Jan 13th. He complains of pain in the stomach and bowels, thinks it is the medicine; the pain in the back was greatly relieved by last night's injection. He was ordered the syrup of iodide of iron two drachms three times a day.

Jan. 15th. The patient is much better. He has no pain in the back, but feels soreness in muscles of thigh. The injection was repeated.

Jan. 17th. The pain and soreness are relieved, but not quite gone. The injection was repeated.

Jan. 23rd. The patient is much better; he feels that the rheumatism is entirely gone. He has had three injections, at intervals of two days. He says he is cured thereby.

Jan. 26th. He feels able to work, and has no pain whatever. He was discharged well.

CASE III. Elizabeth Dine, aged 50, nurse, was admitted January 9th, 1860, with acute sciatica.

Last night (January 8th) she was suddenly seized with an acute pain in the back, at the sacro-iliac symphysis, which shoots down the left leg as far as the great-toe. She cannot walk or even stand, nor lie on her back or left side. The pain is much increased on pressure behind the trochanter-major and in the popliteal region. Dry cupping was ordered to be applied in the region of the nerve; and the atropine injection at night.

Jan. 11th. She found much benefit from the injection. She slept well; can move her leg; there is still much pain experienced on pressure. The injection was repeated.

Jan. 14th. The injection was again used last night, and this morning the report is:—The pain is entirely gone; there is no pain, even on pressure, however firm. She can walk, stand, or sit.

Jan. 19th. She has improved her walking the last five days; is now quite well, and was discharged well.

REMARKS. It is comparatively rare that a recent case, like the last, is admitted into an hospital, and therefore it is worth notice that the injection was employed within twenty-four hours of the attack, and that neither general nor local abstraction of blood was resorted to, nor counterirritation in the second stage; but the injection of atropine only three times, at intervals of two days, the effect of which, on the disease, is very evident. In the above cases, no pains were taken to discover the particular spot where most tenderness was felt, and but little constitutional inconvenience was caused; some giddiness, succeeded by dryness of throat and dilatation of the pupil, however, occurred. The rapidity with which relief was afforded took us quite by surprise, while its permanence has given equal satisfaction to medical attendants and patients. The only other case in which the atropine injection has been prescribed by Dr. Cowdell, is one of intercostal neuralgia, treated while this paper has been in the hands of the printer. The young woman, aged 18, has been for several weeks under treatment for that troublesome pain in the left side—the cause of so much discomfort to many young women. She has at present had only one injection, and from it derived very great relief.

CASE IV. Anna Dare, aged 35, washerwoman, was admitted September 23, 1859, with facial neuralgia and cervical myalgia, which had continued more or less for three years, the pain coursing from the left temporal region to the clavicle and scapula, affecting the integument and muscles of the neck, especially the trapezius muscle. She has been blistered and cinchonised for eighteen months, without benefit. She was ordered an injection of a quarter of a grain of morphia into the tissues of the neck, night and morning.

Sep. 24th. The patient passed a good night—the first good night for many months. The effect of the injection was sleep in less than ten minutes.

Sep. 26th. The patient is improved. The pain in the face is less; being nervous, she complains of general pain, especially in the morning. She was ordered a shower-bath.

Sep. 27th. She will not submit to the shower-baths, or further injections. She was discharged accordingly, relieved.

ADULTERATION OF FOOD. A Bill of Mr. Scholefield, Mr. Wise, and Mr. Villiers, imposes a penalty on persons guilty of adulterating articles of food or drink. Vestries and district boards in London, and town councils in boroughs, will appoint analysts; and for the fee of 2s. 6d. to 10s. 6d. purchasers of suspected articles may have them analysed, the certificate of the analyst being legal evidence. There will be an appeal from convictions before the justices (who will have power to order analyses of food) to the Quarter Sessions. The Act is limited to England.

Original Communications.

THE SANGUINARIA CANADENSIS: ITS NATURAL HISTORY, PROPERTIES, AND MEDICAL USES.

