

be the collecting and distribution of information for educational work, particularly for the medical and dental professions. The present officers are: Dr. W. A. Price, Cleveland, president and managing director; Dr. Thos. P. Hinman, Atlanta, vice-president; Dr. Clarence J. Grives, Baltimore, secretary; Lefa A. Beman, Cleveland, assistant secretary; Edward A. Petrequin, Cleveland, treasurer. The trustees are: Dr. Weston A. Price, Cleveland, Harry J. Crawford, Cleveland, Dr. John V. Petrequin, Esq., Cleveland, Dr. Geo. W. Crile, Cleveland, Dr. Clarence J. Grives, Baltimore, Dr. Eugene R. Warner, Denver, Dr. Thos. P. Hinman, Atlanta, Edward A. Couzett, Dubuque, Iowa, and Dr. Homer C. Brown, Columbus, O.

THE Anglers Association of Onondaga, of Syracuse, N. Y., one of the largest associations of the kind in New York State, and the New York State College of Forestry at Syracuse, have decided upon a cooperative plan for the utilization of the fine springs at the college nursery as a trout nursery and for fish ponds. The college furnishes the site and the anglers pay for the man to care for the fish, etc. The general plan is to care for the young trout fingerlings, received from the Conservation Commission in the spring, and to carry them over the summer in this nursery and then plant them in the fall, at a more favorable season and in better condition. This is the practise now so successfully followed at Rome, N. Y., under the leadership of Mr. Harry Ackley, president of the Rome Fish and Game Association. The fish nursery and ponds will be available to the college for the instruction of its students in the course on fish and game taught to forestry students by Dr. C. C. Adams.

UNIVERSITY AND EDUCATIONAL NEWS

THE University of California has received the following gifts and subscriptions toward the equipment of the new 216-bed University Hospital (now being built in San Francisco from gifts of over \$600,000): Mrs. James

Moffitt, \$5,000; an alumnus, \$5,000; Mr. Alexander F. Morrison, \$5,000; Mr. William H. Crocker, \$2,616.50; Mr. Wallace M. Alexander, \$2,000; a friend of the university, \$2,000; Mr. N. Ohlandt, \$1,500; Mr. Charles W. Merrill, \$1,000; Mr. D. C. Jackling, \$1,000; and the children of the late F. W. Dohrmann, \$500.

THE bill of the ways and means committee in the House of Representatives of the Maryland Legislature makes the appropriation of the state to Johns Hopkins University \$50,000, a decrease of \$25,000 from the grant of last year.

PROFESSOR WILBUR L. CROSS, graduate of the English department of the Sheffield Scientific School, has been elected by the faculty of Yale University to be dean of the graduate school. He succeeds Professor Hans Oertel, who is now in Germany.

IVEY F. LEWIS, Ph.D. (Johns Hopkins, '08), formerly professor of botany in the University of Missouri, has gone to the University of Virginia as professor and head of the Miller School of Biology.

MR. A. W. DUPLER, of the University of Chicago, has been elected professor of botany at Lawrence College, Appleton, Wisconsin. Dr. R. C. Mullinix, who has been head of the department of biology, will continue as professor of zoology.

MR. GEORGE F. MOZNETTE has been appointed as assistant professor in entomology at the Oregon Agricultural College and Station to begin his duties on March 1.

PROFESSOR ETTORE MARCHIAFAVA, a senator of the kingdom of Italy, known for his work on malaria and in other directions, has been appointed to the chair of clinical medicine at Rome left vacant by the death of Professor Guido Baccelli.

DISCUSSION AND CORRESPONDENCE

HORIZON OF THE SHARK RIVER (N. J.) EOCENE DEPOSITS

SOME twenty-five years ago, while working over the Eocene molluscan material in the

Smithsonian Institution from the so-called Pamunkey of Maryland and Virginia, it became perfectly evident to the writer that the majority of the species were very similar to, or identical with, the more common species from the lower "Lignitic" or Bell's Landing horizon of Alabama.¹ Shortly afterwards he observed other specimens while on a trip in southern Virginia representing a higher "*Sellæformis*" horizon. All these faunas have since been ably worked up by members of the Maryland Geological Survey.²

Away to the northeast, but seemingly quite in the general line of outcrop of the Maryland Eocene, are the Shark River beds with a poorly preserved yet interesting fauna. Opinions of Conrad, Cook, Heilprin and Clark have varied as to whether these beds should be referred to the horizon of the near-by Marylandian deposits or should be relegated to a still older Eocene stage. The writer, however, has been quoted on several occasions³ as believing that the Shark River beds should be placed above the general horizon of the Pamunkey Eocene, within a Mid- or Upper Eocene stage.

Since the data upon which this belief is founded have not been made known, it seems quite proper to place them on record that their validity may be intelligently discussed.

It may accordingly be noted:

1. That the absence of such characteristic Pamunkey species as *Ostrea compressirostra*, *Cucullæa gigantea*, *Dosiniopsis lenticularis*, *Crassatella alæformis* and huge *Turritellæ* and *Venericardiæ* seems to preclude the synchronizing of the Pamunkey and Shark River deposits.

