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CANADA

MEDICAL & SURGICAL JOURNAL.

ORIGINAL COMMUNICATIONS.

Series of Cases of Poisoning, by Vinum Colchici recently occurring in Montreal. By Geo. W. Major, B.A., M.D.

Read before the Medico-Chirurgical Society of Montreal.)

At 1.30 P.M., on Wednesday Nov. 26th the Police authorities summoned me to attend several persons, reported to have taken some unknown poison, in large quantities:

Detective Lafon, accompanied me and informed me, while on our way, that one case had proved fatal at 12 A.M., and it was only reported at the station after the first death.

On arriving at the place, I found in the tenement, five persons, suffering intensely. I asked for the vessel in which the poison was contained, and was shewn a large "Winchester" bottle capable of containg 94 ounces. On smelling, I thought I detected a "vinous" smell. The bottle had been washed after its contents had been emptied. On enquiry, the victims described the taste as resembling port wine and bark. After drinking, it left a very bitter taste in the mouth. In another dwelling on the oposite side of the yard, were several more cases of poisoning by the same liquid, one very severe in its symptoms.

I was quite unable to decide as to what the poison could be; all my questions were freely answered, but little information of any value was obtained. On examining Flaherty, (case No. 3) I learned that on the evening of Monday the 24th, he, in company with a cripple, Willie

Hauky, æt. 17, had found this bottle on Alexander street, imbedded in the snow. As his tale did not coincide with the story told by his companion of that evening, we decided to receive it "cum grano." Whatever the poison was, it was certainly irritant and very sedative.

Accordingly without any further loss of time, mustard emetics were freely administered, (not being aware that all the poison had been rejected from the stomach), this was certainly unnecessary, as vomiting had been freely present in all from soon after taking the poisonous dose, and continued until the time of my arrival. Flour and water was ordered and bountifully used. Brandy and ammonia, in very large amounts, was given and continued up to the end.

After doing all possible for the patients, on information received from Edward Hauky, that a flask containing about eight ounces had been carried down to the eastern part of the city by his brother William, in company with Dr. Dugdale, Medical Health Officer, and Detective Officers Lafon and Murphy, I proceeded to find out these people in De Salaberry street. After searching in vain, hunting through every tavern and den, the officers discovered some persons answering the description, resident in a miserable hovel, in a yard off No. 55 Alphonse lane. Here we found our man collapsed ; two children, one of nine years, seriously ill ; one of three years less so. His wife had also partaken of the contents of the bottle—not only the night previously but also on the morning of that day. A physician had been in attendance already, who was accordingly summoned, and informed of the nature of the case.

The dying man, on being questioned, told us of yet another victim :

Andrew Lang, of No. 33 Hypolite street. Leaving William Hauky wife and children in charge of Dr. Lussier, who had now arrived, and amply supplied him with Brandy and Carbonate of Ammonia, we again started in pursuit of what we hoped to be the last victim. Lang had been attended by Dr. Turgeon that morning, but poisoning had,

as in the others, not been diagnosed. We found Lang presenting much the same appearance and symptoms as the others. And sending for his attendant at the same time ordering the same stimulants left for our first cases.

While at William Hauky's house we obtained about three ounces, of the poison, which had not yet been consumed, and on examining, discovered Colchicum Wine. This information gained, we were about as well off as before. *No* antidote, Nothing better suggesting, the original treatment was pursued. During an absence of about two hours, or less, two deaths had occurred and more threatened to end fatally every minute. Their spiritual advisers were in attendance, and the "Sisters" nursed and cared for all. The house was destitute of wood for heating, and bedding was very deficient. All these requisites had been supplied during our absence. Although all the cases had been deemed hopeless, still stimulants were freely used,—in the hope of carrying some through the danger. Sister Cleary informed me that all desired to be allowed to sit up,—but she had refused permission. The wine was from the establishment of Evans, Mercer & Co., manufacturers, and was made from the "seeds."

