means of the excellent cliff sections, the suggestion of the occurrence of such deposits. Pre-Pleistocene deposits were found at Third Cliff, twenty miles southeast of Boston, and possibly at Peaked Cliff, southeast of Plymouth.

The section at Third Cliff shows yellow clays at the base conformably overlain by yellow and white sands and succeeded by a bed of bright red sands with an unconformity at their base. On the eroded edges of the red and white beds are deposited dark, glauconitic and lignitic clays and sands. The entire series of beds has a total maximum thickness of sixty or seventy feet, and outcrops for a half mile along the cliff face. Absolutely no erratic material occurs either within the beds themselves or along the lines of unconformity.

The lithologic characters of the lower beds are like those so persistently characteristic of the Cretaceous from Marthas Vineyard to New Jersey; while the upper beds of dark clays appear to be homologues of the Miocene at Gay Head and at Marshfield. This fact, together with the evidence of the unconformities and of the lignites is being examined with a view toward suggesting probable correlations with the deposits worked out at Gay Head by Professor Woodworth (*Bull. Geol. Soc. Amer.*, VIII., 1897, 197–212); although the absence of specific paleontologic evidence renders such correlation merely tentative. The detailed descriptions of the beds and the conclusions inferred with respect to their age will be published in a later paper.

Isaiah Bowman.

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EXOGLOSSUM IN THE DELAWARE.

The occurrence of the little minnow, *Exoglossum maxillingua* (Le Sueur), in the Delaware basin is of interest. So far as I am aware, it has not been taken in any of the tributaries of the Delaware before the capture of two examples which I caught in the Red Clay Creek, Chester County, Pa., during April of 1904. In this instance I am indebted to Mr. Alfred C. Satterthwait, who assisted me in securing the specimens. When first seen, I was under the mistaken impression that they were simply young unmottled examples of *Catostomus commersonnii*.

In the Susquehanna basin this fish is abundant and I have also met with it in tributaries of the Allegheny in Pennsylvania, especially near Cole Grove, in McKean County.

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SPECIAL ARTICLES.

THE BRAIN OF THE HISTOLOGIST AND PHYSIOLOGIST OTTO C. LOVÉN.

Professor Lovén, the Swedish histologist and physiologist who will be best remembered for his discoveries of the endings of the taste-fibers in the papillæ of the tongue of mammals, as well as of the vaso-dilator nerves, had expressed it as his wish that his brain be preserved after death and studied by his friend and associate, Gustaf Retzius.

With characteristic care and skill Professor Retzius has just published his studies upon Lovén's brain in *Biologische Untersuchungen*, Vol. XII., 1905. The brain exhibits a richness of fissures and these are marked by a superior degree of tortuousness and ramification. The subparietal region is very complex in its surface configuration, while the central (motor) regions are only moderately developed. The cortical centers for speech and language formation are notably large, and Professor Retzius brings this fact into relation with Professor Lovén's notable powers of clear, exact and logical expressions of thought in words; less so in the way of oratorical *finesse* than in the talented use of the best and most adequate expressions. The weight of the brain is not given in this report though its size is said by Retzius to have been well above the average.

Edw. Anthony Spitzka.

APPLES INJURED BY SULPHUR FUMIGATION.

Recently some injured Esopus Spitzenburg apples were received at the New York Experiment Station with a request to diagnose the trouble. They were of the first grade, each fruit wrapped in paper, and packed in a bushel box. The financial loss was important, as a

considerable amount of high priced fruit had been ruined.

Scattered irregularly over the surface of each apple were conspicuous spots of various sizes where the epidermis was dead, discolored and slightly sunken. Each spot was nearly circular, though on some apples the adjacent spots had coalesced, forming a large affected area of irregular shape. Beneath each spot to a depth of a few millimeters, the flesh was dead, shrunken and dry, appearing as though affected with a dry rot. There was no disagreeable odor or taste to the dead flesh or epidermis.

In the center of each of the smaller spots, and scattered over the larger affected areas, were small bodies resembling the pycnidia of a fungus, but examination showed them to be only the normal lenticels of the apples.

Failure to find either fungi or bacteria as a cause of the injury led to the belief that some treatment of the fruit, such as fumigation, might be a cause. Sulphur, being commonly used for fumigation, was experimented with to note the effects of the fumes upon ripe apples. Fruits of different varieties including Esopus Spitzenburg were placed in a bell jar which was then filled with sulphur fumes. After five minutes the fruit was removed and found to have developed numerous spots that were in every way identical with those on the apples received for examination.

This experiment was repeated many times with wet and with dry fruits, but the characteristic spots were always produced. The spots continued to enlarge for some time after the fruits were removed from the fumes.

The presence of a lenticel in the center of each spot would indicate that the sulphur dioxid passes into the fruit at this point and causes the bleaching of the tissue. A similar effect was produced where an artificial break in the epidermis was made. A lenticel makes a strong color contrast with the bleached epidermis, thus giving it the appearance of a pycnidium.

Sulphur was the only substance used in these experiments; it is possible that other chemicals would produce a similar injury.

GENEVA, N. Y. H. J. EUSTACE.

THE FLOATING LABORATORY OF MARINE BIOLOGY OF TRINITY COLLEGE.

ARTICLES of incorporation have been filed with the secretary of the state of Connecticut 'to establish and maintain a floating laboratory of marine biology for exploration in oceanography and the collection and investigation of the organisms of the sea; to supply colleges, museums and other institutions with material for investigation, study and exhibition.'

A vessel of about ninety tons burden will be secured and equipped with the necessary dredges, trawles, tangles, tow-nets, etc., as well as chemical reagents and glassware for work in marine zoology and botany. When the boat is anchored in a protected harbor immediately it becomes a laboratory. The vessel, in sailing from place to place in the ocean, will furnish most favorable facilities for the investigation of the distribution and variation of organisms. On each expedition it is planned to stay in some particularly desirable locality for about one month so that problems of cytology, embryology and physiology may be undertaken. Competent preparators, artists and photographers will be on the staff so that not only museums and laboratories may be supplied with material, but an effort will be made to meet the specifications of investigators as to fixation and preservation, together with sketches, or photographs, of the organisms desired for their work. In going to a new region each summer large collections for research will be made year after year and it is hoped to greatly extend our knowledge of the local faunæ and floræ of the western Atlantic.

In the early summer of 1906 the vessel will sail to the Bahamas. After a month in the sub-tropics the boat will weigh anchor for the cruise northward, making a harbor every hundred miles or so for the purpose of getting material for comparative studies. In the Bahama Islands the conditions are very favorable for the most abundant and varied organisms since these islands are situated in the mouth of the Gulf Stream where it debouches between Florida and Cuba, bringing with it myriads of creatures caught up in the