By GEORGE D. GIBB, M.D., M.A., M.R.C.P., Physician to the St. Pancras Royal Dispensary.

[Read before the Medical Society of London, January 23rd, 1860.]

[Concluded from p. 90.]

Medicinal Uses. The sanguinaria holds a very high rank at the present time in American medicine, and takes its proper position, among many other valuable remedies but little known in this country, in the *United States Dispensatory* and other standard works on therapeutics and pharmacology. It has been considered with, I think, great justice to be allied in its properties to the polygala senega or snake-root, and promises in many instances to be a valuable substitute, both in relation to its emetic and its expectorant properties, in various throat and chest affections. Many American writers consider that there are very few plants superior to the present in its medicinal virtues; and the concurrent testimony of a number of eminent men shows, in their united experience, that it is worthy of a trial in this country in many diseases which perhaps may sometimes prove rebellious to the ordinary methods of treatment adopted. Some of these it is my purpose now to consider, and I shall endeavour to show the principal maladies in which it will really prove useful.

Pneumonia. In an epidemic of the typhoid form of this affection which occurred in the eastern United States anterior to 1822, the efficacy of blood-root was proved by Professor Ives of New Haven, who praised it very highly. He found it an important adjuvant to the ordinary course of treatment adopted at that time for this affection. Dr. Tully's experience agrees with the foregoing; and in what he calls moderate cases of the complaint, he found three parts of the tincture or wine of the sanguinaria with one part of tincture of opium amply sufficient to cure in the secondary stages. In the ordinary form of pneumonia, Dr. J. W. Francis of New York enjoined caution in its use during the first stage, as likely to prove irritating in large doses, whilst in moderate it acted as a mild stimulant and tonic. In the second stage, after the antiphlogistic measures of the first, he says it will prove very serviceable. Dr. Israel Allen of Stirling, and some others, have had recourse to this medicine as a substitute for digitalis in the chronic form of the complaint. Other American physicians give it in various stages of pneumonia, varying the dose according to the stage and condition of the system. Thus Dr. J. P. Leonard of Lime Rock recommends large doses after blood-letting in the sthenic form, and small doses in the asthenic form of the complaint. Professor Ives insists upon emetic doses in the sthenic form. Dr. Macbride of Charleston, South Carolina, has found it useful in hydrothorax, following pleuropneumonia, in sixty-drop doses of the tincture three times a day, increased until nausea is produced. Dr. Tully advocates its use in the same disease, when there is no organic mischief. In chronic pneumonia, Dr. Wood of Philadelphia states that it will be found a valuable adjuvant.

Phthisis. Dr. Tully asserts that, in the subacute form of inflammation which often precedes a rapid phthisis, the cure may in general be trusted to sanguinaria and opium, after the previous use of aperients, and perhaps small doses of calomel and opium. In confirmed phthisis, it is of more value, he says, in combating and palliating symptoms than any other remedy. This, it will be remembered, was written some years ago, before many of the medicines now in use were recommended for this disease. Dr. Stevens of Ceres (1850) has seen the most marked benefit result from it in *hæmoptysis*. For this symptom it was employed by Dr. Nathan Smith and others with remarkable success, fifty years ago; and Dr. Smith's opinion then was, that it would do more towards preventing phthisis than any other remedy. This, I may observe, was mentioned before the Medical Society of London in 1810, and is published in the first volume of *Transactions* ever issued by the Society.