From experiments performed with a portion of the recovered sample, the wine was found to be very active. The wine of seeds is much more uniform in strength. As the seeds are only matured once in the year and are then gathered, whereas the Corm is always obtainable, and is very variable in activity in different seasons. In estimating the activity of Colchicum the variable strength of the different preparations must be kept in view. The Corm is most active in July and August; the seeds are more uniform in strength and the flowers and leaves feebler. In some seasons of the year the Corm is almost inert. The seeds are very hard indeed, quite as tough nux vomica seeds. Mr. Mercer, a gentleman of wide experience as a Pharmaceutist, informs me, that it is almost impossible to crush them, and if placed in the mill, without being soaked for

three or four days in sherry, several days have been consumed without reducing more than one half or two thirds the quantity submitted for grinding. The same gentleman considers the wine of the seeds most energetic, and most reliable.

The wine of the Corm is the only one officinal in the B. P. One made according to the formula of Dr. Williams, and containing two ounces of the seeds to the pint is used in Great Britain. And when Vin. Colch. Seminis is ordered, this preparation is understood—there. The U. S. P. Preparation of the seeds is made with 4 ounces to the pint.

The wine used by the victims in the late poisoning case was made from 4 ounces of the seeds, according to the U. S. P. In referring to the cases mentioned by Guy & Taylor in their works, the wine of the Corm will be understood unless otherwise mentioned.

It appears from the evidence which I was enabled to obtain by questioning the poisoned persons, and afterwards confirmed under oath at the Coroner's inquest, that the Winchester flask, containing the wine of Colchicum (which is now before you) was stolen from an Express van in Alexander street, about seven o'clock, on the evening of the 24th November, by the man Flaherty accompanied by the boy Willie Hauky, and brought to the residence of these people in Tabb's yard, off Hermine street. They all tasted of it, and judging from the appearance of the flask and the way in which it was done up, as also from the acrid taste, decided it to be unfit to drink,—placed it on a shelf, and did not again resort to it until the following Wednesday the 26th November. Several of the family had on this day attended the funeral of an infant child of William Hauky, (deceased), and on their return had entered the dwelling of Edward Hauky. Then, liquor being asked for, this bottle was produced, and on the recommendation of William Hauky (deceased) who declared it to be the best description of Port, was freely partaken of by the

party. The quantities taken by each may be seen on reference to the tables A. B.

The cup out of which they drank was an army regulation tin drinking cup, and is capable of containing six full ounces. After repeated inquiry and cross-examination, I am quite decided bumpers were the order of the day.

The orgie commenced at 5 o'clock, p.m., and ended with the finishing of the wine at 5.30.

The boy Thayer, to whose father the cup belonged, and from whom it had been borrowed some time previously, was not neglected, but received almost three-quarters of a cup, or about 4 ounces, at a moderate calculation. Mrs. Dunn, an invalid, was sent over about two-thirds of a breakfast cup full, and after sharing it in small quantities with the children, drained the remainder—the quantity may be computed at 4 ounces—of which the children had about two ounces between them, leaving the woman an equal amount.

William Hauky on leaving for his house in St. Alphonse street, took with him a small brandy flask (3 gills) containing about 8 ounces of the wine. On the street he met his nephew Andrew Lang, and gave him a "pull of the bottle." Lang says he took two swallows, or about two ounces. On arriving home, distant about two miles, he gave his wife and two children, (aged 9 and 3 years old) a drink. Soon after he complained of feeling unwell, and mentioned to his wife that he believed the liquor to have been poisoned. During the night he experienced the symptoms hereafter to be described. His wife had a drink of the wine the following morning. This woman was not attacked with any symptoms until the evening following the first dose. I may here mention, that probably the symptoms were warded off by liberal potations during the day.

The cases of Colchicum poisoning on record are not very numerous, in all, perhaps, not more than six or eight, that may be considered reliable.

The numerous reports of fatal terminations in gout, by metastasis to the stomach, &c., may sometimes be accounted for by the Colchicum preparations used, The remedy, although pretty sure in its action is powerful, treacherous and unmanageable. Many of the leading Physicians in this city have entirely abandoned its use for the above reasons.

