

otic figures could be found. A few concentrically layered cell bodies were present.

Apparently just as the endothelial cells lining blood- and lymph-vessels attempt in tumor formation to form vessels, and, failing in this, give rise to solid columns of cells, so the endothelium lining the dura tends, sometimes at least, in the new growths to which it gives rise to form spaces lined with endothelium. The connective-tissue fibrillae may be produced, as Ribbert claims, by the endothelial cells, but I prefer to regard them as produced by true connective-tissue cells which grow in with the blood-vessels and extend in between the endothelial cells because there is a physiological demand for them.

F. B. Mallory.

SARSAPARILLA, U. S.—The root of *Smilax medica* Chamisso et Schlechtendal (Mexican, Vera Cruz, or Tampico sarsaparilla), *Smilax ornata* Hooker f. (Jamaica, Central American, Costa Rica, or Lima sarsaparilla), *Smilax papyracea* Duhamel (Brazilian, Para, or Rio Negro sarsaparilla), or a species known commercially as *Honduras sarsaparilla* (fam. *Liliaceae*). Fruiting specimens just received by the writer from Honduras indicate that the last-mentioned is from *S. grandifolia* Regel. Various other species than those here named have been recorded as yielding sarsaparilla, but it is doubtful if any appreciable amount of the present article of commerce so originates. The genus *Smilax* L. is large, being credited with some two hundred species. Its habits and characters are well illustrated by our ordinary cat-briars, green-briars, or bread-and-butter vines, the green, tough, spiny, tendril-bearing stems of which constitute the principal element in dense thickets of the Eastern United States. Apparently, the Northern species do not possess the medicinal properties of those of the tropics. The aerial stems of the latter grow from excessively long slender rhizomes, which run just underneath the loose forest mould, and send down from each joint a fascicle of from few to many tough, elongated roots, which, dried, constitute the drug sarsaparilla. They are collected at

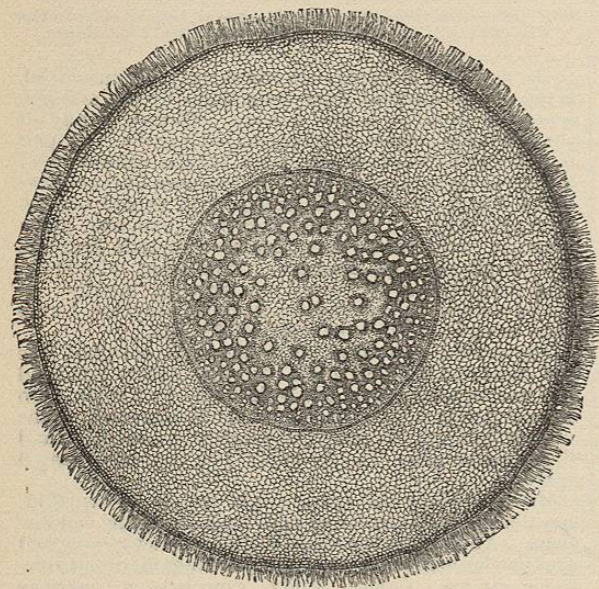


FIG. 4153.—Root of *Smilax Officialis*, enlarged section. (Baillon.)

about the close of the rainy season, probably chiefly with the idea of saving labor, since the ground is then soft and the roots are more easily torn out. After being collected and dried, they are packed in various ways, as explained below, these different forms of packing being characteristic, and aiding in identification, although the practice of packing a cheaper article to imitate a more expensive

one is not unknown. Other forms of sophistication are not common, though other roots, sticks, and even stones are occasionally found in the interior of the packages.

DESCRIPTION.—Mostly more than a metre (more than a yard) in length, and 4–6 mm. ($\frac{1}{4}$ – $\frac{1}{2}$ in.) thick, with few or many fine roots adhering; externally varying from light-gray-brown and smooth, with few deep and sharp wrinkles, to dark- or orange-brown and less smooth, and with more and smaller wrinkles; internally whitish, with a thick, mealy, or sometimes horny cortex, a circular wood-zone and a thick pith; fracture tough; nearly inodorous; taste mucilaginous, somewhat sweetish and bitter, slightly acrid.

The thick, woody, knotty rhizome, if present, should be rejected.

As a rule, Honduras and Brazilian sarsaparillas have the cells of the parenchyma more densely crowded with starch grains, so that they are termed "mealy sarsaparillas," the other two being denominated "non-mealy." It is probably due to this excess of starchy contents that the mealy sarsaparilla wrinkle less deeply in their drying, their wrinkles, however, being usually much more numerous than those of the non-mealy varieties.

Honduras Sarsaparilla consists of the roots separated from the rhizomes, folded back and forth to a length of about two feet, and very closely and tightly wound from end to end with one or more of its own roots, the folded ends not cut off, but projecting slightly beyond the winding at either end. These rolls have usually a diameter of about two and a half or three inches. This variety is generally of a rather light brown color.

It varies greatly in its tendency to bear rootlets, though as a rule these are not numerous. A transverse section made near to the rhizome shows the diameter almost equally divided between the cortex, wood, and pith. The cells of the endodermis are rather thin-walled, the thickness of the outer and inner walls nearly equal, and the form of the cells nearly square.

