

A Review of Driers and Drying

By E. F. Bennett. Pp. 90. (London: *Paint Technology*, 1940.) 3s. 6d. net.

DESPITE the age-old use of linseed oil as a medium for protective and decorative finishes, it is only in comparatively recent times that a serious attempt has been made to study the fundamental aspects of the drying phenomenon. In this review on driers and drying the author has attempted to collect and collate the large volume of published work which by now has accumulated in scattered technical journals, and to present a concise and critical survey of the existing knowledge. The entire field bristles with intricacies. The drying oils themselves are complicated mixtures and the transition from the soluble liquid state to the final insoluble solid film is the result of the interplay of complex physical and chemical changes.

Though small in compass, the book is comprehensive in treatment. It covers the constitution of the various oil types, the general principles of the drying phenomenon, the respective roles of oxidation and polymerization in film formation, the influence of metallic driers, film structure, the constitution of varnishes and the influence of pigments. This admirable compilation of the information on drying oils and driers with its 106 references is interesting and valuable from the theoretical point of view and at the same time it offers much practical and useful information for the guidance of the paint technologist.

The book is highly recommended by two acknowledged authorities on the subject, Dr. J. S. Long and Dr. William Krumbhaar, who in extended forewords contribute lucid and suggestive analyses of the problems awaiting solution by research workers in this field.

The Twin Marchant Calculating Machine and its Application to Survey Problems

By Dr. L. J. Comrie. Pp. 40+3 plates. (London: Scientific Computing Service, Ltd., 1942.) 10s.

IT would be difficult to exaggerate the importance at the present time of easy and rapid methods of solving the day-to-day mathematical problems that arise in military survey work. A large number of such methods, many developed by Dr. Comrie himself, depended in the past on the use of the German Brunsviga Twin 13z calculating machine. The fact that this machine is now, naturally, unobtainable might well have seriously handicapped our fighting forces. It is therefore extremely gratifying to learn that a substitute has been provided by the device of building together in pairs the well-known American Marchant machines. As Dr. Comrie remarks, this improvisation does not produce the ideal twin machine, but at least it gives us a serviceable and urgently needed war weapon.

Dr. Comrie's booklet describes this Twin Marchant and deals in detail with its application to about a dozen of the fundamental problems of survey work. The methods, which make full use of the time- and labour-saving possibilities of the machine, are described clearly step by step. The book assumes no knowledge of calculating machines on the part of the reader, and so eleven of its large pages outline fully the use of the ordinary single-hand calculating machine and many of the tricks which experienced computers

use to shorten their labours. These pages will be useful, not only to those who have to deal with survey problems, but also to a very much larger class of computers and particularly to beginners.

S. L.

Elementary Physics and Chemistry: for Students of Biology

By Dr. E. A. Woodall and E. C. Denne. Pp. 224. (London, Bombay and Sydney: George G. Harrap and Co., Ltd., 1941.) 4s. 6d.

THIS volume is intended as a two-year course to cover the work necessary for students taking biology in the General Schools Examination, the work to be done in the two years preceding the examination year. The chemistry portion is relatively thin, for the authors point out that little subject-matter is required and much of this can be taught in its proper context in the biology course. In the physics portion, on p. 17, the student is told that inertia is a *property*; later he is told that mass is a *quantity* of matter; he will probably be a little fogged when, immediately after this, he reads that "mass and inertia are really the same thing", even though there is a qualifying note. Not everyone will agree that the section on light should start with the spectrum, to be followed by reflexion and refraction, and one wonders why the experimental methods illustrating laws and principles are placed all together towards the ends of the chapters instead of putting them in their proper place in the text.

The diagrams in the book are simple and well done (incidentally Fig. 116 is not quite up to date), and a very useful feature is the use in biology of the principles discussed.

The Story of Electromagnetism

By Sir William Bragg. Pp. 64. (London: G. Bell and Sons, Ltd., 1941.) 1s. 6d. net.

THIS booklet is a reproduction, with certain modifications, of a lecture given by the late Sir William Bragg to cadets of the A.T.C. in the London area. It must have been a 'red-letter' day in the lives of these youths to have had the privilege of listening to so eminent a personality and one so renowned in the field of science. The purpose of the lecture was to give a sketch of the gradual realization of the fundamental principles of electromagnetism, principles on which a great deal of the future work of the cadets is based. The treatment of these principles is rather unique, and could only have been done in this way by the expert, the master of his subject, as was Sir William Bragg.

In the first chapter the four fundamental principles of electromagnetism are set out, and in subsequent chapters the author follows the course of discovery, observing the events which led up to the recognition of each of the principles. The amount of ground covered in this small book is very extensive, and the book should be studied not only by A.T.C. cadets but also by those who train them and by all students of physics.

Sir William Bragg added here one more notable contribution to the many he rendered to the world of science, and it is characteristic of him that, in his last published book, small though it is, he should have returned to fundamentals, discussing them in his own inimitable way chiefly for the enlightenment and stimulation of the younger generation.