Guy and Taylor refer to the following:

CASE I.—In Nov. 1839, a gentleman swallowed by mistake one ounce and a half of Wine of Colchicum, and died in 7 hours. Severe pain in abdomen and other symptoms of irritation were prominent. No post mortem examination was held.

CASE 2.—One ounce of the wine produced death in 39 hours.—*Schneider's Annalen*, vol. p. 232.

CASE 3.—One ounce taken.—Cramps and twitching of tendons—recovery.—*L'Union Medicale*, Aug. 24th, 1848.

CASE.—Woman with With Acute Rheumatism, aged 56 years, for whom Vin. Colch. Sem. had been prescribed, took by mistake one ounce in divided doses in 12 hours. Nausea, profuse vomiting, slight purging, heat and burning pain in throat; great thirst, cold clammy skin; feeble pulse, pain in stomach, &c. These symptoms continued for three days. She ultimately recovered. — *American Journal of Medical Sciences.*

CASE 5 —Mr. Tereday reports a case of poisoning from two ounces Wine of Colchicum. Symptoms occurred one and a half hours after taking it, and vomiting of a greenish fluid, severe pain and great tenderness over the abdomen tenesmus, thirst.—Death took place in 48 hours. No convulsions, and no signs of cerebral disturbance. Post mortem examination showed a red patch of mucous membrane of the stomach near the cardiac orifice. Intestines slightly inflamed. The head was not examined.—*Medical Gazette.*

CASE 6.—Mr. Mann, of Bartholomew Close reports death in four days from 3 oz. in divided doses. At the post mortem, no inflammation of the mucous membrane was

found, but there was extravasation into the mucous follicles.

Two further cases, where one and a half ounces had been taken, and fatal results in 48 hours.

Post mortem no morbid appearances were found.

In the seven fatal cases which occurrad under my care, not a single post mortem was obtained. This is a subject for very great regret, as many years may elapse before again such an opportunity for deciding the condition of the body after Colchicum poisoning may present itself. In the fatal cases the amount taken averaged from 6 or 8 to 14 and more ounces. Do not think that I now exaggerate the quantity, on the contrary, I am, for the sake of safety, placing my calculations at the very lowest figure. Death from such large amounts must certainly have marked appearances—and deductions from these cases alone could have been made, which would have established such facts, as to make post mortem appearances after Colchicum, as certain as are those from any of the other well-known poisonous agents. The Foreman of the Jury requested an examination, but it was refused him. At the solicitation of G. Prout Girdwood, M.D., &c., the able Chemist and Toxocologist, I applied personally to the Coroner—but was politely refused on the grounds that the order for burial had been issued, and the matter was no longer in his power. Possibly I was to blame in not insisting, and at a more early day that post mortems should be granted. The symptoms and appearances before death are, however, fully noted as observed in seven cases, (as also a full hisrory of ten patients convalescent or now recovering), and cannot fail to be of very great value in the future. They have been faithfully recorded, and will be reproduced in a resumé of symptoms towards the end of this paper.

These cases were visited by nearly 40 physicians, and seemed to excite much interest and sympathy.

In the foregoing sketch it will be observed that I have adhered as closely as possible to the facts in the order in which they occurred, or as they were divulged.

Effects after taking the poison:

In the vast majority of the cases, the symptoms were quite the same, and in only one or two instances did they vary in the least.