Brazilian Sarsaparilla also consists of roots freed from the rhizomes, but it is differently packed. The rolls are very large, a yard or more in length and a foot in diameter. They are rolled with extreme tightness, and closely wrapped with a thin tough vine. The folded ends are cut squarely off and the trimmings enclosed in the centre of the roll next packed, the rolls thus possessing a swollen middle portion. This root is of a very dark-brown color and bears a large number of branching rootlets. It is finely wrinkled. The transverse section shows the woody zone much narrower than the cortical

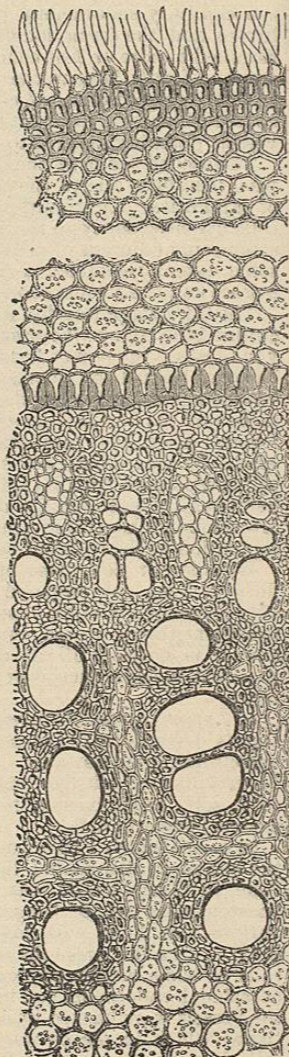


FIG. 4154.—Magnified Section of One-Half Diameter of Root of *Smilax Officialis*. (Baillon.)

and the pith large. The cells of the endoderm are radially elongated, with an oblong aperture, and the inner portion of the wall is thicker.

Mexican Sarsaparilla has the roots of each node still attached to a short portion of the hard woody rhizome. They are loosely folded into somewhat flattened bundles, much thicker at one end and loosely tied with a root which passes several times around in an irregularly spiral manner. The root is of a pale drab-brown, often a little shining, almost free from rootlets and bearing but a few wrinkles, which are exceedingly deep and sharp. The transverse section shows very small pith and wood zones, with a very broad cortical layer. The endodermal cells quite closely resemble those of the Brazilian.

Jamaica Sarsaparilla presents two distinct forms. The plant named above is native of Central America, whence the most of our supplies are received. This root is of a dark gray-brown color, rather thin, sharply wrinkled, and very abundantly supplied with branching rootlets. It is always separated from the rhizome and may come either pressed into square bales or tied into rolls with folded ends, like those of the Honduras, but usually thicker, looser, and with a much scantier and looser winding. The other form is known as "native Jamaica" (species of *Smilax* undetermined), and is the product of plants which have been introduced into the island named. This root is usually much thicker and cleaner looking, and is almost invariably of a bright orange-yellow or orange-red color. It is packed either in bales or in short, thick, lightly tied bundles. The endodermal cells are radially elongated and their walls heavily thickened.

The widest differences of opinion exist as to the relative values of the different varieties of sarsaparilla, and the predominant opinion is not constant, one variety maintaining its position as a favorite for a time, and being then displaced by another. On the whole, Honduras sarsaparilla probably enjoys a wider preference than any other, though the native Jamaican is mostly preferred in Great Britain.

CONSTITUENTS.—Most earnest attempts have been made to find a tangible and useful active principle in sarsaparilla, but with only partial success. From three to fifteen per cent. of starch, according to the variety, a trace of volatile oil, a small amount of resin, pectin, etc., are unimportant. The activity appears to reside in a mixture of three saponin-like bodies, amounting in the specimens examined by Otten to nearly three per cent. Some confusion of ideas has arisen regarding the relations of these substances to one another, on account of the variety of names assigned them by different investigators. Both *parillin* ($C_{26}H_{44}O_{10}$) and *smilasaponin* ($C_{20}H_{32}O_{10}$) have been called "smilacin," and on account of this indefiniteness the last name has been dropped from scientific literature. The third body, *sarsasaponin* ($C_{22}H_{36}O_{10}$), is about three or four times as active as either of the preceding. Like parillin, it is crystallizable, while smilasaponin is not. These constituents are all more or less soluble in water or alcohol, more so upon the application of heat. Either the decoction or a preparation with a warm mixture of alcohol and water well represents the drug. The constituents are fatal to animals, with the general symptoms of poisoning by the sapotoxins.

