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ANALYSIS OF THE RHIZOME OF ARALIA CALIFORNICA.

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Aralia californica is an herbaceous perennial which grows from creeping rhizomes. In Fig. 1 is an illustration of one of these rhizomes. The plant is common in shaded mountain ravines of the Coast Range, from the Gavilan Mountains, northward; it is also found in Sierra County, California. It prefers rich soil and an abundance of moisture, and grows more luxuriantly along streams. It could be obtained in commercial quantities, if desired.

The rhizomes used in this work were collected by the Experimental Bureau of the University of California.

They were in a very moist condition when received; and, as they had an aromatic odor, it was deemed best to make the determinations upon the material as received. Accordingly some of the finely chopped material was exhausted by maceration with successive portions of official alcohol. The alcoholic liquids were mixed, and the solvent removed from the dissolved substances by distillation. The percentage amounts are all based on the fresh rhizome, which contained 70.20 per cent. of moisture.

The official alcohol extracted 5.39 per cent. of the fresh rhizome. The extract was of a reddish-brown color. About two-thirds of it was soluble in hot water. The aqueous solution had a neutral reaction toward litmus. It contained sugars equivalent, in their action on Fehling's solution, to 0.23 per cent. of glucose and 0.13 per cent. of saccharose; smaller quantities of mucilage were also present. The aqueous solution contained a substance which reduced gold and silver salts, and precipitated calcium hydrate; this substance was very probably oxalic acid, the occurrence of considerable quantities of which, as calcium oxalate, is hereafter noted. Tannins were absent. The aqueous solution afforded heavy brownish precipitates with phosphotungstic acid, potassium triiodide, and mercuric potassium iodide test solution, but the substance causing these reactions, could not be removed by agitating the aqueous solution, either acidulated or made alkaline, with benzin, ether, or chloroform; hence they were not alkaloids. The substance which precipitated with the alkaloidal reagents was thrown out of solution upon adding to the aqueous liquid five times its volume of alcohol.

The residue of the alcoholic extract of the fresh rhizome left undissolved by water was dissolved in hot alcohol. It consisted chiefly of resinous substances, These gave a light-brown precipitate with an alcoholic solution of ferric chloride, and a similar, but

lighter colored, precipitate with alcoholic solution of lead acetate, The resinous substances were precipitated when the alcoholic solution was poured into water.- The precipitated substances were soluble in part in aqueous solution of potassium hydrate; the remainder was soluble in an alcoholic solution of the same reagent.

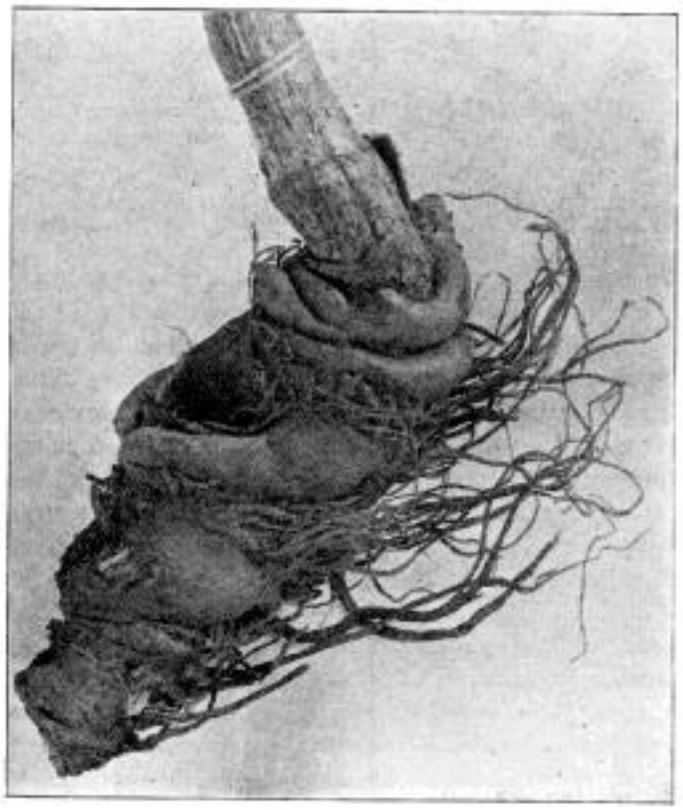

FIG. 1.—Rhizome with roots and part of overground stem of *Aralia Californica*.

