

monographed by De Candolle in the "Prodromus" between 1824 and 1830, and the scattered material relating to many of the orders and genera has not since been brought together and codified. As instances of genera now involved in great confusion for want of a more recent elaboration, we may cite *Ranunculus*, *Viola*, *Papaver*, *Alyssum*, *Draba*, *Dianthus*, *Geranium*, *Galium*, and many others. The present paper is, unfortunately, not a monograph of *Dianthus*, but only a list of the known species classified into groups, accompanied by general remarks on the structure of the different organs in the genus, and on their range of variation, so that, though it is interesting and useful as far as it goes, it still leaves very much to be desired. Although, on the one hand, Caryophyllaceæ are dried for the herbarium very easily, and suffer little in the process, yet *Dianthus* is a very difficult genus for botanists to deal with and to understand. There are 230 species for a monographer to characterize. The range of variation between the extreme types is not great, and some of the commoner species (e.g. *D. Seguieri*, *plumarius*, and *Carthusianorum*) are very variable, the consequence being that, one often sees them named in gardens very incorrectly, forms of *plumarius* especially, which is hardy and spreads readily, doing duty for many totally distinct species.

Dianthus is a genus quite characteristic of temperate and sub-temperate climates. It has its head-quarters in Europe and Western Asia. There are several species at the Cape; a few are Himalayan, Chinese, and Japanese; none reach Australia, New Zealand, or the Andes; and only one just touches the extreme north-western tip of the American continent. There are two principal sub-genera: *Caryophyllastrum*, of which the carnation may be taken as the type, which is far the largest; and *Armeriastrum*, or *Carthusianastrum*, of which the flowers are numerous and clustered, as in the sweet-william. There is a third small sub-genus, intermediate between *Tunica* and the true pinks, which is classified by Bentham and Hooker with *Tunica*, and by Mr. Williams, following Linnæus and Koch, as a third sub-genus of *Dianthus*. Within the bounds of the genus, Mr. Williams finds his primary characters—those which mark groups—in the form of the calyx, the nature of the margin of the lamina of the petals, the presence or absence of a beard at the junction of the blade and claw of the petals, filaments, and styles, the shape of the leaf, and the disposition of the flowers; and his secondary characters—those which distinguish species—in the number and shape of the bracts of the epicalyx, the form of the lamina of the petals and their apposition, the character of the calyx-teeth, the form and structure of the capsule, the form and structure of the seeds, and the disposition of the fascicles of veins in the leaves of the barren shoots and flowering stems. His groups and species do not differ materially from those given in his paper in the *Journal of Botany* for 1885, p. 340. The list would have been more useful if he had stated the native country of each species, and added a reference to where it was first described. We hope, however, that he will see his way to publish, before long, the monograph of which this is a mere outline sketch.

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OUR BOOK SHELF.

Magnetism and Electricity. By Arthur W. Poyser, M.A. (London: Longmans, Green, and Co., 1889.)

SINCE the amount of knowledge that is supposed to constitute an elementary scientific education increases every year, there is sufficient justification for the publication of a series of science manuals designed to meet the growing requirements of the Science and Art Department examinations, and this work is an excellent representation of such a series. Apart, however, from the value of this book as an examination manual, it possesses considerable merit. The matter contained in it is just about as much as would cover the course usually taken in a year's school work; the explanatory text is couched in the clearest language, and the experiments described are capable of being easily brought to a successful termination. Also the 235 illustrations will be of considerable assistance to the student, whilst the many exercises and examination questions interspersed throughout the book may be useful tests of his knowledge. The text-books that in their day have been eminently successful, if unrevised, must be supplanted by others which take a more extended view of the subject; hence it is that this book will compare most favourably with any written for the purpose of imparting a rudimentary knowledge of magnetic and electrical phenomena and the laws by which they are governed.

The Engineer's Sketch-book. By Thomas Walter Barber. (London: E. and F. N. Spon, 1889.)

ENGINEERS and draughtsmen generally keep note-books in which are jotted down most things they wish to particularly remember, accompanied by rough sketches when necessary. The author of this book is no exception to the rule. He tells us he has made many notes and sketches during his experience as an engineer, and has often found the want of such a collection for reference. This volume consists of about 1936 sketches, classified under different headings, of devices, appliances, and contrivances of mechanical movements. The book is certainly unique in its way, and will prove useful to those who have machinery to design, who may require suggestive sketches of mechanical combinations to accomplish some desired end. The author truly remarks that a sketch properly executed is to a practical man worth a folio of description. Hence the descriptions given are generally mere names, with occasionally a concise statement of purpose. Each sketch bears a number, and on the opposite page this number is to be found with the description, &c.,—a very good arrangement.

These sketches are clearly printed, and are probably executed from scale drawings in most cases. Taken as a whole, they fairly represent what they profess to do. Sketch 1636, however, is supposed to represent a Ramsbottom safety valve, but it gives a radically wrong impression of this valve. The lever is shown resting on the two valves certainly, but the spring is attached to the lever at a point considerably above the assumed straight line joining the points resting on the valves—an impossible position. Again, one of the two points of the lever resting on the valves is usually loose and connected with the lever by a pin. The sketch shows the lever and the two projecting points made solid. This example is the most unpractical sketch discovered in the book, and should be rectified in a future edition. A fairly good index adds to the usefulness of the volume. There is ample evidence of careful work on the part of the author, and he is to be congratulated on writing a book which will probably be of use to many engineers and those connected with the profession.

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