

not certain what the dominant element or factor is. It may be female Brown Leghorn color, a modifier, or femaleness or something else. As females colored nearly like Brown Leghorn females appeared among black females in F_1 from Brown Leghorn males by White Rock females it suggests that the dominant element is not female color.

A similar inference may be drawn from the distribution of color in the buff and black non-barred F_1 females from White or Barred Rock females by Buff Rock male. Some of these are black with orange hackle and grade into others in which buff predominates. In all cases the colors are distributed in a more or less perfect imitation of the pattern of Brown Leghorn females. Moreover, many of these hybrids are stippled in certain regions which always correspond to the regions in Brown Leghorns which are stippled.

H. D. GOODALE

"OAKWOOD,"
STAMFORD, CONN.

THE NORTH CAROLINA ACADEMY OF SCIENCE

THE tenth annual meeting of the North Carolina Academy of Science was held at the Agricultural and Mechanical College, Raleigh, on April 28 and 29, 1911, with an attendance of forty members. The meeting of the executive committee, held in the early afternoon of April 28, was followed by a general meeting for the reading of papers. At night, after the academy had been welcomed to the Agricultural and Mechanical College by President D. H. Hill, the retiring president of the academy, Professor W. H. Pegram, delivered his presidential address, "The Problem of the Constitution of Matter." Following this, Professor John F. Lanneau gave a lecture on "Sirius: the Bright and Morning Star."

On Saturday morning, April 29, the annual business meeting was had. Reports of the secretary-treasurer and of the various committees were made. Five new members were elected. These together with the present membership of 80 give a total of 85 members. The report of the secretary-treasurer showed that the academy in membership, in the interest shown in its work, and in its finances, was in better condition than at any time during its history.

The following officers were elected for the ensuing year:

President—H. V. Wilson, University of North Carolina, Chapel Hill.

Vice-president—W. A. Withers, Agricultural and Mechanical College, West Raleigh.

Secretary-treasurer—E. W. Gudger, State Normal College, Greensboro.

Executive Committee—J. J. Wolfe, Trinity College, Durham; Franklin Sherman, Jr., Department of Agriculture, Raleigh; Andrew H. Patterson, University of North Carolina, Chapel Hill.

At 10 A.M. the academy and the North Carolina Section of the American Chemical Society held a joint meeting at which Dr. R. A. Hall, of the University of North Carolina, read a report on "The Chemical Researches of Ehrlich Leading to '606.'" Following this, reading of papers on the academy program was resumed. At 2 P.M., the program being finished, the academy adjourned to the dining room of the college, where a luncheon was given complimentary to the visiting members.

The total attendance was forty out of a membership of eighty-five. There were thirty-three papers on the program, all of which were read save two, and all read when called for but two. In attendance, number of papers presented, general interest as evidenced by the discussion of the papers, this session excelled any in the history of the academy. In addition to the presidential address, which is published in full in the current number of the *Journal of the Elisha Mitchell Scientific Society*, and to the lecture on Sirius, the following papers were presented:

Catching Hawk Moths on Flowers at Dusk: C. S. BRIMLEY, Raleigh.

This paper tells the author's experiences in catching hawk moths on flowers at dusk in several years at Raleigh, N. C. The flowers first experimented with were jimson weed, afterwards four-o'clocks. With the jimson weeds it was found that tying the flowers in bunches was an advantage, while this did not apply to the four-o'clocks, as they were already in bunches. Two flights of moths were noted, the first in June, the second in July and later, the latter largely, the former wholly composed of moths from over-wintering pupæ. The proportion of sexes visiting flowers was 5 males to 2 females. A neighbor's cat was found to be as expert a catcher of hawk moths on flowers as the author. The notes apply mainly to the two tobacco hawk moths.

To be published in full in the current number of the *Journal of the Elisha Mitchell Scientific Society*.

Natural History Notes: E. W. GUDGER, State Normal College, Greensboro.