As an expectorant in the first and second stage, especially the latter, its action is said to be certain, and can be depended upon to arrest the cough and freely empty the bronchial tubes. I have taken some pains to estimate its true value in phthisical affections, especially in the pretubercular stage, in the second,

and in the third stages of the disease; and I can testify to its being a remedy of some importance, that can be relied upon. In bronchitis, it is not the less valuable, as I shall presently show. I gave it in three cases of that condition of body, preceding the deposition of tubercle, in which that product had not commenced to form, although there was cough, short and feeble inspiration, and a general phthisical aspect. In one, a girl of ten years, Alice S—, there was an hereditary predisposition, and many of the symptoms of phthisis in the first stage appeared to be present, but with an absence of the physical signs of the disease. She had taken cod-liver oil and other remedies without benefit, before she came under my care; and was extremely emaciated and weak. After attending to the secretions, I put her on the compound sanguinaria powder nightly, which permitted me subsequently to give her steel, and to resume the cod-liver oil. Her health improved; the cough diminished and disappeared; she gained strength and flesh, and ultimately was restored to perfect health. In another instance of the same kind, in a girl of ten years, Caroline H—, with a sluggish liver, jaundice, cough, but no deposition of tubercle, the same good result ensued, although the time was longer.

In the first stage of phthisis, wherein actual deposition of tubercle was going on, with all the symptoms well marked, in which cod-liver oil alone was not agreeing, I have combined with it small doses of the compound sanguinaria powder twice a day, with relief to the shortness of breath complained of, and improvement of the general health; and all the improvement has been attributed by the patients to the sanguinaria.

In the second stage, the tincture in moderate doses may be combined with other expectorants with very decided advantage, and will assist other remedies to cure; whilst, in the third, the relief afforded in a ready expectoration and complete emptying of the bronchial tubes is really marvellous. Patients have implored me to give them some of the red powders. One poor man, aged 55, with vomica in both lungs, and generally stuffed with phlegm, and much dyspnoea, declared they "did him a world of good", and that nothing had afforded him so much relief.

The expectoration becomes more easy, the breathing clearer, the spasmodic efforts at coughing less; and much improvement will result for a time in the last stage of this malady. Some bitter infusion may be combined with the sanguinaria, with decided good effect in the dyspepsia and loss of appetite sometimes present. I believe the sanguinaria in moderate doses will be found a remedy of much service in the pretubercular and first stages of phthisis, either alone or combined with other substances; and that as an expectorant, in the second and third, it cannot be surpassed. It materially helps to prolong life even in very hopeless cases. In my work on *Diseases of the Throat, Epiglottis, and Windpipe*, just published, I have stated that I have found the decoction of senega, combined with the tincture of sanguinaria, especially useful in promoting warmth and easy expectoration, in consumption associated with disease of the windpipe. Blood-root and tincture of opium give great relief in bronchitis associated with a similar condition of throat-disease.

Bronchitis. In the chronic form of this malady, it is in most general use, I may say, all over North America, as one of the most active and useful expectorants. Drs. Stevens and Leonard speak strongly in its favour. The latter observes, that its acrimony renders it powerful in removing the tenacious phlegm, and which it is our object to get rid of. Dr. Wood of Philadelphia—a name honoured in America, and well known in Europe—recommends the tincture, among other remedies, as well adapted for this complaint, four to six times a day, kept just within the nauseating point. It is used extensively in the various hospitals in Canada, by many physicians whom I rank as warm personal friends; and is found truly valuable as a remedy. Its value in bronchitis I have known for some years, and have frequently found it more serviceable than many other expectorants, and one that promotes the expulsion of mucus in such a manner as to afford very great relief, with a feeling of warmth and comfort to the patient. I commonly prescribe it in dispensary practice. Dr. Horace Green of New York praises it most highly in allaying the cough and irritation in some forms of follicular disease complicated with bronchial or pulmonary inflammation.

Catarrh in its various forms, but particularly the chronic associated with emphysema, is very much benefited by this remedy. Equal parts of the tincture and of paregoric were found by Dr. Tully to afford most marked relief. It produces a warmth about the chest, which the patients find agreeable.

It is much employed in coryza, or cold in the head, promoting the discharge of mucus, and imparts a pleasing sense of warmth to the whole head. Dr. R. P. Stevens speaks highly of its virtues in this affection, and uses it in the form of an errhine, combined with cloves and camphor. I can add my testimony to its value in this malady, and have administered it in very severe cases with speedy relief. As a gargle, also, it is very efficacious.

