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# Achievements and Hopes of WAITE INSTITUTE

Established just 10 years ago, the Waite Research Institute, situated in the picturesque foothills near Fullarton, is an invaluable force in helping the man on the land to overcome the many obstacles that bar his progress.

Through the work of the institute science has been brought to the aid of the primary producer. Methods have been evolved for combating the pests that formerly ravaged his crops; new foddere have been discovered for his stock, and the ideal seeds for varying conditions of climate and soil decided upon.

In the following article a brief outline of the work of the institute is given. An analysis of what has already been accomplished, and an indication of new schemes which the scientist has to aid the primary producer, are also described.



**W**HEN the Waite Agricultural Institute began its investigation work into problems affecting agriculture, the present cultivated fields were in a park-like condition. In the 10 years of the institute's existence, however, they have accommodated more than 100 field experiments dealing with problems of soil fertility, cereal culture, pasture improvement, and with combating insect pests - and plant diseases.

The early work was necessarily confined to the institute's fields, but investigations have since extended to parts of the State where climatic and soil conditions differ widely from those of the Adelaide Plains. In the case of the department of agricultural chemistry, which is also the headquarters of the soils division of the Council for Scientific and Industrial Research, work is in progress in other States of the Commonwealth. Much

striking. It might be expected that similar results would be obtained in localities with rainfall and soil conditions similar to the Waite Institute. Work is in progress at a number of country centres to define the conditions which govern the response of the crop to nitrogen.

In sown pastures, nitrogenous fertilizers have not given economic responses because clover in pastures tends to be depressed by the application of sulphate of ammonia. This results in a loss of free nitrogen normally gathered in by the clover, and this largely balances the nitrogen supplied by the fertilizer. It has been shown, however, that on the light textured soils in many parts of the State, particularly in the hills district and the South-East, light dressings of sulphate of ammonia may prove advantageous in securing good establishment of the pasture species.

**T**HE general results of pasture work at the institute have a far-reaching effect. At the outset an exhaustive series of tests

grown under conditions of lower rainfall.

Present work includes an investigation of pasture establishment on the black soils of the lower South-East, the lighter soil types of the upper South-East, the investigations of strain differences in perennial ryegrass, *Phalaris tuberosa*, strawberry, and subterranean clover, and the establishment of pastures with cover crops and the comparative value of sown pastures and natural pastures in respect to grazing capacity and yield of wool in merino sheep.

**W**ORK in agricultural chemistry may be divided into three main groups. One is closely associated

## AGRICULTURAL

### CHEMISTRY GROUPS

with the soils division of the Council for Scientific and Industrial Research; a second with the improvement of pastures described in the preceding section. The chemist is also interested in the changes that take place in the plant when infected with a disease such as spotted wilt, and in the behaviour of the virus which causes this disease.

The soils division for the time being concerns itself with soil surveys—that is the accurate description and mapping of areas of country of special interest and importance. Principles of working have had to be developed which can be applied to the requirements of a closely settled irrigation area, and also to Australia as a continent, as well as the intermediate cases, which include, for example, work at present being carried out on the moist soils of the central and lower northern districts.

Practically all important irrigation

farming practically impossible. The value of minute doses of cobalt in curing the disease has already been established by the West Australian workers, so that the trouble is evidently akin to our own coast disease. The problem now is to examine the soils for traces of this and other likely metals.

In Tasmania also much work has been carried out on the characteristics of the apple growing soils, and, more recently, on the famous red volcanic soils of the north coast, where potatoes and pastures are of great importance.

A recent development at the institute has been the establishment of a department of bacteriology. This department, at the request of the Wine Overseas Marketing Board, and with the board's financial assistance, is investigating bacteriological problems connected with the keeping qualities of export wine.

The soils division, too, is interested in this department, and has made two major investigations. One was the use of sulphur as a topdressing for improving the texture of irrigated soils, and the second the importance of seed inoculation with improved strains of nodule-forming bacteria in the establishment of pastures of lucerne and of subterranean clover.

**T**HE breeding of new varieties of wheat by hybridisation and selection has been in progress since the institute's inception. The work of producing new varieties is necessarily a slow process. It takes many years from the time the original cross is made before the fixed new strain is thoroughly tested. An important

## WAR ON

### INSECT

#### PESTS

which has become a serious pest in glasshouses, and in market garden crops on the Adelaide Plains.

Systematic observation on thrips during the past three seasons has indicated a close relationship between weather conditions and occurrence of the pest. Warm, moist conditions in early autumn have been found to produce an autumn rise in its numbers, which remain dormant during the cold winter months. Favorable weather in spring causes rapid multiplication in numbers. If this period of increase coincides with the flowering period of apples, in early October, damage to the crop may be serious. Control has been obtained by the use of the new insecticides such as derris and pyrethrum, which repel the thrips from the flowers during critical periods.

**I**NVESTIGATIONS of the plague grasshopper consist of the location of the endemic areas, which appear to be situated in the drier areas of the State immediately north of the 10-in. line of rainfall. Where rainfall conditions favor multiplication, large numbers migrate southwards into the agricultural areas. The location and condition of the endemic areas will enable us to become aware of an impending invasion from the north, so that control measures in the settled agricultural areas may be taken before the grasshoppers' arrival. CH-

## WAR

### WAGED ON

#### HOOPPERS

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Institute's programme. The department of entomology has recently investigated the red-legged earth mite