

ART. IX.—*Poisoning by the Rhus Toxicodendron*. By SAMUEL C.

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THE influence upon the human skin, of the poisonous principle of the *Rhus Toxicodendron*, has been long known and frequently discussed, but until the investigations of Prof. Maisch into the nature of the toxic principle, and of Prof. White into the clinical and pathological phenomena of the disease produced by it, but little had been known regarding these questions. These very elaborate investigations leave but little opportunity for original research, hence the record of my own experience and observations can prove interesting so far only as they may corroborate the conclusions of these distinguished gentlemen, or more definitely settle hitherto disputed points.

As it is my purpose to discuss the subject in its clinical and practical aspects, I omit any description of the well-known natural history and botanical character of the plant, and proceed with the detail of the cases, which will illustrate the peculiar characteristics of the disease.

CASE I.—In June, 1871, Mrs. V. suffered very severely from a burning and itching eruption covering her entire face, neck, both mammæ, external genitals, extending along the inner surface of both thighs, both hands, wrists and portions of her abdomen. Her husband, at the same time, suffered with a similar eruption, though not so severe, on both hands, and an infant had it very slightly about the mouth and chin. A week previous to the appearance of the eruption, the husband and wife had passed an afternoon at a pic-nic, and he had fastened his horses to a bush covered with a vine, the character of which he had not observed. The wife did not approach the plant, and the child had been left at home. The disease ran its course, terminating in desquamation, without any benefit from treatment. Her suffering was so intense for several days that I was compelled to keep her under the influence of morphia.

On the 6th of May, 1872, the eruption again broke out, appearing simultaneously in all the localities attacked the previous year. It began with swelling, redness, intense burning, and itching. During the subsequent twenty-four hours, the inflamed surfaces became densely covered with very minute vesicles, which soon ruptured and poured out very copiously a yellowish serous fluid, which collecting in the most dependent parts desiccated into amber-coloured, semi-translucent incrustations. Saline purgatives and diaphoretics were given without any manifest effect. Applications of oxide of zinc, benzoated zinc ointment, glycerine alone and in combination with borax and camphor water, lotions of the acetate of lead, and various other sedative compositions were equally futile in mitigating the tormenting burning and itching, or in staying the progress of the disease, until finally, after two weeks' duration, relief was secured with a wash of glycerine, \mathfrak{z} ijss, solution of carbolic acid \mathfrak{z} ss, which was applied to the entire inflamed surface, with a soft sponge. From the first application

the exudation, swelling and inflammation gradually diminished, though for a few seconds after the first application, the burning and itching were slightly augmented. Desiccation and desquamation soon took place, and the patient recovered entirely. No trace of disease remained to mark its localities.

On May 31st, 1873, the eruption made its appearance for the third time, the notes of which attack are as follows :—

May 31. Complaints of burning and itching on the right temple, extending to the outer canthus of the right eye, slight redness, but no swelling. Applied the benzoated zinc ointment.

June 1. Right eye entirely closed, swelling extended along forehead and to left cheek, partially closing left eye, also down right cheek to lip. Swollen surface inflamed, firm and inelastic; no pitting. The part first attacked covered with minute vesicles; exudation very copious and seems to irritate the inflamed surface. Burning and itching intense. No fever. Discontinued the ointment and ordered applications, with a camel's hair pencil, of the glyceratum amyli every few hours.

2d. Swelling about eyes slightly diminished. No extension of redness. Right cheek, brow, and right upper eyelid covered with vesicles. Exudation very copious; no burning or itching; no constitutional symptoms; slept well previous night; ordered entire inflamed surface to be thoroughly washed with soft soap, and then dressed, as before, with the glyceratum amyli. At my afternoon visit the swelling had extended down the right side of the face, under the right lower maxilla and chin, but had diminished about the right eye. Exudation very copious, no extension of inflamed surface; the extended swelling being natural in colour; ordered the washing with soft soap to be repeated, to be followed with free bathing of the entire tumefied surface with a solution of the bicarbonate of soda, and after drying of the surface, a reapplication of the glycerate.

3d. Swelling very much diminished; can open both eyes; exudation much less; some burning and itching around left eye, about which there is considerable tumefaction with inflamed surface, but no vesicles or exudation. The swelling about the jaw and chin remains normal in colour. The areas of redness and vesication have not extended; treatment continued.

4th. Swelling and inflammation considerably diminished.

