E. g. the filtrate from *Saponaria* leaves ground with water and sand behaved in this way. When observed ultramicroscopically, all these showed the deep red fluorescence.

J. Reinke (Bot. Zeit. 44: 166 ff. 1886) believed that rhodophyll is composed of two "atom groups," one similar to the green component of chlorophyll; the other, a water soluble substance set free on death and only then becoming fluorescent. It would be of interest to examine the Florideae for fluorescence by means of the dark field condenser. I hope that some one working with these forms in reach will find time and inclination to make the examination.

For bringing into view the fluorescence of chloroplasts the use of glycerine or cane sugar (or equivalent) is necessary. I may iterate that it is at the apex of the inverted cone of illumination, obtained by reflection from the cover glass, that fluorescence is observable. A thin (0.8 mm. or less) slide and a dry objective are required.

In the above media some chloroplasts maintain their fluorescence for a surprisingly long time, though in this they do not all behave alike. Those of *Chlorophytum* and of *Aspidistra* have remained fluorescent in concentrated cane sugar for over a month, the preparation lying on a table in diffused light. During that period, those mounted in glycerine have nearly all lost their fluorescence—a few only are still so at the present writing. In water the chloroplasts, as is well known, rapidly break down or become vacuolated, as they do, but more slowly, in weak glycerine, according to the amount of water present. Under these circumstances no fluorescence is observable, ultramicroscopically, though it may not be absent.

In the chloroplasts of *Vaucheria* the fluorescent pigment soon becomes segregated into one to several vacuoles which are individually fluorescent, and which suffer more or less extrusion. There is a presumption that these vacuoles are identical with the drops of "assimilatory substance" observed by A. Meyer (Ber. bot. Ges. 36: 674. 1918) and by G. Mangenot (C. R. soc. biol. 83: 892. 1920).

With regard to the *Cyanophyceae,* I now find that, irrespective of the genus, the species may be divided into two groups, distinguishable by their fluorescent colors, those which are red (but with difference of shade corresponding it may be with various forms of phycocyanin) and those which are orange. These two groups will probably be found to align themselves with those found by K. Boresch, using spectrum analysis, to contain on the one hand a blue pigment with carmine red fluorescence, and, on the other, a red pigment having an orange-yellow fluorescence, separable from each other also by capillary analysis (Biochem. Z. 119:167. 1921).

The importance of an adequate evaluation of the behavior of the fluorescent pigments is indicated by the recent important work of B. Moore, E. Whitley and T. A. Webster (36 Ann. Rep. Oceanog. Dept. L'pool. 1922) who advance evidence to show that the role of the red pigment in the Florideae is not simply that of a screen, but that it is actively catalytic, partaking in photosynthesis.

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NEW HAMPSHIRE ACADEMY OF SCIENCE

THE New Hampshire Academy of Science held its fourth annual meeting at Alton Bay and at Durham, New Hampshire, May 25, 26 and 27. The academy is bringing together men in scientific work in New Hampshire, including members of the staff of Dartmouth College and the University of New Hampshire, technicians from industrial organizations, teachers of science in secondary schools and some noteworthy amateurs.

A feature of the annual meeting is a field excursion. Last year this took the form of a trip afoot into King Ravine, of the White Mountain, a great glaciated area. This year a boat was chartered for a trip to points of interest in Lake Winnepesaukee.

The program of papers read was as follows:

A review of cellulose hydration theories as applied to beating: M. O. SCHUR.

Auxiliary problems in nitrogen fixation: GEORGE A. PERLEY.

Chlorination of state water supplies: C. L. POOL.

The Schick test for diphtheria: K. C. ATKINS.

The feeble-minded mother in New Hampshire: B. W. BAKER.

Some relations of metabolism to growth and reproduction in plants: H. R. KRAYBILL.

Lethal hereditary factors in butterflies: J. H. GEROULD.

Determination of stellar distances: J. M. POOR.

What of science? L. B. RICHARDSON.

Wild life in New Brunswick: LELAND GRIGGS.

The human side of science: EDWIN E. SLOSSON.

Symposium on "Curriculum of the high and the junior high schools of New Hampshire":

Some theoretical considerations or the what and why: J. W. TWENTE.

Economy in the social orientation of children: E. W. BUTTERFIELD.

The new alchemy: GORDON L. CAVE.

The social science core in secondary education—a study in curriculum making: A. N. FRENCH.

Place of home economics in high school training: HELEN F. MCLAUGHLIN.

W. C. O'KANE,
Secretary