

others were based on signs and symptoms, and a few could be described in modern terminology as "hormonal germination tests made with pregnancy urine". Similar tests for pregnancy, fertility and prognostication of sex are to be found in the Hippocratic writings, their survival for more than a thousand years indicating that there was some connexion between Egyptian and Greek medicine. These tests can also be traced in various medieval authors, such as Moscius, Trotula, Michel Scot, and Albertus Magnus, though they were modified in substance and method. At the end of the sixteenth century they began to be distrusted, though their practice has been recommended even in recent popular works. Dr. Bayon maintains that the original Egyptian test for pregnancy and its modifications, though seemingly absurd in theory and certainly erroneous in practice, represent the first diagnostic tests on record, while their employment throughout the Middle Ages and later indicates a persistent effort to apply biological experimentation to the needs of medicine. The Egyptian test was also a striking example of instinctive anticipation, which proved that in the development of medicine, intuition preceded practice, and was followed by understanding, which culminated in reasoned and demonstrable knowledge.

Science and Animal Welfare

As was noted under the above heading in NATURE of October 22, 1938, a committee was formed by U F A W (The Universities' Federation for Animal Welfare) in an attempt to bring scientific reasoning to some of the outstanding problems concerned with the welfare of animals, and a short résumé of the proposed functions of the committee was given. It is now possible to review the progress of the first year, which has been distinctly encouraging. In connexion with rabbit control, a grant was made towards the costs of research upon ecological aspects of the problem, which is being carried out at the Bureau of Animal Population, Oxford. The Prevention of Damage by Rabbits Act was promoted by U F A W. On Skokholm Island, off the Pembroke-shire coast, the Federation has participated in the attempt to carry out a wholesale cyanide fumigation of the warrens, and it is intended, if possible, to complete the eradication of the rabbits this winter and so render the island suitable for farming. Another area eradication experiment is being supported in Cornwall.

THE problem of anaesthetics for animals has received considerable study. It is felt that the Animals Anaesthetics Act of 1919 is in need of careful revision, and the National Veterinary Medical Association has agreed to appoint a committee of experts to review the whole position of anaesthesia in animals, and to make recommendations for the drafting of a new bill. Animal euthanasia has also been studied; one suggestion which is being discussed concerns the possible use of drugs which, although potent narcotics, have not been marketed for clinical use on account

of their high toxicity or narrow therapeutic margin. While the war will almost certainly lead to a great diminution in the trading of pet animals, every effort is being made to provide, by educational means and otherwise, for an improvement in the care of such animals before and after purchase. The use of the electric goad for droving has been considered, and field tests are being carried out at an agricultural college to determine its efficacy. All who are interested in the work of the committee, are asked to communicate with the honorary secretary, A. N. Worden, at the Federation's headquarters, Gordon House, 29 Gordon Square, London, W.C.1.

Communications on Spectrochemical Analysis

OWING to the war, the publication of papers in the English language in *Spectrochemica Acta* is no longer practicable and Mr. F. Twyman, formerly English editor of the journal, has put forward a suggestion that there be an agreed single medium for the publication of such papers in England. Briefly, the proposal is that papers, articles, and notes on spectrochemical analysis should be sent to the *Journal of the Society of Chemical Industry*, and that if the communication deals with some special subject such as an application to botany, soil analysis, mineralogy, etc., the author should at the same time communicate to his own specialist society an abstract or companion paper dealing particularly with the application, while for details of the apparatus and spectrographic method reference would be made to the *Journal of the Society of Chemical Industry*. Should the 'specialist' portion of the paper be of preponderating interest, the main paper would naturally be submitted to the specialist journal, and an abstract or companion paper sent to the *Journal of the Society of Chemical Industry*. Manuscripts for the Society of Chemical Industry, which should in all cases be prefaced by a short introductory statement setting out in simple language the objects of the investigation and a synopsis of the results achieved, should be addressed to: Mr. T. F. Burton, Society of Chemical Industry, Clifton House, Euston Road, London, N.W.1.

A Sensitive Induction Magnetograph

A SENSITIVE induction magnetograph for measuring the time-rate dH/dt of the horizontal component of the earth's magnetic field is described by H. Nagaoka and T. Ikebe in *Scientific Papers of the Institute of Physical and Chemical Research* (Tokyo) of August 1939. The magnetograph embodies a design of a special shape for collecting the lines of force into a permalloy core enclosed in a cylindrical coil. A record is given of complicated magnetic disturbances caused by electric trams. Even at a distance of several hundred kilometres from a great city, the disturbances can be detected as minute ripples on the traces. The selection of an observing station for observing true geophysical phenomena is therefore a difficult problem. The observed effect of weak earthquake shocks is discussed. Apart from the purely mechanical effects of shock, there are probably

some true magnetic effects due to the varying magnetic susceptibility of erupting lava (the subject of study being the Asawa volcano). The authors think that it may be possible to predict violent eruptions half an hour before they occur. It is also anticipated that the new magnetograph will provide data to test whether short-period disturbances of a few seconds' duration exist during magnetic storms. Provided that a suitable site can be obtained, the magnetograph has other applications in the study of the characteristics of the *E*- and *F*-layers of the ionosphere with respect to the height of origin of the current system producing the diurnal variation of the earth's magnetic field.