ACTION AND USE.—Sarsaparilla was first carried to Europe about 1536–45, and first or early employed as a cure for the same disease with which it has been since most generally associated, and for which another smilax, "China," had previously been used. The use in numerous other slow diseases, especially in eruptions and as a "blood purifier" in general, followed, and has continued extensive until the present time. Although now it has been nearly discarded as a serious medicine by physicians, it is still a much-prized popular remedy, and is extensively used, the world over, for syphilitic and scrofulous diseases. Its reputation is doubtless greatly and unduly enhanced by the enormous popular advertising of numerous proprietary articles bearing its name, but in reality quite different substances. On the other hand, there can

be no doubt that the judicious use of sarsaparilla by physicians should be extended. The valuable depurative effects of the saponins, not only by promoting excretion by the intestines, but through most other channels, requires no argument, and the timely use of a laxative dose of sarsaparilla, perhaps at the soda fountain—if only a genuine article could be there expected,—may well prevent the necessity for more violent treatment later on. The dose of any preparation should represent from 4 to 8 gm. ($\frac{3}{4}$ i. to $\frac{1}{2}$ j.). The Pharmacopœia provides a fluid extract; a compound decoction of ten-per-cent. strength, with two per cent. each of sassafras, guaiac wood, and liquorice root, and one per cent. of mezereum; a compound fluid extract of seventy-five-per-cent. strength, with twelve per cent. of liquorice root, ten per cent. each of sassafras and glycerin, and three per cent. of mezereum.

ALLIED PRODUCT.—China root, from *Smilax China* L., in large, hard, jalap-like tubers, is used in the East for the same purposes as sarsaparilla.

Henry H. Rusby.

SARSAPARILLA, FALSE. (*Aralia medicaculis* L.) See *Araliaceae*.

SASSAFRAS, U. S. P.—*Sassafras bark*. The dried bark of the root of *Sassafras Sassafras* (L.) Karsten. (*S. variifolius* [Salisb.] Kuntze—fam. *Lawraceae*). Although all parts of the sassafras tree are aromatic, the bark of the root is selected for official purposes because its aromatic properties differ in kind from those of the leaves and branches, and are far stronger than the similar properties of the bark of the trunk and the wood of the root and trunk. The British Pharmacopœia makes the root,

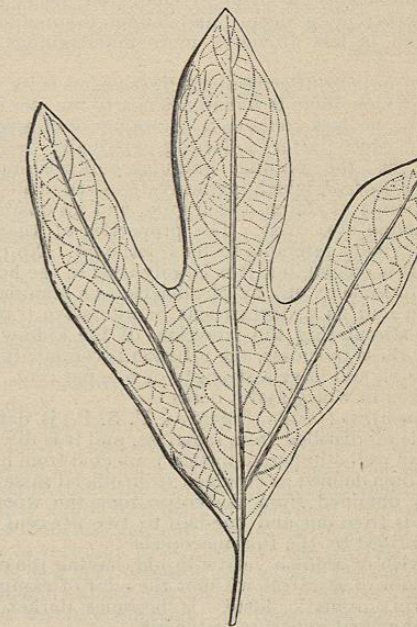


FIG. 4155.—One of the Three-Lobed Leaves of *Sassafras*. (Baillon.)

the German Pharmacopœia the wood of the root, official, while certain others include, or even specify, the wood of the trunk or at least of its lower portion. There can be no question that the official article of the United States Pharmacopœia is very superior to any other part of the plant. The sassafras tree grows very abundantly in light soil and exposed or partly exposed situations from eastern Canada southward, being collected chiefly in the coast region. It occasionally reaches a height of seventy feet or more and a trunk diameter of upward of three feet, though usually its height is from twenty-five to

forty feet and its trunk diameter little more than a foot. The root is much and irregularly branched. When it is freshly dug, its outer color is whitish and its wood yellowish or brownish-white, but the former soon turns gray and the latter of a rusty red or brown after collection. Annual rings are apparent in cross section, though less conspicuous than in most trees of the same region. The bark of the trunk is ashy gray and deeply fissured externally, whitish within, soon turning rusty brown, though not so deeply as does that of the root. The wood of the trunk is similar to that of the root, though less deeply colored. The young twigs are at first deep green and smooth, gradually becoming brownish-warty, then brown and fissured with age. The large pith of the branches is described below. The form of the leaf is displayed in the accompanying cut, though often not lobed or with a lobe on only one side. The leaves are thin and downy when very young, soon becoming thickish and smooth. The dioecious, small, yellowish flowers are borne in umbels or corymbs, and appear somewhat before the leaves. All parts of the tree are aromatic, bitter, and strongly mucilaginous.

The drug is thus described:

In irregular, warped, chip-like fragments, 5 mm. ($\frac{1}{4}$ in.) or less in thickness, the thicker pieces deprived of most of the gray corky layer; bright rust-brown, or with more or less of the gray-brown cork adhering and exhibiting its outer surface softly and rather finely scaly, from numerous short, intersecting, shallow fissures; inner surface obscurely short-striate; light, soft, and fragile, with a short, weak fracture which exhibits a broad, irregular, whitish layer between two rust-brown ones; strongly and peculiarly fragrant; taste sweetish and bitterish, aromatic, mucilaginous, and slightly astringent.

The stem-bark is in strips or elongated pieces, with a lighter-gray, more deeply and longer fissured outer surface, and is less aromatic, more mucilaginous and bitter.

