for the last three years is uniformly remarkable for the absence of centrospheres, whether it be in an egg undergoing its first cleavage or through intermediate stages up to a 30 mm embryo. What might be considered to be centrosomes, however, are frequently present, but these have in every case proved to be aggregates of mitochondria located at or near the poles of the spindle, particularly during anaphase. As cell-division by mitosis is so universal, it would seem that these assumed dynamic centers might be in other animals, as in Amblystoma, merely the result of vortical currents causing temporary aggregation of mitochondria. Fixatives containing acid, such as Bouin's or Zenker's fluids, do *not* ordinarily *completely* dissolve mitochondria, so that their use could easily give rise to a "central body" contained in a "centrosphere"; or acid staining or destaining could give the same appearance. The controversy concerning the character of central bodies might well be ended, therefore, if the technique required for mitochondria were employed in the preparation of the material to be observed.

HERBERT G. COAR
DARTMOUTH MEDICAL SCHOOL

FRESH-WATER MEDUSAE

Craspedacusta ryderi Potts appeared in Swissvale, Allegheny County, Pennsylvania, on or near August 8 of this year. They were found living in a reservoir of the Union Switch and Signal Company. The reservoir is fed from the city water supply and is approximately fifteen by twenty-two feet and is fourteen feet deep. The bottom is bare of any growth, but the walls are covered with algae. On October 1 they were still reported present.

The only explanation for the presence of these animals is that the Hydroid form must have been brought in on fish. These were brought from Lake Erie. There is hardly any chance that they arrived through the city water supply due to the heavy chlorine content. From all available literature it seems that this is the fifth record of the occurrence of fresh-water medusae in the United States, and, for that matter, in the western hemisphere.

STANLEY T. BROOKS
CARNEGIE MUSEUM,
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SPECIAL CORRESPONDENCE

NEW ENGLAND INTERCOLLEGIATE GEOLOGICAL EXCURSION

THE twenty-eighth annual New England Intercollegiate Geological Excursion was held in the vicinity of Providence and Newport, Rhode Island, on October 14 and 15, 1932. The department of geology of Brown University (Charles W. Brown, chairman) had charge of the arrangements.

The group assembled at Faunce Hall, Brown University at noon on Friday. After lunch President Barbour, of the university, spoke a few words of welcome. They then journeyed eastward by automobile to the east bank of the Seekonk River, where varved clays were exposed, overlain by cross-bedded, aeolian sands. Two other glacial localities were later visited in succession along Highway No. 6, an esker situated approximately a mile southeast of the village of Seekonk, and a rock-core exposed by a steam shovel in a gravel pit two miles west of Swansea.

Having crossed the Taunton River, the party journeyed southward from Fall River and stopped first at the water tower, a mile or so from the center of the city. Here is exposed the Fall River granite, probably a much faulted variety of the Dedham granodiorite. Following Route No. 138 they turned aside to an exposure on the bay-shore, one and one half miles southwest of North Tiverton. The Pondville conglomerate was found to have a deceptive contact with the Dedham granodiorite. Elsewhere it is known that a weathered arkose from the granodiorite rests unconformably on the igneous rock, but here the arkose is very slightly developed and the granodiorite might be thought to be intrustive into the Pondville conglomerate.

The next stop was made on the shore of the Sakonnet River, a half mile south of Tiverton. The basal arkose, underlying the Pondville conglomerate, was well exposed and included thin seams of slate. The slaty cleavage, developed at an angle to the true bedding, allowed the structural geologist to detect certain indications of the direction of forces which folded and metamorphosed these rocks. Salt water has corroded the feldspars of the arkose and produced a porous sponge of quartz. A brief visit was made to the Portsmouth "coal" mine, at which place beautiful specimens of graphite were collected.

The party found its way at twilight to the Army and Navy Y. M. C. A., where it made its headquarters for the night. During the evening a business session was held in the assembly hall, after which members of the department of geology at Brown University spoke briefly. Dr. C. C. Branson defended the proposition that the Pondville conglomerate rested unconformably on the Fall River granite, Mr. J. S. Beach discussed the thickness of the Rhode Island Carboniferous series,

and Dr. A. W. Quinn outlined the geology of the vicinity of Newport in anticipation of the morrow's field-trip.

