

and—a feature that one would have expected in every volume—maps are provided to indicate generic distribution.

The main purpose of the "Pflanzenreich," as contrasted with the "Pflanzenfamilien," is to provide an authentic description of species, and criticism of this work has largely to deal with considerations that are best known to the learned authors who have undertaken to write on the different orders. One of the main difficulties consists in reconciling the diverse views held by different writers who have made a special study of the same orders and groups. The discussion of certain forms under *Betula papyrifera* furnishes an instance in which Dr. Winkler holds different views from Prof. C. S. Sargent; without attempting to judge between the two opinions, it would seem that Prof. Sargent has had better opportunities of studying these forms, but it should be added that in this case the writer has fully stated both views: the ideal solution in such a case would be a collaboration of both authorities, if such a collaboration were practicable. It is from this point of view that one could have wished to see the names of other besides German botanists associated with this great undertaking; so far, Dr. Rendle, who wrote the volume on the Naiadaceæ, is the only exception. The commendable spirit of *camaraderie* which exists between botanists has been amply demonstrated in the various international meetings, of which the latest was recently held in Vienna, and it would not appear to be a matter beyond practical realisation to give a more international character to this *magnum opus*.

AN ITALIAN TEXT-BOOK OF PHYSIOLOGY.

Physiologie des Menschen. By Dr. Luigi Luciani. Ins Deutsche übertragen und bearbeitet von Dr. S. Baglioni und Dr. H. Winterstein. Dritte Lief., pp. 323+502+viii. Vierte Lief., pp. 160. (Jena: G. Fischer, 1905.)

THE general features and aims of Dr. Luciani's text-book of human physiology have already been alluded to in the review of the first two parts, and need not be recapitulated here. The first few pages of the third part complete the account of the physicochemical phenomena of respiration. The following chapter gives an excellent account of the mechanics of respiration, including the influence of the respiratory movements on arterial and venous blood pressures.

The succeeding chapter, on the nervous mechanism of respiration, is specially good, and one cannot fail to admire the mastery of the literature of the subject shown by the author, every page giving evidence of knowledge of the original sources. The subject of the localisation of the bulbar, spinal, and cerebral respiratory centres is fully dealt with, the results obtained by the earlier observers—Legallois, Flourens, Schiff and others—being well epitomised. A good *résumé* is also given of the important later results obtained by Gad and Marinescu on the localisation of the bulbar respiratory centres. Reference is also made to the interesting results yielded by Aducco's

research on the action of cocaine upon the respiratory centres.

The author next gives an account of the influence upon the respiratory centres exerted by stimuli transmitted by afferent nerves. A considerable amount of space is devoted to the important work of Hering, Breuer, and others on the self-regulatory mechanism subserved by the vagi. The later experiments of Head have been omitted.

The subjects of apnoea and periodic respiration are discussed with great fulness, much of the author's own work being given.

The next chapter deals with lymph—its sources, physical, chemical, and morphological characters, its circulation, and the theories of its formation. An excellent critical account is given of the secretion theory of Heidenhain, as compared with physicochemical theories of the majority of later workers in this field. In the concluding pages of this chapter the structure and functions of the lymph glands and lymphoid organs—bone marrow, thymus, and spleen—are fully described.

The first chapter of the second volume is devoted to the subject of the internal secretions of the ductless glands. After a brief introductory account of the historical development of our knowledge of glandular secretion, the author passes to a detailed description of the structure and functions of the thyroid and parathyroids. The treatment of the physiology of the thyroid and parathyroids is so complete and full of interest that only a brief reference to the most salient points is possible. The various theories which have been held with regard to the results of removal are critically reviewed. Very full treatment is accorded to the experimental foundations for the theory of an auto-intoxication. In this connection, the results obtained by Colzi and others by means of the method of crossed transfusion are of great interest and importance. Gley's ingenious experiments on the relative toxicity of the blood serum of normal dogs as compared with that of dogs from which the thyroids had been previously removed are also fully described. An important section of this chapter is devoted to the theories of independent specific functions of the thyroid and parathyroids, and to the experimental basis on which these theories are founded.

The structure and still obscure physiology of the pituitary gland are briefly epitomised. A satisfactory account is next given of the structure and functions of the suprarenal glands, although in this case the results obtained by English workers have not been sufficiently recognised by the author.

The following chapter deals with the external digestive secretions of the salivary glands, pancreas, gastric and intestinal mucosæ, and liver. The final chapter is devoted to the mechanical and chemical phenomena of buccal and gastric digestion. The account has been kept well abreast of the most recent advances, many important additions being made by the translators.

A perusal of the third and fourth parts strengthens the impression that the complete work will prove itself to be a most trustworthy and illuminative guide to modern physiology.

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