The following were elected as chairmen and secretaries of the various sections:

Anthropology, Archeology and Geology:
Chairman: R. S. Poor, Birmingham-Southern College.
Secretary: G. Andrews, University of Alabama.

Biology:
Chairman: Septima Smith, University of Alabama.
Secretary: Thera Towery, Howard College.

Chemistry, Physics and Mathematics:
Chairman: Roger W. Allen, Alabama Polytechnic Institute.
Secretary: W. N. Arnquist, Alabama Polytechnic Institute.

Industry:
Chairman: E. A. Hawk, Birmingham, Alabama.
Secretary: T. N. McVay, University of Alabama.

Medicine:
Chairman: Franklin S. DuBois, University of Alabama.
Secretary: G. D. Matthews, Birmingham.

Representatives from eleven high schools met with the academy on Saturday morning, March 11, and organized the Junior Academy of Science of Alabama. Each high school had one exhibit and one member to give a paper. There were more than a hundred in attendance at the high school program. Officers of the Junior Academy are:

President: Winthrop R. Hubler, Ensley High School.
Vice-president: R. E. Chambers, Woodlawn High School.
Secretary: Martha Bray, Ramsay Technical High School.

EMMETT B. CARMICHAEL,
Vice-president of the Academy Conference

SCIENTIFIC APPARATUS AND LABORATORY METHODS

AMMONIATION OF PEAT FOR FERTILIZERS

FOR several years much of the higher grade organic fertilizer materials, such as cottonseed meal and animal tankage, has been diverted into feedstuffs. To use such material in fertilizer mixtures it was necessary to compete with their valuation on a protein basis in feeds. Under such competition the price paid for nitrogen of this sort was considerably greater than nitrogen contained in inorganic fertilizer materials. While in the last few years the price differential has not been so great, due to the low price of feeds from grain products, it still exists and the demand for organic nitrogenous materials in fertilizers has held this price higher than that of the inorganic materials. The desirability of utilizing some abundant organic substance as a carrier of the cheap nitrogen derived from synthetic ammonia led to the investigation by the Fixed Nitrogen Research Laboratory of peat as a possibility in this direction. It is well known that peat occurs in large quantities and in commercially workable beds at widely distributed points throughout the eastern part of the United States. Such deposits may be found from Minnesota to Maine, from Maine to Florida, and along the coast of the Gulf of Mexico.

Experiments have been carried out by the authors to utilize peat as a nitrogen carrier by treating the air-dried material with anhydrous ammonia. Four types of peat have been used and the conditions of treatment have been varied to study the effect of time of treatment, concentration of ammonia and temperature. A quantity of the ground peat passing a 14-mesh screen was loaded into a steel bomb and anhydrous ammonia added in excess. The closed bomb was placed in an electric oven at the temperature under which the experiment was carried out. The temperature used varied from room temperature to 300° and the pressure developed was that obtained under conditions necessary to retain the ammonia in the bomb varying from 100 to 300 atmospheres. The four types of peat investigated yielded products of a nitrogen content of 4 to 6 per cent. at 50°, 10.5 to 13 per cent. at 180°, and 14 to 21 per cent. at 300° C. It was found that treatment after 20 hours had very little effect in adding more nitrogen. Increasing amounts of moisture tended to lower the content of nitrogen in the product, but did not decrease it very sharply. From these results it appears that the temperature variation affects the amount of nitrogen more than any of the other conditions and that by controlling the temperature and water content of the material practically any nitrogen content up to 20 per cent. is obtainable, depending somewhat upon the character of the peat used.

The original peats contained from 1 to 3 per cent. of nitrogen, which is very slowly available as plant food, but under the conditions of treatment here described, this nitrogen becomes a part of the total nitrogen, practically all of which is available according to chemical tests. Analyses have shown that the nitrogen contained in the ammoniated peat is partly water-soluble and partly water-insoluble, although the water-insoluble part is roughly about two thirds of the total. The ammoniated material is considerably darker than the untreated peat, ranging from dark brown to almost black in color. It is slightly more dense than the original peat and decidedly more easily wetted on coming in contact with water.