In from 45 minutes to an hour and a half after taking, the feeling of general uneasiness and malaise was felt, this was attributed to the quantity of liquor taken, and no alarm was felt until all were seized with vomiting and cramps of the stomach and bowels. Edward Hauky, at present recovering, went to the surgery of a Physician near by; the Doctor on hearing the symptoms, decided the case to be choleraic, and gave a mixture of chloroform and morphia. This was used by them all in small quantities, but was freely partaken of by Edward Hauky (now recovering). The sufferers regarded the medicine as an emetic, and it was not until after inquiry from the Medical gentleman I became aware of the true statement. The vomiting continued during the entire night and following day and only ceased in the fatal cases at the "end"— in the recoveries, retching nausea, gapeing and eructations with vomiting at intervals of every five or ten minutes, continued for days together. The vomited matter was first, the contents of the stomach, next bile or mucus, and lastly a peculiar looking fluid which I can only compare to thin pea-soup, or dish water. The pain over the stomach was certainly severe, but not so agonizing, as authorities state; they complained but little. Pressure over the stomach developed pain instantly—on withdrawing the hand relief was experienced. The bowels were also very sensitive.

At the same time as the vomiting came on, so did the purging, preceded and accompanied by griping pains. The substance passed was, natural contents, bilious stools, rice watery stools—frothy mucus, (compared by one of the patients to clear soap suds). Purging continued all night, and soon the rectum became incapable of containing the contents of the bowels. Stools became involuntary, and were voided unconsciously. Heat and pain of anus;

Cramps were felt in legs ; in two cases severe pain in the knees were complained of, and the limbs were kept flexed. Cramps in the toes—cramps of the fingers and thumbs.

In one case (Edward Hauky), very great pain was found in left shoulder. This pain lasted for several days, and was very annoying to the patient. Pains in the back were severe.

No pains were complained of in the hips, at least I heard of none, no headache in any case.

Great pain in the throat ; all were hoarse as if suffering from an attack of acute laryngitis. Great thirst ; drinks were continually called for, and immediately rejected.

During the night previous to my seeing them, they had been drinking water in large quantities, the floor was one pool of vomited matter and water. The extremities were cold, icy cold and shrunken ; the coldness extended up to the trunk ; the trunk was covered with a clammy cold perspiration ; the temperature was normal or slightly below.

The eyes were suffused congested, and running water ; pupils dilated ; the tongue was coated with a thin white creamy fur—tip and edges were red.

The nose was pinched and blue, lips drawn, lobes of the ears blue, nose and ears cold. Countenance anxious and slightly livid—in fact the face was that of a person shivering from cold. The pulse ran from 135 to 145 in *every* bad case, and became imperceptible ; character of pulse was peculiar : intermitting, fluttering, thread-like, small often ceasing, again returning, failing again. When pulse was not found at the wrist it could sometimes be detected, with care, at the elbow. No pulsation in temporals. Heart's action was very weak, sound almost inaudible. Only one sound could be appreciated, resembled a steam propeller in the distance — very labored sound — impulse could not be felt over the side. In the recoveries the heart's impulse gradually was restored—when sounds improved patient was out of danger. No head symptoms—

mind and intellect could not be more clear—all questions answered willingly. No nervous symptoms.

When the purging was not very excessive, a considerable amount of urine was secreted. The boy Thyer passed large quantities of dark, thick-reddish urine,—so his father has informed me. He took, about four hours after the poison, a gill of gin. This may have increased the secretion somewhat. The others passed urine in less amounts—in the two cases more passed. They all seemed to desire quiet, and would cover up their heads, and turn away to seek rest. None slept.

Breathing was very rapid but free: 36–40 respirations in the minute.

Numbness of forearm was complained of. In two cases there was slight subsultus. One case was slightly convulsed before dying.

All sat up before death and called for drink. The symptoms were those of collapse. Had these cases occurred under less suspicious circumstances in the warm season, and under the same low hygienic condition, I should have felt very much disposed to have concluded that they were in the collapse stage of cholera morbus. These appearances and symptoms were noted on my arrival 22 hours after the poison had been consumed.

I have endeavoured thus far to give you all the facts of this case, in the order in which they became known to me, and I trust you will not find them confusing.

Next, it is my intention to report one case in full. The others will be found in tables appended. I would read each case separately, were it not that they all so closely resemble one another, that it would be one continual repetition, and might be found irksome. Any peculiarity will be found noted in the tables under special symptoms. The case of Edward Hauky is the one selected, as the best for exemplification—his symptoms being quite as severe as any. He took as large an amount as any with one exception (his

brother) and he is now, though still seriously ill, gradually improving—we shall regard his case as typical.