A. *An Interesting Case of Symbiosis* (specimens exhibited).—For six successive seasons, wood frogs, leopard frogs, toads and salamanders (species unknown, probably *Amblystoma punctatum*) have been observed to lay their eggs in a small pool in the college park. Each spring it has been noted that the eggs of the salamanders only had a greenish color. Microscopic examination shows that this is due to great numbers of a very small unicellular green alga found within the inner mass of jelly. The green color grows more marked as the development of the eggs takes place, due presumably to the larger amount of CO₂ given off as the larvæ become more active. Since no algæ have ever been found in the outer or general mass of jelly, it seems possible that they may penetrate the oviducts of the salamander and become enclosed in the inner capsule of jelly as the eggs pass to the exterior.

B. *Some Plant Abnormalities*.—A bifurcated frond of the common Boston fern was exhibited. This was one of two growing on one plant in the writer's laboratory at the present time. Three years ago two others were noticed on different plants.

A drawing was exhibited of a motile *Hæmatococcus* with four flagella. This was found last fall in a lot of fresh material from a cemetery urn.

Conjugating Yeasts: W. C. COKER, University of North Carolina, Chapel Hill.

In the course of experiments by an advanced class in the fall of 1910 the rare and peculiar wild yeast, *Schizosaccharomyces octospora* Beyerinck, was found. It appeared in test-tubes that were filled with distilled water in which were a number of unbroken Delaware grapes that were bought in the local market. A day or two after the tubes were prepared a slow fermentation set up, and later a precipitate appeared. On examination of this precipitate after three weeks it was found to contain the *Schizosaccharomyces* in process of conjugation. A later experiment made with Tokay grapes gave a similar result. Cultures were continued and the life history studied in all stages, confirming in general the observations of Guilliermond. Four species of *Schizosaccharomyces* are known, all supposed to be tropical or

subtropical, and *S. octospora* has not been found before in America.

Results of a Practical Attempt to Control Lettuce Sclerotinose: F. L. STEVENS, North Carolina College of Agriculture and Mechanic Arts, West Raleigh.

Lettuce sclerotinose has been the subject of investigation for several years in the North Carolina Agricultural Experiment Station. From the laboratory study it was concluded that all structures except the sclerotium are short lived; therefore, that if the formation of new sclerotia could be prevented diseased beds could eventually be restored to health. To test this theory several experimental beds were very thoroughly infected in April, 1908, by heavily inoculating a large number of plants and allowing the sclerotia which were formed to remain in the beds. The following year 555 plants, or over 45 per cent., died of sclerotinose. From this time on a course of treatment designed to prevent the forming of sclerotia was followed with the hope of lessening the disease. The following year only seven plants, or one half of one per cent., of the crop died. A year later, that is, the present year, the results were almost the same. This experiment seems to indicate that control of this disease can be obtained by the methods employed.

Studies in Soil Bacteriology, V.—The Nitrifying Powers of North Carolina Soil: F. L. STEVENS and W. A. WITHERS, assisted by P. L. GAINES, F. W. SHERWOOD and T. B. STANSEL.

During 1909 and 1910 samples were taken from 58 localities representing 21 different soil types, in each of which was a good soil and a poor soil. The soils came from sixteen counties. Nitrification was expressed as N. E., N. I. P. and N. I. P. in Solu., which terms have been explained in previous publications.¹

A summary of the results is:

	N. E.	N. I. P.	N. I. P. in Solu.
Maximum found	105.1	89.9	1.5
Average for good soil . . .	8.7	44.7	0.6
Average for poor soil . . .	5.0	34.8	0.6
Average for all soils . . .	6.8	39.8	0.6

There is seen to be a great difference in results by different methods of testing. There is also a difference between the results obtained by the same method on samples taken from the same

¹ *Centralblatt f. Bakt., Abt. II., Bd. 25, 1910, p. 64.*

field if the two samples are taken a year apart. N. I. P. in soil gave the higher results on an average, but not always in individual cases, showing that our soil 1931, which has been used so much, affords better conditions for nitrification than most of our soils.

