

## BIOLOGY

## Occurrence in Britain of the Fungus causing Facial Eczema in Sheep

*Pithomyces chartarum* (Berk. and Curt.) M. B. Ellis (synonym: *Sporidesmium bakeri* Sydow) is a saprophytic mould the toxin of which, sporidesmin, causes 'facial eczema', a serious disease of sheep in New Zealand<sup>1</sup>. The fungus is widely distributed in the tropics and sub-tropics<sup>2</sup>, but no specimen has hitherto, so far as we know, been recorded in Europe.

In connexion with work on respiratory allergy by Dr. K. Maunsell, King's College Hospital, a Hirst<sup>3</sup> spore trap (provided by the Asthma Research Council) was used continuously during the summer of 1958 to estimate spore and pollen concentrations of the air beside a small stream at the Imperial College Field Station, near Ascot, Berks. When we later examined deposits from this and another trap nearby, we were surprised to recognize a few of the characteristic spores of *Pithomyces chartarum* on the slides for July 7, 1958. Afterwards a single spore was observed by O. J. Stedman on a slide exposed in a Hirst spore trap at Rothamsted on September 14, 1960.

Surface trajectories for the air arriving on these dates have been supplied by the Meteorological Office. They suggest that the air was of polar origin, thus making wind transport of the spores from the tropics appear improbable: we therefore looked for a local origin.

Early in September 1961, concentrations of 0.1–17 spores per cubic metre of air were detected with a portable spore trap in several areas in Surrey and Berkshire. Finally, on September 18, 1961, after recording 420 spores per cubic metre, *Pithomyces chartarum* was found growing in abundance on debris of *Holcus lanatus* near Virginia Water, Surrey (specimen deposited in the herbarium of the Commonwealth Mycological Institute, Kew). It is not yet known whether the strains of the fungus in the British Isles produce sporidesmin.

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<sup>1</sup> McMeehan, C. P., *Outlook on Agriculture*, 3 (2), 89 (1961).

<sup>2</sup> Ellis, M. B., *Mycol. Pap.*, 76, 13 (1960).

<sup>3</sup> Hirst, J. M., *Ann. App. Biol.*, 39 (2), 257 (1952).

## Anomalies in Onset of Œstrus after Progesterone Suppression of Œstrus Cycles in Ewes, associated with Introduction of Rams

THE onset of Œstrus, following suppression of Œstrus cycles in Merino ewes by administration of progesterone for two weeks, is influenced by dose, interval of injections, time of day of final injection, and time of year<sup>1</sup>. Detection of Œstrus is based on

sexual behaviour of the ewes in the presence of rams. In two separate experiments in May 1961, rams were introduced near the end of the treatment periods. In a proportion of ewes onset of Œstrus was up to 48 hr. earlier than expected; others did not experience Œstrus. These anomalies seemed to have been associated with introduction of rams.

*Experiment A.* One hundred and twenty Merino ewes were injected intramuscularly with 12.5 mgm. of progesterone in oil every second day for 11 days (six injections). They were then allotted to four groups and received the treatments outlined in Table 1. Entire rams wearing marking harness were introduced into the flock on day 1 (one day before the final injection of progesterone). With these doses of hormones the ewes were expected in Œstrus 2–5 days after cessation of injections.

On the night after introduction of the rams and during the next day (day 0) 20 ewes were clearly marked and hence were presumably in Œstrus. In most ewes Œstrus was less than 24 hr. in duration. Of these 20 ewes 2 conceived, 8 returned to service 2–5 days later, and the remainder were marked 2–3 weeks later. Evidently some induced heats were accompanied by ovulation and others were not. It can be seen from Table 1 that the unexpected early heats mainly occurred in the ewes given progesterone at interval of 2 days. The complete results of this experiment, which was part of a study on the induction of twinning in Merino ewes, will be presented elsewhere.

*Experiment B.* Merino ewes were given 15 mgm. of progesterone in oil every two days for 13 days (seven injections). On the morning of May 7, which was the day of the seventh injection, vasectomized rams were placed with the flock for detection of Œstrus for purpose of artificial insemination. Of a total of 22 ewes, 5 came into Œstrus on May 8 and were mated to a fertile ram, and 2 conceived. The remaining ewes came into Œstrus at expected times.

These results indicate that during the middle of the breeding season, introduction of rams at a critical time near the end of a series of progesterone injections affected normal return to Œstrus. The effect was not confined to hastening of onset of Œstrus since in some ewes it is possible that Œstrus was suppressed (final column, Table 1). The latter effect was not observed in both experiments.

A further experiment was carried out in mid-July with the view of examining these phenomena more closely. Sixty ewes were given 15 mgm. of progesterone every two days for two weeks. One group of 20 (group 1) was run with vasectomized rams throughout. Two vasectomized rams were placed with another group of 20 (group 2) on the day of the final progesterone injection. Rams were placed with the third group (group 3) one day after the final injection. An effect due to introduction of the rams was observed, but was of a nature different from that observed in May–June, being confined to variation in the time of onset of Œstrus. The within-group variance in group 3 was less than half that observed in the other two

Table 1. TREATMENT SCHEDULE AND ŒSTRUS IN EXPERIMENT A

Group	No. of ewes	Progesterone (mgm.) on day					Ewes showing Œstrus on day 0*			Ewes not in Œstrus before day 6
		-4	-3	-2	-1	0*	No. in Œstrus	No. returned to Œstrus days 2-5	No. returned to Œstrus 2-3 weeks	
1	30	12.5	—	10	—	10	10	3	6	11
2	29	12.5	10	10	10	10	3	2	1	4
3	30	12.5	—	20	—	20	7	3	3	5
4	31	12.5	20	20	20	20	0	0	0	0

\* Day 0 was day of final injection of progesterone; rams introduced day 1.