

PROCEEDINGS OF THE CLUB

MARCH 25, 1908

The meeting was held at the museum of the New York Botanical Garden, with Dr. John Hendley Barnhart in the chair. The minutes of the meetings of February 26 and March 10 were read and approved. A special committee of the Club appointed on February 11 reported as follows:

At a regular meeting of the Torrey Botanical Club held at the American Museum of Natural History, February 11, 1908, a committee was appointed to draft resolutions concerning the death of the late Morris K. Jesup.

Be it therefore resolved, that the Secretary be instructed to enter in the proceedings of the Torrey Botanical Club, and transmit to the Board of Trustees of the American Museum of Natural History, this record of our sincere regret at the loss of one who always manifested such a broad and deep interest in all matters pertaining to natural science.

The report of this special committee was unanimously accepted and adopted. The scientific program was then taken up and two papers were read, of which the following abstracts have been furnished by the authors:

"Botanical Experiences in western South Carolina," by Mr. Homer D. House.

The richness of the flora of the southern Alleghany mountains was commented upon, special attention being directed to the beauty of the mountains in early June, when several species of *Azalea* and *Rhododendron* are in bloom. Two trips into the mountains were described, one to Jocassee Valley for *Sherwoodia* (commonly known as *Shortia*) and to Tomassee Knob and Tomassee Falls. At the latter place several northern plants were collected, among others *Viola canadensis*, *Trillium grandiflorum*, *Filix bulbifera*, and *Dryopteris Goldiana*. The second trip was to Rabun Bald in Georgia during early June. The top of this mountain is covered with *Rhododendron catawbiense*, which was at that time in full bloom. In the thickets around the coves on the eastern slope of the mountain a new species of

bindweed, *Convolvulus sericatus*, was found. *Viola rotundifolia* also was found here, as well as in adjacent South Carolina, thus considerably extending its known range. The speaker exhibited a large number of specimens, several of them new to South Carolina, and commented upon their distribution.

"Observations on the Nutrition of *Sarracenia*," by Winifred J. Robinson.

Plants of *Sarracenia purpurea*, the common northern pitcher-plant, were exhibited and several colored illustrations of the plant in flower were shown.

The present series of experiments was undertaken under the direction of Professor William J. Gies, at the New York Botanical Garden in the summer and autumn of 1907, to determine the digestive power of *Sarracenia purpurea*, on carbohydrates, fats, and proteins. Solutions of great difference in concentration were introduced into the pitchers and it was found that they resisted distilled water and 33 $\frac{1}{3}$ per cent. sugar solution equally well. Acid and alkaline solutions of a very low concentration had no apparent effect upon the pitchers, but a 0.5 per cent. solution of acetic acid and a 1 per cent. solution of potassium nitrate both proved injurious. Sachs's nutrient solution caused the pitchers to decay within a few days. Liebig's meat-extract was used as a test of the effect of a stimulant. Bacteria and infusoria developed in great numbers and decay began in a few days. Solutions of milk in distilled water of different proportions were used, from the results of which it was inferred that the pitcher produced an alkaline substance which reacted with the acid produced in a very dilute solution of milk, but was not sufficient to neutralize solutions of greater strength. There was nothing to indicate that the milk fat or protein was digested. Solutions of grape-sugar and cane-sugar of different proportions were placed in the pitchers and there were no indications of a detrimental effect upon them. With Fehling's solution, the contents of the pitcher, after the sugar solution had been allowed to remain in them several days, gave a reddish precipitate of copper oxide, indicating the presence of invert sugar. The reduction was most marked in a 10 per cent. solution of cane-sugar.

Starch paste was allowed to remain in the pitchers from three to seven days, when it was removed and tested by boiling with Fehling's solution. The reddish precipitate indicated that a reduction had taken place, though it was not so marked as in the case of the cane-sugar. The addition of an antiseptic did not hinder the reduction of the cane-sugar or starch. Olive-oil and ethyl butyrate were used to test the fat-digesting power of *Sarracenia*, but the results indicated no digestion. Fibrin was used to determine the digestive power upon protein, but the results were negative. These results as to protein correspond with those obtained by Schimper in 1882 (Bot. Zeit. 40: 225) and by Goebel in 1893 (Pflanz. Biol. Schild. 2: 186).

MARSHALL A. HOWE,
Secretary pro tem.

APRIL 14, 1908

The Club was called to order at 8:30 o'clock by Vice-President, John Hendley Barnhart. Seven persons were present.

After the reading and approval of the minutes of the preceding meeting, the name of Mrs. M. H. Reed, 185 Audubon Avenue, New York City, was presented for membership.

The report of the Committee, appointed at the meeting of January 14, 1908, to audit the books and accounts of the Treasurer of the Club for the year 1907, was read and approved.

Resignations were read and accepted from Mr. C. M. Bergstresser and Mr. O. M. Oleson. The Secretary was directed to cast the ballot of the Club electing Mrs. M. H. Reed to membership.

The scientific program consisted of two papers as follows:

"The Relation of Chemical Stimulation to Nitrogen Fixation *Sterigmatocystis*," by Marion E. Latham.

This paper will appear in full in a future number of the "Bulletin" of the Club.

"Some Forms of Protoplasmic reaction," by H. M. Richards.

The speaker reviewed the more recent literature and theories bearing on the subject of the stimulus and response of protoplasm.

Both of these papers were followed by an interesting discussion, and the meeting adjourned at 10 o'clock.

C. STUART GAGER,
Secretary.

OF INTEREST TO TEACHERS

NOTES ON EXPERIMENTS IN PLANT RESPIRATION

JANE R. CONDIT

The experiment designed to show that plants give off carbon dioxide rarely gives satisfactory results with the simple apparatus that can be handled by high school pupils. The withdrawal of the air under water is too complicated for pupils of this age. Contrasting results are not always secured by placing small dishes of lime-water under bell jars with and without growing plants because of the proportionately large amount of air from the room enclosed in each.

In the following experiments in plant respiration a simple method of obtaining samples of air for the carbon dioxide test is given; and contrasting results are certain because of the small but equal amount of air in the check bottle.

A small jar was one-fourth filled with damp germinating barley and placed in the dark. When a lighted match was placed in the jar two days later the flame was extinguished at once, showing that the barley had used so much of the oxygen in the jar that there was not enough left to support combustion. A match placed in a similar check jar without the barley continued to burn for some time.

A small wide-mouthed bottle was filled with the gas from the barley jar by first filling it with water and then inverting it in the jar. When fresh lime-water was added to the gaseous contents of the bottle, a heavy white precipitate appeared. A similar check bottle full of ordinary air did not show this precipitate when the lime-water was added. This showed that carbon dioxide must have been given off by the germinating seeds.

The jar was again sealed, placed in the sun light and left for a week. When the leaves had become green the gas in the jar



Howe, Marshall A. and Gager, C Stuart. 1908. "PROCEEDINGS OF THE CLUB."
Torrey 8(5), 117–120.

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