NOTES.

The following deaths have to be recorded:—

Emil Wilhelm COHEN (1842–1905), since 1885 Professor of Mineralogy in the University of Greifswald; previously (1878–85) he was Extraordinary-Professor of Petrology at Strassburg. He was the author of numerous papers on meteoric irons, and his 'Meteoritenkunde', of which three parts were published between 1894 and 1905, unfortunately remains incomplete. He visited South Africa in 1872, and was the first to give a detailed scientific account of the diamond-fields; many of his early petrographical and mineralogical papers are descriptive of material from this region. He also published a large series of photographic illustrations of rock-sections and of meteorites. A detailed biographical notice, together with a list of his published works, is given by Professor W. Deecke, his successor at Greifswald, in the 'Centralblatt für Mineralogie, &c.' (1905, pp. 513–530).

Per Theodor CLEVE (1840–1905), since 1874 Professor of Chemistry in the University of Upsala. He was distinguished as a chemist, especially in connexion with his researches on the rare earths, but was also a recognized authority on microscopic marine organisms and hydrography. He analysed and described several mineral species, and the mineral cleveite was named after him in 1878.

Jean Baptiste Henry DUFET (1848–1905), since 1885 Professor of Mineralogy in the École Normale Supérieure at Paris. He made numerous exact determinations of the physical constants of crystals, especially of the optical constants of isomorphous mixtures. A biographical notice, with portrait and list of published works, is given by Professor G. Wyrouboff (Bull. Soc. franç. Min., 1905, vol. xxviii, pp. 246–258).

A new and revised edition has appeared (1905) of Professor A. H. Church's well-known Handbook of Precious Stones, which first appeared in 1882 and has several times been reissued; it has now been enlarged from 112 to 140 pages. The coloured plate has been redrawn, new diagrams being given of the absorption spectra of almandine and zircon. In his preface the author points out that the value of the precious stones exported from Ceylon is usually very much under-estimated and con-

sidered of less importance than the graphite and pearls; as a moderate estimate he gives £300,000 as the value of the gem-stones (apart from pearls) annually exported.

New editions, in each case the fourth, have recently appeared of the following standard works: Professor P. Groth's 'Physikalische Krystallographie' (1905) has been increased by forty pages, there now being 820 pages as compared with 527 pages in the first edition of 1876. The principal alterations are in the optical portion. A distinction is now made between bivectorial and vectorial (e. g. pyro-electric) characters; and amongst the former a further distinction is made between physical characters of higher symmetry expressible by an ellipsoid (optical, electric, &c.) and those of lower symmetry (cohesion and elasticity).

The first volume, dealing with rock-forming minerals, of Professor H. Rosenbusch's 'Mikroskopische Physiographie der Mineralien und Gesteine' has now been split into two parts. The first part (1904) has been entirely rewritten by Professor E. A. Wülfing, and gives an excellent summary of the methods of investigation; while the second part (1905), descriptive of the rock-forming minerals, has been extensively revised and added to by Professor Rosenbusch himself.

New editions have also been issued of the textbooks of Mineralogy by Professor G. Tschermak (6th edit., 1905) and Professor Max Bauer (2nd edit., 1904).

An excellent volume on topographical mineralogy is the 'Mineralogia Groenlandica', by O. B. Boeggild, issued as No. 6 of the Contributions to Mineralogy from the Mineralogical and Geological Museum of the University of Copenhagen (Copenhagen, 1905, pp. xix + 625, with map). Being based on the rich collections of Greenland minerals, which have been gradually accumulated in the Copenhagen Museum during more than a century, the work contains much information not previously published: for instance, of the 119 figures of crystals 87 are new. The number of mineral species recorded with certainty is 162. The locality lists include both the new and the old spellings of place-names, and a map adds considerably to the usefulness of the volume. In the preface, which is written in English (the main part of the volume being in Danish), Professor N. V. Ussing gives some historical notes respecting the Copenhagen collections and the many collecting expeditions to

Greenland. Mineral specimens were early brought home by the Danish missionaries, but the first systematic collections were those made by C. L. Giesecke in 1806–1813, while more recent is the remarkably rich material collected by G. Flink in 1897.

