

RAGWORT (*Senecio Jacobaea*) AND ITS RELATION TO WINTON DISEASE.

ESMOND ATKINSON, Biological Laboratory, Wellington.

THE present article is intended to give a general account of ragwort as a weed, and to sum up what is known about it and its relation to hepatic cirrhosis, or "Winton disease." Much experimental work has been done in this direction in New Zealand and in other countries, and a number of reports have been published, but it has not hitherto been easy, except with the aid of numbers of reference-books, even to look through all the evidence collected. With the idea of making this evidence as convincing as possible, actual quotations have as a rule been made here from the more interesting of the reports on the various experiments, observations, &c., connected with the disease.

HISTORY OF RAGWORT IN NEW ZEALAND.

Ragwort is a native of the whole of Europe and the west of Asia, except the extreme north of these countries. It is particularly common in Britain, and is looked on as a native there also, but in all other parts of the world it is regarded as an introduced plant. G. M. Thomson ("The Naturalization of Animals and Plants in New Zealand") states that he cannot find any earlier record of it in this country than 1874, when he discovered it growing near Dunedin; but it rapidly increased in Southland, and in Auckland, Taranaki, and Wellington, and is now abundant in a great many parts of both Islands, though it is not evenly distributed throughout the Dominion. Ragwort was placed on the Third Schedule of the Noxious Weeds Act, 1908 (noxious weeds where so declared by local authority), but in the Noxious Weeds Amendment Act, 1910, it was transferred to the Second Schedule, which includes four plants to be considered as noxious under all circumstances—namely, blackberry, Canadian or Californian thistle (*Cnicus arvensis*), sweetbrier (*Rosa rubiginosa*), and ragwort or ragweed (*Senecio Jacobaea*).

DESCRIPTION OF THE PLANT.

Ragwort is a perennial herb springing from a thick rootstock with abundant shallow roots. There is no tendency in the rootstock to creep, and this means that one plant is not capable of forming a large patch like Californian thistle, for example. This fact is of importance in considering the different ways of getting rid of the weed from an infested area.

The stems are stiff, upright, and not much branched below, and reach a height of 4 ft. or so. They are strongly furrowed, but this is not always conspicuous, as they are very thickly clothed with leaves. The leaves are what is known as pinnatifid—that is, so deeply cut as almost to be compound, the segments in the case of ragwort being themselves crisped and deeply cut along the edges and strongly overlapping, while those at the tip of the leaf are united together to form one segment much bigger than any of the others. In colour the leaves are dark green above and rather paler below. Some spring from the roots and have quite long stalks; others spring from the stem, and