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BERKHEYA THISTLE

(*Berkheya rigida* (Thunb) Bol and W. Dod.)

There is little doubt that this perennial thistle, native to South Africa, was introduced to Western Australia in ballast from timber boats using the Hamelin Jetty near Augusta. It was first recorded in 1909 and a spraying programme during the last two years has reduced it to small proportions.

WEEDS of Western Australia

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BERKHEYA THISTLE

(*Berkheya rigida* (Thunb.) Bol. and W. Dod.)

THE first official record of *Berkheya* or Hamelin thistle in Western Australia was in 1909. A specimen in the State Herbarium bears this date along with the vague locality of "near Bunbury." With little doubt it was gathered from the Hamelin Bay area in the vicinity of Cape Leeuwin. Ships carrying timber to South Africa used the Hamelin jetty during the early years of this century and the introduction of *Berkheya* thistle from that country, its native habitat, was associated with this timber trade. As the ships arrived in ballast, which was dumped before loading commenced, roots or seed probably arrived by this means.

By 1954, trading with Hamelin had long since ceased and much of the jetty had disappeared but the thistle had found conditions to its liking and spread over about 50 acres of coastal country. It had extended along the Karri road to the fringes of the karri formation where the soil improves to a sandy loam. In Victoria it was recorded from Geelong in 1906, Coode Island in 1908 and Port Phillip in 1909. More recently it appeared in South Australia.

During the past ten years Hamelin Bay has become increasingly popular as a fishing and holiday site thus increasing the risk of distributing the thistle to agricultural districts. Systematic control measures were commenced in 1953 and a big reduction of the infestation has resulted although the need for treating seedlings from dormant seeds continues.

