

A very useful list of the algae of typical associations is given for various habitats such as ponds and ditches, rainpools, lakes, mountain tarns, flowing waters, bogs, salt marshes, wet rocks, damp ground, subterranean soil and tree trunks.

The greater part of the book is concerned with a systematic discussion of the eleven classes of fresh-water Algae as follows: Isokontae, Heterokontae, Chrysophyceae, Bacillariales (Diatomales,) Cryptophyceae, Dinophyceae (Peridinieae,) Chloromonadales, Euglenineae, Rhodophyceae, Myxophyceae (Cyanophyceae.)

The author accepts the view of Luther, Borzi, Bohlin and others that the various classes of algae have had their origin from unicellular flagellates with similar pigments and storage products. He accordingly includes such flagellates in these respective algal classes. Zoologists will be interested in the bearings of these segregations on current classifications by protozoologists. The desirability of some sort of protistological organization of this common ground of the two biological disciplines and jurisdictions is rapidly becoming more evident.

The author uses the term Dinophyceae in lieu of Dinoflagellata. This is to be regretted, since the latter has been so widely used for many years, and the scope of the former strictly speaking can not be legitimately extended to include the Gymnodiniaceae and Peridiniaceae. The citation of Woloszyńska's observations of polygonal plates on *Gymnodinium* without criticism might lead the reader to accept the idea that the structures thus detected really belonged to a true *Gymnodinium* instead of to a young or recently exuviated member of some armored genus such as *Peridinium*.

The illustrations are mainly old, but well selected and well executed. One might wish there were more of them, especially in a systematic treatise of this sort, but the author had to choose between the Scylla of condensation and the Charybdis of expense. A brief list of important works and a full index add to the usefulness of this excellent revision of a highly valued handbook.

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Gewebezüchtung. Handbuch der Biologie der Gewebezellen in Vitro. 2 vermehrte Auflage. By ALBERT FISCHER. München: Rudolf Müller und Steinicke, 1927. 508 pages, and 151 illustrations.

THIS volume is a German edition of Albert Fischer's "Tissue Culture," which was published in 1925 by Levin and Munksgaard, Copenhagen. Fischer may well be regarded as the most successful research worker in all Europe in this particular field. The

excellent introduction was written by Dr. Alexis Carrel, the eminent authority on the subject of tissue cultivation. The book is really an entirely new edition of the first, fully revised and enlarged. A thorough description of the technique of tissue culture renders the book especially valuable for investigators in this field, which is rapidly becoming more and more important. In addition, the value of his work is greatly enhanced by the comprehensive and critical presentation of the very significant results and numerous new formulations of biological questions brought out by this method.

An historical review is followed by chapters on: (1) Media employed in the cultivation of tissues *in vitro*; (2) technique covering the preparation of culture media and the various substances now used; cover-glass preparations; measurement of the rate of growth; flask culture method; application of the microdissection method; photography and microscopic examination of cultures; (3) pure strains of cells; (4) tissue culture as a physiological method; (5) morphology; (6) tissue culture as a pathological method, and lastly, a most important chapter on the behavior of tumor cells *in vitro*. An excellent bibliography is appended.

The author's success in the cultivation of tumor cells is outstanding. He devised a technique whereby strains of malignant cells are made to grow permanently outside of the organism. The tumor cells do not lose their malignancy during their life *in vitro*. Even after many passages, a culture when transplanted to an animal gives rise to a tumor with metastases. This is true not only of Rous sarcoma, but also of different epithelial tumors which have been cultivated; for example, the carcinomata of mice.

The results obtained by the method of tissue culture have widened our scientific outlook and have correspondingly increased our knowledge of cell physiology, and Albert Fischer is to be highly congratulated upon his book on this subject.

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SCIENTIFIC APPARATUS AND LABORATORY METHODS

A SIMPLE VISUAL METHOD FOR DEMONSTRATING THE DIFFUSION OF OXYGEN THROUGH RUBBER AND VARIOUS OTHER SUBSTANCES

In experimental work in which small quantities of oxygen are to be measured, rubber connections must be avoided because of the error introduced by the