

FACIAL ECZEMA RESEARCH

Intensive Coordinated Investigations Since Fungus Discovery

A DRAMATIC advance in facial eczema research was made with the discovery in 1958 that the fungus *Sporidesmium bakeri* caused typical facial eczema symptoms and liver damage in experimental animals.

This knowledge gave a new orientation and incentive to work on the disease. In the 18 months since the discovery was made many organisations concerned with agricultural research have been working in a highly organised coordination of investigations.

In papers to this year's Massey Sheepfarmers Meeting Dr J. F. Filmer, Director of the Animal Research Division of the Department of Agriculture, and Dr A. T. Johns, Director of the Plant Chemistry Division, Department of Scientific and Industrial Research, outlined progress to date and the directions in which research is continuing.

In the Department of Agriculture

Dr Filmer



THE idea that a fungus might be the cause of facial eczema is of course not new. It was commonly mooted during the serious outbreaks in 1938 because of the abundance of mushrooms and other fungi in affected paddocks. A survey of fungi was made at that time and tests were conducted with some of those found. The negative results obtained prompted the hypothesis that the liver-damaging factor was formed in one or more pasture species after warm autumn rains. In 1941 liver damage was produced in experimental lambs fed fresh-cut pasture and in 1943 similar results were obtained with heat-dried pasture.

Intensive chemical investigations have shown that the liver-damaging factor could be extracted from affected pasture. These extracts, after being concentrated and purified until they contain as little as 1/70,000 of the original dry matter, are still capable of producing liver damage in guinea pigs and other experimental animals. In the course of this work the chemical test known as the "beaker test" was devised which is capable of estimating the concentration of the liver-damaging factor with reasonable accuracy.

This line of attack diverted attention from the fungus hypothesis, though it was revived from time to time by some workers. In February 1957 an active search for fungi or other organisms in soil and pasture was begun by officers of the Soil Bureau, Department of Scientific and Industrial Research, working in collaboration with officers of the Department of Agriculture, and this led to the dramatic discovery in March 1958 that spores of the fungus *Sporidesmium bakeri* gave a strong beaker test.

It was soon shown that a high sporing strain of this fungus caused typical liver damage in guinea pigs and lambs and produced all the usual symptoms of facial eczema in one experimental lamb.

This exciting story has been well told elsewhere ("Journal of Agriculture", October 1958, page 328), and Dr Johns in his paper which follows gives some background data to the discovery.

Some of the implications of the discovery of the fungus could best be discussed by posing certain questions and giving such partial answers as are at present available.

1. Is the liver-damaging factor in the fungus the same as that in pasture?
2. Is the fungus the cause of facial eczema in the field?
3. What factors influence the abundance and toxicity of the fungus.
4. How can the fungus be controlled?
5. How does the liver react to the fungus?
6. Can stock be protected against the fungus?