N. I. P. in solution shows no correlation with fertility. N. I. P. in soil shows better nitrification with the good soil in 69.2 per cent. of the pairs. N. E. shows no nitrification in either the good or poor samples in 29.6 per cent. of the pairs, but where there is nitrification it shows better in the good in 63.2 per cent. of the pairs. There are several samples in which the poor soil shows better N. E. and N. I. P. than the good soil.

Some Points on Architectural Acoustics: ANDREW H. PATTERSON, University of North Carolina, Chapel Hill.

An account of experiments made by the author and Mr. A. L. Field on the acoustics of Memorial Hall at the University of North Carolina. The reverberation in this hall is very bad, and the problem is complicated by bad echoes due to large flat panels in the dome-shaped ceiling. Further experiments will be undertaken in an attempt to find a complete solution of the difficulty.

Preliminary Report on the Regeneration of Nemerteans and Amphitrite: JUDSON D. IVES, Wake Forest College, Wake Forest, N. C.

Sections of nemerteans were found to regenerate readily and rapidly. But little new material formed on the anterior surfaces. Small sections, not more than 1.2 cm. long, in twenty-five days regenerated 2.5 cm. on their posterior surfaces. A section, 2.1 cm. long, regenerated 1.5 cm. in twenty-five days. A worm, with its posterior portion cut off, its head and the remaining anterior portion measuring 10.2 cm., regenerated 1 cm. in twenty-nine days.

In Amphitrite, the tentacles regenerate readily. Worms, with the portion in front of the second pair of branchiæ removed, thereby removing the tentacles and the first pair of branchiæ, lived for thirteen days, and were in good condition when killed.

A Dangerous Apple Disease: F. L. STEVENS and GUY WEST WILSON, North Carolina College of Agriculture and Mechanic Arts, West Raleigh.

This disease came to our notice in 1909 from Lincoln County, where it appeared in 1908 on a single tree and despite the cutting out of all diseased seen and spraying with lime-sulphur it spread

the next year to thirteen trees. The same trouble appeared in Sampson County in 1909 with even more disastrous results.

Whitish or pinkish pustules appear on the younger twigs and about the crotches of the tree. These bear numerous spores of the *Fusarium* or *Tubercularia* type, but so far no ascigerous form has been connected with them. The infection is in the bark, the diseased areas shriveling and separating. The epidermis splits away, exposing the browned surface beneath, or the pustules merely break through the epidermis, especially near the lenticels. Upon older twigs the bark cracks longitudinally, exposing rows of pustules in the cracks. A pinkish mycelial growth sometimes appears on the diseased twigs.

Condimental Feeds, Stock and Poultry Tonics and Conditioners: G. M. MACNIDER, Department of Agriculture, Raleigh.

A review of the work done by the author on proprietary stock and poultry medicines, the results of which have been published in full in a recent bulletin of the North Carolina Department of Agriculture.

Sixty-four preparations were analyzed chemically and microscopically. They were found to be composed largely of a base material such as cotton-seed meal, oil meal, wheat bran, etc., with small amounts of drugs added. Thirty-four drugs were identified in the preparations examined. The ones used in largest amount are practically worthless as medicines, while those that are of value are used in such small amount that they can have no effect.

The Turkey Buzzard Must Go: GEORGE W. LAY, St. Mary's School, Raleigh.

Originally "the birds of the air and the beasts of the field" were the recognized scavengers. The dog even now is so used in oriental countries, but in a higher civilization his services have been superseded by more modern methods.

The turkey buzzard spreads diseases such as chicken pox and hog cholera chiefly by infection carried on the feet. Owing to his great range of flight he carries disease from the point of infection to places far distant. If burial, the proper method for disposal of dead bodies, is used, he becomes a predatory bird, killing chickens, young pigs, etc. He is therefore a dangerous bird and should no longer be protected by law.

To be published in full in the current number of the *Journal of the Elisha Mitchell Scientific Society*.

