

entered as 0, and a sky completely covered with cloud as 10. The number of days at the various stations at which "a measurable quantity of rain fell," are given in Table xxx. The exact amount of rain constituting a rainy day should in future be stated. In Great Britain only those days on which at least 0·01 inch falls are regarded as "rainy days." We are glad to see that Symons' gauges (5-in. diam.) are adopted—this being the gauge best suited for general introduction—and that the height is a foot above the ground.

We have long been convinced that for a first satisfactory scientific discussion of some of the more difficult problems of the science we must look for the data of observation to India, with its splendid variety of climates, exposures, and abrupt mountain ranges and isolated peaks. The chief of these questions are, the variations in the daily march of temperature as dependent on season, latitude, height, and situation, both maritime and inland; the hourly barometric fluctuations (of which so little is really known), particularly as influenced by strong insolation, vapour, cloud, aqueous precipitation, and height either on extended plateaus or on hills rising abruptly from the plains; and the vital question of atmospheric humidity, to put which on a proper footing as regards hot dry climates, laboratory experiments being all but worthless, recourse must be had to extensive observations and experiments conducted under such conditions as are presented by the scorching climate of the Punjab. In the further development of Indian and general meteorology, the establishment of a Physical Observatory in the Punjab is urgently called for, as being, in truth, indispensable for the prosecution of these and other physical researches.

OUR BOOK SHELF

A Year's Botany, adapted to Home and School Use. By Frances Anna Kitchener. Illustrated by the Author. (Rivingtons: London, Oxford, and Cambridge, 1874.)

THIS unpretending little book is one that is sure to find its way wherever Natural Science is taught in the only way in which it is worth teaching, as a training for both the observing powers and the reasoning faculties. The greater part appeared originally in the *Monthly Packet*, and has been reprinted with additions at the request of friends more discriminating than is usually the case under such circumstances. We know of no book which we could more safely and confidently place in the hands of young people as their first guide to a knowledge of botany. The illustrations are from drawings from nature by the authoress, and are a pleasing change from those which have already done duty in so many text-books.

The following sentence, from the first chapter, illustrates the mode in which the writer conveys her instruction:—"But first I must beg that my readers will give me a fair trial; that they will pick the flowers described, and examine them *while* they read the description; and that they will trace every law, arrangement, and peculiarity in their living illustrations. Sometimes these may not be seen at the first glance, or even in the first specimen, but they must pick fresh flowers, look and look again, and *take nothing upon trust*, remembering that one of the chief lessons botany has to teach is how to use both eye and hand." Several typical flowers are then taken—the buttercup, wall-flower, cucumber or vegetable marrow, gorse, garden-pea, and primrose, and the various parts of each described in ordinary language, without the use of any technical terms. To these succeed separate chapters

"On Flowers with Simple Pistils," "On Flowers with Compound Pistils," "On Flowers with Apocarpous Fruits," "On Flowers with Syncarpous Fruits," and "On Stamens and the Morphology of Branches." To each chapter is prefixed a list of specimens which will be required to enable the student to follow for himself the writer's analysis; the descriptions are given in an extremely easy and lucid style, a few of the commonest scientific terms—but as few as possible—being gradually substituted for the colloquial English phrases at first employed. A sufficient acquaintance having then been obtained with the morphology of the more conspicuous organs, and their functions at the same time explained, the phenomena of nutrition, respiration, and fertilisation, and the structure of tissues, are described in chapters "On Fertilisation," "On Seeds," "On Early Growth and Food of Plants," "On Wood, Stems, and Roots," and "On Leaves." A chapter is then given to classification, to which is appended some useful tables of the characters of the more important orders; and this is followed by two or three chapters devoted to a few of the more important natural orders, and intended to serve as an introduction to the mode of naming plants. The most commonly used technical terms which have not been employed in the work itself are explained in an appendix, in which the wants of students preparing for the University Local Examinations have been kept in view.

The mistaken plan on which many botanical text-books have been compiled is so largely answerable for the horror in which the subject is held by candidates for examination who endeavour to cram facts and technical terms in an incredibly short space of time, without an attempt at practical work, and in the end fail miserably, that we cordially welcome an attempt to place the study on its true footing. We entirely concur in the view of the writer, that to this false method is due the fact that "Botany is so often stigmatised as a dry, uninteresting study;" an opinion which would speedily disappear were her mode of instruction in general use in the family and the school. Mrs. Kitchener's "*A Year's Botany*" seems to us admirably adapted for the purpose which she had in view in publishing it, and we heartily desire for it a large circulation.

A. W. B.

Dental Pathology and Surgery. By S. J. A. Salter, F.R.S. (London: Longmans, Green, and Co., 1874.)

THERE is much in dental surgery besides the simple extraction of teeth, and it is to the consideration of the science of dental pathology that Mr. Salter devotes most of the work under notice. The introductory chapters treat shortly of structure and function, development being left out of consideration. An excellent diagram explains the relation of the tongue to the different parts of the mouth during the pronunciation of the various letters of the alphabet, which latter is arranged on a physiological basis, dependent on the situation of the point of closure by which the sound is produced, upon the completeness or incompleteness of the closure, and upon whether the breathing is soft or aspirate. To the purely physiological student the chapter on irregularities in the position and union of contiguous teeth will be of particular interest; as will the instances given of defects in their number depending on hereditary causes, and on alopecia; to which we may add the peculiar deficiency always connected with the excessive development of hair over the face, as in the Russian man and child who so recently visited this country. The differentiation off from pure surgery of a class of tumours which, before Mr. Salter's investigations, were considered to belong to the bones themselves, and which, as odontomes, are now known to be composed of secondary dentine, will be specially instructive to the pathologist, as will the question of reflex nervous phenomena, such as partial paralysis and blindness, from the irritation of a diseased tooth. A full and very instructive account is also given of "phosphorus