

spots on apple leaves which had been punctured with a hot needle. The fungus was later found on dead apple twigs in Morgantown, W. Va., almost touching a live branch whose leaves bore spots containing *Coniothyrium* fruits. There were but few spotted leaves on the remainder of the tree. Professor Alwood, in a letter to Dr. Sheldon which the writer was permitted to see, states that the fungus winters over on the fallen leaves. The writer has not so far been able to find fruits of the fungus on fallen leaves during the winter and spring.

Coniothyrium pirina, then, occurs in spots on living leaves of apple, cherry,¹⁰ quince and pear,¹¹ and on dead twigs of apple and quince. It is able under certain conditions to produce spots on apple leaves, but nevertheless it is merely a facultative parasite, and probably does not cause the serious defoliation of apple trees in West Virginia, which has been attributed to it.¹² It seems able to winter over on twigs of apple and quince.

Since in the field *Coryneum foliicolum* gave more evidence of being important than *Coniothyrium pirina*, culture work with it was also done. The fungus was grown on the ordinary culture media, and on sterilized twigs of various kinds, including spruce twigs. On synthetic agar the hyphae at first bore conidia singly on short branches, and all the spores grown on agar were long, irregular, and with cells often subdivided, making the spores as many as seven-septate; this corresponds closely to the behavior of *Coryneum beyerinckii* recently reported by Smith. On some of the media cellular, subcarbonaceous structures developed, sometimes becoming flask-shaped with long necks. In August the fungus was found fruiting on a canker on a young apple trunk. Apparently the spores were borne inside subcarbonaceous pycnidia, but the immaturity of most of the fruits prevented definite determination of this point. A pure culture made

¹⁰ Alwood, W. B., Va. Agr. Exp. Sta., Bull. 24: 23-40 (1893).

¹¹ Jennings, H. S., Tex. Agr. Exp. Sta., Bull. 9:26 (1890).

¹² Corbett, L. C., W. Va. Agr. Exp. Sta., Bull. 66:202 (1900).

from spores from this canker grew on agar just as did the cultures taken from leaf-spots.

Some inoculation work with *Coryneum foliicolum* along the same lines as that with *Coniothyrium pirina* gave similar results, except that the *Coryneum* gave even less evidence of vigorous parasitism than did the *Coniothyrium*. It is not likely, therefore, that it is any more important as a cause of disease.

Acknowledgments are due to Professor F. C. Stewart, Dr. Fr. Bubák and Dr. G. B. Traverso for sending specimens, to Dr. C. H. Peck for identification of a specimen of *Phyllosticta limitata*, to Mrs. Flora W. Patterson for determination of a specimen of *Coryneum foliicolum*, and to Dr. J. L. Sheldon for advice and the use of data and specimens previously obtained by him.

CARL P. HARTLEY

MINNEAPOLIS, MINN.

A CYCAD FROM THE UPPER CRETACEOUS IN
MAVERICK COUNTY, TEXAS

IN the fall of 1905 I found a cycad in the Upper Cretaceous of Texas. The locality was three miles north and one and one half miles west of the station called Paloma, on the Eagle Pass branch of the Southern Pacific Railroad, and about twenty miles south of Spofford. At this place the Upson clay is exposed on the east side of Sauz Creek, which joins with Cow Creek to form Elm Creek a half mile to the south. The exposure runs for a quarter mile north and south and is considerably cut up by gullies. At the north end the clay was dark and it contained a *Radiolites*, a small *Ostrea*, an *Anomia* and *Exogyra ponderosa*. This last shell is frequent over the whole exposure. Eight fragments of presumably the same silicified trunk were noted. Three of these matched by their fractures and showed a stem about ten inches wide, flattened considerably, and hollow. These three and one more fragment were all that I could carry, and they have been turned over to a specialist for study.

