of ten fossil crinoids, ranging from Lower Ordovician to Eocene, were also examined, but, with one exception, showed a very small percentage (·8 to 2·56) of magnesium carbonate. The alteration is ascribed mainly to infiltration by calcium carbonate and other constituents, which would naturally lower the proportion of magnesium carbonate. The original suggestion, therefore, that crinoids might play an important part in the formation of magnesian limestones is far from being supported. Nor is it supported by the sole exception, for this was a stem of the common Lily Encrinite from the Muschelkalk; and the reason that this had no less than 20·23 per cent of magnesium carbonate is presumably that it came from one of the many Muschelkalk limestones that have been dolomitized. Even so the proportion of magnesium carbonate does not come near that which obtains in true dolomite.

VII.—Professor E. S. Morse on an Early Stage of *Acmæa*.

PROFESSOR EDWARD S. MORSE'S paper (Proc. Boston Society of Natural History, February, 1910) on "An Early Stage of *Acmæa*", though delayed in coming into our hands, deserves even a late appreciation. Contributions to our knowledge of the phylogeny of the Mollusca are exceedingly desirable, and we wish students of this phylum would spare more time from systematic conchology to the study of such problems as Mr. Morse deals with in his paper. The author, after a study of two species of *Acmæa*, in which (in one at least) no trace of a coiled Nautiloid apex was found in the embryonic stage (though such a coiled apex has been found in the early stages of other Docoglossa), proceeds to review some of the evidence (palæontological, embryological, and anatomical) that suggests that the Docoglossa are actually primitive Gastropoda. It is plain, of course, that all the members of the sub-order (*Lepeta, Pilidium, Helcion*, etc.) must be examined before we attempt to formulate any final statement as to the evolutionary status of the Docoglossa, and in the meantime such evidence as Mr. Morse is able to produce is most valuable, if not actually sufficient to upset the belief that the Docoglossa are not entirely primitive in their structure.

VIII.—Brief Notices.

1. In a paper recently published in the Smithsonian Miscellaneous Collections (vol. lx, No. 21) J. W. Gedley records the occurrence of a bone of a camel associated with remains of the mammoth and bison, from a locality in the Yukon Territory, Alaska, some distance within the Arctic Circle. Although, as is well known, the Bactrian Camel can endure extreme cold, no remains of any member of this group have hitherto been found nearly so far north.

2. Chalk of Gingin, Western Australia.—Mr. R. Etheridge has issued as Bulletin No. 55 (1913) of the Geological Survey of Western Australia a description of the fossils of the Gingin Chalk. The fauna shows a striking similarity to the uppermost White Chalk of England, with *Magas* and *Trigonosemus*. In Bulletins Nos. 36 (1910)

and 50 (1912) the stratigraphy of this deposit was dealt with by Messrs. Glauert, Maitland, and Montgomery.

3. Cambrian Stratigraphy in the North American Cordillera. —Mr. L. D. Burling discusses the *Albertella* fauna, and shows that it is unassociated with *Olenellus*, and consists of forms either typical of Middle Cambrian or confined to the *Albertella* fauna, as species of unknown or connecting affinities. The lower Middle Cambrian boundary has now been drawn at the base of such horizons as the one containing the *Albertella* fauna. (Mus. Bull. 2, Dept. of Mines, Canada, 1914.)

4. Geology of Long Island.—An elaborate and detailed description of the geology of Long Island is provided by M. L. Fuller as Professional Paper 82, Department of Interior, United States Geological Survey, 1914. The paper is fully illustrated by sections and topographic maps. As there is a large amount of Quaternary and Glacial deposit on the island, the work may be studied with profit by many English geologists quite apart from its general interests in a stratigraphical direction.

5. Transportation of Debris by Running Water.—G. K. Gilbert and E. C. Murphy, in dealing with the subject of transportation by running water, discuss the apparatus employed, adjustment of observations, relation of capacity to slope, relation of capacity to form ratio, of capacity to discharge, to fineness of debris, to velocity, to depth; experiments with mixed grades, with crooked channels, flume traction, natural streams, rhythm. (Professional Paper 86, Department of Interior, United States Geological Survey, 1914.)

6. Note on the Temperature in the Deep Boring at Findlay, Ohio. By John Johnson. Amer. Journ. Science, vol. xxxvi, pp. 131, 1913.

The temperatures of the borehole were measured by maximum reading thermometers, three thermometers in a copper cage being used for each measurement. The total depth of the boring was 2,980 feet, and throughout the lower 2,000 feet the gradient was determined to be practically uniform, viz. 0·41° C. (0·74° F.) per 100 feet. Gas flows through the rocks down to a depth of 770 feet, and, as might be expected, the expansion of this gas when it reaches the borehole results in cooling. Consequently the temperatures measured down to that depth are uniformly too low, being those of the expanding gas, and not those of the adjacent rocks.

7. The Grand Gulch Mining Region, Mohave County, Arizona. By James M. Hill. United States Geological Survey, Bulletin 580–D. pp. 58. Washington, 1914.

The copper-ore bodies occur around the side of a vertical mass of sedimentary rocks lying within a series of stratified rocks. The original sulphides have been largely converted into carbonates. The metals appear to have been brought to their present position by generally downward moving waters, which were probably cold, since no hydrothermal alteration of the wall rocks in the vicinity was noticed.