

## Reviews

A LABORATORY HANDBOOK OF PULP AND PAPER MANUFACTURE. By JULIUS GRANT, Ph.D., M.Sc., F.I.C. Pp. viii + 320. London: Edward Arnold & Co. 1942. Price 28s.

This is definitely a good book. Stevens' standard work, "*The Paper Mill Chemist*," has been admirably absorbed, extended, and modernised with no loss, and indeed some gain, in prestige.

Dr. Grant has made something of a speciality of compiling readable summaries of the work of his contemporaries and giving them his own added lustre, and this volume is no exception. It covers a wide field thoroughly, if not quite exhaustively; the treatment is rational and the result satisfactory. Chemists, whether their concern be primarily with paper manufacture or only in testing paper for some of its manifold uses, will find the book of great service.

After an introductory chapter on the scope and function of a mill laboratory, there are two chapters on the control of processes and raw materials for the production of "half-stuff," one on their evaluation, and two on papermaking processes proper. The last three chapters are devoted to paper testing by physical, chemical, and microscopical means. There is finally a short section on water and fuel, and some useful tables form an appendix. Both author and subject indexes are included. Cross-referencing is copious, and the use made of TAPPI standard methods admirable.

Although the book professedly is not concerned with papermaking practice, sufficient attention has been paid to the need for discussing the function of the various control processes in terms of operational requirements, and this tends both to clarity and to easy reading. Its readability is indeed one of its outstanding features. In the few instances where mill processes are explained, however (*e.g.*, the multiple effect evaporator and certain types of beater) illustrations would have been very useful, especially where new apparatus was being discussed.

The paper testing and analytical sections are comprehensive, but it is permissible for a friendly reviewer to draw attention to a few omissions and errors of fact. (1) Logwood and Vandyke Brown (p. 137) are still used in appreciable quantities; the presence of logwood in black papers can be detected by the red colour obtained on warming with dilute HCl. (2) Differentiation between the machine and cross directions of a sheet of paper, Method (*d*) (p. 182), will not be clear if one does not understand what is meant by "the chief line of rupture"; a sketch would therefore have been helpful. (3) The explanation of the effect of handle speed on the Mullen burst (p. 193) is unsatisfactory; the compressibility of glycerin is only  $22 \times 10^{-6}$  per atmos. between 1 and 10 atmos. at 15° C. (4) The section on Colour (p. 202) might well contain a description of a few of the simple colour blindness tests, although none is completely satisfactory; in papermaking a colour-blind person may be given important colour matches to carry out! (5) The pH of untreated papers (p. 236)

may range from 3.7 to 9.0 under certain conditions. (6) The presence of copper (p. 239) is sometimes an indication of the use of copper sulphate to "fix" such dyes as Sky Blue. (7) A test for chromium should be included as a means of establishing the presence of chrome pigments in yellow and green papers, and the use of potassium dichromate in blacks. (8) In the identification of fibres by staining (p. 249), the Schulze method of differentiating between chemical and mechanical pulps is too valuable to omit, and the description of permanent microscopic slide mounts (p. 260) should include mention of such media as polystyrene resins. (9) The list of dirt specks (p. 262) contains no reference to lime spots.

There are, as is almost inevitable in a first edition of a book of this nature, a few misprints, but the only ones of any consequence noted by the reviewer are 1.5 mg. for 1.5 g (p. 92, line 8), hydrogen for hydrogen sulphide (p. 241, line 10), 25 for 2.5% (p. 274, line 26), 10% for 10 per sq. ft. (p. 274, line 27), and the formula of smalt (p. 141, line 17). It is unfortunate that it takes as much space to remark on a few small blemishes as can be spared for the rest of a review, and the reader should not allow his sense of balance to be impaired by this fact.

It only remains to add that the volume, although produced in complete conformity with the authorised economy standards of to-day, is excellently printed; and perhaps to ask with some diffidence why treaties (p. 277) should nowadays require to be prepared on paper of the highest permanence! Yes, this is quite definitely a good book.