Asthma. Some experience of its use in dispensary practice, has shown me that the paroxysms of asthma are much relieved by it, their severity and frequency becoming diminished. I gave it with advantage to a female aged 57, who had been asthmatic since the change of life in 1850, and who suffered from frequent diarrhoea and dyspnoea. It completely dispelled an asthmatic cough in a female of 30, who had aborted a few weeks before. She was subject to this troublesome cough on any sudden change of the weather; there was no disease of the lungs, although she belonged to a phthisical family. Among other cases of interest treated by the same remedy, was a girl of 13, with hereditary asthma; she had besides some of the symptoms of stone in the bladder, although I could detect no calculus. She passed her water in bed, was fretful and irritable, and the urine was loaded with lithates. She rapidly improved under a suitable pectoral mixture and the compound sanguinaria powders, and in a little while was restored to perfect health. Its efficacy in asthma is confirmed by other observers, and amongst them may be mentioned Dr. Eberle, who speaks well of it.

Pertussis. As this important affection has elsewhere met with some attention at my hands, and still is with me a subject of most earnest inquiry, I shall do no more in this place than to state that blood-root will cure the disease after a short period of trial. Professor Ives, Dr. Tully, Dr. Fitzgerald Bird, Dr. R. P. Stevens, Dr. Waterhouse, and many others, recommend it for the cure of this malady, particularly from its emetic and expectorant qualities. It is one of the regular remedies for whooping-cough throughout the United States. I have submitted a few cases to treatment, for the purpose of testing the accuracy of previous observers, and have not been disappointed in it. It should be combined with camphorated tincture of opium. I do not, however, recommend it as superior to all other remedies; it will be found worthy of trial, when other methods have proved slow or unsatisfactory.

Croup. Dr. Nathan Smith and others speak of it as a *sovereign* remedy in this disease. Dr. Bird recommends its use in the membranous stage, as an emetic, in the form of decoction. It expels the false membrane, and produces a stimulating effect upon the mouth and fauces. Dr. Barton pronounces it an excellent substitute for senega in cases of malignant sore-throat, croup, and similar affections, in the form of an emetic and stimulating expectorant. Dr. Ives recommends it as highly useful in the first stage of croup, and must be given so as to produce vomiting. He observes, that many physicians have relied, for years, wholly upon it as a remedy for croup. Dr. Leonard combines tartar emetic with it. I have had only a limited experience of its value in croup, but would not hesitate to employ it urgently, when the sole recourse left to the physician is tracheotomy. In the last stages, I rely upon the strong decoction of senega to effect what the surgical operation is expected to do.

Diphtheria. Of the three forms of this disease now well recognised by the profession, namely, the simple, croupal, and malignant, it is in the two last that the sanguinaria will be found especially useful. In my own practice, I employ this substance as an emetic in the *croupal* form; it acts with energy, and produces a thrilling effect upon the entire mucous membrane of the fauces and respiratory tract, with a feeling of warmth. It alone, seems to impart vitality to the suffering throat, and I recommend it with the very greatest confidence. The decoction or infusion may be given in the dose of from four to eight drachms, at short intervals, until vomiting ensues. This may, then, be followed by the muriated tincture of iron, chlorate of potass, and hydrochloric acid, as recommended by others, and also by myself, in my work *On Diseases of the Throat*.

If it has been necessary to resort to the operation of tracheotomy to afford relief in the hour of danger, we must not rely upon it alone to cure. Something must be given to stimulate and to support, whilst it will at the same time prevent the pouring out of any more diphtheritic exudation; and nothing, as yet, has been found that will accomplish this more effectually than the sanguinaria, the tincture of which, in forty drop doses for adults, and ten for a child, may be

given every two hours. Without undertaking to promise too much, I feel satisfied that those who may employ this valuable and powerful remedy in the manner indicated will find no reason to regret its use; its properties are very similar to the senega in croup. In the malignant form of diphtheria, besides the most active and energetic treatment, as hydrochloric acid to the throat, etc., a gargle, composed of a warm decoction of sanguinaria in vinegar, is invaluable. This subject I have gone into more fully in another place.

