

SCIENTIFIC BOOKS

A Guide to the Constellations. By SAMUEL G. BARTON and WILLIAM H. BARTON, JR. vii + 74 pages. McGraw-Hill Book Company, London and New York, 1928.

THIS book is to be highly recommended to all who wish to become acquainted with the constellations. It will also be very useful to those with some knowledge of the stars, if they wish to do naked-eye observing or to learn more about astronomy. Although it is not intended to be a text-book, and treats each topic only briefly, still the text does contain much accurate astronomical information as well as the essential facts about the various astronomical bodies. All astronomical terms are clearly and simply defined, so that even the beginner will have no trouble in understanding the meanings. Furthermore, the definitions are well arranged, and the book contains such a complete index that it should prove to be a very satisfactory reference book for many purposes.

The main part of the book consists of seventeen excellent charts, accompanied by copious notes on each constellation. Twelve of the charts, which represent the sky for latitude 40° at intervals of two hours, are printed in white on a blue background, and thus resemble the sky more than does any chart printed in black. By means of the dates on the charts and the explanations, it should be a simple matter for any one to find the right chart to use at the time he wishes to observe. An interesting feature of these white and blue charts is that they show only those stars which give us as much light as stars overhead having a magnitude of 4.5. By thus taking into consideration the effect of atmospheric absorption, more stars can be put on the charts without crowding; and also the stars are shown as they actually are seen, fewer being visible near the horizon than in the zenith.

Probably many who use this book will become interested enough in astronomy to continue their reading and observations. For this reason, it is an excellent idea to have given at the end of the book some information about the societies for amateur observers, as well as a bibliography of books and magazines.

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SCIENTIFIC APPARATUS AND LABORATORY METHODS

BIOCHEMICAL EXPERIMENTS PRACTICAL FOR ELEMENTARY BIOLOGY CLASSES

LABORATORY work in introductory biology courses usually places chief emphasis upon a morphological

study of type-forms. There is a growing tendency, however, to introduce work concerning the physiology of the structures studied. If the laboratory treatment of physiological concepts is to be adequate it should include experiments on the chemical composition and physical structure of protoplasm, osmosis, the rôle of enzymes and similar topics underlying the activities of organisms.

Such experiments are thought of as requiring the equipment of a physiology laboratory and are considered impractical for large elementary classes. Courses in introductory biology are frequently taught in laboratories unsuitable for such work, since they lack a sufficient supply of sinks, Bunsen burners, racks for reagent bottles, test-tube set-ups and similar items. The cost of installing and maintaining such equipment is prohibitive, especially since it would be used only in certain portions of an elementary biology course, much of which is devoted to other types of work. Furthermore, biochemical experiments as usually performed require a certain amount of experience in laboratory technique, hence, in large classes of inexperienced students there would be much general confusion and high breakage costs.

Many biochemical experiments, however, can be performed by large numbers of students inexperienced in laboratory procedure by a method that does not require the usual apparatus. The only supplies needed are ordinary microscope slides, alcohol lamps and 25 cc dropping-bottles for the reagents. With the pipettes of the dropping-bottles one or two drops of the various reagents are placed near one end of a slide together with a small amount of the necessary organic material. Holding the slide by the opposite end, the substances are easily heated in the alcohol flame. If the slide is held in a level position the materials remain at one end and do not overflow the edges. This method replaces the usual one of pouring into test-tubes several cubic centimeters of substances from regular reagent bottles and heating in the flame of a Bunsen burner. The biochemical reactions usually demonstrated in that way are shown with equal clarity on the ends of slides. Color changes are observed by placing the slides on a sheet of white paper. As the experiments are performed the various slides can be kept side by side for comparison with each other and with the controls. Microscopic examination is possible at any time concerning the effects of the reaction upon cell structures, which relates the experiment to living things in a way not so effective if the work is performed with commercially prepared substances. The technique is so simple that no experience is necessary for every student to perform successfully his own experiments, a fact having pedagogic values not attained if such experiments are performed by the instructor