

p. 110, it is stated that, in puddling, the carbon is reduced to '1 per cent. ; and also that during the melting-down stage there is little chemical action. P. 111: Puddled bloom is chemically wrought iron with intermingled slag. P. 123: Steel is made by *carbonising* malleable iron. P. 128: Mild steel, not more than '5 per cent. carbon, does not harden when heated and quenched in water. P. 134: The slags from the acid Bessemer process are *very basic silicates* of iron and manganese. P. 138: In Open Hearth process it is stated that the iron ore should be as free as possible from silica, whereas the Spanish hematite usually employed is very siliceous. P. 143: The strength increases as the diameter of the wire decreases. Also cake or tough copper may contain any amount of impurities. P. 223: An alloy of 80 per cent. copper and 20 per cent. zinc is called *red brass*. P. 229: Electro refining of copper; the anode is a thin sheet of copper; the cathode is a bar of blister copper. P. 230: The passage of the electric arc through the carbons produces a very high temperature. It is a great pity that a work which has been so judiciously compiled as the present one should be marred by so many mistakes, when by a more careful supervision of the proof sheets they might have been easily detected and corrected.

*Annals of British Geology, 1893.* A Digest of the Books and Papers published during the Year. By J. F. Blake, M.A., F.G.S. (London: Dulau and Co., 1895.)

ONCE more has Prof. Blake overcome all the obstacles of prolonged research among publications that are many of them difficult of access. Once more has he braved the disappointment of inadequate support, and following his own independent course in the selection and arrangement of his material, he has now given us the fourth volume of his "Annals of British Geology." Every addition to the series renders the whole of greater value, and we sincerely hope that the present volume will be self-supporting, as he ventures to anticipate. To all geologists, and to the provincial worker especially, these "Annals" must be of the greatest service, for the author contrives to give so much of the substance of each paper, that the reader will gain a very fair notion of the additions made to our knowledge during each year. Except in the student's special department of work, there will be no occasion to consult the originals.

Altogether 730 papers and books are noticed, being an increase of 180 over those recorded in the previous volume. The author's introductory review, occupying twenty-four pages, gives a summary of the chief geological news of the year. Although not essential to the Annals, this review acts as a safety-valve for the escape of some few of the critical remarks which arose while the author was perusing the 730 works. New forms of Ammonites and Corals come in for critical observations, so also do the "hemerae" of the Inferior Oolite, and various glacial theories.

In Palæontology the place of honour is rightly given to the Elgin Reptiles described by Mr. E. T. Newton, and an excellent illustration of *Elginia mirabilis* forms the frontispiece of the book.

*The Origins of Invention.* By Otis T. Mason, A.M. Ph.D. Pp. 419. (London: Walter Scott, Limited, 1895.)

To trace our modern industries to their origins, to show how they have evolved, and to point out the changes from naturalism to artificialism that mark the course of civilisation, is a difficult task, but an attractive one; and few ethnologists are better equipped with facts relating to this development than the Curator of the Department of Ethnology in the United States National Museum, who is the author of this book.

Dr. Mason lays down the following as the order in which kinetic energy has been commanded: (1) man-power in every pursuit; (2) fire as an agent in cooking, pottery, metallurgy, &c.; (3) the power of a spring, as in a bow or trap; (4) beast-power, for burden and traction; (5) wind-power, on sails and mills, and in draught; (6) water-power, as a conveyance and a motor, and gravity or weight generally; (7) steam-power, utilisation of an expanding gas; (8) chemical power, in the arts of the civilised; (9) electric power, motors, message-bearers, in mechanics and illumination; (10) light as a mechanical servant, only beginning to be domesticated.

Prominent among inventions are tools and mechanical devices—objects employed as means to ends. Many of these have come down from remote antiquity. Following M. Adrien de Mortillet's classification, Dr. Mason describes the tools and appliances used by primitive peoples for cutting; abrasion and smoothing; fracturing, crushing, pounding; perforating, grasping, and jointing. At the basis of tool-using, lie the systems of counting and weighing and measuring, all of which receive attention.

The invention and uses of fire, forms the subject of a very interesting chapter. Other matters treated in separate sections are stone-working, pottery, primitive uses of plants, the textile industry, inventions belonging to the chase, methods used for the capture and domestication of animals, means of travel and transportation, and instruments of warfare.

The work is readable throughout; it is a valuable history of the development of the inventive faculty, and has, therefore, an important relation to the history of humanity. The ethnologist will find in the volume much that is interesting in regard to the relationship between man's activities in different regions.

*Short Studies in Nature Knowledge.* By William Gee. Pp. 313. (London: Macmillan and Co., 1895.)

FOR boys in the upper standards of our elementary schools, this forms an ideal reading-book. It is simply worded, is not too full of details, contains numerous illustrations, and is likely to create and foster a love of natural knowledge. The book is intended to be used as an introduction to physiography, and it covers the ground usually understood to belong to that science. Copious extracts from the poetical and prose writings of standard authors are introduced into the text wherever possible, and serve to lighten it. The author appears to have spent a deal of care upon the work, and we think he has succeeded in producing a volume which will be welcome to teachers, as well as readable to all who find pleasure in the study of inanimate nature.

*Organic Chemistry: The Fatty Compounds.* By R. Lloyd Whiteley, F.I.C., F.C.S. Pp. 291. (London: Longmans, Green, and Co., 1895.)

THIS is another elementary science manual "written specially to meet the requirements of the elementary stage of science subjects as laid down in the syllabus of the Directory of the Science and Art Department." It is hardly a book that we could recommend to followers of departmental organic chemistry, and certainly not one to be adopted by other students of the science. It is most unequal in structure, and very deficient in parts: Chapter iv., on percentage composition and empirical formulæ, consists of less than one and a half pages. As well-known standard works have been "freely employed" in the preparation of the volume, it is difficult to recognise the sections for which the author is responsible, and therefore undesirable to impeach the accuracy of some of the information.