Scarlatina. Dr. Tully has used the decoction as a gargle with benefit, and Dr. Stevens, of Ceres, derived great benefit from full emetic doses of the decoction in the malignant form of scarlatina. It removes the morbid secretions of the mucous membrane of the stomach, œsophagus, and fauces, and goes far towards breaking up the morbid influence of the disease. In an epidemic of scarlatina, in which the anginous symptoms were, in many cases, of the most alarming character, terminating frequently in acute laryngitis, Dr. R. G. Jennings, of Virginia, after the failure of almost everything else, including nitrate of silver, found gargles of the infusion of sanguinaria in vinegar most efficacious. They cleansed the throat of viscid secretion in the most admirable manner, and afforded much comfort to the suffering patients, allaying all irritation.

My experience of its use in scarlatina is limited; but the testimony of its value as a gargle in the malignant form, is of the most important character, and should be borne in mind when epidemics appear.

Rheumatism has been treated by Professors Nathan Smith, and Ives, in the acute form, with the tincture or decoction, given till its operation upon the skin and system generally becomes manifest. Very many other physicians speak of its use in the chronic form. The juice is relied upon by the North American Indians for the cure of rheumatics. I have cured some cases of chronic rheumatism by the tincture and compound powder. In one, a female of 29, the subject of leucorrhœa and rheumatism, all the pains disappeared in a fortnight, and even the leucorrhœal discharge diminished.

Hepatic Diseases. As might be expected in the Southern United States, where yellow fever, jaundice, inactivity of the liver, and other true hepatic affections prevail, from the nature of the climate, both as regards its high temperature and moisture, and influences arising from its geological position, the sanguinaria would receive a trial in some of them. Dr. Macbride, of Charleston, found it of utility in torpor of the liver, attended with colic and yellowness of the skin. Jaundice he submitted to frequent trials of the medicine, and with advantage. How it acts in jaundice, is a question that was warmly discussed among American physicians; but that it proves successful in curing the jaundice, none seem to dispute. Dr. A. D. Wilson cured a case of enlargement of the liver and spleen in a girl of 16, by the tincture and extract. The evidence of its value in jaundice is favourable by a host of careful American writers. I have used the drug in jaundice, in conjunction with mercurials, and with advantage; but am inclined to attribute much of the benefit derived to the influence of the latter.

Amenorrhœa. From what has already been stated in previous parts of my paper, it will have been seen that sanguinaria, especially in its properties, is an emmenagogue of some importance and power. Indeed, its first known use among the native Indian women was for this purpose. If the patient is plethoric and of full habit, large doses are necessary; and if combined with aloes, shortly before the usual monthly period, it will scarcely or never fail to produce menstruation. On the other hand, if anæmia is a marked feature with debility, to be successful, it is recommended to combine some chalybeate with it. In the form known as *emansio mensium*, it is asserted that the remedy will never fail.

Influenza, Dysentery, and Intermittent Fever, have been treated by it, with doubtful results.

Diseases of the Skin. Without dwelling at length upon its use in these, I may mention, that it will cure scabies, tinea capitis, chronic impetigo of the scalp, prurigo, and some others. Several of these were submitted to treatment in my hands with good results. The ointment has a remarkably cleansing effect in many cutaneous eruptions, and would seem to act principally by destroying the vegetable growths, which in the great majority keep up the disease. The fresh juice directly applied, is, I think, preferable to the unguent, and is thus used by the Indians.