The most important constituent of sassafras is its volatile oil, of which there is sometimes nearly ten per cent. When fresh, the bark contains a large amount of a peculiar tannin, which, after collecting, gradually becomes converted into the peculiar granular yellowish-brown substance, *sassafrid*, which is readily dissolved in alcohol. A large amount of starch, much gum, and an unstudied bitter principle also exist. The properties of sassafras are almost wholly referable to its volatile oil. No preparation of it is official, but it is largely used in the household, and to some extent by physicians, as a stimulating diaphoretic and as a deobstruent or alterative ("blood purifier"), stimulating the excretions of the kidney and skin. For these purposes, the infusion is commonly employed. It should have a strength of five per cent., and may be taken in wineglassful doses.

Oil of Sassafras (*Oleum Sassafras*, U. S. P.) is defined as a volatile oil distilled from sassafras, and it is directed to be kept in well-stoppered bottles, protected from light. Although thus defined as obtained from official sassafras, it is really obtained from the entire root, the wood of which yields from one and one-half to two per cent. It is thus described by the Pharmacopœia:

A yellowish or reddish-yellow liquid, having the characteristic odor of sassafras without the odor of camphor, and a warm, aromatic taste. It becomes darker and thicker by age and exposure to the air.

Specific gravity: 1.070 to 1.090 at 15° C. (59° F.).

Soluble, in all proportions, in alcohol, the solution being neutral to litmus paper; also soluble, in all proportions, in glacial acetic acid, and in carbon disulphide.

If to five drops of the oil five drops of nitric acid be added, a violent reaction will take place, producing at first a red color, and finally converting the oil into a red resin.

If to a few drops of the oil a drop of sulphuric acid be added, a deep-red color will be produced at first, which soon becomes blackish.

The oil consists chiefly of *safrol* (C₁₂H₁₆O₂), with a small amount of *safrene* (C₁₀H₁₆) and a very small amount

of eugenol. Safrol fully represents the properties of the oil.

Oil of sassafras differs but little in its action and uses from ordinary stimulating volatile oils, for example, oil of peppermint. Although an active carminative, it is scarcely so efficient as oil of peppermint or oil of anise in that direction. On the other hand, it appears to be rather more freely excreted through the skin and a more efficient diaphoretic. It is also distinctly laxative and its reputation for stimulating the excretory functions appears to be justified. The dose of this oil is one to five minims. There is no official preparation.

Sassafras pith (*Sassafras medulla*, U. S. P.) is defined as the dried pith of the sassafras and is thus described:

In cylindrical, straight, curved, or coiled pieces, one to several inches in length and 3 to 8 mm. ($\frac{1}{4}$ to $\frac{3}{8}$ in.) in diameter, or in split portions of the same; white, very light, and spongy; inodorous or with a slight odor, as well as taste, of sassafras; very mucilaginous.

Macerated in water, it forms a mucilaginous liquid, which is not precipitated on the addition of alcohol.

Its aromatic content is entirely insignificant and it is valued wholly for its gum, which readily forms a mucilage upon maceration with water. This mucilage possesses the important property of mixing with alcohol without precipitation, and it becomes a useful vehicle for the administration or application, especially to the eye, of active substances. Its properties in general are merely those of mucilages. Its mucilage is official and is directed to be made freshly, when wanted, by macerating 2 gm. of the pith in 100 c.c. of water for three hours and straining.

Several other vegetable products are called sassafras in other countries, but none of them is of interest in our *Materia Medica*.

Henry H. Rusby.

SASSY BARK.—*Mancona Bark*. The bark of *Erythrophleum Guineense* Don. (Fam. Leguminosæ), a good-sized, acacia-like tree, growing in tropical Africa, and employed by the tribes of the west side like Calabar beans, as an ordeal. It was made known in Europe and America about forty years ago, and was revived as a medicine about ten years since. It is a ponderous bark, heavier than water, of a dull red color, a fissured external surface, and a short fracture. Odor slight, taste astringent. The active principle of sassy bark is *erythrophleine*, a crystalline alkaloid, first obtained by Gallois and Hardy. It is an active heart-poison of the digitalis kind, producing slowing of the pulse, increase of blood pressure, and in experiments upon animals death, with the heart in systolic contraction. The powdered drug is a powerful sternutatory. But little use has been found for this potent medicine. It is sometimes used like digitalis, in doses of one to three grains, of the bark, in the form of a tincture, but is far less certain and regular and even more inclined to upset the stomach. It is said to be employed at home in dysentery, etc., with benefit, as well as in intermittent and other fevers. In full doses it is nauseating and emetic, as well as somewhat narcotic.

ALLIED PLANTS, ETC.—See *Senna*. W. P. Bolles.

SAUNDERS, RED.—*Santalum Rubrum*, U. S. The heart-wood of *Pterocarpus santalinus* L. f. (fam. Leguminosæ).