That portion of the recent rhizome which was insoluble in official alcohol was submitted to Dragendorff's scheme of plant analysis. The process revealed the presence of a small quantity of a fat or wax saponifiable by alcoholic solution of potassium hydrate. A small amount of resin was also present. Mucilage and albuminous matter were found in the aqueous extract to the extent of 0.75 per cent., and in the alkaline aqueous extract to the amount of 0.98 per cent, Minute quantities of dextrin, glucose and saccharose were present, Pararabin and a very considerable amount of calcium oxalate were found in the acidulated water extract. The calcium oxalate separated as crystals, when the acidulated water, which was a weak hydrochloric acid, was evaporated. The crystals were needle-shaped, and arranged themselves in stellate groups.

When received the rhizome contained 70.20 per cent. of moisture and 2.22 per cent. of ash. The ash consisted of potassium carbonate, chloride and sulphate, and calcium, magnesium, aluminum and iron, in the form of carbonates and phosphates. A small amount of silica was also present.

The odor of the rhizome caused a special search to be made for volatile oil, For this purpose, 1 kilogramme of the fresh material was finely chopped, placed in a still, and, after allowing it to macerate with water over night, heated with the water. A very small amount, less than 2 c.c., of volatile oil collected in the receiving vessel. The liquid which came over with the oil was neutral to litmus. The oil had a pale-yellow color, and a very aromatic odor; the latter resembled the odor of carrots. Upon standing, the odor of the oil became more pleasant, The oil floated on water. It was soluble in alcohol.

Starch was found in the rhizome. An estimation of it made on the fresh material showed 1.67 per cent.

A special examination of a kilogramme of the rhizome for saponin was made by the method of Christophsohn and Otten, but the principle was not found.

GILLENIA TRIFOLIATA.[1] (INDIAN PHYSIC.)[2]

The histories of plants are not complete without an account of the personalities connected with them. Indeed, the individuals who have had part in bringing to our special notice a plant or its relations to humanity, seem to us as if they were an essential part of the whole story. Very often the generic or specific name of a plant is given in honor of some individual, and we naturally desire to know in what respect he deserved the honor. *Gillenia* would seem, from its construction, to be the Latinized form of some one's name; but no satisfactory explanation has been offered. The plant, itself, has been long known to botanists, as it was among those sent to Europe, in 1680, by the Reverend John Banister; but it was classed with the *Spiraea* family; at least, to that section of the *Spiraea* family known, at that time, as *Ulmaria*. Morison, who published a history of plants, in 1715, before the binomial system was introduced by Linnaeus, described it as *Ulmaria Virginiana trifolia, floribus candidus amplis longis et aculis*, and Linnaeus, himself, having in his earlier works united *Ulmaria* and *Spiraea* describes it as *Spiraea trifoliata, folis ternatis serratis subaequalibus floribus sub ancalatis*. In establishing the binomial system, his evident practice was to retain the first or last term for his specific name. Though not always appropriate, this method preserved the connection of the plant with its earlier history. In this case, the term trifoliata is sufficiently appropriate. It continued as *Spiraea* until 1802, when Conrad Moench, in a supplement to a local flora of the city of Marburg, in Austria, noting its tubular campanulate seed vessel, included stamens, and its peculiar carpels, named it *Gillenia*, as distinct from *Spiraea* which determination has been accepted by subsequent botanists. But why he named it *Gillenia*, has been a matter of doubt. The author of this chapter has not had access to the original work of

1 *Gillenia Trifoliata*, Moench, natural order, Rosaceae.—Leaflets ovateoblong, acuminate; stipules linear-setaceous, entire; flowers on long pedicels, in pedunculate, corymbous panicles. A handsome herb, two to three feet high, slender and nearly smooth; lower leaves petiolate; leaflets two to four inches long, one-third as wide, pubescent beneath, sub-sessile. Flowers axillary and terminal. Petals rose-color or nearly white, eight lines long by two wide. Seeds brown and bitter. *Wood's Class-Book of Botany*. See also Gray's *Manual of the Botany of the Northern United Slates*, and Chapman's *Flora of the Southern United States*.