Apia Observatory

THE annual report for 1935 of the Apia Observatory, issued by the New Zealand Department of Scientific and Industrial Research, bears witness to useful systematic work in several sections of geophysical research carried out at the Apia Observatory. The observations are grouped under terrestrial magnetism, seismology, meteorology, and atmospheric electricity. The meteorological observations include pilot balloon ascents for upper air data and the preparation of daily synoptic charts of the weather in the region of the South Pacific islands. A time service is also maintained. A glance at the meteorological records shows that conditions from the observer's point of view must often be difficult. The mean monthly temperature at 9h. usually exceeds 80° F.; there is much rain in some months, and relative humidity is invariably high. On January 16, 1935, a fall of more than 13 inches of rain was recorded, the total for the month being about 41 inches. Apia Observatory was established in 1902 in connexion with the German South Polar Expedition. The magnetic section of the Observatory was constructed in 1912, the seismograph installed in 1913, while the atmospheric electricity apparatus was housed in 1922-1924 through grants from the Department of Terrestrial Magnetism, Carnegie Institution of Washington. In 1921, the Observatory was formally taken over by the New Zealand Government, which has borne throughout the greater part of the cost of maintenance, although substantial annual grants have been made by the Carnegie Institution of Washington and by the British Admiralty.

The World's Largest Generating Station

Few engineers in Great Britain know much of the progress that is being made in the hydro-electric plant which is being erected at the Samara bend on the Volga by Soviet engineers. The *Electrical Times* of October 26 suggests that a study of the map of Russia will show that the lie of the land at this bend is ideal for the building of a huge hydro-electric plant. Imagine a hairpin bend of the river with the town of Samara containing about 60,000 inhabitants at the top of the bend. The two legs of the hairpin extend west and embrace a ridge of mountains. About thirty miles west of the town is a ravine in these hills, where a small tributary cuts through northward to

join the Upper Volga at Stavropol. This would make an ideal site for a power-house as the pipe lines would short-circuit something like 75 miles of a falling river. The plant when completed is to have a generating capacity of 3.4 million kilowatts. We know that the six stations at Niagara have a total water power of 1.6 million horse-power. Boulder Dam will have an ultimate water-power of 1.3 kilowatts but its main purpose is for irrigation, and as electric power is only a side product it would therefore generate much less electricity than the Volga power station, which may therefore claim to be the world's largest power project. This is a case in which electricity seems to be shaping the geography of a country. Much of the Samara power will be transmitted and probably, considering the immense distances to which it will be transmitted, a voltage of 300,000 or more will be used. Local industries will almost certainly group themselves round the power station, as they have done in several places under Soviet control, and a large new town will grow up.

Farm Forestry in the United States

A most interesting little booklet entitled "Farm Forestry" by W. A. Ross and W. R. Mattoon has recently been issued by the Office of Education, Department of the Interior, United States (Vocational Division Bulletin No. 196, Agricultural Series No. 52, U.S. Govt. Printing Office, Washington, 1939). The material in the bulletin has been prepared to provide teachers of what is termed vocational agriculture with valuable subject-matter written in a practical fashion to enable them to offer more effective systematic instruction on certain forestry work on the farm. The United States, it is said, contains some 470,000,000 acres of land which is classified as forest land. In addition there are several million acres which economists say are in excess of what will be required for the production of field crops and the raising of live-stock and which are therefore available for forestry purposes. Timber is now a recognized crop in diversified farming programmes. Much of the booklet may be read with interest in its application to Great Britain. The United States has, as is well known, some difficult problems to solve owing to excessive lumbering of forest and excessive crop-growing on soils not applicable to such treatment. The so-called dust bowls have shown the direction to which such over-utilization leads. The hints given in this bulletin are therefore of major importance to the farmer.

Land-grant Colleges in the United States

AN English farmer remarked that, when he arrived in Honolulu in 1907, he was surprised to find two experts on the spot, ready to advise on forestry and agriculture, supply seeds and lend money on small holdings. This is one result of the far-flung enterprise of the United States which appears in "The Land-grant Colleges", a paper-covered monograph prepared for the Advisory Committee on Education appointed by the President in 1936 (Washington, D.C.: G.P.O. 25 cents). The authors trace the rise and broadening