(18) The method of segregating students on the basis of the quality of previous college work seems satisfactory because all sections so arranged performed, in the test subject, and in the entire group of second semester subjects, exactly as rated.

(19) No harm is done to any grade of students under segregation and after one trial no instructor objects to at least one section of the low students.

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## ON VALONIA AND HALICYSTIS IN EASTERN AMERICA*

THE use of large coenocytic algae in the study of protoplasmic permeability and the accumulation of salts in the vacuolar sap has proved so valuable that a note on certain distinctions with regard to them may be of interest. The best known species is *Valonia macrophysa* Kütz., of Bermuda, where it is widely distributed, but reaches large size only in favorable situations. It then occurs in branching clusters, which often are very tight and force the individual "cell" to grow into an elongated or tapering cylindroid. The separated "cell" is dark green and firmly turgid while alive and sinks in sea water. Its specific gravity is correlated with its sap content, as shown by Osterhout and Dorcas,[1] the solution of (chiefly) potassium chloride in the vacuole having a higher density than the sea water.

This cell contrasts markedly with the other Bermuda coenocyte studied, the one known locally as "sea bottles," washed ashore during part of the year on exposed beaches of the south shore. These are invariably single, pear-shaped cells up to an inch or more in diameter, and never clustered. These cells have not yet been found *in situ,* but when the stranded ones are carefully gathered many are found to live in the laboratory for a week or more. During this time they remain a pale to medium green in color, and have a distinct turgor, though the cell is much more resilient than that of *Valonia macrophysa.* Most marked of all, these cells continue to float in the sea water and only sink when the protoplast disorganizes and the green color disappears. This flotation during life is again correlated with the sap constitution (Osterhout and Dorcas, *loc. cit.*), the predominating salt being sodium chloride, and the solution slightly less dense than the sea water. Sulphate ion is excluded, and potassium is not markedly accumulated. On death, of course, all the salts of the sea water diffuse in, and the sap no longer remains light enough to float the protoplasm and cell wall.

These "sea bottles" of Bermuda have long been considered as *Valonia ventricosa,* a common species of the West Indies.[2,3] It was remarkable, of course, that two species of the same genus should differ so widely in fundamental character as to exercise such different selectivity with respect to salts. This distinction, together with differences in the cell wall, chloroplasts, distribution of nuclei and absence of lenticular or holdfast cells raised the suspicion that the floating form might not be *Valonia* at all, but *Halicystis,* a somewhat similar genus, known in the North Sea, the Mediterranean and the Pacific.[4] The occasional appearance of radiate and stellate markings quite similar to those figured by Kuckuck[5] in connection with zoospore formation in *Halicystis* strengthened this suspicion.

Further evidence was afforded the writer this summer, during a stay at the Carnegie Institution's marine laboratory at Tortugas, Florida. On the reefs surrounding those keys the cells of *Valonia ventricosa* J. Ag., are found *in situ,* and may be gathered for laboratory study. These cells are, again, always single, never in clusters or branching, and are usually almost spherical. They are, however, but slightly resilient, are dark green in color, and immediately sink in sea water, floating neither in the ocean nor while kept in sea water in the laboratory. The electrical conductivity of the sap indicates it to be chiefly potassium and not sodium chloride solution and is almost the same as that of *Valonia macrophysa,* gathered at Fort Jefferson, in Tortugas. Chemical analysis will be reported elsewhere in detail.

It is evident that this Florida species, morphologically similar to the *Valonia ventricosa* widely distributed in the West Indies, is something quite distinct from the Bermuda "sea bottle." It is therefore gratifying to report that specimens of the latter (and of one of three cells found floating at Tortugas, closely resembling the Bermuda form) were submitted to Dr. Marshall A. Howe, of the New York Botanical Garden. Dr. Howe has very kindly identified the floating cells as being indeed *Halicystis.* The species remains in doubt, *H. ovalis* (Lyngb.) Aresch. being evidently a smaller plant.

The conclusions we may draw are: (1) Physiological differences may be useful in taxonomic diagnosis,

* Contributions from the Bermuda Biological Station for Research. No. 155.

[1] Osterhout, W. J. V., and Dorcas, M. J., *J. Gen. Physiol.,* 1924–25, vii, 633.

[2] Collins, F. S., and Hervey, A. B., *Proc. Am. Acad. Arts and Sc.,* 1917, liii, 51.

[3] Britton, N. L., "Flora of Bermuda," New York, 1918, p. 494.

