

## THISTLES.

NOTES ON *CARDUUS ARVENSIS*,*(Cnicus arvensis* of some Authors).

The common Creeping Thistle, with a short reference to *Cnicus Lanceolatus*, the Spear or Plume Thistle :

[Read 12th August, 1878.]

*Carduus arvensis* is perhaps the commonest of European thistles. It is well known under the names of "creeping," "wayside," "corn," and "vine," and latterly, in Tasmania, it has received the additional one of "Californian." Why this latter name should have been so long exclusively used for so common and well-known a plant, it is difficult to conceive, although it no doubt originated from the fact that some 20 or 25 years ago a shipment of barley, purporting to be the Oregon variety, was received from California, to which is attributed the introduction, or, at all events, the serious augmentation of this weed. It is certain that wherever this barley was used as seed, a plentiful crop of the thistle soon made its appearance, and has ever since held possession of the ground, and thus the term of Californian thistle originated. But the plant being so common in Europe in all grain crops, especially oats, and being one also that has followed cultivation to most parts of the world, it is not improbable that it may have existed in the colony at a very early date, there is however no evidence of its having been noticed before the time specified.

Although the late Mr. Wm. Archer, in some notes on this plant published in the Transactions of the Society for the year 1870, identified it with the common European creeping thistle, yet I believe the impression to be widespread that it is of comparatively recent origin, and that it is indigenous to California. So firmly is this opinion held that, when some years ago I received specimens of the plant to name, from a late warden of Bellerive (who has since passed away), and which were duly returned with the botanical and common names attached, I was told that I had made a great mistake, and that the plant could not be a native of England, but had come from California.

The plant is not indigenous to America, but has become common in Canada, California, and other parts, and is invariably spoken of as having been introduced from Europe. The term Californian Thistle is therefore not an appropriate one and should not be used, or, if used at all, should be kept in subjection to those by which the plant is known so well, not only in the present day, but hundreds of years ago. In Parkinson's "Theater of Plants," published nearly 250 years ago, it is figured as the "creeping, way, or vine thistle," and he alludes to it in the following terms:—"The rootes of this thistle are very small and whitish, running both deepe and farre about under ground like unto quicke grasse, but have no knotted joynts therein like it, but shooteth up heades of leaves from the branches of the roote, so that it will be as ill or worse than quicke to weede out if it be once got into the ground."

The retention of the name so far has had a tendency to mislead, as it has prevented persons interested in the matter from a ready

reference to descriptions of the plant in agricultural and other works, for it must be borne in mind that the term of Californian thistle is not applied to it out of Tasmania, but that under the heads of creeping, way, or corn thistle, it has been known and written of for hundreds of years, and no difficulty would be experienced in learning its history and habits. Besides, these names convey some idea of the character of the plant, the former denoting its well-known creeping habits, and the others the places generally infested with it, and on this account are the more appropriate.

So far I have confined my remarks to what may be termed the identification of the plant; and this being attained, it will be easy for any one to acquire a knowledge of it, for a plant that has taxed the energies of farmers for hundreds of years has claimed attention at the hands of most, if not all, agricultural writers. In order, however, to make the subject more complete, I will append a few notes on the habits of the plant, and on the most approved methods of dealing with it.

As before stated, the creeping thistle is, perhaps, the worst of weed pests, and one that once introduced into ground, is extremely difficult to eradicate, on account of its power of multiplication by division of the root, every particle of which is sufficient to form a new plant. It has been asserted over and over again that it never quits a country where it has once become established, its powers of extension by seed as well as root are enormous. Some idea of both modes may be obtained by the following extracts:—

In the *Agricultural Gazette* for July 3, 1875, there is an article on the creeping thistle that goes into the life history of the plant. It appears that the idea is prevalent in England, as well as in Tasmania, that the plant does not perpetuate itself by seed, but entirely by root division. To refute this impression the proprietors of the *Gazette* instituted an experiment, the details of which, with diagrams, are given in the article as above, the following being simply a condensed account:—