2 *Meehans' Monthly*, 1898, p. 127.

Moench. Indeed, beyond the fact that he was a Professor of Botany somewhere in Hesse Cassel, and that he was the author of a few local Floras, little is known of him. Of Gillen, if there ever was a person by this name, nothing is known. Paxton, in his Dictionary, says the plant was “named by Moench, probably after Gillen, some obscure botanist.” The always-careful Darlington says “Derivation of the name not well ascertained.” Dr. Asa Gray has it that it was “dedicated to an obscure German botanist or gardener, A. Gille, or Gillenius.” The , Century Dictionary" enlarges a little on this and says, “named after Dr. Arnold Gill (Latinized Gillenius), a German botanist;” and it gives the pronunciation *ji-lé-ni-a*. There are good philological reasons against the latter suggestions. Wood brushes away the whole line of argument, and suggests the derivation from a Greek word signifying hilarity, from the well-known use of the plant by the Indians, but even here the orthography—two I's being employed in the name—is against the conjecture. It is most reasonable that the genus was named Gillenia in honor of some good cultivator of plants at Marburg. The city was, in Moench's time, a famous seat of learning, with reputable schools and colleges; while the gardens of its citizens were filled with rare plants from many countries.

The *Spiraea trifoliata* was, in the language of Sims, “a plant much coveted, increasing but little, propagated with difficulty, and liable to be lost unless placed in soil and situation highly favorable to it. It is scarce in the gardens about London.” This was in 1796. Moench was writing a *Methodus* or arranged account of the plants found in the fields and gardens of Marburg-and there is little difficulty in believing that he would name the plant in honor of the one in whose garden the rare opportunity of examining it was afforded. May we not say “*Gillenia*—in honor of a grower of rare plants at Marburg in Austria?”

In recent times trouble has arisen in regard to the names of plants from the fact that species, supposed to be distinct and named as such, have been referred subsequently to one species. In these cases the rule proposed was that the oldest name should prevail. But in many cases the newer name has widely prevailed before the older was noted. The recent effort has been to insist on the older name, and a new rule proposed that a name once used should riot be employed again. As it is expressed “once a synonym, always a synonym.” The current is not running smoothly in this direction, and our plant has been dragged into the whirlpool. In Britton and Brown's recent work, the “Illustrated Flora of the Northern States,” *Gillenia* is dropped, and it appears as *Porteranthus*; the name being given by Prof. Britton in honor of Prof. Thomas C. Porter. The reason given for this is that Adanson gave the name *Gillena* to a genus which proved to be the same as *Clethra*. *Gillena* thus became a synonym which Britton and Brown regard as ineligible. But even under this rule the change seems unjustifiable. *Gillena* is not *Gillenia*. If a difference in spelling, though but in a single letter, is to make a name synonymous, many changes will have to be made in other things. The new name, *Porteranthus* might even be questioned, as *Porterella* has been employed before, though, to the regret of all who would see Professor Porter's eminent services to botany honored, it has been pronounced synonymous with another campanulaceous plant. *Gillenia* will probably prevail for our plant.

As already noted, it was known to English botanists early in the seventeenth century; but cultivators, according to a reference in “Philosophical Transactions,” n. 337, p. 214, n. 134, are indebted to the famous amateur gardener, Henry Compton, Bishop of

London, in the garden of whose palace at Lambeth it was found growing at the time of his death, in 1713.

