

Moisture in a gas is of importance in drying operations, so the chapter by Grüss in which the alteration of the moisture content with varying conditions, and the methods used in its determination and regulation, gives valuable information to those testing drying plants or carrying out research on this subject.

In the second section of this book, Krönert describes the various types of calorimeters available for the measurement of the calorific values of solid, liquid and gaseous fuels, and this is followed by two chapters, one by Grüss on the measurement of heat and the other by Burbach on the loss of heat, both of which are of considerable importance to engineers.

All the contributors, in both volumes, have worked to a carefully prepared scheme in which

the theoretical aspect of their subject is first emphasised. This is then followed by, in the first volume, descriptions of suitable industrial plants or units and, in the second volume, information on the instruments and regulators to be used. Often, too, hints are given on the methods of working which should yield good results. The first volume, therefore, should appeal more to the designer and user of chemical plant than the second, which is primarily a volume for those engaged in testing or research.

Many engineers, however, and especially those at the commencement of their career, will only become acquainted with this valuable work through lending libraries; this, in view of the excellent way in which the various subjects are treated, is to be regretted.

Short Notices

Traité de zoologie. Par Edmond Perrier. Fascicule 10: *Les mammifères.* Publié par les soins et avec le concours de Prof. Rémy Perrier. Pp. iv+3343-3610. 45 francs. *Index alphabétiques des 10 Fascicules.* Par Prof. Rémy Perrier. Pp. iv+163. 40 francs. (Paris: Masson et Cie, 1932-1933.)

THE volume upon mammals forms the tenth and final fascicule of Perrier's great "Traité de Zoologie". Like its forerunners in the series, it is essentially a morphological and classificatory textbook, and in it the life and habits of the mammals have no place, apart from a short account of limb adaptations.

The greater part of the work (190 pages) consists of comparative accounts of the organic systems of the body. The text is adequate, but the majority of the illustrations have a familiar look, and we must protest against the reappearance of the figure showing the successive annual stages of the growth of the antlers of the red-deer, ending in three stages in which the crown shows an impossible (or at any rate an altogether abnormal) development; nor is it accurate to say that the addition each year of new tines (*andouillers*) "permet de juger exactment de l'âge d'un Cerf".

The remainder of the book (77 pages) gives, in small type, the classification of the Mammalia, down to the characters of families.

The ten volumes, begun by Edmond Perrier and completed by Rémy Perrier, opened with an account of general zoology, and this was followed at intervals by volumes dealing, mainly on morphological and systematic lines, with the groups of the animal world, each of the vertebrate classes having allocated to it a complete volume. A special account of the embryological development of the allantoidian vertebrates was included in the reptile volume. The index consists of two parts, one confined to technical terms, and the other to the names of genera and subgenera, various typographical characters being used to indicate fossil forms, synonyms, illustrations and other details.

J. R.

Die Rohstoffe des Tierreichs. Herausgegeben von Ferdinand Pax und Walther Arndt. Lief. 9. Pp. 881-1040. 16.80 gold marks. Lief. 10. Pp. 1041-1216. 17.60 gold marks. Lief. 11. Pp. xxiv+1217-1400. 34 gold marks. (Berlin: Gebrüder Borntraeger, 1932-1933.)

THESE three parts contain the chapter on fibrous materials of animal origin, the greater part of which is devoted to the account of hair, including wool, and bristles obtained from horse, cattle, camel, alpaca and vicuna, sheep, goat, rabbit and pig. The history of these fibres from early times, and the principal localities from which they are now obtained, are briefly set forth. The physical characters and structure of the various types or grades of fibre and the technical processes by which they are spun, woven or otherwise prepared for use, are described, and the commercial designations of the different sorts of yarn and finished products are defined. The testing of fibres for length, fineness and other qualities and the substitutes used for horse hair, wool and bristles are considered. The characters of the hair and bristles of a number of wild mammals and the uses of these fibres are described, and an interesting section on human hair and its applications is added.

Of other fibres considered in this chapter the most important are produced by silk-spinning Lepidoptera, especially the Bombycidae. The spinning glands are described and their cells, with remarkable branched nuclei, are figured. Details are given of the culture of the silkworms (some 43,000 of which develop from an ounce of eggs), the characters of the silk fibres, the mode of collection, spinning, etc. Among other fibres considered, are spider's threads for the cross-lines of optical instruments, the fibres of the byssus of the bivalve *Pinna nobilis*, and the tendons and ligaments of mammals.

This useful account of fibrous materials, which extends to more than five hundred pages, is well illustrated and includes lists of works for reference.