On Saturday morning a study was made first of the relations of the Carboniferous black shales to the Cambrian or Precambrian quartzites and greenstones near "Miramar," the estate of Dr. Alexander Hamilton Rice. The western peninsula of Newport was then visited. On the south shore, west of Viking beach, a series of banded black shales offered a complex study of secondary banding produced by flowage under pressure. Somewhat similar structures were found in a conglomerate composed of granite pebbles with quartzite lenses at the entrance to Fort Adams. The pebbles had been mashed and rolled until the resulting gneiss was hardly recognizable as a conglomerate. At Purgatory, near the public beach east of Newport, an igneous dike has weathered away, leaving a chasm a few feet wide with vertical walls composed of the Dighton conglomerate. Quartzite pebbles in the conglomerate have been elongated by pressure from the east into cigar-shaped forms. Fractures across the pebbles offer an important study in the mechanics of yielding under stress. Some of these Carboniferous pebbles were found to contain Cambrian brachiopods.

After a delightful luncheon at "Miramar," the party crossed by ferry to Jamestown and visited Mackerel Cove at the southern end of the island. Here the basal arkose of the Carboniferous rests on a granite. Two important questions were not answered: (1) Is the granite of the same age as the Sterling in eastern Connecticut or does it correspond to the Dedham granodiorite of southeastern Massachusetts? (2) Does the arkose rest unconformably on the granite or is the contact due to faulting?

Again the automobiles were driven onto a ferry and at Saunderstown the shore road was taken toward Narragansett Pier. Three miles south of the ferry the Kingston Carboniferous series is invaded by many pegmatite dikes. At Boston Neck near Watson Pier the waves have eroded away the less resistant shales and sandstones and the dikes stand out in relief. Some believe these dikes are members of the Sterling granite series and, hence, that the Sterling batholiths are post-Carboniferous in age. Others would assign them to another series and place the Sterling batholiths in a Pre-Carboniferous period. Manifestly, the correct solution of the problems at Mackerel Cove would also help to solve the difficulty here.

Twenty-three automobiles carrying between sixty and seventy students and teachers from nearly every college in New England made an imposing cavalcade. The wonderful weather and the hospitality of our hosts combined with more interesting geologic problems to make the excursion a memorable occasion.

WILBUR G. FOYE,
Secretary

SCIENTIFIC BOOKS

Kosmos. By WILLEM DE SITTER. Pages viii + 138. Harvard University Press, 1932. Price, $1.75.

DR. WILLEM DE SITTER has contributed so much to modern theories of our universe that any book from his pen must command the attention of the scientific world and of the intelligent reader who would keep in touch with the rapid expansion of astronomical concepts. This new volume puts in permanent form the substance of a series of lectures presented at the Lowell Institute in Boston in the autumn of 1931. It is a scholarly treatment of the evolution of ideas regarding the structure of the universe from ancient times to the present day.

After an introduction covering the aims and methods of scientific research and the attainments of astronomy to the day of Copernicus, Dr. de Sitter reviews in rapid succession the contributions of seventeenth century astronomy as exemplified in the labors of Kepler, Galileo and Newton. With the enunciation of the law of gravitation through the mathematical genius of Newton the classical laws of planetary motion became established and the foundation was laid for an analysis of the motions of planets and stars throughout the universe.

In no uncertain praise Dr. de Sitter does credit to the rare gifts of Herschel in envisioning concepts of the whole universe, while at the same time applying himself assiduously to details of observation necessary for the foundation upon which any satisfactory theory of the universe must ultimately rest. The conclusions which Herschel reached were based on assumptions that we now know are not valid. "Nevertheless no single astronomer either before or after him has done so much for the final solution as William Herschel."

High tribute is paid to the pioneer work of Kapteyn, of Groningen, in developing methods of attack on the problem of the distances of the stars through the new science of stellar statistics. The author's elucidation of the details of Kapteyn's method is somewhat technical in places, but even the general reader will be impressed with his painstaking care. In Chapter 5, somewhat more popularly descriptive, Dr. de Sitter reviews the contributions of modern photography and spectroscopy which have made possible the extension