

into the work, it is for palæontologists to see that he is enabled to complete it.

Mr. Buckman's procedure is to print the original diagnosis, to give additional details, and then to discuss and amplify them, recording his result in a final paragraph fixing the nomenclature. Such work is of the highest possible value, for until we have cleared up and fixed old types it is merely beating the air to describe new ones.

We are glad to see that the author tabulates and explains once more his terminology and his zones, as that renders his position and work quite clear and comprehensive.

For Mr. Tutchter's photographs we have nothing but praise. With a critical knowledge of the forms and their details, he has mastered his art, and the combined efforts of the two friends has laid all students of the Ammonites under a great debt. More subscribers are, however, needed to push the work forward to a more rapid completion.

#### VII.—BRIEF NOTICES.

1. YORKSHIRE PHILOSOPHICAL SOCIETY.—The Annual Report of this Society for 1912 contains a notice of the building of a new lecture theatre, erected by the influence of the President, Dr. Tempest Anderson, and formally opened by Professor T. G. Bonney, F.R.S., who delivered a discourse on the "Development of Education".

2. CAMBRIDGE PHILOSOPHICAL SOCIETY.—To the Proceedings of this Society (vol. xvii, 1913) Mr. R. H. Rastall has contributed notes on "The Mineral Composition of some Cambridgeshire Sands and Gravels", including Plateau and River Gravels and wind-drifted surface-deposits. While the most abundant material in all the sands is naturally quartz, it is interesting to find that "next in abundance is flint in white opaque grains, often well rounded". Other minerals are glauconite, tourmaline, kyanite, staurolite, garnet, hornblende, augite, hypersthene, and epidote, while there is an almost complete absence of muscovite. The author concludes that "the materials have been derived from two sources, partly from the Neocomian sands of Cambridgeshire and the neighbourhood of the Wash, and partly from far-distant sources by ice-transit, that is, from the solid matter transported on and in the ice from Norway, Scotland, and the north of England". In another paper on "The Minerals of some Sands and Gravels near Newmarket" the most notable heavy minerals recorded are zircon and rutile, while kyanite, staurolite, and tourmaline are rare or absent. Moreover, in certain beds of loam and marl muscovite proved to be abundant.

3. SOUTH AFRICAN VERTEBRATA.—In the *Annals of the South African Museum* (vol. vii, 1912) Dr. R. Broom describes a new species of *Propappus*, and expresses his opinion that this genus and the allied *Pareiasaurus* "were heavily built animals which probably walked with slow, deliberate movements, such as we see in the large tortoises. They were land animals, and it seems more likely that they lived even on the dry land than that they frequented the marshes. The structure of the claws and the humerus would seem to indicate that they were digging animals, and probably, like the *Echidna*, they

defended themselves from their carnivorous enemies by digging into the ground".

In a second paper Dr. Broom describes a species of *Tylosaurus* (a Pythonomorph) from the Upper Cretaceous beds of Pondoland; in a third paper he gives an account of a new type of Cynodont from the Stormberg named *Tritheledon riconoi*, while the new family is called the Tritheledontidæ; and in a fourth paper he discusses some points in the Dicynodont skull.

4. **PLEISTOCENE GEOLOGY OF NEW YORK STATE.**—This formed the subject of the annual address to the Geological Society of America, Mr. Herman L. Fairchild, President (Bull. Geol. Soc. Am., xxiv, 1913). The author discusses the limits, thickness, movement, and recession of the ice, its erosional and constructional work together with that of glacial waters in connexion with drumlins, moraines, eskers (sub-glacial), kames (extra-glacial), and other features. In conclusion he refers to Glacial time, remarking that "the estimates of those best qualified to judge of the length of Pleistocene time are from 500,000 to 1,500,000 years".

5. **NORTH AMERICAN CAMELS.**—After six years excavation at La Brea, California, the University of California has been so fortunate as to obtain several nearly perfect skulls of *Camelops hesternus*, and varieties with associated skeletal material representing the greater part of the animal. This has enabled Dr. Merriam to revise all previous work on the group and speak with more certainty as to the many species raised on imperfect material. (Univ. Calif. Publ., Bull. Dept. Geol., vii (14), pp. 305–23, May, 1913.)

6. **THE MANUS OF TRACHODON.**—A well-preserved skeleton of *Trachodon marginatus*, Lambe, from the Edmonton formation of the Red Deer River, Alberta, Canada, has allowed Mr. L. M. Lambe to describe the manus in detail. This differs materially from the description given by Barnum Brown of the manus of a specimen from the Lance formation of Wyoming in 1912. That species was called *T. annectens*. About four feet of the tuberculated skin is preserved in the new specimen. Mr. Lambe gives a full account of the manus and three plates in the *Ottawa Naturalist*, May, 1913.

7. **ROAD-METAL.**—The following paragraph is reprinted from reports for the year 1912, on the Geological Survey, the Geological Museum in Jermyn Street, etc. (P.P., Cd. 6793), 1913: What is essentially a new departure in the work of the Geological Survey of Scotland was made in 1912. The Argyllshire County Council, recognizing the importance of utilizing to the best advantage the great variety of stones suitable for road-metal in that county, desired to purchase a series of road-stone maps showing the occurrence of road-stones in places easily accessible from the main roads. Maps were prepared on the scale of six inches to one mile, on which were marked only the outcrops likely to be of importance for this purpose. The surveyors find them of great use, as the published one-inch maps are on too small a scale to show all the smaller intrusions of igneous rock, some of which make excellent road-stones. As they are not complete maps they are comparatively inexpensive to prepare.