Surgical Diseases. Those said to have been benefited by sanguinaria, but which I shall not dwell upon, are ill condi-

tioned ulcers, warts, and nasal polypi; gonorrhœa, bites of venomous reptiles, and erythema from acrid and poisonous plants. In regard to its asserted powers in cancer, I will observe that it was tried internally and externally by myself and others in some painful examples of this disease, and we regretted having lost any time in giving it a trial, as we found it to be completely inert in scirrhus affections.

Preparations. It now only remains to mention the various preparations.

1. **Powder.** The usual dose of this as an emetic is from ten to twenty grains suspended in water. It is preferable sometimes to administer it in the form of pill, to avoid the irritation of the fauces. Dr. Leonard frequently combines it with ipecacuan. As a nauseating and stimulating expectorant, the dose is from one to five grains, repeated more or less frequently, according to the effect desired. Grain doses will produce a diaphoretic and expectorant effect; if given every one or two hours, it will then exert a sedative action, and reduce the frequency of the pulse.

2. **Compound Powder** (of the author). Take of sanguinaria powdered, two scruples; hard opium, powdered, one scruple; sulphate of potass, powdered, seven scruples. Mix. Every ten grains contain one grain of opium, two of sanguinaria, and seven of sulphate of potass. The dose is from three to fifteen grains. It is one of the most convenient preparations, and probably the least irritating.

3. **The Powder of Sanguinaria with Camphor.** Take of sanguinaria powdered, one scruple; powdered camphor, eight grains; powdered cloves, thirty-two grains. Mix. This is used as an erhine in coryza, and proves very efficacious.

4. **Infusion of Sanguinaria.** Take of sanguinaria bruised, five drachms; boiling water, a pint. Macerate for four hours in a lightly-covered vessel, and strain. The emetic dose is from half an ounce to an ounce, at short intervals, till its effects are produced.

5. **Decoction of Sanguinaria.** Take of sanguinaria bruised, six drachms; distilled water, a pint and a half. Boil down to a pint, and strain. The dose is the same as the infusion, but is a little more energetic, particularly if given warm.

6. **Preserved Juice of Sanguinaria.** This is prepared by expression from the fresh root, and adding alcohol; but I think it preferable to employ the expressed juice when required, as obtained fresh from the root. When the fresh root is broken, or the stems of the leaves, the juice will pour out in sufficient quantity for immediate use.

7. **Oil of Sanguinaria.** This may be obtained by submitting the root with water to repeated distillation. The dose would be from one to four drops.

8. **Extract of Sanguinaria.** Take of sanguinaria bruised, five ounces; water, two pints. The bruised root is to be macerated for some hours in a portion of the water, then briskly rubbed, adding the remainder, and then set by for the drugs to subside. The liquor is then to be strained and evaporated to a proper consistence. If warm water is used instead of the cold, the extract soon becomes mouldy. A more suitable form might be employed than the above. The dose is from an eighth to half a grain *ter die*. It may be necessary to commence with a sixteenth, according to the strength of the patient. The extract, as prepared by Tilden and Co., is a very elegant and popular preparation, and much employed.

9. **Tincture of Bloodroot, U.S.** This is the only official preparation, and is made as follows:—Take of bloodroot, bruised, four ounces; diluted alcohol, two pints. Macerate for fourteen days, express, and filter. It is also prepared by thoroughly moistening the bloodroot in powder with diluted alcohol, allowing it to stand for forty-eight hours, then transferring it to a percolator, and gradually pouring upon it diluted alcohol, until two pints of filtered liquor are obtained. Will prove emetic in a dose of two to four drachms; but is rather intended to act as a stimulant to the stomach, expectorant, or alternative, for which purpose twenty to sixty drops may be given every two or three hours in acute cases, and three or four times a day in chronic. (See *United States Dispensatory*, and *Wood's Therapeutics and Pharmacology*, vol. ii.)