A new journal entitled 'Economic Geology', published bimonthly at Lancaster in Pennsylvania, is devoted to mining geology and the systematic study of ore-deposits. In scope it is very much the same as the 'Zeitschrift für praktische Geologie'. The first two numbers, issued at the end of 1905, include several original papers by well-known American geologists, together with personal notes, abstracts, and reviews. Commencing with 1906, the 'American Geologist' will be incorporated with the new journal, and its final number will contain a general index to the thirty-six volumes which have been published during the last eighteen years (1888–1905).

The Mines Branch of the Canadian Department of the Interior has commenced the issue of a series of publications on the economic minerals of Canada. The two monographs which have already appeared (1905) deal with mica and asbestos (i. e. chrysotile), and are by Fritz Cirkel. These extend to 148 and 169 pages respectively, and are illustrated by numerous figures, plates, and maps. They give a description of the general characters, modes of occurrence, methods of mining, and working of the minerals. Much of the information is of a strictly practical character, and in places shows evidence of having been hurriedly put together.

'Minerales alcalinos y terrosos de Colombia' and 'Gemas y minerales litoides de la Republica de Colombia' are the titles of two pamphlets, by R. Ll. Codazzi, recently issued as parts of the 'Trabajos de la Oficina de Historia Natural' (Bogata, 1904). A brief description is given of the characters of American species of minerals, with notes on their occurrence at North and South American localities, and in particular those of Colombia.

Other South American publications bearing on mineralogy have also reached us from Peru; namely, the 'Boletín del Cuerpo de Ingenieros de Minas del Perú', of which twenty-six numbers have already appeared (Lima, 1902 and 1905) and several more are promised. These deal primarily with the mineral resources of the different provinces, whilst

others, for example No. 7 on 'El Cinabrio de Huancavelica', treat of a mineral of economic importance at a particular locality.

Although several artificial substances (tartaric acid, cane-sugar, &c.) are known to crystallize in the hemimorphic (sphenoidal) class of the monoclinic system, there is as yet no known example of this type of symmetry amongst minerals. Dr. H. Böckh ('Földtani Közlöny', Budapest, 1904, vol. xxxiv, p. 369) claims to have found an example in fichtelite, a hydrocarbon occurring in lignite. The crystals he describes exhibit the hemimorphic development of the faces and are pyro-electric, but they were artificially crystallized from a solution obtained by extracting a fichtelite-bearing lignite with ligroin, and can therefore scarcely be considered to be representative of a natural mineral.

The linear force exerted by growing crystals has been investigated by Drs. G. F. Becker and A. L. Day (Proc. Washington Acad. Sci., 1905, vol. vii, pp. 283–288). A weighted plate of glass was placed over a crystal of alum growing from solution, and it was found that a crystal 1 cm. in diameter could raise a kilogram weight through a distance of several tenths of a millimetre. The crystals grow with a cupped surface, and only a very narrow ring of material is in contact with the glass. The actual area of contact it was impossible to estimate, but it is so small that the force exerted by the growing crystal must amount to many pounds per square inch, being of the same order of magnitude as the resistance which the crystal offers to crushing stresses.

Attention is drawn to the geological importance of this force of crystallization, especially in connexion with the formation of quartz-veins and ore-deposits. If in quartz the force exerted during crystallization on the walls of the vein is comparable with the resistance which the material offers to crushing, then it must be considerable.

The so-called 'pine-apple' pseudomorphs, from the opal mines of White Cliffs in New South Wales, consist of precious opal with the form of acute four-sided pyramids of considerable size and arranged in radiating clusters. They have been examined by Jaquet, Weisbach, and Pelikan, who have variously suggested gypsum or sulphur for the original mineral, while Gürich compared them with the 'barley-corn' pseudomorphs of Sangerhausen. Recently Messrs. C. Anderson and H. S. Jevons

(Records of the Australian Museum, 1905, vol. vi, pp. 31–37, two plates) have measured the angles between the somewhat rounded faces and find that the form is monoclinic; they also observed traces of a distinct cleavage perpendicular to the plane of symmetry. The angles approach those of glauberite ($Na_2SO_4.CaSO_4$), and this, the authors conclude, was the original mineral of these pseudomorphs.