

are those which enter into the most cordial relations with a large body of students."

IN the June number of the *Journal* of the Boston Society of Medical Sciences Dr. James H. Wright has a paper on the application of color screens to photomicrography, in which he shows that by a proper use of filtering light media the clearness and accuracy of photomicrographs may be greatly enhanced.

SOCIETIES AND ACADEMIES.

GEOLOGICAL CONFERENCE AND STUDENTS' CLUB OF HARVARD UNIVERSITY.

Students' Geological Club, May 2, 1899.—Mr. A. W. Grabau gave a *résumé* of the paleontology of the Boston basin.

Geological Conference, May 9, 1889.—Under the title 'Tertiary Granitic Intrusives of the Yellowstone Park,' Dr. T. A. Jaggaer, Jr., reviewed Mr. Arnold Hague's paper on 'The Tertiary Volcanoes of the Absaroka Range' (*SCIENCE*, IX., pp. 425-442).

Students' Geological Club, May 16, 1899.—At a special meeting of the Club, Mr. L. LaForge exhibited his collection of Chemung fossils.

Geological Conference, May 23, 1899.—Three papers were presented at this final meeting of the year. Mr. A. W. Grabau discussed 'Some Modern Stratigraphic Problems' from a paleontological point of view. He emphasized the importance in paleontological work of the division of marine organisms into Plankton, Nekton, Benthos, Meroplankton and Pseudoplankton, and held that extensive deposits of planktonic organisms enclosed by beds of shallow water origin indicate a period when the land stood at baselevel. Benthonic animals are important as facies fossils, and the benthonic mode of living exerts a great influence in the development of local faunas. Repopulation of a district by a benthonic fauna which has occupied it at an earlier date—through the medium of meroplanktonic larvae, as demonstrated by Walther—was illustrated by examples drawn from the Hamilton of western New York. Graptolites and Ammonoids, as pseudoplanktonic organisms, are important as index fossils.

Among local or provincial faunas acceleration

was considered to be one of the foremost means of differentiating species. Thus, the Fusidae of the Paris basin appear to have developed independently from those of the Hampshire basin of England. In each area a complete, distinct, phylogenetic series has been discovered. These, although parallel, present specific differences throughout; while certain individuals suggest occasional migrations of species from one basin to the other.

In considering the operation of barriers upon migration the case of the genus *Fulgur* was cited. This gastropod has inhabited the Atlantic coast between Cape Cod and the Gulf of Mexico since Miocene time, its northward and southward migration being prevented by climatic causes, due largely to topographic conditions. That their young are not carried to other similarly characterized shores appears to be due to the fact that the veliger stage is passed in the egg capsule, so that in this gastropod the planktonic larva does not exist.

Mr. H. T. Burr gave 'Results of Recent Studies of the Geology of the Boston Basin,' and Mr. L. LaForge spoke on 'The Relation of Dikes, Joints and Faults in Somerville, Mass.'

J. M. BOUTWELL,
Recording Secretary.

DISCUSSION AND CORRESPONDENCE.

BODY BLIGHT OF PEAR TREES.

IN the spring of 1898 when preliminary studies with* apple canker were begun at this station a few inoculations were made in the limbs of a large pear tree with cultures of *Sphaeropsis*, taken from cankered apple limbs. The fungus grew readily at all points of inoculation and produced dead sunken areas of the outer bark, similar to those that are so common on the trunks and larger limbs of pear trees. These definitely outlined and sunken areas of dead bark, commonly known as body blight, have long been thought to be due to the action of the pear blight bacillus. However, it may be pointed out that body blight is preëminently a disease of the outer bark, while with pear blight the reverse is true since the cambium layer is first attacked.

**SCIENCE*, Vol. VIII., pp. 595 and 836.

The full significance of the result of these inoculations was not realized at the time since it was not then known that *Sphæroopsis* occurred on these blighted areas. In the spring of the present year, however, a *Sphæroopsis* was found to be comparatively abundant on the diseased bark of pear trees in the station orchards. Since that time a large number of pear trees from various localities affected with body blight have been examined and in nearly every instance this fungus was found to be more or less abundant. One case particularly worthy of notice was that of a comparatively young orchard that was severely attacked by body blight and the fruit of a *Sphæroopsis* was so abundant that the conclusion was irresistible that this fungus must be the cause of the disease.

Numerous inoculations made this spring with cultures of the *Sphæroopsis* in large trees and in nursery stock clearly show that this fungus may produce body blight of pear trees.

Other species of fungi closely associated with the *Sphæroopsis* frequently occur on trees attacked by body blight, *Macrophoma malorum* (Berk.) Berl. et Vogl. being specially abundant. The studies have not yet progressed far enough to determine what part these other fungi play in producing the diseased condition. Bacteria may also be concerned in this trouble, but of this we have as yet no proof.

W. PADDOCK.

GENEVA, N. Y.

FORMATION OF CUMULUS CLOUDS OVER A FIRE.

IN SCIENCE of January 8, 1897, Mr. R. DeC. Ward describes the formation of cumulus clouds over a fire in Cambridge. Last Friday (June 30th) another phenomenon of this kind was observed at Blue Hill and from Winthrop and approximate measurements of the height obtained.

The fire was in South Boston and consumed the buildings of the Bay State Iron Works. The smoke cloud was not of unusual size, but rose vertically to a considerable height (800 to 1,000 metres), encountering at this height a north-westerly wind, which swept it nearly horizontally over the harbor. The fire began before 8 p. m., and the smoke reached its greatest height about 8:05 p. m. At 8:03 p. m. a

small white cloud began to form at the apex of the smoke, which at this time was apparently nearly over Long Island, in Boston Harbor. The cloud increased rapidly in height, assuming the form of a true cumulus and reaching its greatest size at 8:05 p. m. The accompanying sketch shows roughly the appearance of the smoke and the cumulus at that time. The sky



was nearly clear, no other low clouds being in the vicinity of the smoke. The cumulus cloud is shown at (A) and apparently was about 3° in height and length, the highest or thickest end being toward the north. Between 8:05 and 8:07 p. m. another smaller cloud formed at the edge of a rift in the smoke considerably lower than the one just described. Its position is shown at (B). Mr. A. E. Sweetland, of this observatory, who at this time was in Winthrop, about 5 miles (8 kilometres) northeast of the fire, estimated the altitude of the highest cumulus to be 15°, while a measurement made with the nephoscope at Blue Hill, about 10 miles (16 kilometres) south of the fire, gave 10° as its altitude as seen from the observatory. These measurements show that the vertical height of the top of the cloud at A was at least 2,500 metres, while that of the cloud at B was about 2,000 metres, above sea level.

The smoke began to diminish in quantity at 8:07 p. m. and separated from the clouds, which became flatter and more elongated. At 8:11 the clouds were separated from the smoke by a space several degrees wide, and after this time they slowly evaporated.

S. P. FERGUSSON.

BLUE HILL OBSERVATORY, July 1, 1899.

A REPLY TO MR. MARLATT'S ARTICLE ON SOURCES OF ERROR IN RECENT WORK ON COCCIDÆ.*

WHEN I lived in Colorado, some years ago, I remember hearing it said that a man who had

* SCIENCE, June 16, 1899, pp. 835-837.