This article, often called ruby wood or red santal, is the product of a small tree of India, collected chiefly in the Madras Presidency, and now mostly from cultivated plants. The wood is imported in billets three or four feet long and from two to eight or nine inches in diameter, the bark and sapwood having been removed. It is of a bright blood-red color within, but darker upon the surface, becoming at length nearly black with age and exposure. For pharmaceutical use, it is usually cut into chips or rasped into powder. It is almost odorless and has only a slight astringent taste. Its coloring matter is santalin or santalic acid, crystallizing in minute red prisms, soluble in alcohol, ether, alkalies, and a few es-

sential oils, but not in water, which is scarcely colored by red saunders. The article is essentially a dye-stuff, being without physiological or medicinal power and used purely for coloring purposes, as in the compound tincture of lavender, which contains about one per cent. of it.

W. P. Bolles.

SAVILL'S DISEASE. See *Dermatitis Epidemica*.

SAVINE.—*Sabina*, U. S. P. The leaves and young twigs of *Juniperus Sabina* L. (fam. Pinaceæ or Conifera). This is a compact, horizontally spreading, evergreen

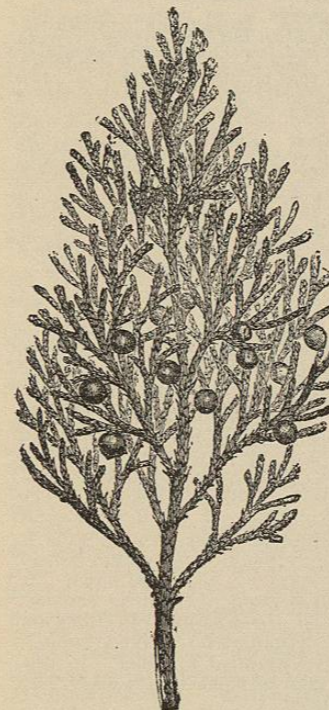


FIG. 4156.—Savine, Fertile Branch. (Baillon.)

shrub or small tree, resembling our common red cedar on a small scale, and bearing similar berries. It is widely distributed through the north temperate zone of the Old World, and is also met with in the Northern United States (in the Great Lake region) and in Canada. The medicinal supply comes from Europe, chiefly from Switzerland, in "short, thin, subquadrangular branchlets, the leaves in four rows, opposite, scale-like, ovate, lanceolate, sessile, more or less acute, appressed, imbricated, bearing on the back a shallow groove containing an oblong or roundish gland; odor peculiar, terebinthinat; taste nauseous and bitter."

The odor and taste of savine are mostly due to from two to four per cent. of essential oil (*Oleum Sabina*, U. S. P.), a pale-yellow, terebinthinous liquid, becoming thicker and darker by age, colorless if redistilled, of a specific gravity of about 0.910. It has the odor of savine, a sharp, bitter, camphoraceous taste, and is more rubefacient and irritating to the skin than others of its class. Tannin and resin are less important constituents of savine.

ACTION AND USE.—Savine and its oil are essentially like, but more intense than, oil of turpentine in physiological and therapeutical properties; irritating to the skin and mucous membranes, to the urinary apparatus by which they are eliminated, and to the uterus, which they may cause to abort. Besides these effects, convulsions and coma may follow. Vomiting, diarrhoea, gastrointestinal inflammation, strangury, with or without convulsions or unconsciousness, these are the usual symptoms of savine poisoning; abortion may or may not take place. This potent drug is not much employed. It has been given as an emmenagogue, also as a hæmostatic, for leucorrhœa and other purposes mostly connected with the uterus. It is not infrequently used with criminal intent to produce abortion, usually without success, unless it nearly or quite kills the mother also; externally it is the basis of some moderately useful stimulating ointments, liniments, and "hair-restorers."

In this country, the oil of juniper, which is milder, is perhaps generally substituted for oil of savine. Oil of turpentine is also often substituted for or mixed with it. Oil of savine can be distinguished by the fact that it does

not form a solid mass with hydrochloric acid; also by the fact that very little of it distills under 200° C.

The dose of savine (leaves) is about 0.5 gm. (gr. viij.); of the oil, from one to four or five drops. A fluid extract of the former (*Ex. Sabina Fluidum*, U. S. P.) is an eligible preparation and the basis of the cerate (*Ceratum Sabina*, U. S. P.), strength about 25 to 100 savine.

W. P. Bolles.

SAVORY, SUMMER. See *Labiata*.

SAW PALMETTO.—This palm, *Serenoa serrulata*, forms the common palmetto scrub of South Carolina, Georgia, and Florida. The whole plant has marked demulcent and nutritive properties, and is extensively used as a local remedial agent in all forms of disease of the mucous membranes, especially when associated with debility and wasting. Its use is followed by an improved digestion, increased strength and flesh, and a soothing influence on any irritable state of the membranes. It is used in catarrh, ozena, and bronchitis, and has a special value in diseases of the bladder and reproductive organs. Reginald Harrison¹ has found it very beneficial in irritable states of the bladder, and compares its action to pareira. It is also reported to be of benefit in affections of the prostate gland. Another property that is claimed for it is its vitalizing and strengthening action upon weakened and wasted glands of the generative organs. It is said to cause a rapid development of the mammae, ovaries, and testes, when these organs are debilitated as the result of masturbation and sexual excesses of all kinds.

The berries and seeds contain a large percentage of a fixed oil, upon which the medicinal properties are said to depend.² The fluid extract of the seeds is the most convenient form for administering the drug; it is given in half-drachm to one-drachm doses, repeated three or four times a day.