The symptoms described before were those occurring 22 hours after taking the wine, also those of the night on which the wine was taken. After giving notes in Edward Hauky's case, I shall give a synopsis of general symptoms taken up to time of death or recovery, as the case may be.

EDWARD HAUKY'S CASE :—

Edward Hauky, Æt. 35, laborer; strongly built, stout man; had been at funeral of brother's child, and had taken two glasses of spirits on road home; at 5 o'clock drank two cups full, (he still persists in saying brim full). About an hour and a half after commenced to feel unwell, laid down and soon began vomiting: cramps, purging, great thirst. Went to a Physician, and obtained what he considered an emetic, but which the Doctor since has told me was chloroform and morphia—took some himself, and gave it to the others. During entire night vomited and purged, drank water. Passed water from bladder freely twice during night. At two o'clock next day saw him for first time. Pulse 125 to 140; cold feet and hands, face drawn; nose, lips and ears blue; vomiting, purging, anus swollen and painful; evacuations passing away involuntarily. No headache or nervous symptoms. Very great pain in left shoulder. Cramps in stomach, bowels and legs, pain in knees,—tenderness over stomach and bowels. Voice like a raven's croaking. Painful to speak. Pulse intermitting, almost a thread—often absent. Heart sound barely audible—only one sound, as if a heart beating far away. Ordered hot water and bricks to feet and legs. Mustard to stomach.—Brandy and Ammonia internally in very large does. Also milk and gruel, and small pieces of ice. Considered his recovery impossible. Vomiting and purging continued for next three days, with very little abatement. Ordered him turpentine stupes over bowels and stomach. Lime water and milk and essence of beef internally. Hot applications externally. Very little improvement for several days.

Nov. 27—Visited patient with my friend, Dr. Ross. Still in very critical condition, but improvement certainly marked. Pulse 120.

Nov. 30.—Passed five stools. Pulse 112. Sleepless—vomiting every five minutes. Food almost immediately rejected. To use lime water and milk.

Dec. 1st. 10 p.m.—Four stools—very severe pain in the back complained of. Throat not so painful. Perfectly raw inside. Voice very husky. Vomited ten or twelve times. Continued ice. Pulse 98, strong and full. Ordered one grain pulv. opii., repeated in two hours if not asleep. Consumed two quarts milk and beef tea. Pain in left shoulder not so severe, was prominent symptoms for the first three days, and loudly complained of. Dr. Henderson of Edinburgh refers to this as a prominent symptom in a case under his notice.

Dec. 2nd, 7 p.m.—Six stools to-day; passed but little; intense pain over umbilicus, though in pressure elsewhere over abdomen, no pain was experienced. Pulse 78 full and regular. Great thirst; vomiting very much diminished. Ordered one grain of opium. Did not sleep at all night previously on two grains

Stop Ammonia and Brandy—which up to now had been pushed heroically. Continue lime water and milk, and beef essence.

Dec. 3rd, 7 p.m.—Perfectly sleepless last night. Pulse 80; very strong and tense; tongue somewhat clearer—red tip and edges.

Since yesterday feels numbness of both thumbs under the nails. Pain in left shoulder, and scapula much less.

Two ounces Ol. Ric. given at 9 a.m.; has not yet operated.

Ordered fresh eggs with milk.

Vomits but little; throat still sore; very hoarse; has an eruption over the body, resembling poisoned punctures as seen in dissecting wounds. Pains still severe over stomach on pressure.

Dec. 4. p.m.—Gave two powders each of gr. 5 Cal., and 2 opium—one at 8 and one at 12, if not asleep.

Dec. 5.—Saw Hauky with Doctor Simpson.

Pulse 86, full. Pain over stomach very much diminished. Spent very good night; slept 4 hours. Took dose of salts and senna [without my knowledge]. Severe griping pains, vomiting. Milk and eggs.

