

# ROUND THE RESEARCH STATIONS



## Current Work and Findings in Department of Agriculture Trials and Experiments

### Wallaceville

#### Diagnosis of Cobalt Deficiency in Sheep

The best way of diagnosing cobalt deficiency, as previously pointed out in "Journal" articles, is by a trial on the farm with two groups of animals, one of which receives no special treatment and the other receives cobalt. Cobalt bullets are useful for this purpose. If both groups are weighed at the beginning and the end of the trial, an average weight change difference of about 5 lb in favour of the cobalt group is usually indicative of cobalt deficiency.

However, it is not always convenient or practicable to run trials on the farm, and laboratory examinations of livers from suspected deficient animals are carried out at Wallaceville Animal Research Station to assist diagnosis. Formerly livers were analysed for cobalt content, but it has been found that cobalt is active in the form of vitamin B<sub>12</sub>, to which it is converted in the paunch, and that cobalt deficiency is, in effect, a deficiency of vitamin B<sub>12</sub>.

On the basis of this information Wallaceville trials have shown that the vitamin B<sub>12</sub> content of liver gives a better indication of the presence or absence of cobalt deficiency than does the cobalt content. Provisional vitamin B<sub>12</sub> diagnostic criteria for fresh liver have been worked out and are as follows:

Very low: Less than 0.07 parts per million B<sub>12</sub>.

Low: From 0.07 to 0.10 parts per million B<sub>12</sub>.

Borderline: From 0.11 to 0.19 parts per million B<sub>12</sub>.

Normal: More than 0.19 parts per million B<sub>12</sub>.

### Wallaceville

#### *Escherichia coli* Septicaemia in Lambs

An *Escherichia coli* septicaemia has been found to be responsible for the sudden deaths of about 100 lambs from a flock of 1,400 in the South Island and for a number of lamb deaths in other flocks.

The affected lambs were three to eight weeks old and had been docked, and though they were observed twice daily by the farmer, they were almost invariably found dead at the rate of three or four a day without any premonitory signs.

Deaths were at first thought to be due to enterotoxaemia, but administration of enterotoxaemia antiserum failed to check losses.

The most characteristic finding on post-mortem examination was the presence of large amounts of straw-coloured fluid and fibrin strands in the thoracic cavity, with fibrin in the abdominal cavity. Other evidence of septicaemia, such as small hemorrhages throughout the carcass, was usually lacking. Some lambs showed all the features of enterotoxaemia, while in others there were no significant changes.

Some lambs survived the initial septicaemia, and infection localised in the central nervous system, leading to meningitis and symptoms of a central nervous disorder, and in the joints, leading to arthritis and severe lameness.

*E. coli* has been regularly isolated in pure culture from all organs, ribs, and arthritic joint fluid of affected lambs.

In transmission experiments lambs were readily infected by intravenous inoculation of thoracic fluid from affected lambs or a pure broth culture of *E. coli*,