Beaumont Small.

¹ London Lancet, 1890, 414.
² Phar. Review, 1897, 113.

SCABIES (Latin, *scabies*, an itching eruption, from *scabo*, I scratch).—Synonyms: The Itch; German, *Krätze*; French, *Gale*. Scabies is a contagious disease of the skin, wholly local in character, due to the presence of an animal parasite—the *acarus* or *sarcoptes scabiei* (see Arachnida, in Vol. I.) in, and upon, the skin. The eruption present may vary from the smallest amount imaginable, a few papules, up to the most severe development of inflammatory lesions, even such as to render the patient helpless; the subjective sensations may vary from a slight pruritus, which is described as not unpleasant when relieved by scratching, up to an itching which is almost unendurable, causing restless nights and distressing days.

The most common sites for the lesions of scabies are the hands, especially about the wrists, in the soft skin between the fingers, and on the sides of the hands. But in many cases the eruption is entirely absent from this locality and is well marked elsewhere. In males the penis seldom escapes, and in females the region of the nipples is very apt to be affected; the anterior fold of the axilla is a very common seat of the lesions, and the elbows and extensor surface of the forearms are sometimes most severely affected. In those who sit a great deal the buttocks often present an abundant eruption. In infants and children the softer parts of the feet and ankles generally exhibit lesions. It may be said that the head is never affected by scabies.

The eruption of scabies exhibits the greatest variety of lesions, from the smallest papules and vesicles to large pustules, often ecthymatous in character, and in weakly children pustular bullæ may form on the hands. The bulk of the lesions is papular, although small vesicles can generally be seen on tender portions of the skin during some period of the disease. Mingled with these primary lesions there are generally found the results of scratching, viz., abraded surfaces and those covered with crusts.

The only single pathognomonic sign of scabies is the *cuniculus*, furrow, or burrow (German, *Milbengang*; French, *sillon*), which is caused by the penetration of the female beneath the epidermal layer of the skin in the search of a place where she may lay her eggs; the male seldom, if ever, goes beneath the skin. This *cuniculus* consists of a minute, dark-colored line, generally somewhat beaded in appearance and curved, appearing much as if a bit of dark sewing-silk had been run beneath the surface; rarely, it is as long as a fourth of an inch, more often half that length; and generally it may be seen to terminate at one end in an inflamed papule or vesicle, or sometimes to run over a pustule. The female insect will be found at that end of the furrow, and the dark line is her track, which is found to be filled with eggs in various stages of development, and, among them, black particles of feces. If the skin is washed these dark lines, instead of being removed, become more apparent; but in recent cases, or in individuals who are very cleanly or have undergone treatment, it is often impossible to discover any of these *cuniculi*, although the disease may still exist, and, if left alone, it will increase and may be communicated to others.

Scabies is not a very frequent disease in this country, forming only about 1.5 per cent. of a large number of skin cases analyzed. In other countries it is more common, and in Glasgow it formed twenty-five per cent. of ten thousand cases analyzed by McCall Anderson.

DIAGNOSIS.—Considerable care is often required to diagnose a mild or unusual case of scabies, and cases sometimes go unrecognized for a long time. The disease most commonly confounded with it is eczema, which may present almost identical appearances, except that there are no *cuniculi*; when these latter are positively found the diagnosis is certain. The location and distribution of the eruption, the history of contagion, and the multiform character of the lesions are generally sufficient to establish the diagnosis. Scabies may also be confounded with lichen, pityriasis, prurigo, pruritus, and urticaria papulosa.

ETIOLOGY.—There is but one cause of scabies, the presence of the parasite (*acarus* or *sarcoptes scabiei*), whose removal or destruction is followed by the cessation of the disease. It often occurs, however, that the treatment employed may occasion an amount of artificial eruption or dermatitis which may mask the true affection, and may even remain after the real cause of the disease has been destroyed; this second eruption may require a very different treatment, of a soothing character.

PATHOLOGY.—The only pathological lesions, aside from the presence of the *cuniculus*, are those connected with inflammation of the skin. The lesions are simply inflammatory areas of greater or less size, caused either by the direct irritation of the burrowing insect, or by the scratching or other measures employed for the relief of the itching, or by both. When the local irritation is removed the eruption ceases; if the *acari* could all be removed mechanically, picked out, there would be no eruption. In patients who are paralyzed on one side, or who have been unable to scratch, there is very little eruption on the portions of the skin which are out of reach.