Dec. 6.—Full and regular pulse, 78. Throat not painful, still very hoarse. Great thirst. No pain over stomach. Consumed 4 eggs and two quarts of milk; yesterday quart beef tea, &c. Still uses lime water. No vomiting of any consequence. Hands if left outside bed clothes become numb [from wrist to elbow], although room is warm. Knees cold all the time.

After the salts had two passages resembling the yelk of egg in appearance.

Dec. 12—I saw Hauky this evening. He is up. Limbs are very numb, big toe of left foot quite insensible, and legs feel as if asleep. When his bowels are moved complains of griping. Uses fresh eggs beaten up with milk every day. Very constipated; only has evacuations when procured by medicine.

Dec. 14, 1873—Still continues to improve. Appetite very fair. Ordered quinine mixture; complains of numbness of limbs, creeping sensation, &c. Hair of the head has commenced to fall out in quantity. In a week he will be completely bald. Before the accident he had a very full head of hair, and in fact until a few days ago. Walked as far as Bleury street, a distance of 75 yards. Was very much exhausted after his return. Experiences great trouble in using his legs, which feel as if they were asleep.

Dec. 18.—Hair still falling, is almost bald. Throat still hoarse; has pain at closet, or when he bends his body. Sleeps much better.

Lives on fresh eggs and milk. Cannot digest solid food with any comfort.

Ends of thumbs feel still numb. Has lost fully 30 lbs weight. Bowels very constipated.

GENERAL REMARKS, APPEARANCES, SYMPTOMS, &c., AS SEEN IN SEVEN FATAL CASES AND TEN RECOVERIES.

The constitutional disturbance was proportionate in severity to the amount of poison taken, of course affected by general health, strength, previous habits and age.

In the fatal cases, the amount of poison varied from 4 to 18 ounces, with one exception, viz., that of Mrs. Dunn, an invalid, who succumbed to a dose of two ounces.

The deceased persons, with the exception of the boy Thyer, and Mrs. Dunn, were all dissipated and low lived. In my opinion, had they been of good strong constitutions, and had received prompt aid, we should not have had the painful duty of chronicling the demise of so many. The children seemed to be more capable of throwing off the effects of doses, which to them ought to have been quite as fatal as very much larger ones to adults.

When small quantities, as half an ounce to one and a half ounces were taken, after the sedative action was overcome, convalescence took place rapidly. For two or three days there was, as a matter of course, considerable irritation of the stomach and bowels, and such other symptoms as we might naturally expect.

ANTIQUITY OF COLCHICUM AS A REMEDIAL AGENT.

The Colchicum plant, Colchicum Autumnale, popularly known as meadow saffron, or Autumn crocus, order Melanthaceæ is a native of moist rich meadows in many parts of England.

Diascorides describes this plant under the names Colchicum, Epherum, and Wild Bulb, and state that it abounds in Messennia and in the Island of Colchos, (from which latter place it received its name.) He describes its poisonous effects as resembling those of mushrooms, and decides upon milk as the best antidote.

Galen alludes to its poisonous qualities.

Paul of Œgina, who flourished in the next century, speaks of Hermodactylus and of its uses in gouty complaints,

and at the same time, remarks that it produces nausea and anorexia, and is injurious to the stomach; and adds that it is speedy in its action.

Alexandet of Tralles, writing in the 5th century, refers to the efficacy of Hermodactylus in gout, after the production of watery stools, yet like his predecessors, states that it increases the liability to attack. Dr. Paris and Sir Charles Scuddamore, of modern times, also agree that the tendency is augmented. Many Arabian Physicians have referred to its power of alleviating gouty and rheumatic pains, and recommend poultices of the root in painful affections of the joints.

Like many other remedies of merit Colchicum fell into disuse until 1718 when it was revived by Wedel, as a prophylactic for the plague.

