

takes one at a time to the pastures, where the first lesson is to follow at his heel. Very easily all the rest is learned in constant daily practice.

"To train a dog that has not had such advantages from heredity and environment requires knowledge of what is to be done, skill in its application, quick perception, constant kindness and much patience. Kindness may sometimes inflict punishment. The dog should be rather underfed, so as not to be too fresh and impetuous. His movements should be controlled by a light but stout cord which will stand a sharp jerk, and of a length suited to the lesson being taught. The first is 'to heel,' which is to follow at your foot. The next is to follow the sheep without running or dashing among them. To do this slowly is of great practical importance. Then he is taught to go to the right or the left by a motion of the hand or by a word, and so on, step by step. The trainer should always remember the slow progress he made in learning to read, and he must not expect his dog to advance three or four times as rapidly as he did. This is a grievous and a common fault with most dog and colt trainers.

"Punishment should be used with sound judgment. The dog is very sensitive to kind or harsh words, and these should be the chief expression of your satisfaction or dissatisfaction with what he does. The jerk of the cord is an excellent reminder. The whip is sometimes necessary, and the more seldom it is used the more influence it has when applied. When he does well he should be patted on the head, and by his own pleasure made to feel the approval of his master. After an hour's good work he should be rewarded with food, but when he has been willful and disobedient it should be temporarily withheld. Rewards and punishments are important agents in instruction.

"The instructor must observe the tendencies and peculiarities of his pupil and adapt his training to them. Under no circumstances should he lose the complete control of his temper.

"Training cannot be successfully accomplished intermittently at the convenience of the trainer. It must be regular, systematic and persistent."

Some Common Poisonous Plants.

(Compiled from a paper by Prof. V. K. Chestnut, Assistant, Division of Botany, U. S. Department of Agriculture.)

The plants commonly looked upon as poisonous are those which through general experience, history or tradition are known to produce some ill effect upon animal life. The literature of Europe contains the names of over three hundred and fifty plants which in that quarter of the globe have been known to produce ill effects upon man or animals, while in North America there are only a few which have been generally recognized as poisonous, and these grow mostly in the eastern and more thickly-settled part of the continent.

In the absence of statistics, objection is made to an increase of ill-reputed species, for æsthetic reasons and on the ground that plants exist for the consumption of animals and cannot therefore be poisonous. These ideas are wholly without scientific foundation and are deplorably misleading. A full acquaintance, however, with the preparation of drugs, and with their action upon animals, removes many of these uncertain factors.

In the widest sense, all plants should be classed as poisonous which have ever produced ill effects accidentally, and not those alone which the combined knowledge of the botanist, the chemist, and the animal expert have proved to be such. Especially should this view be taken in a new country, and in the case of plants likely to tempt the appetite. By this cautious attitude the dangerous plants can be ascertained and antidotes be determined without repeated sacrifice of life and property.

POISON IVY (*Rhus radicans*).

Poison ivy occurs abundantly throughout Canada and the United States, especially east of the

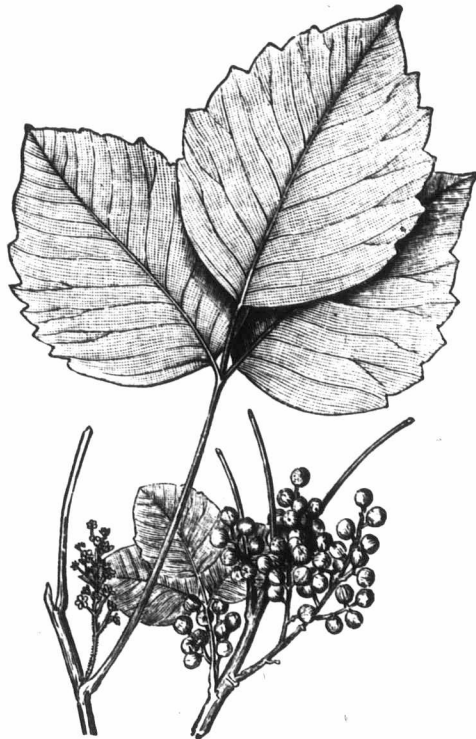


FIG. I.—POISON IVY (*Rhus radicans*).

Great Plains. It grows in the open brush, in ravines, and on the borders of woods, and it spreads along roadsides and cultivated fields from seeds carried by crows and other birds which feed upon its fruit. It is generally a climbing vine, but if no support is at hand it either trails along the ground or sends up short, vertical shoots. (Fig. 1.)

Besides one near relative, which is almost as poisonous, there are no other plants which resemble it closely except the non-poisonous box elder, the leaves of which bear a close resemblance to those of the ivy. It is only in its seedling stage, however, and when growing beside hedges, that the box elder could be taken for ivy. The Virginia creeper, also non-poisonous, is sometimes mistaken for the poison ivy, but it is easily distinguished by having five, instead of three, leaflets, all of which spread out from a common point, like the fingers of a hand.