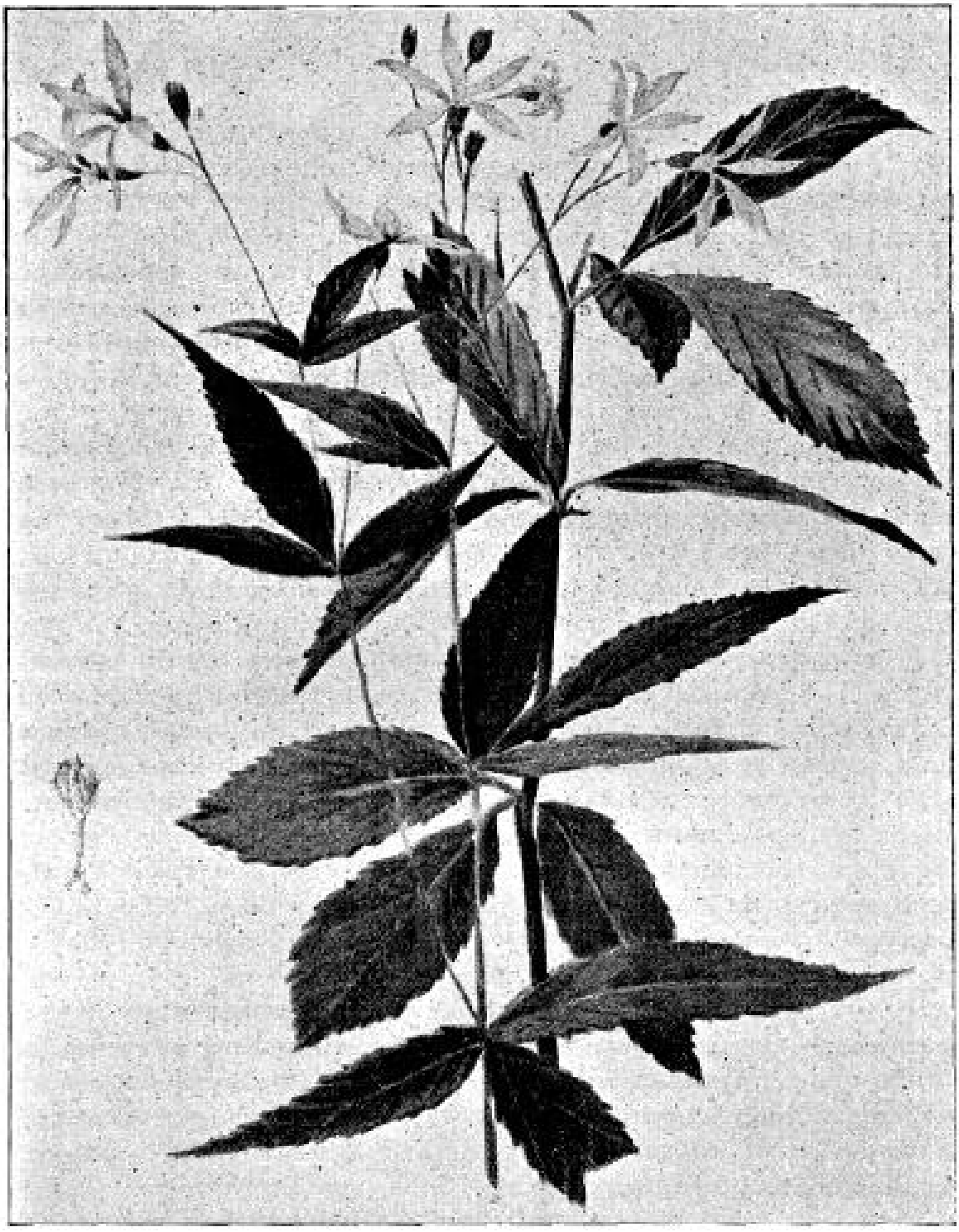

FIG. 1.—Lower portion of a flowering stem of gillenia trifoliata, from a plant growing on the Wissahickon, near Philadelphia.

The common name, “Indian Physic,” refers to its use among the Indians. Some authors say that it was customary for some tribes of Virginia Indians to meet together once a year, and go through a regular system of purification, accompanied with peculiar religious services. At these times, the pounded root of this plant was the chief emetic. Clayton to Gronovius, in his report on Virginian plants, says it is “Ipecacuanha, or Indian Physic.” As Ipecacuanha is believed to be a Brazilian term, signifying a “sick-making” plant, it is probably an application by the white settlers to this plant. It would be a connecting link between the Virginia Indians and those of South America, if this term were common to both. In noting its properties, Griffith says, in “Medical Botany,” “It early attracted the attention of botanists, who found it well known to the Aborigines as a certain and safe emetic. It is a curious fact, connected with our *MateriaMedica*, that there is scarcely any plant having remedial powers with which the Indians were not well acquainted before any communication with the whites; while there is scarcely one indigenous remedy that has been the result of scientific research”—a remark that may be applied to many things besides medical knowledge. In regard to its worth, Dr. Griffith says that, after Baum had regarded it as of no merit, he examined it carefully, and concluded that there could be no doubt of its value. The dose given is thirty grains, persisted in till vomiting takes place.