“On September 2nd ten seeds were sown, which had all come up by the 22nd, and some had commenced to show their secondary leaves. By the time the prickly foliage became manifest the cold weather had set in, and all the plants apparently died. However, in February following a bud had just emerged through the ground, when two of the specimens were taken up, and drawings made of them. By June of the second year, whilst a strong shoot was growing above ground, a most extraordinary rhizomation was taking place below, which by the next season will produce a thicket of thistles derived from a single seed. It is not to be wondered at that the farmer has not observed seedlings of these thistles, as they are at first very small and inconspicuous, and both young and old plants die down in the winter. It is estimated that a plant in the third year will produce from 12,000 to 20,000 seeds, but fortunately these seeds are greedily devoured by the larvæ of some minute beetle, which eats them to such an extent as to render it difficult in some seasons to gather perfect seeds.”

The following experiment, made by Mr. Curtis some years ago, and reported in the *Farmers' Magazine*, will illustrate the root growth, and its power of multiplication by even minute divisions.

Mr. Curtis, after stating an instance of a descending root, 19 feet long, having been taken out of a quarry, says :—"I planted a piece of root two inches long in my garden in April, and by November it had thrown out stolons on every side, some of these being 8 feet long, which had thrown up tufts of leaves 5 feet from the original root; the whole of the roots when dug up weighed four pounds. Notwithstanding the man used the utmost caution in digging it up in order to extract all the roots, in the spring fifty or sixty young plants made their appearance on the site of the old one.

In the above extracts sufficient has been said to show that it is no ordinary foe with which we have to deal. Although it may not be possible to entirely eradicate the plant, much may be done, by the adoption of proper measures, to lessen the evil. It has been shown that the plant increases in two distinct ways—by seed and by root division. It is by seed that the plant becomes disseminated, every seed falling in a favourable situation being capable, in the third year of its growth, of producing, as before stated, from 12,000 to 20,000 seeds, which from their pappiform nature will be scattered far and near, so that a very few plants maturing in some neglected place will suffice for the continuance of the evil.

Its increase and spread by root division is very often favoured by the ordinary farming operations, or by the means adopted for its destruction. Ploughing, or breaking up of land both favour its extension. Even in England, where the winters are much more severe than in Tasmania, laying down the land to bare fallow, unless followed by an unusually severe frost, does not tend to abate the evil. Ordinary hoeing or cutting with the scythe, if done at the proper season, may to a certain extent prevent its extension by seed, but will not materially diminish root action. Hoeing, indeed, often tends to the spread of the plant by dividing the roots, and to such an extent does this take place on badly-farmed land in England that frequently whole fields may be seen completely overrun with it. Cutting with the scythe is objectionable, and especially so if done early in the season, as it causes the plant to form underground buds in profusion, which soon break with renewed vigour.

The object to be attained in dealing with this plant with a view to its extirpation is a twofold one. Firstly, to prevent its dissemination by seed, and secondly, to attack the roots so as to lessen or destroy their vitality. To effect this the following practice is most in favour with good cultivators :—Where the land has become foul with this pest it should at once be laid down to grass and depastured by sheep or cattle for at least eight years. By this means the plant is kept in check by the browsing of the stock, which eat it promiscuously with the other herbage, and when the ground is again broken up it will be found if the plant has not been entirely destroyed that it has at least been greatly subdued, and that cultivation may be carried on at a minimum expense for thistle extraction.

As an instance of the benefit of laying down to grass, I will mention that on land occupied by Mr. Hull on the Brown's River Road, this thistle was introduced with the seed barley before referred to, and to such an extent had it spread that it threatened the destruction of a

young orchard. All efforts for its suppression tended but to increase the evil. Finally the land was laid down to grass, and the thistle has gradually disappeared, but it still remains rife in the hedgerows and roadsides in the vicinity.

