

Field surveys are carried out by the Field Investigation Department, and an independent survey of tractor utilization is in hand. Potato planting and harvesting, sugar beet and grain harvesting, and hay-making are under investigation. Present farming practice is studied, and planned trials, so far as practicable under controlled conditions, are undertaken. Results, methods and equipment were to be seen. A portable windrow weigher has been devised; but much of the apparatus used is that already mentioned in connexion with testing.

The main laboratories, forming the Instrumentation Department, are at the service of all departments. There special investigations are carried out, for example, on the specific heat of soils, ploughshare wear and precision drilling, besides routine calibration and analyses. Moisture content determinations are a prominent feature for which standard methods are not always suitable, and special apparatus has to be devised to cope with a wide variety of products—for example, apparatus was in use dealing with grass, with coffee beans and with tomatoes.

Considerable use is made of photography, including cine-films; two ciné-films with tape-recorded commentaries were shown in the Conference Room each day; the Library, which handles not only books, bulletins and periodicals but also manufacturers' catalogues and Institute photographs and slides, was open to visitors.

¹ Nat. Inst. Agric. Eng. and Scottish Machinery Test. Stat.; Report October 1, 1949–September 30, 1951. (Silsoe: the Institute, 1952.) 8s. 6d.

² See *Nature*, 169, 519 (1952).

SPORTS TURF RESEARCH INSTITUTE

MACHINERY EXHIBITION AND OPEN DAY AT THE ST. IVES RESEARCH STATION

THE combined machinery exhibition and open day of the Sports Turf Research Institute, held during July 15–16 at the St. Ives Research Station, Bingley, proved to be a very successful event of great interest to all users of sports turf. Manufacturers combined to put on show a wide variety of implements used in turf production and maintenance, and to many people it was a revelation to see the amount and variety of machinery called for to uphold modern turf standards in face of the increasingly heavy demands being made on playing areas. Mowing machines of very many types naturally were much in evidence; but there were also, among other things, tractors, fertilizer distributors, line-marking machines, compost shredders, turf-cutting implements, watering tackle, weed sprayers of all sizes and a variety of implements for piercing turf in order to relieve soil compression and facilitate easy ingress of air and water. A wide range of hand- and power-drawn machines was demonstrated. A recent development has been the use of the three-point hydraulic linkage of tractors for operating spiking equipment, while a new power-driven spiker, shown for the first time, roused much interest.

The variety of sprayers on view may be taken as a measure of the interest taken in weed control. On the experimental ground, where a number of current trials were demonstrated, the subject of weed control

also received attention. Weedkillers based on 2:4 D (2:4-dichloro-phenoxyacetic acid) and M.C.P.A. (2-methyl-4-chloro-phenoxyacetic acid) have proved a great boon, but some weeds have proved somewhat resistant and work on these is proceeding. On show were experimental plots treated with 2:4:5 T (2:4:5 trichloroacetic acid) at various rates with and without admixture with 2:4 D and M.C.P.A. Results obtained against clover were very promising indeed, but yarrow control did not appear so good. There were also trials of exfoliated vermiculite for turf establishment and maintenance and on the use of bitumen for toughening turf to withstand heavy wear. Further field trials on view included a number on grass-seed mixtures for various purposes and others on fertilizer treatment. Among the latter must be mentioned a series which must be about the oldest of its type existing, since in it individual plots have received their own particular kind of fertilizer treatment for a period of more than twenty years. The effects of these treatments on botanical composition, pest and disease invasion, drought resistance and the like were easy to see.

Much interest was displayed by visitors in the laboratories which were open to them. The increasing demand for scientific advice is well shown here, since only last year a new chemistry laboratory had to be fitted out to cope with the increasing demand for analytical work, while this year visitors were able to see for the first time the new Biology Department. Though its laboratory space is somewhat limited, the Department has an ambitious programme and is already making its presence felt.

This new Department undertakes routine examinations of diseased turf, the identification of turf plants, and turf pests; in addition, both short- and long-term schemes of research, mainly in the realms of turf diseases, are being conducted. In Great Britain there is not the great variety of turf diseases which may be found in, say, the North American continent, but there are definite problems in need of solution. Improved methods of control of *Fusarium* patch disease are being sought, and new fungicidal materials are on test in the laboratory and in the field for this purpose.

A study is being made of the biology of 'fairy rings' as a necessary preliminary to the devising of methods for their elimination. In the popular literature on turf management much has been written on the control of 'fairy rings'; but trials with reported curative treatments seldom seem to have been conducted under adequately controlled conditions.

STANFORD RESEARCH INSTITUTE, CALIFORNIA

REPORT FOR 1951

IN an address, "Research and Industry—Partners in Progress", to the board of directors of the Stanford Research Institute, California, on the occasion of the fifth anniversary of the founding of the Institute, Brigadier-General D. Sarnoff, chairman of the board of the Radio Corporation of America, said that the Institute is an outstanding example of the natural partnership between research and industry. That partnership, he believed, offers the