Besides Indian Physic, a popular name is “Bowman's Root”—not from any individual of that name, but as synonymous with Indian—the man who uses the bow.

When growing in large masses, as it is occasionally found, it does not present the same pretty effect as when individual plants are growing among sedge-grasses, ferns and other green vegetation.. The light color of the flowers, amidst so much verdure, then shows to great advantage. This is the condition in which it is generally found. It occurs sparingly beyond the Alleghanies. It seems most at home in New York, Pennsylvania and thence to Virginia, becoming scarcer till Northern Alabama is reached, which seems its southern limit.

NOTES AND NEWS.

Corn Smut.—According to Dietrich (*Pharm. Zeit.*), the amount of alkaloids in *Secale cornutum* is somewhat higher than is given frequently in the textbooks. Five samples yielded between 0.155 and 0.340 per cent. of alkaloids.

Balsam of Saô Thomé.—According to Moeller (*Ber. d. D. Pharm. Ges.*, 1898, P. 21) the tree which yields this balsam is one of the Burseraceae, *Santiriopsis balsamifera*, Engl. It attains a height of 15 to 18 metres, and from it flows spontaneously a balsamic resin of reputed healing properties.

Poisoning by Copaiba.—A case is reported by W. H. Thompson (*Brit. Med. Jour.*), of a man aged twenty-seven, who had been taking the balsam for about three weeks. The face and whole body were covered with reddish patches. The temperature was increased, the pulse reduced. The urine did not show any indications of sugar or albumen. The medicine was discontinued and the patient recovered.

Microbes.—A scientist, looking for microbes, says there are absolutely none on the Swiss mountains at an altitude of 2,000 feet. Here is the place for the purity party; and scaremongers who are forever horrifying the public with the dismal fear of microbes; they would have to take their supply with them, most of which are useful to man. It is pleasing to observe that the microbe does not give himself lofty airs, but as a fellow-creature comes down to our level and dwells cheerily in our midst. —*Meehans' Monthly*, from *Revue Scientifique*.

Goat Milk Cure in France.—Consul-general Gowdy reports in Consular Reports (June, 1898): "I cannot discover that goat's milk is used for clinical purposes in France. It is, however, sometimes given to sickly children, when it is found that the milk of cows and the various prepared milks do not agree with them. Goat's milk is very rich in cream and nutritious substances and there is a popular belief that it is a useful article of diet in pulmonic and anemic complaints. It is served at the domiciles from troops of goats which are milked on the Spot, as it is believed that, to be efficacious, it must be drunk fresh from the animal.

Burdock as a Vegetable.—What is even regarded as a vile weed can, with a little stretch of imagination, be turned into an ornamental plant or delicious vegetable. This is especially the case with the common Burdock, *Lappa major*. Schoolboys all know it from gathering the burs and compressing them into a ball, they being held together by the curved points of the floral involucre. This is all they know about it. It is difficult to see anything more to be despised in the Burdock leaf than in the leaf of the rhubarb. It appears that it is largely used in China for food. But it is stated that, if the stalks be cut down before the flowers expand and then be boiled, the taste is relished equally with asparagus. The leaves, when young, are boiled and eaten as we eat spinach. In Japan, it is in universal use. Thousands of acres are devoted to its culture. But in this case, the root is the object. It requires deep soil to get the roots to the best advantage. The common name, in China, is Gobbo—a name, however, which need not replace our common one of Burdock.—*Meehans' Monthly*.