To prevent its propagation by seed the plant should never be permitted to flower, but should be continuously pulled up before reaching that stage. The best time to effect this operation is when the shoots are from 9 inches to a foot high, and the operators should be provided with thistle gloves to protect their hands from the prickles with which the plant is furnished. Pulling is preferred to cutting or hoeing because, if the operation is properly performed, the shoots will break off at their junction with the rhizome or root-stock, and if persevered in the rhizome will in time become blind and have a good chance of perishing. When the hoe, or scythe is used, the tops are cut at, or immediately below, the surface and the plant soon pushes forth a new shoot and will continue to do so everytime attacked, until late in the Autumn, when the upward growth for the season would naturally cease.

Although in theory it is held that if the leaf-growth of any plant be prevented for a time, the plant will eventually die, in practice, with some plants at all events, the time is so long that the theory may almost be said to fail. With the plant under consideration, especially if an old established one, the leaf-growth would have to be kept in check for an indefinite period before the root-stock would succumb.

An instance of how some plants retain their vitality under adverse circumstances is given in the *Gardeners' Chronicle* for May 18th, 1878, where it is stated that a bulb of *Psarum alexandrium*, which had been placed in the herbarium in 1839, and had thus had a rest of 35 years, had just been resuscitated by Professor Caruel of Pisa.

As indicated by its second name of 'way' thistle, the plant is common in those localities and it is to such, in no slight degree, that its extension is due. The farmer is interested in keeping his land clean, for otherwise the crop would be seriously affected, and he would be a loser by his own neglect; but to waysides, hedgerows and waste places he does not extend his operations, naturally regarding them as out of his province, and thus it is that they become neglected and are the source of much mischief.

With reference to the soil on which the plant thrives best, although it will be found on most, yet it prefers a sandy loam, especially when this is in a state of cultivation. Being essentially a weed of agriculture it flourishes on cultivated ground, or on land that has been loosened to any depth. On pasture land it will scarcely obtain a footing, as the seedlings, even supposing they should appear, would be kept down by the stock. Too much care cannot be exercised in the selection of seed. It is from want of sufficient caution in this matter that many places become foul, as a very few patches of thistles, left to mature their seed in a crop of grain, may be the source of irremediable mischief. It is pretty certain that it was in seed grain that the plant first found its way to Canada, and thence to California and other parts of America. To California the credit is given of having introduced it into Victoria

and Tasmania, and by the same means it may not only find its way throughout the Island but to the most remote places.

It is a public injury that lands much overrun with the pest should continue to be cropped with grain of any kind, or that even hay crops should be taken from them. Better by far the land be laid down in pasture, by which means the risk of dispersion would be very much decreased.

A very good plan to adopt with suspected seed is to throw it into a cask or tank of water before sowing, stirring it gently for a short time. If it contain any thistle or other light seeds they will rise to the surface and may be skimmed off and burnt.

Some idea will be gained as to the extent of the evil which is so imminent, on reference to the article in the *Agricultural Gazette* before quoted, where it is stated that the annual cost to the farmers of Great Britain, for the spudding and hoeing of thistles alone, is not less than £125,000.

It would be interesting to ascertain whether the beetle alluded to as eating the seed in England is present in Tasmania. I am not aware that it is, but even supposing it to be here it is not always at work, and some seasons and places are more productive of thistle seed than others. Before closing these notes I am desirous of making a short reference to *Cnicus lanceolatus*, the common Spear or Plume Thistle, which in Tasmania is called the Scotch Thistle. My object in alluding to this plant is to point out that it is not the true Scotch Thistle. The plant recognised by botanists as the Scotch Heraldic Thistle is the *Onopordon acanthium*, a specimen of which I now exhibit. *Cnicus lanceolatus* is unquestionably the Spear or Plume Thistle. It was figured as such in Parkinson 250 years ago, and still retains those names in modern works on botany. The plant, as pointed out by Mr. Wm. Archer, is not at all peculiar to Scotland, and in no way is the term applicable to it, except from the belief that it first found its way thence to Tasmania.

Whether the Act passed in reference to this plant is sufficiently explicit to ensure a conviction I am not prepared to say, but it could not be proved to be the Scotch Thistle, and therefore it would be desirable to have the names by which it has been so long known incorporated in that Act.