5th. Tumefaction and inflammation diminishing very rapidly, none on lower part of face. Exudation less; none from some parts. On right cheek, which is but slightly swelled and less inflamed, are a few scattered milky-coloured pustules, much larger than the vesicles. Desiccation commenced in parts; she continued to improve rapidly and was soon entirely well.

CASE II.—Mr. O. C. G. was exposed to the poison on the 31st May. On the morning of the 2d of June discovered a blotch of redness with very slight swelling extending in a fan shape from the root of the nose towards the hairy scalp. In the afternoon the tumefaction had increased, and felt hot.

June 3. Face very much swollen and disfigured; both eyes closed; on the right temple a circular blotch of redness slightly elevated, itching and burning intensely; on the neck just above the middle of the right clavicle an oblong patch of similar character; on the afternoon of the same day the circular blotch was thickly covered with very minute vesicles, and vesication had commenced on other parts of the inflamed surface; no exudation; no constitutional symptoms; appetite good; ordered the parts to

be washed with soft soap, dried and then bathed with a solution of the bicarbonate of soda, and subsequently protected with the glyceratum amyli.

4th. Exudation quite free, but not copious; no extension of tumefaction or inflammation, slight burning at some points but no itching; treatment continued.

5th. Improvement very marked; can open both eyes; no extension of inflammation, tumefaction, or vesication since commencement of treatment. Exudation greatly diminished; no burning or itching. Examination with a magnifying glass detects no vesicles, where not visible to the naked eye. The patches of vesication present a milky whitish appearance, and under the magnifying glass the vesicles seem collapsed, presenting closely aggregated curdy whitish points. Small patches of vesication on the dorsum of right hand, and dorsal aspect of several fingers exhibit vesicles much larger than any which have appeared on the face. They are limpid at their apices. The fluid, when discharged by puncture, is limpid and transparent, changes blue litmus paper to a deep blue, which fades after drying, leaving no trace of discoloration. Suspended the glycerate.

6th. Swelling and inflammation subsiding rapidly; desiccation established; desquamation commenced on the 7th, and was completed on the 10th.

CASE III.—In the spring of 1865 I attended a lady who, a few days after exposure to the poison, suffered with swelling and inflammation of her right cheek, attended with intense burning and itching. The inflamed surface was covered with large blisters, containing a yellowish serous fluid. In the succeeding spring she was seized with a precisely similar attack, without being able to trace it to any renewed exposure to the poisonous plant.

The perfect insusceptibility of some individuals and peculiar susceptibility of others is very remarkable. One may require the direct application of the expressed juice or of the distillate to produce its local effects. Another will resist the toxic action however applied. A third will suffer to an intense degree from simply going in the vicinity of the growing plant, and, occasionally, persons are so easily affected that the smoke of the burning plant will poison them. Prof. Maisch¹ mentions the fact that several persons who entered his laboratory while he was engaged in his experiments, "were more or less poisoned by the vapours diffused in the room."

Another of its peculiarities is the readiness with which it can be conveyed to other parts of the body by the contact of the part which may have received the poison from the plant, and from one individual to another, even though the first may not, or very slightly, suffer from its poisonous action. The cases of the wife, husband, and child, before recorded, fully illustrate this characteristic. The wife's face may have received the poison direct from the plant, though she denied having been near it; but it is impossible that the parts of her body under the clothing,

¹ Am. Journal of Pharmacy, vol. xxxv. p. 10.

and the child, could have been thus affected. As her hands and wrists were poisoned, it is possible that she conveyed it to the other parts; but it seems more probable that it was conveyed by the hands of her husband. I have several times treated cases illustrating this peculiarity. Two years ago a gentleman residing in the suburbs of the city suffered from the characteristic eruption on his hands and genitals. His story was, that after handling the plant, and previous to washing his hands, he had poisoned his penis and scrotum. The appearance of patches of eruption, in the case of Mr. O. C. G., below the collar, is, also, evidence of its conveyance. Prof. Maisch¹ says he "has transferred the poisonous effects to some other persons by shaking hands with them," and Prof. White² reports the case of a child six years old, who contracted the disease from a servant boy (himself not susceptible), whose hands came in contact with the child several hours after having been engaged "in pulling up some of the plants," and had been thoroughly washed "with hot water and soap, and afterwards with vinegar."

