

AGRICULTURAL RESEARCH IN ITALY.

*Annali della Regia Scuola Superiore di Agricoltura di Portici.* 2nd series. Vol. iv. (Portici, 1903.)

THIS well printed volume contains a series of ten papers contributed by the professors of the Royal Agricultural College of Italy at Portici since the publication of the last report in 1898, together with a general review of the work of the chemical department since its foundation.

The papers are very varied in character; the first is a statistical inquiry into the production of fruit in Italy and other civilised countries; two papers treat of a fungoid disease of maize and of the olive; and of three papers by Prof. Casoria the chief deals with the composition of various saline waters as compared with the rocks they traverse and the deposits of tufa, &c., formed from them. In some of the waters traces of arsenic and nickel are recorded, with titanitic acid in measurable quantities.

But the paper which is of most agricultural interest is the record drawn up by Prof. Giglioli, the director, of the experimental work in agricultural chemistry carried out at Portici since 1877. It includes studies in the life of seeds, which were shown to retain their vitality when immersed for years in alcohol or chloroform, so that oxidation, however slow, is prevented and the respiratory process entirely stopped. Another interesting observation was the occurrence of copper in the bat's guano found in certain Calabrian caves, which led to the discovery that copper is a regular constituent and probably possesses some biological function in some insects, from which it passes to the bodies of bats and other insectivorous animals. Experiments on the introduction of plants new to Italian agriculture are recorded, such as the Soja bean, the camphor laurel and the Smyrna fig, over the acclimatisation of which the United States Department of Agriculture has spent so much care.

The field experiments carried out at Suessola include trials of various manurial substances occurring naturally in Italy, such as seaweed, a phosphatic deposit from Otranto, and leucite, a mineral characteristic of the Vesuvian and many of the older lavas of Italy, containing at times as much as 20 per cent. of potash. The dryness of the climate renders the action of merely finely ground mineral manures slow and uncertain, but the phosphatic deposit gave good results when used first for a green crop which was afterwards turned in, while the trials with leucitic earth show promise, and might give better returns if a plant were chosen for experiment more sensitive to potassic manuring than wheat is.

Other investigations deal with the effects of electricity in stimulating crop production, with the action of manganese dioxide as a constituent of manures, and particularly with the cultivation of wheat, the important series of experiments on which have before been noticed in these columns. The author claims that, as at Rothamsted, the plots at Suessola

"demonstrate that a large production of cereals can continue indefinitely provided the land be well cultivated and manured. But while at Rothamsted the

growth of wheat alone is possible in each year, in the 'Campania Felice' in the same year crops of wheat and maize forage can be raised. Thus, by the intensity of its production of grain, the fourteen years of experiment at Suessola are equivalent to twenty-eight years in England."

While the above list is by no means exhaustive, it will serve to show the activity of the experimental station at Portici, and the many-sided interests of its director, Prof. Giglioli. A. D. H.

OUR BOOK SHELF.

*La Telegrafia senza Filo.* By Augusto Righi and Bernardo Dessau. Pp. vii+518; with 259 woodcuts. (Bologna: Nicola Zanichelli, 1903.)

PROF. RIGHI has considerable claims to be regarded as the father of practical wireless telegraphy. It was from him that Marconi, as a student at Bologna, derived the knowledge of modern electricity which has enabled him to cross the gap which separates the Old World from the New. The benefits that the university and its professor have conferred on mankind by training a Marconi suggest the question: Should not universities be endowed with exceptional scholarships to assist exceptional men? The advantages of expending 100l. annually to help on students of average mediocrity are well known. On the other hand if a university should produce a man with the enterprise of Marconi once in 100 years, the advantage to the community of enabling him to carry on his experiments with the accumulated amount of an annuity that had been left unawarded during the interval cannot be overestimated.

A work on wireless telegraphy, coming from the physical department of the University of Bologna, and bearing Prof. Righi's name, will be read with great interest. The present volume is, however, rather of the nature of a popular treatise intended for readers not starting with any previous knowledge about electricity. Hence the first part, extending over about 110 pages, is taken up with a general account of the principles of electricity and magnetism. The second part deals with electromagnetic waves, the electromagnetic theory of light, and coherers. In the third we have an account of all the different methods of telegraphy, from the earliest attempts at making a telegraphic current flow across a river by conduction, down to a close examination of the Marconi system and the various inventions which have been proposed or patented on parallel lines. In the preparation of this part the authors have evidently made a careful study, not only of the published literature of the subject, but also of the patent specifications both of the "Wireless Telegraphy and Signal Company" and of other inventors, the object evidently being to give an unbiased account of what Marconi actually discovered, and what he derived from other workers in the same field. The fourth part deals with the systems of wireless telegraphy and telephony depending on the use either of ordinary light or ultra-violet rays combined with a photo-voltaic receiver. In a brief appendix, M. Dessau deals with the recent experiments in long distance "Marconiography," and gives illustrations of the Poldhu station and the arrangement of the antennæ on ships. This appendix contains several statements of interest concerning the effect of solar radiation on the transmission of signals, the relative merits of the coherer and the magnetic detector (the latter being considered superior by Solari), and such matters.

While the book has been specially drawn up for the general reader, there are few physicists who can read