The Chemistry of Flour Milling.

Modern Cereal Chemistry. By D. W. Kent-Jones. Pp. ix+324. (Liverpool: The Northern Publishing Co., Ltd., 1924.) n.p.

THE chemistry of wheat flour, and the elucidation of the factors influencing the "strength" or baking quality of flours from different wheats, present problems as complicated and difficult as any to be found in food chemistry. Recent research has thrown much light on some of these problems, and the author, who is well known as an authority on flour chemistry, is to be congratulated on having given a connected and critical account of the important work done on this subject during the last few years.

The English miller draws his wheat from almost every wheat-producing country in the world. Many of these wheats differ enormously in their strength or ability to produce a good loaf; that is to say, a large well-risen loaf possessing a certain silky and finely vesiculated texture. The author, in his chapter on the colloidal chemistry of flour, discusses the relative importance of various factors in the production of strength. The actual amount of gluten present and its physical character, the degree of colloidal dispersion of gliadin and glutenin, the hydrogen ion concentration of flour and the extent to which it is "buffered," the enzymic activity of the flour and the relative amount of yeast food present, are all more or less concerned in determining strength or weakness in a flour. The author is clearly on good terms with the most recent work on the colloidal chemistry of flour, and has given in this chapter an able review of present-day knowledge in this field.

It is when the author comes to the chapter on bleaching and flour improvers, on p. 165, that he treads heavily on dangerous ground. He adopts wholeheartedly the attitude that the artificial bleaching and improving of flour by nitrogen peroxide, chlorine, nitrogen chloride, peroxides, persulphates, acid phosphates, etc., is completely justifiable and beneficial both to the trade and to the consumer. In fact, he is at such pains to emphasise the entirely harmless character of these additions that the suspicions of the reader may well be aroused, and he may be led to inquire more closely whether the introduction of one pound of pure chlorine gas into a ton of flour is, in fact, entirely without effect on the consumer's health, whether there may not be some subtle action on the flour, affecting, ever so slightly, those vital principles which food manufacturers are never tired of claiming for their products, and whether the oft-repeated argument that no one has ever been able to prove injury to health from such additions is good enough where the most important foodstuff of all is concerned. To attempt an answer to these questions would, however, be outside the province of a reviewer.

The concluding chapters dealing with conditioning, moisture in wheat and flour, and analysis of flour are excellent. The book may be warmly recommended to all interested in the chemistry of flour, on the understanding that the Report of the Departmental Committee on the Use of Preservatives and Colouring Matters in Food be glued to p. 165. G. W. M.-W.

New Measurements of Atomic Masses.

Isotopes. By Dr. F. W. Aston. Second edition. Pp. xi+182+5 plates. (London: E. Arnold and Co., 1924.) 10*s.* 6*d.* net.

IT is seldom that a natural philosopher has made a subject so peculiarly his own as Dr. Aston has done with the experimental investigation of isotopes. At the present time, about fifty non-radioactive elements have been examined for isotopes, and all except half-a-dozen or so are among Dr. Aston's trophies. It is not, apparently, so much that other workers have stood aside as that the technique is not quite so simple as a casual description of the experimental method might suggest to the inexperienced. About two years ago, Dr. Aston published a general account of his work since the War under the title "Isotopes," and, as was to be expected, a second edition was soon demanded, which has now made its appearance.

As reference to the table of isotopes on p. 107 will immediately show, in the interval of two and a half years, more than twenty new elements have been investigated for isotopes by the author, so that at the time of writing, all the elements from atomic number 1 to atomic number 39 have been worked through, and many in the range 39 to 80. A beginning has been made with the elements of the rare earth group. The additions are mainly due to the development of the method of accelerated anode rays by the author. A salt of the metallic element to be investigated is made into a paste with graphite, and this paste, packed into a small tube, is used as the anode, and bombarded with cathode rays. The instability of the discharge consequent on the release of gas from the anode is avoided by a skilful device consisting of a subsidiary cathode and a kenotron valve. It is indicative of the troublesome nature of the work that even Dr. Aston himself records that when the apparatus was working sweetly, he analysed six elements successfully in as many working days, but that after it had been dismantled and set up again so as to be, apparently, exactly the same as before, he was unable to obtain any results of value for some weeks. When conditions are favourable the method gives excellent results.