10. **Green's Tincture of Sanguinaria.** Dr. Green's formula is as follows:—Take eight ounces of the bloodroot, finely bruised, and macerate in two pints of absolute alcohol, and then prepare in the usual way. The dose is from fifteen to sixty drops every three or four hours, or three or four times a day, according to the necessity of the case. Although I do not go so far as to believe, with Dr. Green, that the official tincture is inefficient, still it seems to me that its strength might be increased with decided advantage, because the active

principle is readily taken up by the spirit. The absolute alcohol is for that reason also preferable to the diluted.

11. *Wine of Sanguinaria*. It is prepared in the same manner as the official tincture, substituting sherry wine for the diluted alcohol. The dose is the same as the tincture, and is considered more pleasant and powerful.

12. *Vinegar of Sanguinaria*. Take of sanguinaria fresh and sliced, half an ounce; vinegar, two pints. Shake it frequently, and it is ready for use in a few hours. This is the process of Dr. Jennings. I think it preferable to recommend the root to be bruised, and rubbed up with the vinegar, and filtered after a few hours.

13. *Syrup of Sanguinaria* is prepared by Wiegand as follows:—Take of bloodroot in coarse powder, eight ounces; acetic acid, four ounces; water, five pints; sugar, two pounds. Add to the powder two fluidounces of the acetic acid, mixed with a pint of the water; macerate for three days, transfer to a percolator, and displace with the remainder of the water mixed with the remainder of the acetic acid. Evaporate the infusion obtained, by means of a water-bath, to eighteen fluidounces, then add the sugar, and form a syrup, straining, if necessary. This is serviceable to young children. The dose, as an emetic, is from one to two fluidrachms.

14. *Ointment of Sanguinaria*. Take of the powdered root a drachm; lard, an ounce. Mix.

15. *Sanguinarina*. This is the alkaloid, and has not been used in medicine; I have prescribed some of the salts of it, prepared by myself.

CASE OF SUSPECTED POISONING BY OXALIC ACID OR ITS SALTS: RECOVERY: WITH REMARKS.

By THOMAS SKINNER, M.D., Liverpool.

[Read before the Liverpool Medical Society, January 12th, 1860.]

THE crime of secret poisoning has become so common of late, as to necessitate increased activity on the part of the profession, in order that they may detect it, if possible, in time to save the victim; if not, at least in time to detect the criminal. The safety of our patients, the safety of society at large, and our own interest, equally demand this of us.

I have thought that the following case would be interesting to you for several reasons:—First, as the crime was detected in time to save the victim, though too late to bring the evidence home to the criminal; secondly, as it is an unusual poison to be made use of for the purpose of committing murder, especially by slow poisoning; thirdly, on account of the great difficulties connected with the detection of the poison in most cases; and lastly, because of the extensive and interesting field it lays open for further investigation.

Professor Christison, in an interesting memoir in the *Edinburgh Medical and Surgical Journal*, so far back as April 1823, made the following prophetic statement:—

"Though oxalic acid has hitherto been given through accident only, there is much reason to fear it may also be given by design, when its properties are more generally known. Much inducement is already held out to the poisoner by the readiness with which it may be administered; and it will be no small additional temptation, that, in certain circumstances, there will be as much difficulty in detecting it." (Vol. xix., p. 194.)

CASE. C. W., unmarried, a young, healthy, and intelligent, but unsuspecting female, without relations of any kind, was left in possession of household furniture, bed and table-linen, and *bijouterie*, to the value of about £100. Her means of living are comparatively moderate, and she was attended by a female domestic much older than herself, who had long obtained the upper hand of her. They were the sole occupants of the house.

