In 1892, when the book first appeared, astronomy seemed to have reached a peculiarly static position, in reality the unsuspected precursor of an outburst of creative activity. In particular, the Nautical Almanac seemed to have attained a settled form unlikely to be changed for years to come, and with it the outlook of the student was bounded accordingly. Now the conditions have changed, including the definition of time; the Nautical Almanac itself is not the same, and it has been supplemented by the abridged edition for the use of seamen and the Air Almanac for the special needs of air navigation. Moreover, the students are not the same; their interests are professional and no longer merely academic. Thus the opportunities which face the instructor in astronomy are vastly more interesting than existed half a century ago, and they are different in kind.

The more spectacular modern changes in the subject-matter of astronomy itself may seem to be associated with the introduction of physical methods and ideas. But the Astronomer Royal has confined his revision to bringing up to date the exposition of those fundamental principles on which the whole subject depends, to rearranging related sections and to providing a sound introduction to the methods of sea and air navigation now in use. An enlarged table of astronomical constants has been added. But in the main the substance of the work remains as in earlier editions. In abstaining from incursions into astronomical physics the editor is doubtless justified by the proved success of an existing model. Even without transgressing the limited ideas of the nineteenth century some relief to the purely goniometric line of argument might be found in the conception of radial velocity and in the rectangular co-ordinates appropriate to photographic projections. Without going so far the Astronomer Royal has greatly improved the structure of the work and made many necessary alterations within its familiar framework. But if in happier days a fresh edition is contemplated, one is tempted with all respect to exclaim with Hamlet, "O ! reform it altogether". In short, let it be a new work inspired with the aim of serving as the master, not the servant, of the examiner. H. C. PLUMMER.

CHEMISTRY OF WHEAT

The Constituents of Wheat and Wheat Products

By Prof. C. H. Bailey. (American Chemical Society Monograph Series, No. 96.) Pp. 332. (New York: Reinhold Publishing Corporation; London: Chapman and Hall, Ltd., 1944.) 6.50 dollars.

THE object of reviewing a book is to give readers some information on the author and his authority for writing on the particular subject, to indicate the scope of the book and to give an impartial evaluation of the value of the work. This is not a particularly difficult task in this case.

C. H. Bailey, professor of agricultural biochemistry in the University of Minnesota, is one of the foremost cereal chemists in the world. His work, often with a band of devoted students and postgraduate workers, is well known to all workers in that field. His contributions, both in quantity and quality, to cereal chemistry probably exceed those of any other worker. He was awarded the highest honour that can perhaps be given to a cereal chemist, namely, the Osborne Medal of the American Society of Cereal Chemists, in 1932. He has practical experience of book-writing in that he published in 1925 a book entitled "The Chemistry of Wheat Flour", which was No. 26 of the Monograph Series of the American Chemical Society, of which the present book is No. 96. Nobody, therefore, is better fitted to undertake the task of collecting together in book form the known facts on the constituents of wheat and its products. With characteristic painstaking thoroughness, Prof. Bailey has for years been working on a card index system to collect the necessary facts for the present book.

The book has a definitely restricted scope. It does not deal with the processing of wheat and its products, the chemistry of such processing such as the changes which occur in milling and bleaching, or in the making of bread or confectionery goods. It is hinted in the preface that a further book dealing with these and allied matters may be issued later. So far as it is possible to make such an arbitrary division, the present book is concerned with exactly what the title states, namely, the nature of the various constituents, such as the proteins in wheat and its products, the character of the starch, sugars, gums, lipids, minerals, pigments, etc., present, and particularly the vitamins which are now known to exist in the various portions of the grain. The vitamin chapter is typical of the whole book in that it gives a comprehensive account of practically all the important work which has been done, especially the recent work. What will be particularly appreciated is the fact that this chapter covers not only B_1 and its distribution in the grain, but also all the known facts with respect to the presence of riboflavin, nicotinic acid, pyridoxine, pantothenic acid and other vitamins in the whole grain, in various types of flour and in offal, including germ.

The book comprises sixteen chapters. Practically the first half, namely, up to p. 139, is concerned with the protein and other nitrogenous constituents. This part is particularly full, but contains much of the earlier work, now known to be of little value but which is presumably retained as of historical interest and to give the background for the more recent work. The book is not intended as a textbook for the various industries concerned. There is little general discussion and it consists essentially of a record of published scientific investigations. It will therefore be of particular value to future research workers. The book is well balanced and there are relatively few omissions to work that matters. The comprehensiveness of the book, although only of 332 pages, is seen from the fact that there are approximately eight hundred names in the authors' index, and the references to published papers approach 2,000. The book appears to be singularly free from errors and misprints, although it was observed that in Table 112 the last column should presumably have been mgm. per 100 gm. and not mgm. per lb. Incidentally, the variety of ways in which vitamin results are recorded, such as μgm./gm., mgm./100 gm., mgm./lb., etc., are always confusing, and it is convenient to have the relationship table given on p. 282 of the book.

The book not only fulfils a real want but also fulfils that want well. There is a scarcity of good books on the chemistry of wheat and its products, and this is true of any language. We have no hesitation in recommending this book to all advanced workers in this field—in fact, they cannot afford to be without it. D. W. KENT-JONES.