A preparation of Koumys maybe made, according to the *Dietetic and Hygienic Gazette* for August, as follows: Fill a quart champagne bottle to the neck with pure cow's milk; add two tablespoonfuls of white sugar, first dissolving it in a little water by the aid of heat; add also a quarter of a two-cent cake of yeast. Then securely fasten the cork in the bottle and shake the mixture well; place it in a room having a temperature of from 70º to 80º F. for six hours and finally in an ice-box for about twelve hours. It is then ready for use and may be taken in quantities varying with the requirements of the stomach and general condition of the patient. In preparing koumys it is well to make sure that the milk is pure, that the bottle is sound and the yeast is fresh. The bottle should be opened with great care on account of the effervescent properties of the mixture, and the latter should be discarded and not drunk at all if there is any curdle or thickened masses resembling cheese, as these indicate that the fermentation has been prolonged beyond the proper time. It should be prepared as required for use. The virtue of koumys resides in the fact that it nourishes, refreshes and stimulates, with no subsequent reaction from its effects. Koumys contains some alcohol, with fat, casein, lactic acid and carbonic acid gas. The cost is about fifteen cents per quart, including the bottle.—*The Medical Age*, 1898, P. 540.

Cicuta vagans, which grows in the low pasture lands of Oregon, has been found to poison cattle in late winter and early spring. According to U. P. Hedrick (*Oregon Sta. Bull.*, 46, p. 12, pls. 4) not less than 100 cattle in various parts of the State were poisoned last spring by this plant. In an experiment in which the bulb was cut into small pieces and fed, along with carrots cut in the same way, to a two-year-old heifer at 8 o'clock A.M., death resulted one and a half hours later. Upon post-mortem examination, pieces of the root were found in the rumen and in the second stomach. The lungs were highly congested, but otherwise nothing abnormal was noted. On the following day an experiment with a calf was made at 9.15 A.M., and an attempt made to counteract the effects of the poison by giving an ounce of turpentine in a quart of milk. The calf recovered its feet and tried to walk. Soon there were indications of spasms, and the dose of turpentine and milk was repeated, when the calf stood up until 11.30 A.M., then it went down as before. Aconite and milk were then given, and also a hypodermic injection of nitroglycerine, but the animal died at 11:45 A.M. From the beginning of the experiment there was a decided rise in temperature, the highest being $106^{1}/_{4}^{o}$ F.

Similar experiments were made later in the season (May), and it was learned that much larger amounts of the bulbs could then be consumed without serious effects. Hence the author concludes that cattle are likely to be poisoned only from the first of January to the middle of May. The simple remedies, such as old bacon grease, flour and milk, recommended by stockmen in milder cases, the author thinks may be of some value, but that they will be unavailing with an animal that has swallowed even a very small quantity of the bulb when the poison is virulent. The best remedies are eradicating the plant from pastures or keeping cattle from lands where it grows.—*Expt. Sta. Rec.*, 1898, p. 892.

POISON IVY—RHUS TOXICODENDRON.—In the spring is the time for people to be poisoned by this plant; any one may handle it with impunity at any other time. just when the new growth is beginning and the sap is running riot through its system, buds bursting, with free growth all along the line, it is, at this time that the effluvia of the past year is pouring out into the atmosphere from its every pore through branch and leaf. One may see a silvery sheen on its leaves in the bright sunshine. Touch it not at this time. It does not poison all. I am not subject to it at any time. I would not dare to pull the leaves, bruise them and smear them on my face, in bravado as I have seen children do, in years gone by, for I feel certain that it would poison me; but otherwise I handle it, work amongst it at all seasons of the year and receive no harm. There are immense quantities of the vine in this country. Nearly every tree in the woods has a plant or two clinging to it and the fences are loaded with it. I have met with men who have declared to me, that the Boston Ivy and Virginia Creeper, *Ampelopsis quinquefolia*, would poison them just as easily and as quickly as the *R. Toxicodendron* and that they dare not go near either of them in the spring. But I have always looked upon this last experience as a case of mistaken identity. The two vines generally grow together, are seen clinging to the same trees and the two plants are much alike when denuded of their foliage. As a cure for the poison, Nightshade—*Solanum nigrum*—is used; its leaves bruised, mixed with cream as an emollient; also Healall, *Brunella vulgaris*. Both are used in outward applications. These are the old-time remedies. Doctors must have better methods now. The

Nightshade is poisonous (said to be) and used as a poison to correct another poison.

In this part of the world the chief complaint of rhus poisoning comes from colored leaf gathering in the fall.—F. K. STEELE, in *Meehans' Monthly*