

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 review¹ 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 archæological 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.

¹ "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.

GLASGOW.—The late Dr. John Hall, a graduate of Glasgow, of St. John's Wood, London, who died in 1909, left the reversion of one-half of his estate to the University, for the foundation of tutorial fellowships in medicine, surgery, and obstetrics, for the better equipment of the practical classes in these subjects, etc. Through the death of his sister, who has added half her own estate to that of her brother, the large endowment has now accrued, and may amount to some 50,000*l.* when the estates are realised. The benefaction will be of great use to the University's large school of medicine, which now exceeds in numbers and in clinical resources any other in the kingdom.

Dr. J. S. Haldane, fellow of New College, Oxford, has been appointed Gifford Lecturer at Glasgow for the years 1926, 1927.

MELBOURNE.—Applications are invited for the professorship of agriculture and the post of research physicist. Conditions of the appointments may be obtained from the Agent-General for Victoria, Victoria House, Melbourne Place, Strand, W.C.2. The latest date for the receipt of applications is May 31.

APPLICATIONS are invited, until April 18, for the professorship of philosophy at the University College of Swansea. Particulars of the post may be obtained from the College Registrar, Singleton Park, Swansea.

AN election to Beit fellowships for scientific research at the Imperial College of Science and Technology, South Kensington, will take place in July next. Applications must be received on or before April 18. Forms of application and all information can be had by letter addressed to the Rector of the College.

VISCOUNT BURNHAM will deliver an address on "Technical Education as it affects Employers of Labour" on Friday, March 27, at 8 P.M., at the Battersea Polytechnic, London, S.W.11. The Governing Body of the Polytechnic has extended an invitation to the London County Council Joint Standing Conference of Evening Institutes in the district to hold at the Polytechnic an Exhibition of Work done by students on Friday evening and Saturday afternoon and evening, March 27 and 28, while the laboratories, workshops, kitchens and demonstration rooms of the Polytechnic will also be open for inspection.

SOME of the inner working of a preparatory school on modern lines is shown in a pamphlet entitled "St. Piran's Year Book for 1924," recently received. Few people realise how fundamentally wrong is the system of so-called education in a great many preparatory schools where the only object seems to be to cram in a knowledge of a few subjects—principally Latin and Greek—to meet the requirements of the Common Entrance Examination. How this can be expected to encourage latent ability, even for languages, much less to reveal a boy's true bent, passes comprehension. Every schoolmaster admits what Mr. Secretary Cecil said to Roger Ascham, very wisely and most truly, when the great plague was at London in 1563: "Many young wits be driven to hate learning before they know what learning is." The headmaster of St. Piran's, Maidenhead, has shown in a very practical way how scholarships can be won and examinations passed without serious detriment to education in the true sense of the word. Natural science, for example, is taught to the boys at St. Piran's although the Common Entrance Examination does not require it. An engineering shop, various societies—literary, natural history, wireless, photographic, gardening—and lectures on subjects of current interest provide

stimuli calculated to reveal latent ability. This is, or should be, the true aim of all education. To the impartial mind it appears that this out-of-date Common Entrance Examination condemns the boys in most preparatory schools to do merely school-work in school, while the education, if any, they may have the luck to acquire is most likely to be picked up in out-of-school hours.

THE Battersea Polytechnic's report for 1923-24 shows 2735 as the total number of students, 447 being full-time and 2288 evening and other part-time students. The full-time courses were chiefly in the Training College of Domestic Science, and in engineering. Of the entries for part-time work about a third were for mechanical engineering and building and electrical engineering, a third for physics, chemistry, and mathematics, and the rest for women's subjects, music, hygiene and physiology, matriculation classes, physical training, and art. The figures are large, but a comparison with the figures for previous years is disquieting. The Principal points out that there is a steady decrease in numbers, and says it is largely due to the increased fee for out-county students (to cover the difference between the ordinary fee and the cost to the L.C.C. of the student's education) and the cessation of work under the Government scheme for the higher education of ex-service students. The decrease in the number of full-time students is fully accounted for by these reasons, but there remains a large decrease, nearly 600, in the number of evening students (comparing 1919-20 with 1923-24), attributable in part it may be supposed to the slump in the engineering trades. An interesting development in the Department of Hygiene and Public Health is the institution of a course in practical home dietetics (gas-ring or oil-stove cooking) for bachelor men and women. The enrolments in this department show a substantial increase.

THE international interchange of university students and university teachers has attracted much notice since the War. Many post-War organisations—the League of Nations' Committee on Intellectual Cooperation, the International Confederation of Students and its affiliated national unions, and many others, as well as older associations, such as the League of the Empire and Victoria League, make the fostering of such interchange one of their chief objects. The Universities Bureau of the British Empire has an Interchange Committee, consisting mainly of the Interchange Correspondents of the Bureau in the home universities, and has for several years printed and circulated annually a list of students from other countries in the universities and university colleges of Great Britain and Ireland. To the list for the current academic year is appended a list of university professors and lecturers of these universities who in 1923-24 visited universities in other countries and vice versa. No official sources of information exist regarding the visits of university teachers, since many of them are arranged without the official cognisance of the registrars of the home universities: indeed, the list is so scanty as to suggest that the visits of these "merchants of light," as they have been called, resemble, in being few and far between, if in no other respect, the visits of angels. Nevertheless the list is interesting as a pioneer attempt which should be repeated with more success. When one considers the expenditure incurred in the world of finance and commerce in recording and publishing statistics of imports and exports of material commodities, one wonders that the learned world has not long ago insisted on receiving systematic intelligence of the interchange of savants.