The following table eliminates differences due to dry ewes, and, based on the ewes that actually lambed, shows that the performance of the three flocks in the two years was similar.

LAMBS BORN PER EWE

—	1948.	1949.
High-fertility flock	1·36	1·39
Low-fertility flock	1·15	0·91
Unselected control flock	1·23	1·30

It should be emphasized that the present differences in fertility levels have resulted from the initial selection and subsequent culling rather than from any progress so far made through breeding for this character. The numbers of two-tooths so far bred and lambing in the flock are too small to make comparisons worth while.

In another small experiment observations have been made on 35 Romney ewes which failed to lamb as two-tooths in 1947. These were all mated in 1948 and 9 of them again failed to lamb. These 9 ewes were remated in 1949 and again failed to lamb.

Œstrogens in Pasture.—Work in Australia has shown that œstrogenic substances in subterranean clover produce infertility in ewes and lactation and swelling of accessory sex-glands in wethers. The occurrence of lactation was observed during the year in a large proportion of 700 wethers grazing on sandhill country sown with subterranean clover, red clover, and short-rotation and perennial rye-grass. A second lot of wethers showed teat development when red clover had become dominant on the same area. The bulbo-urethral glands showed typical changes. Ewes are being grazed on the area to observe their reaction.

During the year assays have been made of clovers collected from a number of districts in both islands and of thirty pasture species, as well as samples of mixed pasture collected at weekly intervals under two methods of pasture management during spring at Ruakura. Only the subterranean clover and red clover were shown to contain œstrogens. In red clover œstrogens were present in the leaf but absent from flower heads, stems, and roots.

To date no symptoms have been noted in sheep in New Zealand, other than the lactation reported in wethers, and it seems likely that no trouble will be experienced as long as a reasonable proportion of grasses is grown with subterranean and red clovers. The effect of feeding red clover to ewes before and during tupping is being studied.

Excretion of Œstrogenic Substances by Pregnant Ewes.—Chemical techniques for the extraction and concentration of œstrogens in sheep urine have been explored. The earlier concentrates were found to contain a substance toxic to the mice used in the assay. This toxin has now been identified as p-cresol. It has further been shown that in sheep urine almost the entire volatile phenolic fraction consists of p-cresol, whereas in the urine of other species the presence of several simple phenols has been recorded by other workers. The daily excretion of p-cresol by sheep is about 1 g. Following identification of the toxin the method has been modified by introducing a steam distillation step whereby the p-cresol is removed from the œstrogen-containing fractions used in the assay.

Recovery tests, using human pregnancy urine (as a source of œstrons) added to sheep urine, show that little loss of potency occurs as a result of this modification.

A satisfactory field method for continuous collections of urine from grazing ewes has been developed so that estimations based on complete twenty-four-hour urine excretions of ewes under natural conditions has been possible. Twenty-four-hour collections were made weekly for two months before lambing and thereafter weekly for three weeks. Œstrogens were detected only during the last four weeks of pregnancy. The amounts excreted per day are very low in comparison with the daily excretion in human pregnancy