

and Lord Cawdor. The expedition owed much to the hospitality of the Tibetans, and to the courage and endurance of the men and women who, at the risk of life and limb, carried their loads up and down the almost vertical cliffs of the gorge. The book is illustrated by excellent photographs, some of which must have been taken from very perilous positions. The last two chapters of the book are by Lord Cawdor, and give a short account of the natives of Eastern Tibet and their customs.

*Reports of the Progress of Applied Chemistry, issued by the Society of Chemical Industry.* Vol. 11, 1926. Pp. 742. (London: The Society of Chemical Industry, 46 Finsbury Square, E.C.2, 1927.) 12s. 6d.; 10s. to Fellows of the Chemical Society, or 7s. 6d. to members of the Society of Chemical Industry.

ONE is accustomed to anticipate with some eagerness the publication of the annual reports on pure and applied chemistry by the Chemical Society and the Society of Chemical Industry, respectively. The eleventh volume (1926) of the latter series will occasion no disappointment. In fact, it is unusually comprehensive; it is readable and yet as full as ever of catalogued information, and, moreover, it has appeared promptly. It is not surprising that constant reference is made to the impression left by last year's dispute in the coal-mining industry on the progress of applied chemistry; however, the difficulties of that period have at least focussed attention on fuel economy, on more fruitful ways of using coal, and on the possibility of meeting future demands for liquid fuel.

It is noteworthy that the period under review saw the establishment of the Institution of Fuel Technology and the Fuel Section of the Society of Chemical Industry. The fermentation industries, also, continue to grow in importance; the butyl alcohol—acetone fermentation is now being harnessed to the commercial production of hydrogen. Harington's work on thyroxin is recorded as the most notable advance in the chemistry of the hormones. A. A. E.

*Wireless Loud-Speakers, a Practical Manual describing the Principles of Operation, Performance, and Design.* By Dr. N. W. McLachlan. Pp. viii + 139. (London: Iliffe and Sons, Ltd., 1927.) 2s. 6d. net.

THIS book describes in a simple way the main principles used in the design of various modern types of loud-speaker. Both the amateur and the expert will find in it much that is instructive. The musician who judges from the average loud-speaker reproduction of to-day is forced to conclude that at the best it is only fair. The performance of even the best loud-speakers is far from ideal. The musical ear soon detects resonances in the reproduction, and sometimes it soon ceases to give pleasure. It is also necessary that there should be no falling off in the reproduction of notes in the scale having frequencies between 40 and 400 cycles and also in the scale from 2000 to 4000 cycles. In

the former case the bass, and in the latter the upper harmonics, are almost lost. In practice the ear finds a great difficulty in judging which of several imperfect instruments is the best. It seems to be a matter of taste. It has to be remembered that the radiation of sound from a horn loud-speaker is in the form of a divergent beam, the best quality being obtained when the aperture of the horn points directly to the listener. With a cone diaphragm the radiant beam is wider and extends on both sides of the diaphragm. Owing to the focussing effect the reproduction is best with the concave face to the front. In certain cases, however, this is somewhat modified by reflection from the walls of the room.

*Entwicklungsgeschichte der mineralogischen Wissenschaften.* Von P. Groth. Pp. v + 262. (Berlin: Julius Springer, 1926.) 18 gold marks.

THIS essay on the historical development of the mineralogical sciences is especially interesting in being from Prof. Groth, who has been a leader in these subjects for half a century and has now reached the age of eighty-three years. It is divided into two sections—"Krystallkunde" and "Mineralkunde"—and the period covered is up to the end of the nineteenth century; that is, previous to the recent developments in crystallography due to X-ray methods.

The early history of mineralogy and crystallography are closely interwoven, but now they must be regarded as distinct sciences. Crystallography is no longer an aid only to mineralogy, but also to chemistry and physics—a fact that is well brought out in the present sketch. Besides chapters on geometrical crystallography there are others on physical and chemical crystallography, and on the recognition of the connexion between the form of crystals and their optical properties. The mineral section contains chapters on the crystallography of minerals and the optical determination of rock-forming minerals, and on the chemistry of minerals, including the study of their alteration and artificial reproduction. Some account is given of the more important mineral collections in various countries and of the work that has been done on the material so collected. An appendix gives an interesting series of biographical sketches of the more prominent past workers.

*The Story of Reckoning in the Middle Ages.* By Florence A. Yeldham. With an Introduction by Dr. Charles Singer. Pp. 96. (London, Calcutta and Sydney: George G. Harrap and Co., Ltd., 1926.) 4s. 6d. net.

THE increasing number of teachers who are becoming interested in the history of mathematics will welcome this little book, which is divided into two parts, treating respectively of the abacus and algorism. Admirable diagrams enable the reader to perform simple calculations with the abacus, and the chapters on algorism throw considerable light on the evolution of our modern methods of computation.