TREATMENT.—The treatment of scabies is purely local and consists in such measures as destroy the life of the parasitic insects and their eggs. The patient first takes a warm bath, using plenty of strong soap rather alkaline in character, such as the *sapo viridis* or the common laundry soap, and rubbing the affected parts so as to break the furrows as much as possible. After drying, the affected parts, or even much of the body, should be well rubbed with an ointment of which sulphur is a chief ingredient. The ordinary sulphur ointment diluted once, with the addition of a drachm of liquid storax to the ounce, answers as well as anything. After thorough friction with this for at least half an hour, the patient puts on underclothes which are to remain on night and day until the end of treatment. The ointment should be freshly rubbed in twice daily for several days, and a bath is to be taken on the third day, the ointment being again rubbed in and a fresh suit of underclothes put on. After three days more

of treatment another bath may be taken, and it is then to be expected that the cure is complete. But frequently some of the *cuniculi* will be found to have escaped being broken, or new infection may come from the clothing or elsewhere, and in such case the treatment must be repeated. Sometimes an artificial eruption is excited by the treatment, when soothing remedies are required. The clothing should always be treated; the underclothes should be boiled a long time and very thoroughly ironed; the outer garments may be baked or very thoroughly ironed on the wrong side. Patients should be more or less isolated, although when they are under treatment the chances of communicating the disease are very small.

PROGNOSIS.—The prognosis is, of course, favorable; there can never be the slightest harm in curing even the most inveterate or severe cases of scabies. In the hospitals abroad it is claimed that a cure is effected in a few hours, but it is questionable if, in the large majority of cases, the relief is more than temporary, a portion only of the parasites being killed. Practically, cases require treatment for a number of days, or even weeks, to make the cure certain; when the skin is delicate the active parasitic treatment may have to be interrupted, owing to the dermatitis excited, and occasionally it will be found difficult to use remedies strong enough to effect a cure.

L. Duncan Bulkley.

SCAMMONY.—(*Scammonium*, U. S. P., B. P.) A resinous exudation from the living root of *Convolvulus Scammonia* L. (fam. *Convolvulaceæ*). This is a perennial herb of the Levant, having a long, thick, cylindrical, several-headed, but otherwise usually simple, milky-juiced root, and numerous twining stems, resembling those of an ordinary morning-glory vine. The root, which is official in the British Pharmacopœia, is up to a metre in length, and a decimetre in diameter, at the crown, light brownish-yellow without, white within, fleshy, and resinous. The scammony is collected by cutting off the living root at the crown and either scraping off the exudation as it appears or placing some receptacle, commonly a mussel shell, at the lower side to receive it as it runs down. It may dry at once, a very high grade of the drug thus resulting; or, as is more usual, the separate collections are laid aside until enough is accumulated to make a "cake," when it is all moistened and kneaded together. In this way the bubbles and sour odor of what is known as "Virgin scammony," are produced.

Scammony is in irregular, angular pieces, or circular cakes, greenish-gray or blackish, internally porous and of a resinous lustre, breaking with an angular fracture; odor peculiar, somewhat cheeselike; taste slightly acid; powder gray or greenish-gray. The porous, bubbly texture and the sour, cheesy smell are results of fermentation during the process of drying. It is soluble to the extent of three-fourths in ether. The costliness and opaque color of scammony render it especially liable to adulteration. Lime, flour, ashes, gum, etc., are among the common admixtures. The proportion of resin is the best test of purity. This resin (*Resina Scammonii*, U. S. P.) is obtained by digesting the drug with alcohol and evaporating the tincture so obtained, or by treating the root in the same way. It is a brown, translucent brittle resin, with a sweet fragrant odor if obtained from the root; but, as is usually seen, from crude scammony, it is more greenish and dirty in color, and has the odor of scammony itself. In action and value the two products are about the same.

COMPOSITION.—The peculiar resin of scammony, unfortunately called *jalapin*, and now known as *scammonin*, first obtained in a state of purity by Johnston, in 1840, differs from the *convolvulin* of jalap by its solubility in ether.

When purified, it is a colorless, translucent, brittle non-crystalline resin, tasteless and odorless, of nearly neutral reaction, and freely soluble in ether. It is a glucoside, and resolvable into *scammonic acid*, a crystalline substance, and sugar. Good scammony contains eighty or ninety per cent. of this resin.

ACTION AND USE.—Scammony and its resin are to be counted among the very active drastics, excelled only by croton oil and elaterium. Their action is similar to that of jalap, but considerably more intense. They are used as derivatives and hydragogue cathartics in cases of cardiac and renal troubles associated with dropsy. The action of scammony resembles that of jalap, but is more intense. Aromatics and carminatives are appropriate adjuvants. Dose, of good scammony, half a gram or so; of the resin, 3 or 4 dgm. The compound extract of colocynth contains fourteen per cent. of resin of scammony.

W. P. Bolles.

SCAPULA, SURGICAL AFFECTIONS OF THE.—**DISEASES OF THE SCAPULA.**—Acute periostitis and osteomyelitis of the scapula are rare. When present they are usually the result of traumatism followed by infection, and affect most commonly prominent portions of the bone, such as the spine.

Tuberculous osteomyelitis of the scapula is much more common and may give rise to extensive caries and necrosis. Cold abscesses may form and reach the surface at some distance from the focus in the bone. In rare cases the shoulder-joint may become involved.

The treatment of tuberculous disease will depend upon the extent of the local process. Small foci may be scraped out with the Volkmann spoon and treated later by iodoform injections. Larger foci may require resection of a part of the bone, such as a portion of the body or the spine. Complete excision of the scapula is seldom indicated.