The Library of Congress as an Aid to Scientific Research: E. W. GUDGER.

The Library of Congress, with its vast aggregations of books and journals, including the priceless Smithsonian collection, is the greatest aid in America to the historical side of scientific research. Through the system of inter-library loans, nearly any and all of this enormous mass of literature is available to the scientific researcher, provided that his college library bear the cost of transportation. The writer has during the past five years carried on three separate extensive historical researches in ichthyological literature which would have been impossible without access (at a distance) to this great library. It is a pleasure to record the prompt and efficient service with which every one of many requests for books has been met, and to call the attention of scientific men to this great adjunct to their work.

Occurrence of the Yellow Fever Mosquito at Raleigh: C. S. BRIMLEY, Raleigh.

In the summer of 1910 the writer found a rather small mosquito with white banded legs to be common in his house in the daytime. On investigation this proved to be *Stegomyia calopus*, the species which transmits yellow fever. The species was active all day, biting even at noon in a well-lighted room, while mosquitoes taken after dark almost invariably turned out to be other species. The species has not been taken by other Raleigh entomologists. No breeding places were discovered.

Proposed Reform in our Calendar: ANDREW H. PATTERSON, University of North Carolina, Chapel Hill.

A discussion of the various methods proposed in recent years for the reform in our present calendar.

Some Interesting Water Molds: W. C. COKER, University of North Carolina, Chapel Hill.

The occurrence in Chapel Hill of *Thraustotheca clavata* (DeBary) Humphrey was reported. It seems to have been found previously only at Strassburg, Germany. In this singular mold the sporangial wall dissolves away almost completely, suggesting the method of spore liberation in *Rhizopus*, and the encysted spores are allowed to fall apart in all directions. The spores escape from their cysts in the laterally ciliated form, showing that the first swimming stage is suppressed.

There also occurs in Chapel Hill a species of *Dictyuchus* in which the entire sporangium breaks

away from the hypha as soon as the spores become distinct. After some time the spores escape singly through individual tubes as is normal in the genus. Other points reported were the appearance of a variety of *Achlya americana* with hypogynous tubes, the occurrence in Chapel Hill of *Achlya racemosa* Hildeb., and the fact that *Saprolegnia diclina* Humphrey is at least not always dioecious.

Rhizoctonia of Buckwheat: F. L. STEVENS and G. W. WILSON, North Carolina College of Agriculture and Mechanic Arts, West Raleigh.

Mention was made of a serious outbreak of rhizoctoniosis on buckwheat in the western part of North Carolina.

The Finned-tailed Larva of the Butterfly Ray, Pteroplatea maclura: E. W. GUDGER.

The adult ray has a very short tail, in length about equal to one third of the body, with very faint traces of dorsal and ventral finfolds. A photograph was exhibited of three young attached to flattened yolks, showing each embryo with a profusion of long external gills and a tail three fourths as long as the body. All three larvae have the hinder halves of their tails distinctly finned above and below, thus forming broad paddle-like organs. The significance of this in the phylogenetic history of this ray is very great.

More than half the material is at hand for the embryology of the fish, and an effort will be made to collect the remaining stages this season.

The Whistling Arc in the Study of Auditorium Acoustics: C. W. EDWARDS, Trinity College, Durham.

Employing the well-known device of using a sound emitting light for a source of sound waves, a whistling arc was used for investigating confusion and distortion in an auditorium. The very large variety of sharp clear notes that the arc could be made to emit by varying the inductance made it especially useful in the study of the less practical problem of distortion. Small mirrors were used, following the method of F. R. Watson, of the University of Illinois, to trace the path of the sound waves after reflection from various surfaces.

No abstracts have been received for the following papers:

Survivals along the Sea Islands from Hatteras to Key West: COLLIER COBB, University of North Carolina, Chapel Hill.

The Peat Deposits of North Carolina: JOSEPH H. PRATT, Chapel Hill.

