

of children as affecting the digestion of their food. It would be well if all parents could be made to heed the author's suggestions in regard to thoughtlessness in rebuking children at the table and the almost cruel practise of forcing them to eat what they dislike. The statements that "there is an element of hypocrisy in the attitude of parents who are selecting precisely what they please to eat while compelling little children to swallow food which repels" and "to oblige a child to finish a plateful of food against its inclination may be crass brutality" are forceful and should be heeded by those who have the care of the physical development of children.

The reader can but wish that the author had been more free in the use of cuts, for those which are given are very helpful.

W. H. JORDAN

NEW YORK AGRICULTURAL
EXPERIMENT STATION

Studies in Radioactivity. By W. H. BRAGG, M.A., F.R.S. Macmillan. 1912. Pp. x + 196. \$1.60.

Physics owes to Professor Bragg two of the most important of its recent advances. He first conceived and successfully carried out experiments on the "range" of corpuscular radiations and on the "stopping power" of different substances for these radiations. These experiments, with those on scattering, which inevitably followed, have been chiefly responsible for such additions as have recently been made to our knowledge of the internal structure of the atom. The first 10 chapters—104 pages—of the book in hand are taken up with a presentation in clear, non-mathematical language, of the present status of our knowledge of "range," "stopping power," "scattering" and "ionization" as these terms apply to the α and β particles. This material, culminating in C. T. R. Wilson's beautiful photographs of the tracks of α and β particles, probably marks the end of the conception of the positive charge of the atom as a uniform sphere of positive electrification. It seems to demand instead some sort of a Saturnian atom.

Bragg's second important contribution has consisted in the amassing of evidence for the inter-convertibility of β rays and X rays, or β rays and γ rays. This evidence is presented in the second half (pp. 104–196) of his book, which deals wholly with studies on the nature of X and γ rays. That this evidence is exceedingly convincing admits of no dispute, but that it can be successfully interpreted in terms of a neutral pair theory is more than doubtful. Indeed so rapid have been the strides made during the past year in establishing the essential identity of X rays and light that I fancy that Professor Bragg himself would today interpret all his results in terms of an ether pulse theory instead of a neutral doublet theory, but it would have to be an ether pulse theory of the J. J. Thomson sort, in which the energy remains localized in space instead of being distributed uniformly over the wave front. For a clear statement of the apparent necessity for some sort of a localization of radiant energy in the wave front the second half of Professor Bragg's book could scarcely be excelled. One might wish that the author had brought out more emphatically the parallelism between the behavior of X rays and ultraviolet light, for it is in this parallelism that the chief argument against the neutral doublet theory is found.

The book is invaluable to every student of the absorbing problem of the nature of radiant electromagnetic energy.

R. A. MILLIKAN

UNIVERSITY OF CHICAGO

BOTANICAL NOTES

POLYSTICTUS VERSICOLOR AS A FOOD PLANT

In the course of some investigations made by Professor M. R. Gilmore in August, 1912, on the knowledge and use of the indigenous plants by the Dakota nation of Indians, the economic botany of the Dakotas, he learned of the use of *Polystictus versicolor* as a human food. The Dakota name is *Chaⁿ naⁿ pa*,¹

¹ The raised n signifies a vanishing sound something like the French n.

which literally means "wood-ears" or "tree ears," the name, no doubt, being suggested by the shape of the fungus. It is used when young and tender and is prepared by boiling. Mr. Gilmore's informant was a man probably more than sixty years of age, speaking only the Dakota language, a man of more than average intelligence, a judge in the Indian court of the Wakpamni district of Pine Ridge Indian Reservation. He is of the Ogallala tribe of the Teton Dakotas.

AN EVERYDAY BOTANICAL MANUAL

THERE is evidently no good reason in these days for ignorance concerning the names and general classification of at least the higher plants, if we may judge from the attempts that are made by writers and publishers to supply popular manuals and handbooks. Some of those published in the past have not had much more to commend them than the wish on the part of the writer to help people who were more ignorant than he concerning the plants of some more or less vaguely defined area of North America. And yet the poorest of these had some value, and no doubt helped many people who could not have been induced to buy a better book. No doubt botanists have sometimes been unduly impatient with books of this description, while the non-botanical public has managed to get some of the information about plants which it craved, and which it could not find in the more accurate scientific publications.

But these merely tolerant words need not be used in regard to Dr. C. A. Darling's "Handbook of the Wild and Cultivated Flowering Plants," which made its appearance the latter part of 1912. The preface states that the object of the book is "to furnish a convenient and easy means of determining the wild and cultivated flowering plants found in the East." In carrying out this plan the author has used dichotomous keys of a kind so easily followed that with proper care one need not "run off the track" before finding the name of his plant, in its proper place in its family, order, subclass and class. A hint is given as to the proper pronunciation of the

scientific name when found, and an English name is provided for every species. A good glossary and (single) index closes this handy little book of 264 small octavo pages.

If this little book can find its way into the hands of the persons for whom it has been prepared it will serve a most useful purpose, and this part of the public may well feel indebted to the author who in addition to his duties as an instructor in botany in Columbia University has taken upon himself the very considerable labor of writing and publishing this little book.

THE EVOLUTION OF PLANTS

ONE of the most helpful books for the beginner in philosophical science is Professor D. H. Campbell's "Plant Life and Evolution," in Holt's American Nature Series, which appeared some months ago. It will be remembered that a dozen or so years ago the same author brought out a book entitled "Lectures on the Evolution of Plants," in which he emphasized the structural side of his topic. The book now under consideration, while considerably less technical, is really a supplement to the earlier work. That book arranged plant structures in evolutionary sequence; this one accounts for the structures, and their changes by a discussion of the factors concerned. The earlier book was structural, this one is philosophical. The first one appealed primarily to the botanist, while this one will appeal to a much wider circle of readers, in proof of which we may cite some of the chapter headings: *e. g.*, factors in evolution; the origin of land plants; environment and adaptation; the problem of plant distribution; the human factor in plant evolution; the origin of species, etc.

CHARLES E. BESSEY

THE UNIVERSITY OF NEBRASKA

SPECIAL ARTICLES

SUPPLEMENTARY NOTE ON THE SIGNIFICANCE OF VARIETY TESTS

SINCE the appearance in SCIENCE¹ of a note "On the Significance of Variety Tests," Dur-

¹ N. S., 36: 318-320, 1912.