The clay containing these fossils has been by Dumble called the Upson clay and is described in Augustana Library Publications,

No. 6, p. 68. It is from 500 to 600 feet thick in this vicinity and the stratum of this particular exposure is included somewhere in the upper 150 feet of the formation. Some sandstone ledges appearing a mile and a half south contain *Ostrea larva* and impressions of *Halymenites*, and these ledges mark the beginning of the change to the overlying San Miguel beds. This trunk comes from at least 1,400 feet above the base of the Upper Cretaceous in this state. The Upson clay is underlain by about 750 feet of limestone of the age of the Austin chalk, and below this there are here some 250 feet of sediments corresponding to the Eagle Ford shales. So far as I am aware this is the only known cycad yet found in the Upper Cretaceous of America.

J. A. UDDEN

ROCK ISLAND, ILL.

SOCIETIES AND ACADEMIES

THE TORREY BOTANICAL CLUB

THE club was called to order on May 27, 1908, at the Museum Building of the New York Botanical Garden at 4 P.M. by Vice-president John Hendley Barnhart. Eight persons were present. After the reading and approval of the minutes for May 12, 1908, the announced scientific program was presented. The following abstracts were prepared by the authors of the papers:

The North American Species of Zygodon: Mrs. N. L. BRITTON.

Attention was called to the fact that *Zygodon viridissimus* is a rare species, having been found only a few times in the high mountains of the southern Alleghanies and northern New York. It is usually sterile and propagates by septate brood-bodies, borne in clusters in the axils of the leaves. Fruiting specimens, collected by Dr. J. K. Small on the summit of White Top, Virginia, showed that the peristome is absent, though all the capsules found were either too young or too old for satisfactory determination. A comparison with specimens collected by Drummond near Hudson Bay shows that the latter belong to *Zygodon rupestris*, which is variously placed by European authors as either a species or a variety of *Z. viridissimus*. Sterile specimens of *Zygodon gracilis* have been recently discovered in North Carolina by Dr. A. J. Grout. *Zygodon excelsus*, whose fruit is also still unknown, appears to be more closely related to *Leptodontium* than to *Zygodon*.

The Acceleration of the Period of Senescence by Radium Rays: C. STUART GAGER.

In view of the fact already well known, that, as old age approaches, the size of the cell-nucleus becomes less relative to that of the cell, measurements were made to see if this relation was affected by exposure to radium rays. It was found that in cells near the root-tip of *Zea Mays* the diameter of the nucleus was 35.5 per cent. that of the cells in unexposed plants, but only 33.33 per cent. in roots exposed to radium rays. This is some evidence that exposure to radium rays accelerates the approach of the period of senescence.

A Collection of Philippine Fungi: W. A. MURRILL.

A splendid collection of fungi, six hundred and thirty-seven packets in all, was recently received from the Bureau of Science, Manila, through Mr. E. D. Merrill, botanist. Previous work upon the fungi of this region was briefly sketched, and the collections of Philippine fungi in various institutions compared.

This paper will be published in full, with notes and description of interesting species, in a future number of the *Bulletin of the Torrey Botanical Club*.

An announced paper, on "Botanical Supplies in the Public Schools," was not given, on account of Dr. Hollick's unavoidable absence.

At the close of the stated program Dr. Gager exhibited some photographs of flowers, etc., taken in natural color at the New York Botanical Garden by the Lumière process. The process was briefly explained.

Dr. Murrill exhibited a specimen of "Tuckahoe," and called attention to the fact that the sporophore of a *Polyporus* had been obtained from a form common in parts of Canada, the "Tuckahoe" being a sclerotium, or a resting stage of the mycelium in mass. He would be glad to receive specimens of these sclerotia, either fresh or dried, from any locality, so that the various species, if more than one exists in this country, may be properly distinguished.

Dr. Barnhart exhibited for Mr. Nash a flowering specimen of the lace-bark tree, *Lagetta Lin-tearia*, a native of the West Indies. This tree is known to have flowered only once before in cultivation. An article on the specimen, and the peculiarities and uses of the lace-like bark appeared in the June, 1908, number of the *Journal of the New York Botanical Garden*.

C. STUART GAGER,
Secretary