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