fessor Charles E. Vanderkleed, as professor of pharmaceutic chemistry.

DISCUSSION AND CORRESPONDENCE

AFTONIAN SANDS AND GRAVEL IN WESTERN IOWA

To THE EDITOR OF SCIENCE: During the past summer investigations made by the writer for the Iowa Geological Survey revealed widespread deposits of Aftonian sands and gravels in the western part of Iowa.

The beds, where undisturbed, in some cases reach a thickness of 35 feet, and furnish fine examples of cross-bedding and interbedding of sands and gravels. They lie unconformably between the Pre-Kansan and Kansan drifts, and were evidently deposited in flooded streams during an interglacial period.

That the climate of this period was comparatively mild is shown by the presence of fossil shells of species of mollusks still living in Iowa, belonging to the genera *Unio, Sphærium, Pisidium, Valvata, Planorbis, Ancylus,* etc., and of numerous bones and teeth of extinct herbivorous mammals belonging to the genera *Elephas, Mamut, Equus,* etc. The latter were found exclusively in the coarse gravels, while the former occurred chiefly in the finer sands.

At a number of points these sands and gravels were plowed and folded, and heaped up to a height of more than 100 feet above the Missouri Valley by the mass of Kansan ice which passed over them and in some cases even displaced the underlying Pre-Kansan.

The discovery is of special interest because these western gravels may now be definitely referred to the Aftonian, and because the fossils present a fauna practically new to that horizon, and throw light upon the climatic conditions which existed during the period of deposition.

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STATE UNIVERSITY OF IOWA,
December 14, 1908

SCIENTIFIC BOOKS

National Antarctic Expedition. Vol. IV., Zoology. London, British Museum, 1908. 4°, pp. 6, 279, and 65 plates. (Containing) *Solenogastres,* by H. F. NIERSTRASZ; *Aptera,* by G. H. CARPENTER; *Schizopoda,* by W. M. TATTERSALL; *Copepoda,* by R. NORRIS WOLFENDEN; *Echinoderma,* by F. JEFFREY BELL; Echinoderm larvæ, by E. W. MACBRIDE and J. C. SIMPSON; *Myzostomidæ,* by R. RITTER VON STUMMER-FRAUENFELS; *Sipunculidæ,* by W. F. LANCHESTER; *Actiniæ,* by J. A. CLUBB; *Tetraxonida,* by R. KIRKPATRICK; and *Calcarea,* by C. F. JENKIN.

Under the supervision of Mr. F. Jeffrey Bell, of the British Museum, another fine volume has been added to the series describing the scientific results of the expedition to the Antarctic under Captain Scott, R.N., and his companions. A brief reference to the subject-matter of the various memoirs is all that our space permits.

A single species of *Proneomenia* was obtained in about latitude of 78° S. This is described by Nierstrasz in great detail, followed by a proposed division of the family Proneomeniidæ into a large number of groups, based on the structure of the glands and radula. It may be heterogeneous, and the forms of which it is composed may be related to different members of the Proneomeniidæ.

Carpenter reports the presence of a wingless insect belonging to the Collembola in moss from Granite Harbor in 77° S. latitude, though the specimens were in rather imperfect condition. Enough was made out to allow placing it in a new genus, *Gomphiocephalus,* of the Poduridæ.

The Schizopod crustacea collected embraced considerably over ten thousand specimens, but of these the vast majority belong to a single species and the total number of species collected is only thirteen. The abundant material of the *Discovery* party enables Mr. Tattersall to combine under Dana's original name four subsequently described species taken from mutations due to age, or variability. Two species are cited as "bipolar" but further investigations of the deep sea may reveal them as cosmopolitan.

Of the Copepods seven proved new, and one new genus, *Paralabidocera,* is proposed by Wolfenden. Of the twenty-eight Antarctic species recognized, two are regarded as "bipolar," though many have Arctic an-

alogues. Twenty-five species were collected by the *Discovery*.

Among the small collection of echinoderms was the *Promachocrinus* first obtained by the *Challenger*, six Holothurians, two species of *Antedon*, three Echini, eight Starfishes, and ten or eleven Ophiurans. The collection of larvæ yielded the discovery of two pelagic forms and of the brood-pouch in *Cucumaria crocea*. A well-marked axial sinus and pore-canal in the *Cucumaria* embryo is of importance as definite evidence of a structure about which doubt had previously existed.

Two species of Myzostomidæ are treated in great detail. The sipunculoids comprise about thirty specimens which were all small and are considered as belonging to a single species of *Phascolosoma*.

The Actinians comprised six genera and eight species, of which six are Antarctic, two having been obtained at the Auckland and Falkland Islands.

The Tetraxonid sponges are exquisitely illustrated with colored plates of the finest quality.

There are six forms of Tetractonellidæ described, of which two are new varieties. The species are equally divided between the genera *Craniella* Schmidt, and *Cinachyra*. Of Monaxonellida there are forty-three species, with four new genera. Of the species, when obtained, twenty-two were new to science, besides seven new varieties.

The calcareous sponges collected comprise eighteen species and one variety, out of which six new genera and two new family groups have been constituted. All but five belong to the Heterocœla. In the discussion Jenkin proposes a new arrangement, founded in the main upon the classifications of Polejaeff and Dendy. The most interesting features of the collection are the large number of species containing chiactine spicules; five new species with "linked" flagellated chambers; a sponge, *Megapogon villosus*, with larger spicules than any hitherto recorded for a calcareous species; the unusual development of the gelatinous mesoderm in *Leucandra gelatinosa;* and the duplicate ovum, apparently a new form of egg cell in *Megapogon raripilus*, and *Achramorpha nivalis*. In the latter case the ovum appears to be made up of two unequal parts. The larger part is very similar to the ordinary large ovum cell and contains a large transparent nucleus and a small, strongly staining, nucleolus. The smaller part appears to be a multicellular structure, consisting of a large inner cell surrounded by a sheath of small cells, but it is possible it may be a single cell, the large portion being the nucleus. The inner cell contains two structures; one strongly staining like the nucleolus of the larger part, the other a hyaline sphere packed with about a dozen grains of one color, and an odd one which stains a different shade. The cells forming the outer layer have each a nucleus and a nucleolus. This layer, or sheath, in some cases surrounds the inner sphere completely, in others only surrounds the outer part, not existing between the inner spherical cell and the twin half of the ovum. It is possible that the smaller twin may be a feeding cell for the nourishment of the larger twin.

All the species of calcareous sponges were obtained at the winter quarters and in comparatively shallow water.

W. H. Dall

Hygiene and Public Health. By Louis C. Parkes, M.D., D.P.H., University of London, and Henry R. Kenwood, M.B. Edin., D.P.H., London. Third Edition with Illustrations. 8vo, pp. 620 with 96 illustrations. Philadelphia, P. Blakiston's Son & Co. 1907.

The third edition of this valuable work under the conjoint authorship has been carefully revised and brought up to date. The book is divided into thirteen chapters and deals in a very comprehensive way with Water; The Collection, Removal and Disposal of Excretal and Other Refuse; Air and Ventilation, Warming and Lighting; School Hygiene; Soils and Building Sites; Climate and Meteorology; Exercise and Clothing; Food, Beverages and Condiments; The Contagia; Communicable Diseases and Their Prevention; Hospitals—Disinfection; Statistics; Sanitary Laws and Administration.