The product is of such physical condition as to be well suited for use as a conditioner in mixed fertilizer or for direct application. It promises to be of great importance in offering a cheap nitrogen carrier which, used in mixed fertilizer, will prevent caking of the mixture and keep it in condition suitable for easy distribution. The condition of the nitrogen being partly water-soluble and partly water-insoluble makes it of essential value where danger of leaching or loss through drainage is encountered. Substitution of this material for part of the inorganic materials in the fertilizer mixtures will also be of value in diminishing the burning effect of highly concentrated mixtures, as the amount of water-soluble nitrogen would be reduced thereby.

The advantages of ammoniated peat from the standpoint of fertilizer use are numerous and apparently convincing, and in addition both peat and ammonia from which it is made are cheap and abundant. There are estimated to be 14 billion tons of peat covering 110 million acres in the United States, and ammonia as produced from nitrogen fixation processes is one of the cheapest forms of nitrogen. While the process of manufacture has not yet been worked out, indications are that it will be relatively simple and cheap. Investigations on the details of the technical problems involved are being actively prosecuted.

In the soils unit of this bureau, H. G. Byers and I. C. Fenstal, while engaged on a study of the decomposition of peat, on heating it with aqueous ammonia in a closed vessel obtained a peat product with an increased nitrogen content.

R. O. E. DAVIS,
WALTER SCHOLL
BUREAU OF CHEMISTRY AND SOILS
U. S. DEPARTMENT OF AGRICULTURE

AN ACCURATE METHOD FOR MEASURING NEW-BORN MICE

WHILE carrying on growth studies of the mice of the genus *Peromyscus*, it became necessary to devise some method for the accurate measurement of newborn and very young mice. For the first two or three days after birth, these mice are so small, squirmy and curled in posture that it is almost impossible to take accurate measurements of the total length, tail length and hind foot by the usual hand methods.

The idea was therefore conceived of taking pictures of each litter with a Leica camera. A metric scale was pictured at the same exposure so that the mice were all taken at a fourth natural size. The negatives were then projected upon a screen by means of an ordinary lantern slide projector at forty times the negative size or ten times natural size. The measurements were then taken from the screen picture and divided by ten. The curved areas, such as the total length, were measured with a pair of dividers. The cost per picture is nominal where a Leica camera and a projecting apparatus are available, and the accuracy of this method fully compensates for the small amount of time and labor involved. It is suggested that this method may also prove efficient in measuring other small animals.

ARTHUR SVIHLA
STATE COLLEGE OF WASHINGTON

A NEW SOURCE OF WORKING CURRENT FOR POTENTIOMETERS

THE writer has observed that a two-volt primary battery on the market, known as an "air-cell" battery,[1] has characteristics which make it an almost ideal source of working current for a potentiometer.

This battery has a rated capacity of 600 ampere hours and a flat voltage discharge curve if the current drain does not exceed the specified 650 milliamperes. This is ample capacity for a potentiometer for many months' use.

The writer has used such a battery in place of a storage battery and has found that when protected against changes of temperature the working current will remain constant for hours and in some cases an entire working day without adjustment.

The above features, together with its cheapness and continuity of service, make it a very desirable source of current. The potential of a storage battery drops steadily until it reaches a point where it must be replaced and recharged.

LESTER F. BOSS
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[1] Eveready Air-Cell "A" Battery, manufactured by the National Carbon Company.

SPECIAL ARTICLES

THE EFFECT OF GALACTOSE FEEDING UPON DEPANCREATIZED DOGS

THE studies of Roe and Schwartzman,[1] in which it was shown that diabetic subjects have practically as good a tolerance for galactose as normal subjects, suggested that it would be of interest to study the influence of pancreatectomy upon the metabolism of galactose. We have therefore undertaken an investigation of the metabolism of galactose in depancreatized dogs,

[1] J. H. Roe and A. S. Schwartzban, *Jour. Biol. Chem.*, 96: 717, 1932.