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CICUTA (WATER HEMLOCK) AS A POISONOUS PLANT.¹

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Among poisonous plants special interest attaches to *Cicuta*, since it is probably the most violently poisonous of the plants in temperate regions. Although it is widely distributed and is annually the cause of many deaths, both of domestic animals and of human beings, its poisonous character, unfortunately, is not generally recognized. This is true in spite of the fact that the genus, which occurs in Europe as well as in America, has been known to be poisonous since the middle of the seventeenth century, and many accounts have been written of the terrible results from eating *Cicuta* roots.

COMMON NAMES OF CICUTA.

Cicuta has a considerable number of popular names. Perhaps it is most commonly known as "cowbane" or "water hemlock." In the mountain regions of the West it is frequently called "parsnip" or "wild parsnip." Other names, less common, are "snakeroot," "snakeweed," "beaver poison," "muskrat weed," "spotted hemlock," and "spotted parsley."

HOW TO RECOGNIZE CICUTA.

It is difficult and perhaps impossible to give a description of the plant which may be intelligible to one who has not some botanical knowledge. Figure 1, which shows a species found on the western coast of the United States, gives a general idea of the appearance of the plant.

Cicuta is an umbelliferous plant, and belongs to the same family as the carrot, parsnip, etc. It grows in wet places and is especially common in some parts of the West along irrigating ditches. Unfortunately it resembles rather closely a number of harmless plants which grow under the same conditions. It has a thickened rootstock, to which are attached roots which may be slender as in the picture (fig. 2) or may be in the form of a cluster of thickened, fleshy tubers. In the longitudinal section it will be noticed that the rootstock has a number of transverse chambers. These chambers are not always so dis-

¹ A more extended account of *Cicuta* and its poisonous effects can be found in Bulletin 69, U. S. Department of Agriculture. This bulletin can be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., for 10 cents.

tinct as shown in the illustration, but they are always present, and it is by them that the plant is readily distinguished from most plants growing in similar situations. Botanists recognize several species, but they are very closely related and all have the chambered root-stock. So far as known, all the species are poisonous.



FIG. 1.—Leaves and flowers of *Cicuta vagans* (water hemlock).

the Bureau of Animal Industry of the United States Department of Agriculture, but it is probable that only a small proportion of the actual number is made public. Many of these cases recover, but unfortunately the proportion of fatalities is large.

THE POISONING OF LIVE STOCK.

In the aggregate the loss of domestic animals from *Cicuta* poisoning is not large, but individual owners may lose rather heavily. Occasionally the stock eat roots that have been washed out by the high water in small streams. Farmers in their plowing sometimes bring

THE POISONING OF HUMAN BEINGS.

The curiosity of children, which often leads them to eat strange roots, is the cause of most of the cases of poisoning of human beings. Occasionally older people are affected with the same curiosity, with similar results. Cases of poisoning are more frequent in the spring, partly because the roots are more likely to be noticed at that time and partly because they seem to be more poisonous then than later in the season. Every year a considerable number of instances of poisoning are reported to

to the surface a considerable number of roots, and these are eaten by cattle, with resulting sickness and death. It has been stated that water has been poisoned by roots broken by the trampling of cattle, but these stories are not well authenticated.

Most of the accounts of the loss of domestic animals refer to cattle, but sheep, horses, and swine are sometimes killed, and there is no doubt that *Cicuta* is poisonous to all the higher animals.

SYMPTOMS OF CICUTA POISONING.

The symptoms of *Cicuta* poisoning in man are pain in the stomach, nausea, sometimes leading to violent vomiting, diarrhea, dilated pupils, labored, stertorous breathing, sometimes frothing at the mouth, weak and rapid pulse, and violent convulsions.

In the lower animals the symptoms are like those in man, but less pronounced. The first symptom is generally frothing at the mouth, followed by uneasiness and pain. This is suc-

ceeded by violent, intermittent convulsions in which the animal kicks, sometimes extending the legs rigidly, throwing back the head, and bellowing and groaning as though in great pain. There are peculiar spasmodic contractions of the diaphragm which take the place of vomiting in man. In fatal cases the convulsions grow more violent until terminated by death, which results from respiratory failure.

QUANTITY OF CICUTA NECESSARY TO POISON.

The *Cicuta* root is extremely poisonous. Just how much must be eaten to produce illness or death is not known, and the quantity probably varies. While there is reason to think that it is more poisonous



FIG. 2.—Rootstock and first leaves of *Cicuta vagans*. The upper figure shows the transverse chambers of the rootstock.



in spring than later in the season, a very little at any time of the year it may cause illness or even death.

PART OF THE PLANT POISONOUS.

The rootstock of *Cicuta* is always poisonous. Cases have been reported of the poisoning of live stock from eating the tops, both green and in hay, but careful experiments by the Office of Poisonous-Plant Investigations have shown quite conclusively that there is no danger from the leaves or seeds, either when eaten green or when dried in hay. Poisoning results only from the ingestion of the roots, and the fact that *Cicuta* tops are sometimes gathered with the hay which is made on irrigated farms need give the farmer no concern, provided the roots are not included.

REMEDIES FOR CICUTA POISONING.

In cases of the poisoning of human beings the recognized treatment is to give an efficient emetic, followed by a cathartic. Some form of opium may be given to control the convulsions when they are violent. If free vomiting is promptly produced, the patient is likely to recover.

It is obvious that ruminant animals can not be treated in this way, for the effective clearing of the stomach is impossible. While hypodermic injections of morphin may be used to aid in controlling the convulsions and a purgative may help in eliminating the poison, ordinarily the convulsions are so violent that nothing can be done for the animal. All cases of poisoning of domestic animals by *Cicuta* must be considered as practically hopeless, so far as treatment is concerned. All cases are not necessarily fatal, for many recover, but there is little, if anything, which can be done to aid recovery.

So far as live stock are concerned, about all that can be done must be in the way of prevention. If the land is plowed where the plant grows, care should be taken that no roots are left where stock can get at them. Where the plants grow in great abundance, as they frequently do along irrigating ditches, it is desirable to dig them out. When this is done the roots should not be left on the surface, but should be destroyed. It is seldom that stock are poisoned when grazing, unless they graze along ditches, where the plants sometimes grow almost in the water with very little soil and can easily be pulled up.

Perhaps there is no way to prevent some cases of poisoning of children. Something might be accomplished, however, if parents and teachers would attempt to make clear to children the danger of eating strange roots.

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