

actual occurrence in these Pleistocene beds is necessary. Mr. Holloman is now keenly alive to the importance of these discoveries, as he was not when we first talked to him; and, as he had previously found and discarded other similar implements before we saw him, he is confident of eventually finding more, as commercial quarrying continues in this deposit. When it is found, he told the writer that he would do all in his power to protect it *in situ*, and wire for authorities to come and view it for themselves. Consequently, as the quarry is now being actively developed, further discoveries are to be expected in this great deposit.

HAROLD J. COOK

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THE GEOLOGY OF SONORA

WHILE making a study of the sedimentary rocks in the Cananea Mining District, Cananea, Sonora, Mexico, I found some fossils which Dr. G. H. Girty, of the U. S. Geological Survey, has determined as belonging to the Carboniferous Age. The limestone in which the fossils occur was formerly considered to be Cambrian.¹

Dr. Girty says: "The fossils from Cananea accompanying the letter of February 19 from Dr. Graham John Mitchell are, without much question, of Carboniferous Age, but to assign them within the Carboniferous System with any degree of certainty is impossible. The specimens, all very fragmentary, include cup corals (*Triplophyllum?* and *Lithostrotion?*), a strophomenoid (*Schuchertella* or *Derbya*), a *Spirifer* (apparently of the *Rockymontanus* group), and *Hustedia*."

GRAHAM JOHN MITCHELL

THREATENED EXTINCTION OF THE RUFFED GROUSE

ACCORDING to a recent report of the Department of Fisheries and Game, the ruffed grouse is facing extinction in the state of Massachusetts. Only a few of these magnificent upland game birds have been seen within the past year; and why this is so is not fully known, though it is believed that they have succumbed to a periodic visit of the partridge sickness. The winter and spring of 1926-27 were not sufficiently severe so as to decimate any large numbers of them, nor was the toll of the hunting season unusually large. But with the present mild winter, and a good breeding season, it is hoped that this once common game bird will be able to make sufficient numbers to withstand successfully the depredations of its natural enemies during the coming year. And

¹ *Eco. Geology*, vol. 5, No. 4, June, 1910, page 317.

with a closed season next fall, which the legislature is at present considering, to assist in their fight, it is believed that within a year or two they will be back on a fairly sound basis. It is to be regretted should this bird have to be added to the already long list of vanishing species.

BIRGER R. HEADSTROM

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WHAT IS A NAME?

SINCE Dr. Holland's recent fatherly note (*SCIENCE*, Feb. 10, p. 161) the differences between us seem reduced to one (I will not quarrel over the word "binomial"):

Is *Limnas ferruginea Chrysippus* (Hübner) as good a name as *Papilio Danaus Festivus Chrysippus* (Linnaeus) or *Sphinx Adscita Phegea*, which every one accepts?

The idea will be expanded in *Entomological News*.

WM. T. M. FORBES

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SCIENTIFIC BOOKS

A treatise on the British Freshwater Algae in which are included all the pigmented Protophyta hitherto found in British freshwaters, by the late G. S. West, M. A., D.Sc., F. L. S., A. R. C. S., professor of botany at the University of Birmingham. New and Revised Edition in great part rewritten by F. E. FRITSCH, Professor of Botany in the University of London. (Cambridge, The University Press) xviii+534 pp., 207 figs. in text. Price 21 shillings. 1927.

THE first edition of this highly valued treatise, issued nearly twenty-five years ago, has been so long out of print that this new and up-to-date edition will be doubly welcome. Since the microscopic freshwater flora is so cosmopolitan in its distribution this handbook will serve others than British investigators. It will also be useful to zoologists as well as to botanists, since the reviser has included all pigmented or colored flagellates within the Algae. The first fifty pages are given to generalities, such as the ecology, distribution, collection, cultivation, structure, cytology and reproductive processes of the Algae. The author is inclined to minimize the significance of the polymorphism of the unicellular Algae brought about in cultures because of the lack of correlation of such results with the same species in their natural environments. Certain normal well established instances of polymorphic life cycles of both unicellular and multicellular stages do not justify sweeping general conclusions at present as to the extent of comparable polymorphism elsewhere among the Algae.

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 Woloszynska'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.

CHARLES A. KOFOID

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.

ALBERT H. EBELING

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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