

high-vitality seeds come through the ground often several days before low-vitality ones, and the weakening influence of unfavourable conditions on the establishment of the former is not nearly so marked as it is on the lower-vitality seeds.*

It must be remembered that all seeds deteriorate in vitality on being stored. Some species are more susceptible to deterioration than others. Chewings fescue may lose its vitality in two years after harvesting, and this is a very important point to be considered in the buying of that seed; current season's seed should always be demanded. Meadow-fescue, in common with Chewings fescue, is also a short-lived seed, and frequently seed arrives in New Zealand from America with a very low germination. Meadow-foxtail and *Poa trivialis*, two expensive seeds, demand attention in the buying, as there is at times low-germinating seed on the market. In purchasing *Paspalum*, also, the safest plan when buying without a knowledge of the germination is to stipulate Australian-grown seed, for the New-Zealand-grown seed is often extremely low, and may, in fact, germinate nil or only as little as 3 or 4 per cent. Many failures to secure a strike of *Paspalum* are due to sowing this locally grown seed.

As far as the other pasture seeds are concerned, with reasonable care in buying only high-grade seed there should be little danger of failure through poor germination.†

PURITY OF SEEDS.

As far as the purity of the seeds is concerned there is no doubt that the general well-machine-dressed lines of merchants are quite satisfactory for sowing. There are, however, one or two noteworthy exceptions. Southern crested dogstail and imported alsike are likely to contain Californian thistle (Fig. 112). Auckland-grown *Lotus major* is likely to contain dodder and *Lotus hispidus*. This latter may have been purposely added as an adulterant, but frequently the crops harvested are very mixed. Brown-top may contain red-top, the seed of which is almost identical and distinguishable only with quite a high magnification of the microscope.

Owing to the resemblance of certain kinds of seeds to one another the practice of adulteration is not unknown, and while in certain cases substitution of one seed for another may occur accidentally, one finds that in the case of mixed seeds resembling one another the mixture is usually sold at the figure of the higher-priced seed, indicating that there might have been something of method in the mixing. It must be said, however, for the seed-merchants of New Zealand that wilful adulteration is now seldom practised, and having regard to the fact that it is so easy of accomplishment this certainly is to their credit. It still remains a fact, however, that all merchants are not so scrupulous as one might wish regarding the sale of seeds. As this article is written a sample of white clover offered to a farmer by a North Island merchant has been received into the Laboratory here from the farmer concerned, and it contains 60 per cent. of suckling-clover. The price

* See photograph of turnip-seed on page 96 of *Journal* for August, 1918.

† For germination of agricultural seeds in 1921 and 1922, see tabulation by Nelson R. Foy in *Journal* for April, 1923, page 250.