

Interim Report of the Joint Departmental Committee appointed by the Ministries of Transport and Agriculture to investigate the damage to fisheries resulting from rain washings from tarred roads, that the author adopts rather a critical attitude towards the recommendations of this Committee. That any Government Department should produce an interim report giving preference to asphaltic bitumen (an imported product) for the treatment of roads draining directly into fishing waters, without first consulting tar distillers to ascertain their ability to remove the supposed toxic constituents of tar, is a matter which reflects unfavourably on British team practice. It is to be hoped that in their final report the Ministries will either point out the positions in the United Kingdom (if they exist) where the conditions of their experiments may be reproduced, or report that tar distillers have met the objections raised by effecting a preliminary treatment of tar.

With regard to other sections of the book, the author gives insufficient detail of the methods of preparing refined naphthalene and anthracene for use in the manufacture of dye intermediates, as well as upon the subject of removing benzenoid hydrocarbons from gas by means of absorbents, such as activated charcoal and silica gel, etc.

The author is, however, to be congratulated on his treatise, and we should be proud that such a first-class text-book upon coal tar distillation has been produced by a British chemist. In the next edition he should be advised to give more attention to the influence of the method of coal distillation upon the nature of the tar produced, to the effect of a high free carbon content of tar in increasing distillation difficulties, and finally to attempt some correlation of the existing information on the constitution of coal and the tar produced therefrom.

In the preface the author apologises to the publishers and thanks his wife. It is suggested that in view of the considerable ingress into the author's spare time which this compilation must have caused, the apologies might gracefully have been added to the thanks.

### Our Bookshelf.

*Strength and Structure of Steel and other Metals.* By Prof. W. E. Dalby. Pp. xii + 176 + 38 plates. (London: Arnold and Co., 1923.) 18s. net.

THE particular object of this book is to describe researches carried out by the author on load strain diagrams of materials, and to relate these to the results obtained from ordinary tests of materials and to use them as indications of the quality of materials.

The ordinary testing machines and instruments used in testing, the author's elegant recorders for specimens in tension and in torsion, and the special hydraulic machine used by him to give easy and rapid control,

in which the specimens can be broken in a fraction of a second, are described. The author devotes some attention to the micrographic study of materials, and describes the special apparatus used for obtaining micrographic photographs.

The load strain diagrams as obtained by the author's special apparatus for a number of materials, together with the chemical analyses and micrographic photographs showing the structure of the materials, are given; but the author has not apparently yet been able to relate the particular forms of load strain diagrams to the special structure of the materials. This is disappointing; but if this is ever going to be possible, such researches as are here described will no doubt be of assistance. It is probable, however, that the inner structure of metals can only be satisfactorily analysed by the much more delicate X-ray method.

The phenomenon of slip in metals is briefly discussed. The author suggests that the working stress on a material should be some fraction of the stress at which loops in the load strain diagrams are obtained, and remarks that a working stress of one-third of that at which loops are formed in a particular metal gives a factor of safety of three. This statement is open to very serious objections, as it is very doubtful whether the limit of proportionality in one direction is a safe criterion from which to determine a factor of safety; and, furthermore, the safe range of repetition stress for a material has apparently very little relationship to the stress from which the author defines his factor of safety. The book concludes with a chapter on the strength of screw-threads.

It is doubtful whether the author has quite made out the thesis with which he starts, but the book is one which can be thoroughly recommended to all engineering students for the study of load strain diagrams, and as an elementary introduction to the study of metallography.

*Modern Radio Communication: a Manual of Modern Theory and Practice, covering the Syllabus of the City and Guilds Examination and suitable for Candidates for the P.M.G. Certificate.* By J. H. Reyner. Pp. xi + 208. (London: Sir I. Pitman and Sons, Ltd., 1923.) 5s. net.

By substituting continuous waves for the damped wave trains of the spark transmitter, the author shows that several of the phenomena of radio telegraphy can be explained very simply by vector diagrams. The book is meant for beginners, so whenever a lengthy mathematical proof is required the formula "it can be shown" is used. There are many useful descriptions in the book, but we doubt very much the wisdom of beginning directly with an account of atoms and their component nuclei and electrons. The author spells Kirchhoff's name incorrectly and gives an extraordinary statement about applied E.M.F.'s and back E.M.F.'s as his first law. The definition of charge as an accumulation of electrons due to an applied E.M.F. lacks definiteness. The unit charge is the coulomb, which is  $6 \times 10^{18}$  electrons. "A current of one Ampere is said to flow when the electrons move past a given point at the rate of one coulomb per second." The definition of mutual inductance given does not state why this inductance is called "mutual," while dielectric strength