Isoetes in North Carolina: W. C. NORTON, North Carolina College of Agriculture and Mechanic Arts, West Raleigh.

The Composition of Melted Kauri Copal, as Used in Varnish Making: CHARLES H. HERTY and C. S. VENABLE, University of North Carolina, Chapel Hill.

Results of some Preliminary Studies in Wing Vein Homologies, Homoptera cicadina (lantern): Z. P. METCALF, Department of Agriculture, Raleigh.

Regressive Differentiation in Hydroids and Sponges: H. V. WILSON, University of North Carolina, Chapel Hill.

A Striking Class-room Experiment after Otto von Guericke (by invitation): J. M. PICKEL, Department of Agriculture, Raleigh.

Recent Changes of Level from Cape Hatteras to Cape Sable (lantern): COLLIER COBB, University of North Carolina, Chapel Hill.

How to Discover the Solution of a Problem: JOHN F. LANNEAU, Wake Forest College, Wake Forest.

Mineralogical Notes on Rutile, Pyrophyllite, Talc and Graphite: J. H. PRATT, Chapel Hill.

Some Interesting Variations in the Flowers of a Local Vinca: W. C. NORTON, North Carolina College of Agriculture and Mechanic Arts, West Raleigh.

Road-surfacing Materials: JOSEPH H. PRATT, Chapel Hill.

Some Seedlings of the Scuppernong Grape (by invitation): F. C. REIMER, Department of Agriculture, Raleigh.

The Postulates of Relativity: C. W. EDWARDS, Trinity College, Durham.

E. W. GUDGER,
Secretary

SOCIETIES AND ACADEMIES

THE AMERICAN PHILOSOPHICAL SOCIETY

At the meeting of the American Philosophical Society, Philadelphia, on May 5, 1911, an address on lignite was delivered by Dr. Joseph A. Holmes, director, Bureau of Mines, Washington, D. C.

The extent of the lignite deposits in the United States will be realized from the following figures giving the areas in several of the states:

Alabama	6,000
Tennessee	1,000
Louisiana	8,800
Arkansas	5,900
Texas	53,000
South Dakota	4,000

North Dakota	31,000
Montana	7,000

In a number of states in the Rocky Mountain region there are large areas of coal that represents a transition between typical lignites and bituminous coals. For these the name "sub-bituminous coals" has been suggested, and is tentatively used by the United States Geological Survey.

The lignite beds in Alabama, Mississippi and Tennessee represent a transition between peat and the more typical lignites of the Dakotas and Texas. Little or no use has been made of the lignite beds in these three states.

The lignites in Texas and Arkansas have been used to a limited extent; as have also the lignites of the Dakotas and eastern Montana. In this latter field the lignites contain 20, and in some cases more than 40, per cent. moisture, and slack badly and rapidly on exposure to the atmosphere; and this quality seriously interferes with their use and value for fuel purposes.

The outlook for the utilization of lignites is favorable along three lines: (1) In gas producers, without either drying or other treatment; (2) in boilers of special construction, such, for example, as that installed more than a year ago at Williston, N. D., by the United States Reclamation Service, where the lignite is used in its natural condition almost immediately after being brought from the mine; (3) in the form of briquettes. This requires that the lignite should be thoroughly and finely crushed and dried to a moisture content of from five to ten per cent., and then compressed while still warm into briquettes.

Limited quantities of lignite from California, North Dakota and Texas have been made into satisfactory briquettes at the Government Mine Experiment Station at Pittsburgh, using the full-sized German briquetting press, which develops a pressure of twenty to twenty-five thousand pounds per square inch. In the cases just mentioned the briquettes were made without the use of any binding material, a sufficient amount of tarry material remaining in the crushed and dried lignite to serve as a bond to hold the particles together in the briquette.

It is believed that our investigations along this line will demonstrate the fact that the lignite in Texas, and the Dakotas and Montana can be made into briquettes on a commercial scale, and that in this form the lignite can be used as a substitute for other domestic fuel in these regions.