Sometimes I have thought the disease was extended by permitting the exudation to flow upon healthy parts, but more careful observation has satisfied me of its innocuousness, at least when applied to a healthy skin, though it is possible the area of erythema may be extended over surface already tumefied. Prof. White and Dr. Pierson failed to produce the disease by inoculation. The exudation, whether from a recently punctured vesicle, or from the surface, will deepen the colour of blue litmus paper, but the changed colour disappears with drying.

Profs. Maisch and Proctor think the morbid phenomena speedily succeed the application of the poison; the former asserts that while operating with it "a copious eruption and the formation of vesicles" occurred on parts exposed to the plants. Griffith says the symptoms are manifest within a few hours after exposure; others concede that several days may elapse. I am convinced that in many cases a week will pass before the appearance of the local symptoms, and the cases are very rare where any morbid condition is apparent within 48 hours. This difference may be due either to the varying susceptibilities or degree of concentration of the toxic agent.

In many cases the disease will run its course in a week, but occasionally it will continue through a month. Griffith³ says the eruption may continue a long time; one "set of vesications succeeding another, so as to protract the disease for an indefinite time." And Prof. White thinks it usually lasts from ten to fourteen days.

Griffith very correctly describes the symptoms as "violent itching, redness, and tumefaction of the parts, especially of the face, succeeded by heat,

¹ Am. Journal of Pharmacy, vol. xxxviii., p. 10.

² N. Y. Medical Journal, March, 1873. ³ Griffith's Medical Botany, p. 185.

pain, vesication, and fever." I do not think the last is often present, except in cases where there is considerable surface involved.

The vesiculation is always uniform in the same person. Generally is in circumscribed patches of closely aggregated minute vesicles, sometimes covering only small portions of the inflamed and tumefied surface. Occasionally the vesicles are very large, looking like blisters.

Prior to the investigations of Prof. White this affection was almost universally regarded as an erysipelatous inflammation. He insists that the "tissue-changes are always of an eczematous, never of an erysipelatous nature." It has seemed to me to present a combination of some of the symptoms of acute eczema and of erysipelas. The character of the eruption, enormous tumefaction, extent of inflammation, degree of infiltration, copiousness of the exudation, proneness to and rapidity of extension beyond the precise limits to which the poison may be applied, and the absence of any marked constitutional symptoms seem to impart to it an individuality.

To a practised eye the diagnosis is not difficult. Particular attention to the essential characteristics, sufficiently set forth in the clinical histories of the cases reported, and to the history of the case, will enable any one to differentiate it from either eczema or erysipelas.

I have witnessed none of its sequelæ, other than the annual recurrences of the characteristic eruption. Cases of acne, chronic eczema, and other chronic cutaneous diseases have been ascribed to the Rhus poison. Long continued and indolent ulcers have also been traced to the same cause, but with the exception of a single case, where slight superficial ulcers marked the localities of several large blebs, and which left, after healing, white spots, I have witnessed nothing of the kind.

Prof. White failed to find a single recorded case of the poisonous action of the Rhus upon the lower animals. Stillé, however, at page 683, vol. 1., *Therapeutics and Materia Medica*, refers to several cases where dogs were fatally poisoned by its internal administration, and one by exposure to the poisonous emanations.

When taken internally its action is that of an acro-narcotic. Introduced in 1788 by Dr. Fresnoi, as a remedy in chronic cutaneous diseases, it has been frequently employed since with varying success in the treatment of certain nervous affections, but seems to have gone entirely out of use.

Dr. Stokes¹ reports three cases of rhus poisoning from drinking the tea made of the root, in one of which the characteristic eruption appeared upon the skin. Dr. Moorman² also reports two cases, poisoned by eating the berries. In the Report on Botany, vol. 5, p. 755, *Transactions of the Amer. Med. Assoc.*, the case of Mr. Wilkes, a medical student, is referred to. To test the toxic effects of the Rhus, he took after supper a gill of the strong decoction of the leaves and vine. He was much swollen

¹ Medical and Surgical Reporter, 1867, p. 373.

² American Journal of Medical Sciences, April, 1866, p. 560.

the next morning, and continued to swell until relieved by a wash composed of the bichloride of mercury and hydrochlorate of ammonia. All these cases recovered.

All the cases of *Rhus* poisoning which I have seen occurred during the spring or summer or autumn months, most usually in the spring. It is maintained, however, that the bark and wood contain the poisonous quality, which it will impart at any season of the year, and that persons may be poisoned by the exhalations into the room while the wood is burning in the fire.

