshah Mehta Road, Fort, Bombay), 1944. Vol. IX. Pp. 350. Price Rs. 6-6-0.

First published in the year 1935, this comprehensive and valuable Annual has come to be looked upon as the only authoritative source of information and data pertaining to all branches, including the legislative and economic aspects of the Indian Sugar Industry.

A new peak of production of sugar was reached during the period covered by the Annual and the author envisages the easy possibility of reaching the target of 1.5 million tons during the impending season.

The magnitude and the economic status of the industry are realised if attention is called to the fact that the production of sugar in the country has been responsible for preventing the substantial drain of about 16 crores per annum and for supporting 20 million agriculturists. An industry of such national importance needs to be consolidated and rationalised to withstand possible competition during the post-war period. The author has focussed attention on problems relating to this aspect of post-war reorganisation of the entire industry. One of the effective methods of stabilising the industry consists in the economic utilisation of its bye-products. This aspect has not received any serious attention. Excepting for the utilisation of molasses for the production of power alcohol, no other bye-products are now being produced. The institution of an acoustical engineering laboratory and the founding of a National Collection of Type Culturés, both at the Indian Institute of Science, it is hoped, will stimulate research directed towards a rational utilisation of the bye-products. The Annual deserves the earnest attention of not only those concerned with post-war industrialisation but also those interested in the continued prosperity of the most important and vital of our national industries.