

as short as two millionths of a second. Messrs. Reyrolle's plant is one of the largest and best equipped short-circuit testing stations in the world. A scheme has now been initiated whereby full facilities are provided for utilising this testing plant for the benefit of the electrical industry. A company has been formed which will operate independently and will be in a position to issue national test certificates.

A Piano with no Wires

ACCORDING to a recent report by Science Service, pianos are now being constructed in Kalamazoo, Michigan, U.S.A., with no strings or wires. To produce the tones, strips of steel not more than a few inches long are made to vibrate electrically. The new instrument, called a *clavier*, uses a piano keyboard to operate the strips producing the notes, which are practically pure tones. These tones, which are almost inaudible, are picked up by magnetic induction and passed through an audio-frequency amplifier. The capacity of the amplifier is about ten times that of the average radio amplifier having a capacity of 30 watts. The player therefore has at his command a tone ranging from a mere whisper to one that would balance an orchestra. The impact noise sometimes audible in a piano is filtered out, and thus the pure tone is produced. The piano was invented by Prof. Lloyd Loar after experiments extending over several years. Through the use of ear-phones, the piano student can practise his lessons without disturbing anyone, the sound being heard only by himself. The tone volume can be varied over a wide range simply by turning a dial. The operating devices occupy very little space, the *clavier* consisting of little more than keyboards.

Ipswich Museum

AN appeal on behalf of the Ipswich Museum has been issued by Mr. J. Reid Moir, its president. The Museum is not well provided with exhibits illustrating the culture of the bronze age; but it now has the opportunity of acquiring an exceptional collection of bronze implements, many of which were found in Suffolk, at a cost of £100. The collection is at present on view in the Museum. Mr. Reid Moir, in issuing his appeal, does not confine himself to this immediate object; he takes a long view of the situation. Availing himself of the occasion, he suggests the institution of a body of "Friends of the Museum" who might collaborate in its work in various ways, and might, by subscription, provide a fund for use in emergencies which the provision from municipal funds could not meet for various reasons. The case for the local museum as a centre of regional scientific and historical studies is ably stated in the appeal and needs no further elaboration here. On the question of general principle, however, it may be pointed out that any proposal such as that made by Mr. Reid Moir, which helps to broaden interest among the local public in the function of its museum, deserves every encouragement. Without desiring to relieve the municipality, as the local

education authority, from any responsibility that may be imposed upon it for the maintenance of the general intellectual level of its area, it must be admitted that occasions frequently arise in connexion with the work of a museum in which voluntary effort, financial or other, is salutary and expedient, or even necessary, to supplement the official obligation of the municipality.

Grassland and Grazing Research

Two new bulletins in the Herbage Publication Series have been issued by the Imperial Bureau of Plant Genetics at Aberystwyth. The first, entitled "Grazing" (Bull. No. 10. 1s. 6d.), consists of a collection of papers read at the British Association meeting at Leicester in 1933, each of which approaches the subject from a different aspect. The grazier's problems are put forward from a practical man's point of view, while the effect of the stock on the sward is considered in the light of experimental evidence. The Bureau has for some months been collecting information regarding the technique employed in pasture and grassland research in Great Britain and certain dominions, and the other bulletin ("Technique employed in Grassland Research in New Zealand", Bull. No. 11. 3s.) is the first publication on the subject. Questions of strain testing and building in grasses, clovers or lucerne, the breeding methods employed and the necessary corollary—the certification of herbage seeds—form the subject of several of the papers. The measurement of pasture production is considered in detail. A modification of the technique formerly described as 'alternate mowing and grazing' is put forward, while the layout of the experiments, the stage at which cuttings should be made, and the technique of stock grazing trials are among other major points dealt with. Reference is also made to two laboratory tests which have proved useful in conjunction with field work. In the first place the prussic acid content has proved valuable as a means of distinguishing between different types of wild white clover, while screened ultra-violet light has been successfully employed in rye grass type determination.

Russian Studies of Crop Plants

THE material collected by Dr. Klinkowski on the ecological distribution of lucerne types has been translated and published in an abridged form as Bulletin No. 12 in the Herbage Publication Series of the Imperial Bureau of Plant Genetics ("Lucerne: Its Ecological Position and Distribution in the World". Aberystwyth: I.B.P.G., Agricultural Buildings. 3s. 6d.). Lucerne is the oldest forage plant known and originated from a number of regions of a 'steppe' character. The routes along which the plant migrated are traced, and the history of its development and the importance of the crop at the present time described for 45 different countries. The geographical distribution of the types of cultivated lucerne in Europe, Asia and North Africa is also dealt with. A further publication, "Plant Breeding in the Soviet Union", has been