remarks on photochemistry, colloids and research work in Great Britain. Altogether this is a very readable book and all the more so because of the continuity of plan, which is quite unusual. Most writers of historical outlines content themselves—or are forced to content themselves—with isolated chapters. It is really quite a feat to have avoided this danger to so great an extent as Sir William Tilden has done.

The reviewer is entirely in sympathy with the contention, in the preface, that students should not only know the names of the leaders of scientific thought, but should perceive correctly the connection between their discoveries and the general progress of their science. In order to bring this about, a series of biographical notes has been appended to each chapter. In these notes are given a brief sketch of the life and work of every deceased chemist or physicist who has contributed substantially to the progress thus far accomplished.

Wilder D. Bancroft

BOTANICAL NOTES

PROTOCOCCUS, NOT PLEUROCOCCUS

In a recent number of *Nyt Magazin for Naturvidenskaberne* (Christiania) N. Wille gives the results of his studies of the actual specimens of certain lower green algae prepared by C. A. Agardh, and still preserved in the herbarium of the University of Lund, Sweden. One outcome of these is the settlement of the question as to whether or not the name *Protococcus* is still valid. As every teacher knows there has been a strong tide against the use of the name *Protococcus* for the common green slime of tree-trunks and walls, the preferred name being *Pleurococcus.* In the paper under consideration the author first gives a summary history of the nomenclatural tangle which has arisen. In 1824 C. A. Agardh named a certain plant *Protococcus viridis.* In 1842 J. Meneghini, not knowing Agardh's plants, proposed the name *Pleurococcus,* and included blue-green as well as green species, and among the latter he included the plants named *Protococcus viridis* by Agardh. Other forms of confusion resulted from this initial blunder of Meneghini's but what is here given is sufficient to warrant Wille's conclusion:

> It is clear that in order to disentangle such a confused mass of synonyms one must go back to the original specimens to determine what C. A. Agardh really understood by his species *Protococcus viridis.*

So he examined the original specimens and found that the specimens labeled *Protococcus viridis* are what later authors have called *Pleurococcus.* This fact requires, as Wille says, that "this species must therefore be called *Protococcus viridis.*"

Since *Pleurococcus* was used by Meneghini for blue-green and also green algæ that name is left badly discredited, and must doubtless fall into synonymy.

SHORT NOTES

Some recent systematic papers are: A Consideration of Structure in Relation to Genera of Polyporaceae, by Doctor Adeline Ames (*Ann. Mycol.,* Vol. XI.), including a key to, and descriptions of sixteen genera, with four half-tone plates; New Fucaceae, by N. I. Gardner (Calif. Univ. Pub., Vol. 4), containing descriptions of some western rockweeds and their close allies, and accompanied by eighteen half-tone plates of excellent photographs of the plants described.

Bulletins 284 and 285 of the Bureau of Plant Industry of the U. S. Department of Agriculture on the Water Requirement of Plant deal with some of the scientific facts that underlie the practical aspects of agriculture. In the first the joint authors, L. J. Briggs and H. L. Shantz, report in detail upon their investigations made at the dry-land experiment station at Akron, in northeastern Colorado, in the years 1910 and 1911. The bulletin is a valuable contribution to the physiology of the water loss sustained by plants under arid conditions. In the second bulletin the same authors have rendered a most welcome service to plant physiologists by presenting in summary form a review of the literature of the water requirement and water loss

of plants. These summaries are so systematically arranged that they must prove of the greatest help to plant physiologists.

ALLIED to the foregoing is Dr. F. J. Alway's paper, "Studies on the Relation of the Non-available Water of the Soil to the Hygroscopic Coefficient" (Research Bull. No. 3, Agr'l. Expt. Station of Nebraska).

AMONG the recent pathological papers are: M. T. Cook's Report of the Pathologist for the year 1912 (N. J. Expt. Station) enumerating especially the diseases of the year; Ethel Field's Fungous Diseases Liable to be Disseminated in Shipments of Sugar Cane (Circular 126; Bureau of Plant Industry, U. S. Dept. Agric.); Adeline Ames's New Wood-Destroying Fungus (*Bot. Gaz.*, May, 1913); P. J. O'Gara's Studies on the Water Core of Apples (*Phytopathology*, April, 1913), and Organization and Methods of Control of Plant Diseases (Wash. State Hort. Assn., 1913).

HERE may be mentioned H. R. Cox's paper, "Controlling Canada Thistles" (Farmer's Bulletin 545, U. S. Dept. Agr.), containing a good deal as to the biology of these weeds, as well as practical suggestions as to how they may be eradicated.

HERE too should be noted O. F. Cook's "Wild Wheat in Palestine" (Bull. 274, Bureau of Plant Industry, U. S. Dept. Agric.), describing "a new type of wheat growing in a wild state" in Palestine. Though this paper "does not attempt to reach a final decision on the question whether the wild wheat of Palestine is the true ancestor or prototype of the domesticated varieties of wheat," it does serve to bring out "several additional facts regarding the character and habits of the plants."

THE NEW VOLUME OF THE SYLLOGE FUNGORUM

QUITE recently the twenty-second volume of this work reached American subscribers. It is a continuation of the "Supplementum Universale" of the twenty-first volume, and includes the descriptions of added species of fungi to the end of the year 1910. Like the volume immediately preceding, it is the joint work of P. A. Saccardo and Alex. Trotter. It is devoted to the Ascomyceteae (pp. 1–822) and Deuteromyceteae (pp. 823–1505). A Repertorium of 24 pages, an Alphabetical Index of species (69 pages), and an Index of Genera (13 pages) close the volume.

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SPECIAL ARTICLES

THE SOLAR SPECTRUM AND THE EARTH'S CRUST

PROFESSOR ROWLAND'S list of the elements whose lines appear in the solar spectrum has long been a classic work of reference among astronomers, and Dr. F. W. Clarke's summary of the chemical composition of the earth's crust occupies a similar position among geologists. Each list has been thoroughly discussed, by various writers, from the standpoint of the science to which it belongs; but little attention seems to have been called to the striking resemblances between the two.

In the annexed table are given (1) Rowland's list of the elements whose dark lines appear in the integrated spectrum of the sun, arranged in the order of the combined intensity of the lines of each element, as quoted in Abbot's "The Sun," p. 91 (1911); (2) a similar list of the elements, arranged in the order of the intensity of their bright lines in the spectrum of the solar atmosphere, as photographed at the total eclipse of 1905 by S. A. Mitchell[1]; (3) Clarke's table of the percentage composition of the outer ten miles of the earth's substance, including the lithosphere, hydrosphere and atmosphere,[2] and (4) the average composition of ninety-nine stony meteorites, as derived by G. P. Merrill from published analyses.[3]

[1] *Astrophysical Journal*, 38, 407–495, and 39, 166–177, 1913–14.

[2] As given by him in Bulletin 491 of the U. S. Geological Survey, pp. 27–33, with additional data from papers in the *Proceedings of the American Philosophical Society*, Vol. 51, p. 220, 1912, and the *Journal of the Washington Academy of Sciences*, Vol. 4, pp. 59–62, 1914.

[3] Quoted by Clarke on p. 39 of the work first cited.