

**Vegetable and Fruit Growers' Conferences**

Edited by Dr. D. H. Robinson. Pp. 64. (Worcester: Littlebury and Co., Ltd., 1945.) 6s. net.

**T**HIS little book consists of fourteen short papers read to the Vegetable and Fruit Growers' Conferences held in Worcester in December 1944. The contributors are prominent commercial growers and members of research station and Ministry of Agriculture staffs.

The first paper, by Dr. H. V. Taylor, gives an account of the expansion of vegetable production during the War and probable future requirements. The second, by G. H. Tawell, deals with artificial irrigation of vegetable crops and gives useful guidance on methods, and the application of fertilizers in solution. Prof. T. Wallace contributes the next three pages on the factors determining soil fertility, and a single page by Prof. G. E. Blackman deals with the chemical control of weeds. D. R. Bomford makes a convincing plea for research on horticultural as distinct from agricultural machinery, and suggests specifications of various implements. J. F. Bomford calls for a compulsory marketing and distribution scheme and the education of urban populations in the importance of the industry and its problems. The next four papers, by N. H. Grubb, J. Turnbull, C. P. Norbury and F. J. Masters respectively, give the merits and defects of the main commercial varieties of soft and tree fruits. V. L. S. Charley discusses varieties of apples and pears for cider and perry making and of soft fruits for syrup production. G. A. Nott makes out a case for the production of unfermented apple juice as a means of disposing of low-grade fruit. D. A. Osmond writes on the soil series to be found in Worcestershire and their suitability for various crops, and the book ends with an account by W. L. Moore of his experiences in planting a cherry orchard under grass.

The papers provide stimulating thumb-nail sketches of subjects of current importance to commercial growers, and those on fruit varieties should be particularly useful. There are a few minor typographical errors.

W. E. B.

**Time, Number and the Atom**

By R. Fortescue Pickard. Pp. vii+92 (London: Williams and Norgate, Ltd., 1945.) 8s. 6d. net.

**M**R. PICKARD is interested in numbers, particularly primes and perfect squares. He points out that the ratio of the masses of the proton and the electron may be taken as 1849, and this is the sum of the consecutive primes from 3 to 131 inclusive; or as Mr. Pickard prefers to put it, the mass of the whole hydrogen atom is 1850, which is the sum of the first 32 primes, 2 being omitted. In an appendix he gives arguments in favour of omitting 2 from the list of primes. He also points out that  $1849 = 43^2$ , and 43 is the sum of the terms in the bracket when the Rydberg Series is taken as far as corresponds to the completed series of the Periodic System.

A search for further arithmetical relationships leads him to regard each element as characterized by two integers, its atomic number and its mass number. On account of the existence of isotopes it becomes necessary to choose a "primary" mass number, which is often the rounded atomic weight, or the mass number of the most abundant isotope, but may be that of a rarer isotope, or even of an isotope as yet undiscovered: for example,  $Li = 6$ ,  $B = 10$ ,

$Sc = 44$ . From this array of numbers Mr. Pickard produces some interesting patterns, though as these mostly involve the sums of the mass numbers of groups of consecutive or otherwise related elements, it is difficult to see what physical significance they can have.

The word "time" in the title refers to certain metaphysical arguments tending to identify the fundamental ideas of time and number.

F. J. GARRICK.

**Astronomical Air Navigation**

A Comprehensive Handbook embodying the Latest Principles for Practical Navigators, Instructors and Students. By Squadron-Leader Ronald Hadingham. Second edition, revised and enlarged. Pp. xii+152. (Kingston Hill: Technical Press, Ltd., 1945.) 12s. net.

**T**HE second edition of Squadron-Leader Hadingham's handbook on astronomical air navigation has been enlarged and revised. A description is included of the Mark IXA bubble sextant, with which the navigator continues his observation for two minutes, during which period the altitude is recorded sixty times and the average value of the observed altitude is automatically indicated; the accuracy of observation during unsteady conditions of flight is thereby considerably increased. A full description is also given of the astroglyph and its uses; with this instrument, which was for long on the secret list, the position lines for different altitudes of two stars suitably placed for observation are projected on to the navigator's chart, enabling the position of the aircraft to be obtained quickly and without computation. The chapter dealing with star identification has been enlarged.

The volume is a useful and essentially practical handbook. It is somewhat marred by a number of loose statements, such as that "the value of refraction is always negative and must be subtracted from the observed altitude", and that "this gradual change (i.e. precession) must also produce a change in the positions of the seasons". The statement, on p. 83, that the earth's axis is inclined at  $23\frac{1}{2}^\circ$  to the plane of its orbit is so obviously incorrect that it is not likely to be misleading.

**The Annual Register**

A Review of Public Events at Home and Abroad for the Year 1944. Edited by Dr. M. Epstein. Pp. xii+506. (London, New York and Toronto: Longmans, Green and Co., Ltd., 1945.) 42s. net.

**W**ITH unfailing regularity, unbroken since 1758, this volume presents a year of the history of the world and a survey of progress in art, literature, science and finance. The usual arrangement is maintained, beginning with a summary of English political history and the course of the War, followed by imperial history; and then the most important movements and events in foreign history, which reveal much that may have been lost sight of in the limited space of current newspapers. The second part includes a chronicle of events, obituaries of the year and retrospects of various aspects of national life. Public documents printed in full include the Bretton Wood agreements, the Franco-Soviet treaty and the Dumbarton Oaks proposals. An excellent index facilitates the use of the volume. No student of current affairs can afford to dispense with this full and objective survey of the world's history.