

recorded in the data published, but wheat production in both is less in 1923 than in 1922. Almost the whole of this loss can be apportioned to the United States, where increases in the more important crops of cotton and maize more than counterbalance it. Four million acres went out of wheat in 1923 and 5.4 million were added to the maize and cotton crops. Further, the excess of exports over imports of wheat has fallen from 32 million quarters in 1921 to 9.6 millions in 1923. Taken together, these figures would seem to afford a striking confirmation of the forecast made by the Bureau of Agricultural Economics in the U.S. Department of Agriculture Year-book for 1921. In a paper on "Wheat Production and Marketing," O. E. Baker says, "Wheat production, however, has been increasing less rapidly than population in this country, and it is very probable that this will continue to be true, at least until we reach the point where we consume practically all we produce." Such a state of affairs is obviously of very serious import.

The International Year-book has grown during its brief career, and this issue gives many more details than its predecessors. It is to be regretted that in so doing it has been thought necessary to discontinue some of the summary tables. That relating to the percentage of each crop, based on total area under cultivation in each country, is a noticeable omission. The book contains sections dealing with crops, livestock, trade returns, prices, freight charges, fertiliser consumption, and rates of exchange, and will repay perusal not only by the agriculturist and economist but also by the interested layman.

### Critical Ionisation Potentials.

THE publications in the Bulletin of the National Research Council of the Washington Academy of Sciences have included many numbers which are excellent reports on the state of knowledge at the time of publication in special branches of modern science. The monograph under review<sup>1</sup> is stated to be the first of a series which, when complete, will form the report of the National Research Council Committee on Ionization Potentials and Related Subjects. The monograph is in two parts, the first of which, by Prof. K. T. Compton of Princeton University, deals with the methods by which critical potentials for the excitation and ionisation of atoms and molecules by electron impacts have been measured. The author gives a very clear account of the principles of the various experimental methods of determining the critical potentials of gases and metallic vapours, and of investigating their significance. There is also a brief section on the critical potentials for the production of soft X-rays from solids. The text is well illustrated by diagrams of apparatus and experimental curves, which will be particularly appreciated by the general reader.

The second part of the work deals with the interpretation to be placed on the critical potentials which have been measured, that is to say, it is a discussion of the nature of the particular disturbance produced within the atom or molecule at each critical stage. It is written in a clear and concise manner by Dr. F. L. Mohler, of the United States Bureau of Standards. The relation between lower critical potentials and arc spectra is first given. Multiple excitation phenomena and the higher critical potentials of gases are then dealt with, and the interpretation of the latter class of data is further considered in connexion with the results for soft

X-rays from solids. A final section deals with the results which have been obtained from experiments on polyatomic gases, and their relation to thermochemical data. The whole is illustrated by clearly drawn energy diagrams and Moseley curves.

The bibliography which is appended to the monograph is a very comprehensive one and will be of value to research workers in this field. Altogether the book forms the most complete summarised account we have seen of the work which has been done in the important branch of modern physics with which it deals, and the authors are to be congratulated on their excellent production.

### University and Educational Intelligence.

BRISTOL.—A lecturer in physiology will shortly be appointed, with duties to begin on October 1. Particulars of the post may be obtained from the registrar. The latest date for the receipt of applications for the lectureship is April 20.

CAMBRIDGE.—The Adams Prize for an essay on "The Physical State of Matter at High Temperature" has been awarded to Mr. R. H. Fowler, Trinity College. A Smith's Prize has been awarded to T. G. Room, St. John's College, for an essay on "Varieties generated by Collinear Stars in Hyperspace." F. C. Phillips, Corpus Christi College, has been elected to the Amy Mary Preston Read Scholarship.

The subject for the Adams Prize for 1925-6 is "The Constitution of the Interior of the Earth and the Propagation of Waves through the Interior and over the Surface of the Earth." The adjudicators say that "the facts as to the propagation of earthquake waves may now be considered fairly well established, and a discussion is asked as to the deductions which can properly be drawn as to the constitution of the interior of the earth. Such questions may suitably be treated as the reflection, refraction and dissipation of waves at surfaces of discontinuity, if any, inside the earth; also the interior arrangements which would best account for the ordinary P, S seismological tables. A discussion might also be given as to how far the various suspected periodicities of earthquake phenomena, if real, must be attributed to a periodicity of external agents, and how far, if at all, they represent periodicities of free vibrations of the earth itself." The Prize, which is of the value of 240*l.*, is open to competition of all persons who have at any time been admitted to a degree in the University.

Grants have been made from the Worts Fund to Mr. T. R. Parsons, Sidney Sussex College, towards expenses incurred in studying with Prof. Orbelli of Leningrad the operative procedure used in research by the physiologists of the Pavlov School, and to Mr. K. de B. Codrington, Corpus Christi College, towards the expenses of a visit to India for the purpose of carrying out archaeological research at Elura, Hyderabad State, and at Badami, Bombay Presidency, and of making moulds of the sculpture.

It is proposed to erect the new Pathological Laboratory on the Downing site near the Biochemical Laboratory and the Molteno Institute of Parasitology.

Emmanuel College is offering to a research student commencing residence at the University in October 1925, a studentship of the annual value of 150*l.*, which will be tenable for two years. Applications must reach the Master of Emmanuel (The Master's Lodge, Emmanuel College, Cambridge, England) not later than July 31. The award will be made on the evidence submitted by the candidates, which must include a brief statement of the proposed course of research and evidence of general ability and of special fitness for the proposed course of research.

<sup>1</sup> "Critical Potentials," by K. T. Compton and F. L. Mohler, Bulletin of the National Research Council, Vol. 9, Part 1, No. 48. Pp. 135. (Washington, D.C.: National Academy of Sciences, 1924.) 1.60 dollars.