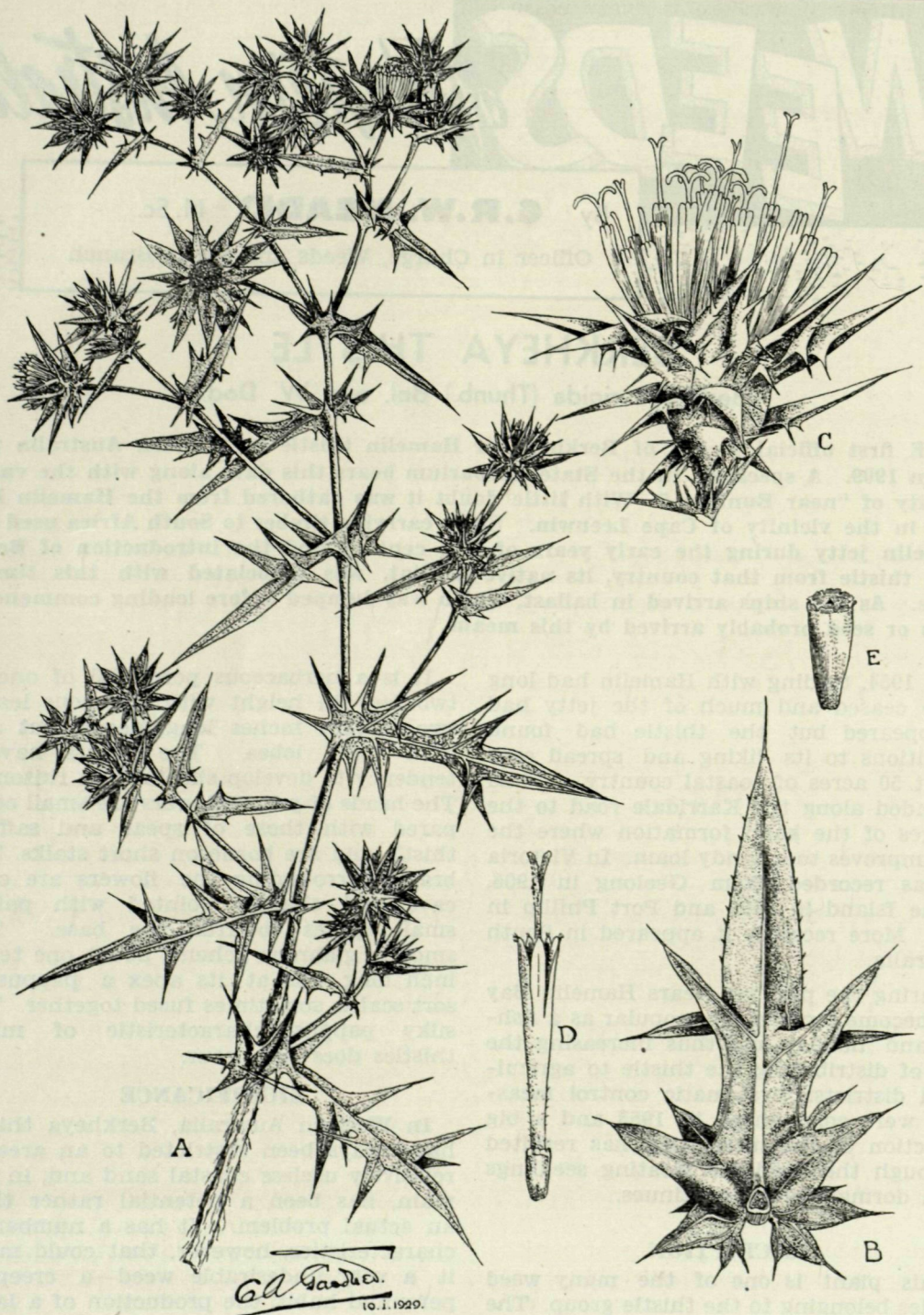
DESCRIPTION

This plant is one of the many weed species belonging to the thistle group. The generic name, *Berkheya*, is used to differentiate it from other species while the alternative, *Hamelin*, refers to the locality in which it grows.

It is a herbaceous perennial of one to two feet in height with glaucous leaves two to four inches long, deeply cut and with spiny lobes. The plants have a tendency to develop shoots from rhizomes. The heads of yellow flowers are small compared with those of spear and saffron thistle and are borne on short stalks. The bracts surrounding the flowers are concave and sharply pointed with paired small spines towards the base. The smooth, glabrous achene, about one tenth inch long, has at its apex a pappus of sort scales, sometimes fused together. The silky pappus characteristic of many thistles does not occur.

SIGNIFICANCE

In Western Australia, *Berkheya* thistle has always been restricted to an area of relatively useless coastal sand and, in the main, has been a potential rather than an actual problem. It has a number of characteristics, however, that could make it a very undesirable weed—a creeping perennial habit, the production of a large number of seeds, spiny and unpalatable foliage and a seed head adapted for mechanical distribution. Although the spread during the last forty years was



BERKHEYA THISTLE (*Berkheya rigida*)
 A—Branch; B—Leaf; C—Flower head; D—Single floret; E—Achene ("seed").
 (From a pen-drawing by C. A. Gardner, Government Botanist).

comparatively slow there is every possibility that the plant could become really aggressive on the better soil types. We have a number of examples of weeds which have remained more or less static for many years and then spread very rapidly in a short period. St. John's Wort is one and Berkheya thistle may have a similar capacity.

The assumption that it would not necessarily remain restricted to the coastal sand is supported by the fact that in South Africa it has been recorded from inland localities as well as the sea board. As with a number of other South African plants which have become weeds of consequence in Australia, Berkheya thistle has not proved troublesome in its native country.

Besides its potential significance to agriculture, Berkheya thistle has proved a source of annoyance to campers attracted by the fishing possibilities of Hamelin Bay. The spines are disconcerting to even well-seasoned bare feet and can be very disturbing if they penetrate blankets.

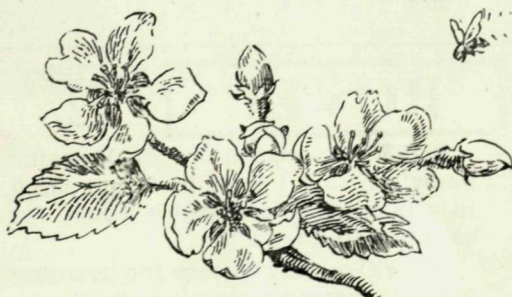
CONTROL

It is likely that Berkheya thistle could be controlled by repeated cultivation but this is not practicable at Hamelin Bay where the weed occurs mainly among scrub on steeply undulating country consisting of loose sand in many places. Owing to the spiny nature of the plants, little control can be expected from grazing by stock.

In 1941 and 1942 experimental work was carried out with various chemicals including common salt, Atlacide (sodium chlorate) and sodium arsenite. Although the salt ($2\frac{1}{2}$ tons per acre) was not effective, satisfactory results were obtained with $7\frac{1}{2}$ per cent. sodium arsenite and $7\frac{1}{2}$ per cent. Atlacide when applied as a fine spray at the rate of 200 gallons per acre. For several years Atlacide was used to confine the weed to the main infested areas.

Trials undertaken more recently with hormone-like herbicides showed that 2,4-D ester applied at the rate of 2 lb. acid equivalent per acre was effective. A control programme using this treatment was commenced at Hamelin Bay in 1953. Spraying was made difficult by the hilly

nature of the country and the fact that in many places the weed was growing among dense undergrowth. A four-wheel drive vehicle used to transport equipment, enabled most of the spraying to be done with hand leads from a power unit. Knapsack pumps were used for the remainder. Good results have been obtained and there has been little recovery from parent plants. Further sprayings have been necessary to cope with seedlings and, no doubt, owing to the presence of large numbers of dormant seeds in the soil, vigilance will be necessary for a number of years.



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