2. That the Shark River beds are not below the Pamunkey beds from: (a) The fact that if they were they would naturally be the equivalent of some basal or Midway Eocene horizon. Certainly if such were the case there should be some trace in the Shark River beds of that great virile Midway fauna that stretches from the Carolinas to the Rio Grande, on the north,

and from Trinidad to east of Brazil, on the south; the similarity should be as great between Shark River beds and Alabama Midway as between Pamunkey and Bell's Landing beds—in fact the "Lignitic" beds are more local in character than the more truly marine Midway. But the Pamunkey shows derivatives of the Midwayan in its *Hercoglossa*, *Cucullææ* and great *Turritellæ*, while these striking forms are absent from the Shark River deposits. (b) The fact that, as indicated above, if these beds are pre-Pamunkey they must also be pre-Midway, i. e., older than the oldest known marine Eocene on this continent, which seems quite out of the question.

3. That the Shark River beds are Mid-Upper Eocene and above perhaps all of the Pamunkey horizons from: (a) The fact that the general aspect of the molluscan fauna is upper and not lower Eocene. Witness the presence of *Aturia* and not *Hercoglossa*; the large rotund *Caricellæ* closely allied to, if not identical with, the Claibornian forms showing nothing in common with the small slender Midway species; the *Fusoficula* of *penita* proportions and appearance and not of the older *juvenis* type; *Turritellæ* of non-carinate, Claibornian aspect; *Pleurotomariæ* of huge dimensions as in the Upper Eocene beds of the Carolinas though unknown in lower horizons; *Ostreæ* of the Claibornian *divaricata* (i. e., *sellæformis*) type and with nothing in common with *crenulimarginata* of the Midway or *compressirostra* of the Lignitic; *Pectens* of the types found in the Claiborne and Pope's Creek beds, with no resemblance to those of earlier horizons; *Crassatellæ* of the high, huge *alta* type of the Claibornian, with nothing in common with the lower Eocene forms; *Volutithes*, similar or identical with Claibornian forms and without the *Athleta* characteristic of the Lignitic. (b) The fact that the coral from the Shark River beds noted by Vaughan is of a genus unknown from any other state "from a horizon below the Claibornian."⁴ (c) The fact that although the vertebrate evidence on this question is very slight, "*Anchip-*

¹ *A. J. S.*, Vol. 47, p. 301.

² See especially Rept. '01, Eocene.

³ Mon. 39, U. S. G. S., p. 17.

⁴ *Op. cit.*, p. 17.

podus riparius is currently identified with *Trogosus* or *Tillotherium* of the Bridger Middle Eocene. If this identification is correct and if it came from the Shark River beds, then these are probably Middle Eocene, possibly later, but not earlier."⁵ (d) The fact that the Pamunkey embayment or segment filled in seaward during Eocene time till the Carolina end of the arc was reached in late Eocene times, would suggest a similar age for the New Jersey beds at the other end of the arc.

The conclusions from the above outline of facts may be thus briefly summarized:

(a) The Eocene beds in New Jersey may be in the same trend of the Maryland Eocene outcrops, but this fact has little to do with the relative age of the deposits.

(b) The known Shark River fauna shows very little relationship with the comparatively near-lying Pamunkey faunas; still less with any known lower or basal Eocene, Midway fauna.

(c) The general aspect of the Shark River fauna with its many species closely allied to or identical with Claibornian forms would seem quite sufficient in itself to cause these New Jersey beds to be referred to a horizon *above* instead of *below* the mass of Pamunkey deposits.

(d) Data from other paleontologic sources are of a questionable nature, but so far as they go they seem to support the writer's contention.

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A PHYTOPHTHORA ON OATS

WHILE in the recently started experiment garden at Stanford University on February 10, I noticed on the leaves of volunteer oats markings such as I had not seen before.

On examining the material in the laboratory, the markings were found to be due to a species of *Phytophthora*. The markings may appear as spots or as stripes along one or both margins of the leaf, or as a stripe down the

⁵ Matthew, *ex lit.*

center. The diseased areas become yellowish, and then whitish when conidia are abundant. Later these areas, which sometimes have a water-soaked appearance, become brown or reddish-brown, and the parts shrivel and dry up.

The short, hyaline, unbranched conidiophores ($4-5 \times 15-300 \mu$) issue from the stomata on both sides of the leaves and usually bear a single ovate or obpyriform conidium. The conidia are quite large ($30-42 \times 42-78 \mu$, occasionally one is much smaller) and fall away with a small part of the conidiophore attached. They germinate by producing numerous zoospores. Chlamydozoospores were found crowded together in the tissues of some of the older diseased areas. They were globular, hyaline or very light yellow, some thin-walled and others thick-walled, and $12-18 \mu$ in diameter. In some leaves oospores were also found abundantly. The oogonia were thin-walled and $30-39 \mu$ in diameter. The globular oospores were $27-30 \mu$ in diameter, the epispore being smooth, hyaline or light yellow, and about 2μ thick.

The species is certainly very similar to *Phytophthora Colocasiae* Rac. on the taro (*Colocasia esculenta*) in Java, India and Formosa, but a more extended study is necessary to determine its specific rank. It has been found in several fields about Stanford University and by the state highway near Mayfield, California. As a large percentage of the plants were infected in some localities, the fungus may become of considerable economic importance.

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STANFORD UNIVERSITY,
February 17, 1916

ENDURANCE OF THE PORPOISE IN CAPTIVITY

THE New York Aquarium lost last year a most attractive exhibit, the bottle-nosed porpoise (*Tursiops truncatus*) which has lived in the large central pool of the building for more than twenty-one months.

The cause of its death was a mixed infection, which in a few days attacked every part of its skin, covering the smooth glistening surface with unsightly pustules. This infection