TUMORS OF THE SCAPULA may be either benign or malignant, the latter being the most common. A recent collection of 64 cases made by Langenhagen showed the following relative frequency: Exostosis, 8; chondroma, 14; fibroma, 5; carcinoma, 23; sarcoma, 12; uncertain tumors, 2.

The tumor may reach an enormous size, and in case of the malignant varieties the surrounding parts may become invaded. Some tumors grow into the axilla, others spread to the adjacent muscles, and may eventually ulcerate through the skin. Metastases may occur in the pleura, lungs, vertebrae, or some other internal organ.

The treatment of malignant neoplasms consists in excision of the scapula provided that the tumor has not involved the arm. In the latter case removal of this as well may be indicated (interscapulo-thoracic amputation).

Benign tumors, when circumscribed, may be removed by partial resection of the portion of bone involved. The usual incision for excision of the scapula begins over the acromion, runs along the spine to its inner border and there descends to the angle. Through this incision the muscular attachments are divided close to the bone, and the whole bone is removed. If possible that part of the acromion should be preserved which receives the insertions of the trapezius and deltoid muscles. Otherwise the function of these muscles will be lost.

FRACTURES OF THE SCAPULA.—These are comparatively rare injuries (according to various authors from one to four per cent. of all fractures), and occur chiefly in adult males.

The following varieties of fractures occur:

1. Fracture of the body of the scapula (including one of the angles).
2. Fracture of the glenoid cavity.
3. Fracture of the neck.
4. Fracture of the acromion and spine.
5. Fracture of the coracoid process.

1. *Fractures of the Body* are the most common. They occur usually in the infraspinous fossa, and the line of fracture is most commonly transverse. The cause is blunt violence, such as a blow or fall, and there may be considerable contusion of the overlying soft parts. In case of multiple fractures, there may be several fissures radiating from a central point. Fractures of the lower angle form a comparatively common group of fractures

of the body, and may be accompanied by considerable displacement of the small lower fragment. Fractures of the upper angle are far less frequent.

The objective symptoms of fractures of the body are, as in other fractures: crepitus, false motion, and localized tenderness. These signs are not always easy to make out, especially in muscular subjects or in case of marked swelling. The scapula can be brought into prominence and thus be easier to palpate if the elbow is drawn inward in front of the chest or the arm carried backward and inward. Dislocation of the fragments is most marked in fractures of the lower angle, and is then due to the combined action of the *teres major* and *serratus magnus* muscles upon the lower fragment.

The prognosis of these fractures is good. Bony union usually takes place promptly under proper immobilization, and the function of the arm is not impaired. In the rare cases of compound fracture suppuration may occur, and the pus may burrow downward between the scapula and the muscles of the back.

The treatment consists in immobilization of the shoulder and scapula in that position which overcomes the deformity. The arm can be kept in this position by means of a Velpeau bandage to which may be added some turns of a plaster-of-Paris bandage. In about four weeks the fracture should be solid and movements of the arm may be begun. König recommends in some cases suture of the fragments.

2. *Fractures of the Glenoid Cavities.*—These are rare fractures which may involve chipping off of some portion or of the whole of the articular surface (fractures of the anatomical neck). They are sometimes associated with dislocation of the humerus. The symptoms are very obscure, and it is doubtful if a diagnosis can be made. As a dislocation of the humerus is often present, the treatment would be that of the dislocation.

3. *Fractures of the Neck of the Scapula* are of considerable practical importance. The line of fracture runs downward from the incisura scapulae. The causes are usually some form of direct violence applied to the shoulder region, such as a blow or fall.

The symptoms resemble somewhat those of dislocation of the head of the humerus. There are a flattening of the shoulder and abduction of the arm; the acromion is prominent, and the axis of the arm is not directed toward the shoulder-joint. The chief point of difference is that the fractured piece can be felt in the axilla as an irregular object not resembling the smooth head of the humerus. By grasping the coracoid process with the middle finger and the posterior aspect of the shoulder with the thumb, crepitus can be felt on rotation of the arm. Crepitus can also be felt by palpation in the axilla. The deformity of the shoulder can be readily overcome by upward pressure on the fragments within the axilla, but recurs again as soon as pressure is stopped. In dislocation of the shoulder, on the other hand, the deformity is made to disappear only by special movements for reposition of the head of the bone.

The treatment consists in replacing the fragment by upward pressure and maintaining it in place by a pad in the axilla. The arm is secured to the body by means of a Velpeau bandage. Plaster bandages may be applied as an outside dressing. The fracture sometimes requires as long as from ten to twelve weeks for consolidation.

4. *Fractures of the Acromion and Spine* are produced by direct violence upon these prominent portions of the bone. The line of fracture is usually transverse. The most important symptoms are the irregularity in the outline of the bone, localized tenderness, and occasionally crepitus. In case of the acromion, the fracture lies either in front of the acromio-clavicular joint or near the base of the acromion. The outer fragment may be displaced downward from the weight of the arm. The treatment of fractures of the spine consists in immobilization of the arm in a flexed position. In fractures of the acromion the outer fragment is elevated by pressing the humerus upward. It is retained in position by means of a bandage