The effects of poison ivy upon the skin are generally familiar. Numerous experiments show that when the smallest amount of this oil is applied to the skin it is very gradually absorbed in the course of a few days, and that within certain limits the longer it remains on the skin the greater will be the irritation produced. Some of its other common names are poison oak, poison vine and mercury. Its nearest relative is a plant known to botanists as *Rhus diversiloba*, poison oak (fig. 2), which grows in similar situations at low altitudes throughout the Pacific Coast from Lower California to Canada and northward. Western people call it poison oak because the leaves, though very unlike those of Eastern oaks, bear a considerable resemblance to the common species of the West. The leaves differ in size as well as in shape from those of poison ivy. Ranked together in the same genus are two other poisonous plants which, although they produce the same effects upon the skin, are yet totally different in their gross appear-



FIG. II.—POISON OAK (*Rhus diversiloba*).

ance, being thus more closely allied to the sumac or non-poisonous species of the group. Only one of these is at all common, and that is the poison sumac (*Rhus vernix*) (fig. 3), which is found growing in swamps from Florida well north through the temperate zone and eastward to the Mississippi valley. It is a shrub or small tree six to eighteen feet in height, with long pinnate leaves having seven to thirteen smoothly-polished leaflets. It is also commonly known as poison dogwood, poison ash, and poison elder.

Poison ivy has long been regarded by the ignorant with a degree of awe akin to superstition. Mysterious principles were relied upon to explain the phenomena, and up to the present time the common belief has been that the poisonous constituent was really an exhalation from the plant, and by more enlightened persons it has been attributed more concretely to a specific gas, a volatile alkaloid, and a volatile acid like formic acid. Experiments have seemed to verify these ideas in turn, but the falsity of all has at last been proved by the discovery of a more tangible compound. In January, 1895, Dr. Franz Pfaff, of Harvard University, announced that the poison is in reality a non-volatile oil. Numerous experiments have been performed with the purified oil, and it has been shown to produce exactly the same effect as the plant itself. It is found in all parts of the plant, even in the wood after long drying. Like all oils, it is insoluble in water, and therefore cannot be washed from the skin with water alone. Alcohol dissolves it readily. Alkalies saponify it and thus render it inert, but this result is more easily obtained by an alcoholic solution of the sugar of lead (lead acetate), which, if applied early, will give immediate and permanent relief. It is not desirable to use strong alcohol, which is apt to be too irritating, but a weaker grade of from 50 to 75 per cent. should be preferred, and to this the powdered sugar of lead is to be added until no more will dissolve. The milky fluid should then be

well rubbed into the affected skin, and the operation repeated several times during the course of a few days. This remedy is poison when taken into the mouth.



FIG. III.—POISON SUMAC (*Rhus vernix*).

The American Water Hemlock (*Cicuta maculata*) (fig. 4) is by far the most virulent plant native of North America. It is found growing at low elevations, along streams and ponds, and in marshy ground throughout the eastern portion of the continent, not extending apparently very far west of the Great Lakes. It is perennial in duration, and grows to a height of from four to eight feet. In some river marshes it is so extremely abundant that in early summer the landscape is whitened by its bloom. It belongs to the well-known parsley family, and may easily be distinguished by its fasciated, spindle-shaped roots, which are from one and one-half to three inches in length, and by the trellised structure of the underground portion of its main stem. Both of these parts are strongly impregnated with a yellow, aromatic oily fluid, which has odor resembling that of the parsnip. It has been commonly known in various localities by the following names: water hemlock, wild hemlock, beaver poison, musquash root, cowbane and children's-bane. It is frequently mentioned in the newspapers under the erroneous name of "wild parsnip."

The victims of this class of plants are chiefly herbivorous animals. The underground portions are the most poisonous, and as these are often washed, frozen or dug out of the soil during winter and early spring they are sometimes eaten by children or by animals, the former taking them for horse-radish, parsnips, artichokes, etc.; the animals eating the various kinds because they are among the first green substances to appear in the spring. The poisonous constituent resides in the aromatic oily fluid already mentioned. Falck, a German authority, reports a 45 per cent. fatality in 31 cases of water-hemlock poisoning occurring in Europe.



FIG. IV.—AMERICAN WATER HEMLOCK (*Cicuta maculata*).

The symptoms of poisoning are vomiting, colicky pains, staggering, unconsciousness, gnashing of the teeth, and frightful epileptiform fits, ending in death. As no chemical antidote is known, the treatment must consist in a thorough cleansing of the alimentary canal, and in combating the symp-