

of the milk after milking by various specific bacteria. He saved the Danish dairy industry a great deal of money, and made notable contributions to public health and to veterinary science. A period of collaboration with Fibiger helped to establish the relationship of human and bovine tuberculosis. To the writer, however, Jensen's work on experimental cancer is of the greatest interest. This subject is covered by six papers, five of which are translated into English from the original Danish.

Jensen established a number of transplantable tumours of mice and a transplantable sarcoma of the rat, generally called the 'J.R.S.', which is still widely used because of its consistent biological characteristics.

Many of the now well-known properties of tumour cells were first described by Jensen, who showed experimentally that they could not resist temperatures above 46° C., actinic light from a Finsen lamp with adequate cooling of the tumour tissue, drying and autolysis, and, in fact, that cancer cells had general properties very similar to those of normal cells. He failed to demonstrate any infective or parasitic causal factors associated with his transplantable tumours. In a lecture on "Some Experiments with Cancer Tumours" in 1901, Jensen discussed the etiology of cancer in terms that are equally apposite to-day.

Jensen's objective attitude towards his own work is well illustrated by his frank admission in a paper (1908) that his earlier claims, in 1905, to have caused regression of transplanted tumours by injection of antiserum obtained from rabbits immunized against mouse tumour were ill-founded, and that the regressions were probably spontaneous.

Jensen recognized the desirability of investigating the incidence of spontaneous tumours in the progeny of mice bearing spontaneous tumours. He attempted some experiments on these lines; but as the significance of line breeding was not then appreciated, his results were less striking than those of modern geneticists.

This collection of papers is an example of consistently good experimental work, lucidly expounded.

P. R. PEACOCK

Combustion processes are extremely fast chemical reactions, and kinetic studies have shown that many are chain reactions involving the intermediary participation of atoms, radicals or energy-rich molecules. Direct measurements of the nature, formation and reactivity of these active particles are not straightforward, and it is in this field that spectroscopic studies can reveal much information not obtainable in other ways. In his monograph, Dr. A. G. Gaydon has summarized the progress that spectroscopic research has made in the study and elucidation of the finer details and mechanism of the combustion process. Much of the material is the original work of the author, and in preparing the second edition the book has been considerably expanded and brought up to date by the inclusion of new material. Those who found the first edition valuable will not hesitate to read this new modernized version. To others interested in combustion the book can be warmly recommended as a most stimulating work and the only book which summarizes the great advances which the application of theoretical and experimental spectroscopy have made to the theory and nature of combustion. The subject-matter is presented in an elegant, precise and readable manner, and no detailed previous knowledge of spectroscopy by the reader is assumed. The early chapters, which deal with the study of the emission spectra of various flames and explosions, are followed by chapters devoted to continuous spectra, the role of atomic oxygen in flames, and the use of absorption spectra and investigations in the infra-red region in studying combustion processes. Later chapters are devoted to special topics such as after-burning, determination of flame temperatures, and the life-time of activated molecules. In the last section the author indicates possible future developments and the nature of the problems yet to be elucidated. A fairly complete bibliography and an appendix, giving the chief characteristics of the flame spectra which have been studied, are included and have enhanced the value of the work as a reference book.

Prof. S. Tolansky's small book is one of the well-known series of monographs on physical subjects published by Messrs. Methuen. It is intended for students who are already familiar with the fundamentals of atomic spectroscopy and who wish to enlarge their knowledge and become familiar with the important developments which have arisen from the detailed study of the theoretical and experimental aspects of the hyperfine structure of line spectra. Since the first edition of this work, considerable advances have been made, and these are included in several new chapters and by the extensive rewriting of other sections of the book. Because the hyperfine structures of the spectral lines are due to either isotopic mixture or spin properties of their nuclei, recent developments have been largely concentrated on providing information about nuclear and magnetic moments. It is with this aspect that the book is mainly concerned. The determination of these magnitudes is summarized in a clear and concise manner, and an up-to-date list of nuclear data of some fifty-five different atoms, including seventy-nine isotopic species, is provided and discussed. An adequate theoretical background for the understanding of the hyperfine structure is given.

The advanced student or others interested in either spectroscopy or nuclear structure will find this book easily readable and useful. It can be thoroughly recommended as an excellent introduction to the subject.

## SPECTROSCOPY AND ITS APPLICATIONS

### Spectroscopy and Combustion Theory

By Dr. A. G. Gaydon. Second edition, revised. Pp. xii+242. (London: Chapman and Hall, 1948.) 25s. net.

### Hyperfine Structure in Line Spectra and Nuclear Spin

By Prof. S. Tolansky. (Methuen's Monographs on Physics Subjects.) Second edition, revised and enlarged. Pp. viii+120. (London: Methuen and Co., Ltd., 1948.) 6s. net.

**B**OTH these books are revised second editions of well-known and valuable monographs. They deal with the detailed application of experimental and theoretical spectroscopy to the specialized problems of chemistry and physics. Both are written by acknowledged authorities in their respective fields, and contain fairly complete reviews of the original contributions of the authors.