

### Early English Railways

It is known that in the archives of various foreign countries there are documents of interest to students of the history of technology ; but seldom is any of this material published. One such document, however, has recently formed the subject of a paper by Mr. P. Zabarin'skiy published in vol. 4 of the "Archives for the History of Science and Technology". The paper itself is in Russian, but with it is the letter of William Vaughan dated, London, June 14, 1804, and addressed to his Excellency Vice-Admiral Chichagoff, minister of the marine at St. Petersburg. William Vaughan (1752-1850) was a director of the Royal Exchange Assurance Corporation, London, and was much interested in canals and railways and docks. Railways, he said, were common in England and Wales for the conveyance of coals, limestone, ore and such things, and in the London Docks, in which he evidently was particularly interested, railroads and waggons were used in the excavations. Experiments were apparently made at the Docks and in one of these, he said, "In six days of 12 hours, 25 men filled, 24 boys drove and 24 horses conveyed, 3650 cubic yards of earth to the distance of 400 yards and returned the waggons empty". Vaughan described clearly the turntables used on the banks of the Thames, gave estimates of the cost of removing material and made some remarks on the use of railways in Russia.

### Work of the Rockefeller Foundation

THE Rockefeller Foundation's report for 1933 presents a tale of vast and varied activities, for the financing of which it had, in pursuance of its mission "to aid in the process of the rationalisation of life", made itself wholly or partially responsible. Its policy in relation to the pressing social problems of the day is guided by the principle that it "can neither remain indifferent to them nor relinquish the support of the fundamentals on which in the long run the control of man's destiny depends". In medical and natural sciences, emphasis has been laid on the problem of mental health and the advancement of the rapidly evolving modern science of man ; in the social sciences, on the problem of economic structure and process, international relations and community organisation and planning ; and in the humanities, on the encouragement of international cultural understanding and the preservation and interpretation of American culture. Early in the year a sum of a million and a half dollars was set aside for emergency grants for work in connexion with the 'new deal' programmes. Contributions were also made as an emergency measure towards the salaries of eminent scholars displaced for political reasons in Europe and 'adopted' by universities in Europe and the United States. Appropriations during the year totalled about ten million dollars. Among the larger appropriations in the field of the social sciences were : Brookings Institution for Economic Studies, 250,000 dollars ; Institute of Economic and Social Research, Paris, 350,000 dollars ; League of Nations, 275,000 dollars ; National Bureau of Economic

Research, New York, 225,000 dollars ; social science research aids, 150,000 dollars ; Social Science Research Council, New York City, 265,000 dollars.

### Scientific Horticulture

THE third Year-book of the Horticultural Education Association appears under the new title "Scientific Horticulture". It is longer than in previous years, its contents cover a wider field, and go far to justify the change of heading. The presidential address of the Association is by Dr. T. Wallace, and deals with "Science and Fruit-growing", mainly from a historical point of view. Many of the papers in the volume were delivered at a revision course in horticulture arranged by the University of Reading in September, 1934. The practical nature of the lectures of this course is at once apparent—they deal with the highest-grade modern processes in vegetable culture, glasshouse work and bulb-growing, together with descriptions of diseases and pests. They are incorporated as Bulletin 47 of the University of Reading. Articles contributed specially for the year-book include "Commercial Horticulture in Northern Ireland" by W. J. Megaw and E. E. Skillman, "Fruit-tree Spraying Equipment" by J. Turnbull, "The R.H.S. Apple and Pear Conference, 1934" by N. B. Baggenal and R. T. Pearl, "Selection of Soils for Dessert Apple Growing" by B. S. Furneaux, "Twenty-one Years' Fruit Research at East Malling" by R. T. Pearl and R. Hart", "Waste Products in Horticulture, their Utilisation as Humus" by Sir Alfred Howard, and "Research at Rothamsted of Importance in Horticulture" by Miss M. D. Glynn and H. V. Garner. The volume entirely justifies its name, and is a great credit to Mr. R. T. Pearl, its honorary editor. One has the feeling, however, that the bias is on the practical side, and that the newer scientific principles which most gardeners have yet to learn—such as photoperiod, seed stratification and control, plant sterility and the conditions affecting vegetative regeneration—are not expounded. The school garden, the primary stage in horticultural education, receives no notice whatever.

### Over-population in America's Deer Herds

IN the Yellowstone National Park, the two great herds of wapati or 'elk' now comprise about 30,000 individuals, and in the northern area the drought-reduced pastures have accentuated a long-standing problem of over-population (Science Service, Washington, D.C.). The fundamental cause of the food scarcity which has resulted is the inevitable restriction of the natural emigrations of the herds, for outside the northern boundary of the Park, the Yellowstone Valley is occupied by cattle ranches. These make an impassable barrier and confine the deer permanently to a quite inadequate portion of what is naturally only their winter range. Overgrazing has altered the vegetation for the worse ; most of the nutritious native grasses have been killed out, and their place taken by a weed grass, fox-tail, which apart from its low nutritive value, pierces the gums and permits the growth of a fungus