On the 8th of November last, the young mistress was seized with a severe rigor, followed by an attack of acute peritonitis, seemingly arising from no very evident cause. Leeches, to the number of twelve, were applied to the abdomen, and the ordinary ice and opium treatment was adopted. On November 15th, or seven days thereafter, the patient was convalescent, and put upon quinine, port wine, and food easy of digestion. On the fifth day of the convalescence, a relapse occurred. The peritonitis, which before was general, was now limited to a small spot in the left umbilical region, and, though so limited, yet the pain was exquisitely acute. The pulse was 110, hard

and wiry; the tongue much furred, thirst intense, and occasional vomiting and retching. The forehead was covered with beads of perspiration, the knees drawn up, and the general aspect of the patient was expressive of extreme agony. No cause was traceable to account for this relapse, no more than for the primary attack. Leeches were again applied, to the number of eight, over the painful spot, followed by large anodyne poultices, and ice and opium, as much as could be borne, were administered internally. In two days or so the patient was again convalescent; the pulse 64, but the appetite on neither occasion returned, and there was always present an unaccountable feeling of nausea. She was again ordered port wine, and as much rice porridge as she liked, thrice daily. No medicaments of any kind were to be given, and, as my patient was seemingly out of danger, I lessened the frequency of my visits.

On December 1st I saw her in the morning. She was then still complaining of the nausea. She thought it was arising from the presence of bile in her stomach, and she asked me if I would allow her some warm water to relieve it. I consented, but the warm water, though it emptied the stomach, did not afford relief to the feeling of nausea. Before leaving the patient's house on this occasion, I began to have misgivings about the domestic, as I could not account for the nausea, so I ordered her to keep anything which might come from her mistress for my inspection.

Next day, her servant, who also nursed her and gave her all her food and medicine, called at my house between the hours of six and seven a.m., to inform me that her mistress was very ill with vomiting, and just at the point of death. Such a sudden change, entirely out of the natural course of the disease, added to my previous misgivings, made me at once suspect poisoning; I therefore took with me a clean phial in order to secure some of the vomit.

On my arriving at the house it was exactly seven a.m. I found the messenger coolly cleaning the windows and humming to herself, instead of attending to my patient, who was then almost dying. She opened the door, and told me that her mistress was "*bilious*," that she was often complaining this way, that she (the servant) was tired of her place, as her mistress was no sooner well of one thing than she was ill of another, and she was not able to sit up all night and work all day." After this heartless tirade was delivered, which, to say the least of it, was false, I hurried to the patient, and secured six ounces of a greenish fluid, which I saw her vomit. The following was her condition:—Her extremities were quite cold, the forehead and cheeks moist and clammy; the pulse 84, but small and easily compressible, the respiration impeded; the tongue was thickly furred, the colour of it like wash-leather, and red round the edges; the eyes were lustreless which twenty hours before were bright and shining; the cheeks were fallen in, the countenance anxious, and the general expression cadaverous. She had an uncontrollable thirst, which had to be gratified, despite the urgency of the retching, vomiting, and hiccup; above all, she suffered most from a severe *burning* pain internally, at the scrobiculus cordis, tender when touched, and increased on pressure. The pupils were dilated, otherwise the organs of special sense and of volition were intact, but from sheer exhaustion she was unable to give me any particulars, beyond the fact, that she had been vomiting more or less from the time of my last visit (a space of twenty hours). The moment that I saw her, I had not the slightest doubt she was labouring under the influence of an irritant poison.

As the patient had been vomiting for upwards of twenty hours, and was rapidly passing into a state of collapse, further emesis was needless; and, as the poisonous substance was as yet unknown, no direct antidote could be relied on; I therefore determined, if possible, to stop the violent action of the stomach, and to rouse the system. For these purposes, a large mustard poultice was ordered to the hypogastrium, bottles of hot water to her feet and along her sides, some sodawater to be drunk, and an experienced nurse to be got; while I went myself to the nearest apothecary for some pills of creasote and morphia, one of which I administered with my own hands. As I had an appointment with my friend Mr. Marsh about this time, I fulfilled it, and begged of him that he would see the case along with me, which he kindly did.

On our arrival, the patient was much in the same condition, only the vomiting and retching were not so violent, and she was better able to answer our questions. After a careful examination of the patient, we both came to the conclusion, that either the young woman had been poisoned by some com-