

NEW AMERICAN PLANTS FROM THE PENNSYLVANIA
PERIOD AS PRESERVED IN COAL BALLS

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Of the various coal ball localities in Illinois, Indiana, and Texas from which I have made collections, two are almost completely worked up. The first one which has been examined is at Harrisburg, in Saline County in southern Illinois. There, in a now sealed-up mine located in the No. 5 coal seam of Illinois, excellent material was found which has been described by various of my students and friends as well as by myself. The second locality which is also located in an abandoned mine, but in a not yet fully determined, comparatively young coal seam is that of Calhoun in Richland County, Illinois. More than three hundred coal balls from Calhoun have been sectioned and given a preliminary examination. Quite a number of these have been selected for detailed research. During the academic year 1933-34 the following persons besides myself have been occupied with the Calhoun coal balls: Roy Graham, whose doctor's thesis, "Pennsylvanian flora of Illinois as revealed in coal balls, I", appeared in the Botanical Gazette of March, 1934, and Miss Mary Ellen Underwood, whose master's thesis, entitled "Morphology of some Illinois Coal Ball Plants", has been prepared under the supervision of Professor Paul J. Sedgwick in the department of Botany at the Graduate School of Syracuse University. A previous master's dissertation entitled "Morphological Studies of some Illinois Coal Ball Plants" was presented at Syracuse University in the spring of 1933, by Miss W. Louise Crocker.

Our investigations of Calhoun coal balls during the past year have added considerably to our knowledge of the coal ball flora of Illinois. Dr. Graham established in his above mentioned paper six new species and one new genus which had not been known previously, either in America or elsewhere. The new investigations brought to light additional facts about the Cycadofilicales and the Filicales in particular, while the existence of *Amyelon radicans*, the root of Cordaites, was established for America by Miss Underwood. She also found additional information on the well-known Cycadofilicalis *Heterangium grievii*, and its probable seed *Sphaerostoma ovale*. Entirely new Cycadofilicales seeds which were described by Roy Graham are *Conostoma platyspermum* and *Conostoma quadratum*. He found also a new microsporangium, *Telangium pygmaeum*, and he established the following new species of fern sporangia: *Notoschizaea robusta*, *Scolecopteris latifolia*, and *Scyathotrachus bulbaceus*. Miss Underwood photographed some excellent cross sections of the petioles of *Botryopteris forensis*. Additional material on *Sphenophyllum*, *Psaronius*, and *Myeloxylon* was found by all of us. One of the coal balls which I examined happened to be cut along the axis of a thick stem of *Medullosa* showing the branching. There are still quite a number of Calhoun coal balls which need detailed examination. As soon as this is done material from another locality will be studied and gradually our knowledge of the coal ball flora of the Illinois-Indiana-Kentucky basin will give us a fairly complete picture of the vegetation which formed the coal seams of this big basin. Dr. Graham took a number of Calhoun coal balls to Cambridge, England, and studied them in Professor A. C. Seward's laboratory. A paper containing these studies was recently received by the Botanical Gazette.