H. AINSWORTH HARRISON

GAS WARFARE. W. K. FITCH. A "P.J." Monograph for Instructors. Pp. 103. London: The Pharmaceutical Press. 1942. Price 2s. 6d.

This booklet is concerned with gas warfare in a very general way, the main chapters dealing with the properties, detection and identification of the war gases, respirators, first aid and treatment of gas casualties, and decontamination. In such a small volume only the main principles of this complex subject can be given, and although the author has managed to condense a considerable amount of information in a very handy form, the subtitle "a monograph for instructors" appears to be rather ambitious. From the instructor's point of view the Ministry of Home Security and other official publications, of which this booklet is a compressed form, deal much more adequately with the subject and a more suitable title for the monograph would be "An Introduction to Gas Warfare." With a little more care in reading the reference books the author would have avoided several errors and inaccurate statements; for example, the boiling point of diphosgene is given as 106.7° C. on page 5, instead of 127–128° C., the wrong formula and molecular weight have been ascribed to bromomethylethylketone, and one stage in the preparation of ethyl dichloroarsine is given as "the reduction of the ethyl arsenious oxide by sulphur dioxide." A further source of irritation is the use of drachms, grains and minims, in the part dealing with gas simulants (*i.e.*, non-toxic materials with the odour and appearance of particular war gases and having, perhaps, some similar chemical properties), in what are certainly not pharmaceutical preparations. In spite of these failings from the chemist's angle, this little book should prove very useful to those who require a bird's-eye view of the subject at a very low price. The appendixes dealing with the decontamination of weapons, a Home Guard gas exercise and 23 questions stated to have been taken from platoon gas instructors' examination papers, should appeal to the more military-minded. W. J. STAINSBY

AN INTRODUCTION TO INDUSTRIAL MYCOLOGY. By GEORGE SMITH, M.Sc., A.I.C. 2nd Ed. Pp. xii + 260. London: Edward Arnold & Co., Ltd. 1942. Price 20s. net.

Most mycological problems that arise in industry have to be investigated along individual lines, each according to the characteristics of the fungus concerned and the material involved. It is probable that the author had this in mind when writing this textbook on industrial mycology, the first edition of which appeared in 1938, as the work is primarily concerned with methods of culture of fungi, their examination and classification rather than with methods of control. It may even be considered that too close adherence has been given to this principle, and that the section on the control of mould growth, one of the most fundamental problems of the industrial mycologist, deserves a greater allocation than a dozen pages out of 260.

After a general introduction on the fungi with their terminology and classification, the *Zygomycetes*, *Ascomycetes*, yeasts and related fungi, *Fungi Imperfecti*, *Hyphomycetales*, *Aspergilli*, *Penicillia* and related genera are considered in separate chapters. Many fungi of economic importance are described and illustrated in each section by superb photomicrographs, and references are also given to standard works where the different fungi can be studied in greater detail. A condensed, but eminently practical, section on laboratory equipment and technique together with one dealing with the maintenance of cultures follow, and the physiology of mould fungi is also considered. Many industrial uses of the fungi are indicated in the short closing chapter.

The new edition contains nearly 50 pages less than the original, but this is the result of more compact presentation, and the actual quantity of the text has been increased. Most of the original subject matter remains unchanged but, from the applied mycology angle, considerable improvement has been made in some sections, notably in that dealing with yeasts, which has now been extended to form a separate chapter. The chapter on laboratory equipment and technique has been improved by the addition of, for example, the use of Cellophane technique for the examination of moulds, and of greater details for the preparation of permanent slide cultures. A new section dealing with the methods used for growing moulds on comparatively large volumes of liquid media is not only of general interest but should be of very real value to those engaged in the isolation of the products of mould metabolism. The control of that menace to the mycologist—the mite—is now also given the attention that, unfortunately, it deserves.

It will be a relief to all those familiar with the first edition, and should be a cause of pride to the publishers, that in spite of war-time difficulties the high standard of presentation, especially of the 136 really beautiful photomicrographs, has been maintained.

M. OLLIVER