Treatment.—Several indigenous plants have been highly extolled as specifics for the disease. Dr. Stokes¹ claims to have frequently cured cases with one or more applications of the juice or sap of the *Urtica pumila*, commonly known as the bastard nettle; and Dr. Canfield² asserts he has invariably succeeded with the local application of the balsam-like juice of the *Grindelia hirsutula* and *robusta*, a perennial found in California. The *Rhamnus oleifolia* has also been recommended. Dr. Livezey³ has obtained satisfactory results from the tincture of lobelia, and Dr. Risk⁴ has never failed with the decoction of white-oak bark. Dr. Dunn⁵ has had equal success with the decoction of the leaves of the cotton-wood. Prof. White refers to the supposed special power of a decoction of *serpentaria*, and Dr. Clark⁶ has found an infusion of coffee beneficial. Many other remedies have been used, but their claims to confidence are very slight.

Since the discovery by Prof. Maisch that the toxic quality was due to an acid, which he denominated toxicodendric acid, the treatment has been based upon a true scientific basis. Previously it was entirely experimental, and many curious formulæ have been suggested as infallible cures. It is curious to observe how gradually and truly domestic empiricism approached the correct principles of treatment, for, long before the investigations of Prof. Maisch, or even of Khittle, who claimed that the poisonous agent was a volatile alkaloid, ammonia, soda, potash, sugar of lead, soft-soap, and common salt had been extensively employed as domestic remedies.

The very decided curative properties of the alkalies are well exemplified in the cases of Mrs. V. and Mr. O. C. G. In both cases the duration of the disease was cut short, more markedly so in the latter case. The pathological phenomena were arrested at that stage and confined to the precise limits which they had reached at the time of the first application. In the case of Mrs. V. the swelling extended after the first washing with soft-soap, but was unaccompanied with any inflammation.

¹ Medical and Surgical Reporter, vol. xxx. p. 542.

² American Journal of Pharmacy, vol. xxxii. p. 414.

³ Boston Medical and Surgical Journal, vol. I. p. 262.

⁴ Cincinnati Medical Repertory, July, 1871.

⁵ Medical and Surgical Reporter, vol. xxiv. p. 195.

⁶ Boston Medical and Surgical Journal, vol. liii. p. 163.

There appears to be some other element of disease besides the mere local toxic effect of the acid, or how account for the extension beyond the limits of the direct application of the poison? It extends by continuity, and the alkalies seem to possess an equally satisfactory influence in arresting the morbid condition in such parts. The cases reported by Dr. Stokes and the case of Mr. Wilkes would seem to suggest the conclusion that it will produce its local cutaneous effects through absorption into the blood.

Glycerine will sometimes relieve the burning and itching. Its influence is, however, simply palliative. The glyceratum amyli relieves the intense local suffering, and affords sufficient protection to the inflamed surface without obstructing the view of the parts.

The beneficial results, ascribed by several writers to cold lotions of sugar of lead, are, I think, due entirely to its cooling and perhaps astringent properties. With me it has not yielded any direct curative results. Prof. White, however, claims that it precipitates with the toxicodendric acid "an inoffensive, harmless salt."

I have only treated the disease during its acute stage, and hence cannot determine the value of the alkalies and other suggested remedies in the treatment of the chronic form. The first and second attacks of Mrs. V. ran their course, unless the second was arrested by the application of glycerine and carbolic acid. Washes of the mild and corrosive chloride of mercury have seemed to afford the surest hopes of success when the alkalies have failed.

I have found but two fatal cases recorded.

ART. X.—*Case of Erysipelas followed by Puerperal Peritonitis.* By
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THE question whether puerperal peritonitis is related to, and dependent upon, the virus which engenders erysipelas has elicited much discussion among practitioners of midwifery as well as among pathological writers; and although much, and convincing, evidence has been adduced in confirmation of the supposed relationship, its existence can hardly as yet be regarded as a settled pathological fact. As a contribution to the evidence in favour of the identity of origin of the two diseases, I will relate a case which recently occurred in my own practice.

Mrs. O—, aged about twenty eight years, received a slight wound on the forefinger of the left hand from a butcher-knife, while engaged in some domestic duty. On the following day a peculiar redness was noticed about the seat of the wound, attended with considerable swelling and much pain. Slight chills, with flushes of heat, supervened. These symp-