[4] Setchell, W. A., and Gardner, N. L., *Univ. California Pub., Botany,* 1920, viii, 154–5.

[5] Kuckuck, P., *Bot. Ztg.,* 1907, lxv, 139.

especially in calling attention to suspected differences; (2) within the genus *Valonia* these differences are not as great as at first indicated, and the genus has greater unity; (3) *Halicystis* is probably not closely related to *Valonia,* but may come of a widely differing ancestral stock, one in which sodium instead of potassium is selectively accumulated. This would further justify placing the genus in another family, the Protosiphonaceae.[6,7]

It is also evident that another genus of these large "cells," new to our Atlantic coast and adapted to direct studies in permeability, will on account of its variation from the others, further increase the comparative value of such studies.

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## SOCIETIES AND ACADEMIES

### THE CORDILLERAN SECTION OF THE GEOLOGICAL SOCIETY OF AMERICA

THE Cordilleran Section of the Geological Society of America, which includes all members of the society resident in the Pacific Coast and Rocky Mountain States, held its twenty-sixth annual meeting on January 28 and 29, 1927, at the University of California in Los Angeles. William J. Miller, chairman of the section, presided. The Pacific Coast Branch of the Paleontological Society of America also met on January 29. The annual dinner was given under the auspices of the Branner Geological Club.

The program, comprising some thirty papers, was varied and interesting. The majority of the papers concern the fields of structural and physiographic geology. Representative titles were: "Origin of the Desert Basins of Southwest United States," by Eliot Blackwelder; "The Dissected Fault Scarp of the Wasatch Range, Utah," by William Morris Davis; "Origin of Normal Faults," by Chester W. Washburne; "Three Important Relief Sustaining Formations of the Southwest," by Robert T. Hill; "Current Geological Investigations in Japan," by T. Wayland Vaughan; "Experiments in Shear-Zone Folding," by Howard W. Kitson; "The Physical Indications of the Bridge Creek Flora," by Ralph W. Chaney; "The Camels of the McKittrick Pleistocene," by John C. Merriam and Chester Stock.

Approximately fourteen fellows of the Geological Society and seventy-five guests, mainly geologists, attended the meetings.

As an incident probably without precedent in geological meetings in this country, a slight but very distinct earthquake disturbed somewhat the presentation of a paper concerning active faulting. The shock occurred in the midst of a discussion by James P. Fox, of the University of California, of the active Haywards Rift and other recent faults of Central California. It seemed that Nature was protesting, by peculiarly appropriate means, against the investigation and discussion by Inquisitive Man, of one of her normal processes.

JOHN P. BUWALDA,
*Secretary.*

### THE UTAH ACADEMY OF SCIENCES

THE twentieth annual meeting of the Utah Academy of Sciences convened at Hotel Newhouse, Salt Lake City, April 8 and 9. The program consisting of twenty-one papers was roughly divided into three sessions, one on Friday evening comprising six papers on research in education, and two sessions on Saturday. The forenoon session was devoted to papers on natural science including agriculture, agronomy and bacteriology. In the afternoon papers on subjects in the physical sciences were read. There were a total of twenty-two papers in all, the heaviest program the academy has had for a number of years.

The sessions were all well attended and the interest was good throughout. The attendance from the education people at the Saturday sessions, however, was noticeably small.

At the business session following the program of papers the following officers were elected for the ensuing year:

President, R. A. Hart, Salt Lake City.

First Vice-President, Dr. Jos. F. Merrill, University of Utah.

Second Vice-President, Dr. Willard Gardner, Utah Agricultural College.

Council: Dr. Bert L. Richards, Utah Agricultural College, Professor O. W. Israelson, Utah Agricultural College, Dr. Vasco M. Tanner, Brigham Young University.

Secretary: Mr. J. Cecil Alter, Salt Lake City.

Twelve new members were added to the academy and five members were advanced to fellowship.

This was the first meeting in many years to be held down town, the previous meetings having been held at the university. The experiment seemed to be successful both in the number attending the different sessions and in the interest shown. The newspaper publicity was better than we usually get, undoubtedly due to the convenience of getting reporters to the meetings.

C. ARTHUR SMITH,
*Secretary.*

[6] West, G. S., "Algae," Cambridge, 1916, vol. i, pp. 223–4.

[7] Blackman, F. F., and Tansley, A. G., *New Phytologist,* 1902, i, 115.