Again in 1763, Storck brought it forward in the treatment of Dropsy, Gout and Chronic Catarrh. In the interval between 1814 and 1820, by the publications of Want, Home, Haden, Williams, Copeland and others, it was again established in the confidence of Physicians. Mr. Want was very much impressed with the resemblance between the action of "Eau Medicinale" and that ascribed by ancient physicians to Colchicum and Hermodactylus, and also with the fact that Colchicum entered into the composition of Turner's powders, Vienna decoction, and other gout specifics.

Action on Lower Animals.

Colchicia or Colchicina, the alkaloid, has action on the lower animals, similar to veratria the alkaloid of White Hellebore.

Colchicum is poisonous to herbivorous animals, and is generally avoided by them.

It acts with severity on horses and cows, producing inflammation of bowels, purging, running of eyes and nose, destruction of stomach, &c.

It is especially inimical to the dog, and is called by the French " Mort au chien," from its very fatal effect.

Rabbits and frogs, it would appear from experiments, enjoy very great immunity from the action of Colchicum, and have been known to recover from doses fatal to large dogs. Lewins reports having given 6 drachms of the wine of the seeds to a rabbit, without producing any result beyond an abundant secretion of ine.

RESUME :—

In from 45 minutes to one hour and a half after taking the wine, vomiting ensued. The contents of the stomach were first rejected, then bile or mucus ; afterwards a fluid similar to "rice water" of cholera.

When the amount of poison taken was very great, the purging came on simultaneously with the vomiting,—but if only a small quantity, comparatively speaking, had been swallowed, the evacuation of the bowels was delayed for several hours. The passages were first the natural fœces, then bilious stools, next "rice water,"—a very large amount of a frothy, slimy secretion, compared by one of the patients to clean soap suds. In no case were there any traces of blood to be found. The vomiting continued until the last moment in the fatal cases, and the bowels were emptied involuntarily. Cramps were severe in the stomach, bowels and legs. Severe pains were felt in the knee joints in some. And in two cases very markedly in the left shoulder, so much so, indeed, as to be a continual cause of complaint, and avoidance of laying on the left side. Rubbing was frequently demanded for relief. In the majority there was numbness from the elbow to the wrist ; cramps of the fingers, especially the second finger, and in one case extreme numbness of the thumbs under the nails. This latter peculiarity was present even for twenty-six days after. In the case of the boy Thyer, there was great pain between the shoulders. The features (twenty hours after the accident) were pinched and drawn, lips and nose blue, as also the lobes of the ears. The eyes were congested, pupils dilated slightly ; voice hoarse and husky, and pain was experienced in speaking,

Feet and lower extremities icy cold, as also were the hands and arms. The rest of the body had a warmish clammy feel, but was below the normal temperature. The pulse was rapid, 125 to 145 or more in the minute, small, compressible, intermitting, and at times imperceptible at the wrist, though it could be found at the elbow with some trouble. The temporal arteries were difficult of detection, even the carotids required patience to distinguish. For several hours before death, they were almost pulseless, the heart's impulse was not to be felt over the chest, and even with difficulty heard on applying the ear to the chest wall. The sound might be likened to a blowing sound, or a murmur, or to a heart heard at a very great distance, or through a stone wall, both sounds lapsing into one.

Respiration was full and easy, and was well maintained throughout. The pulse respiration ratio was borne out throughout.

The sufferers were sensible to the last and throughout. One case terminated with a slight convulsive effort. All sat up before dying, falling back in less than an instant. No headache was complained of. Muscular strength was retained. They were all able to sit up, lift a cup to their lips, or even walk.

They were perfectly sleepless. In two recoveries there appeared a pustular eruption on the face and lower extremities, resembling in its character poisoned wounds.

In the case of the boy Thyer, while sawing wood, an hour after drinking the wine, he was seized with violent retching and vomiting succeeded by a "fit," which from the decription resembled a convulsive attack. Thumbs were turned in, with the fingers closed over them.

The amount of wine taken varied from one mouthful to 15 or more ounces.

The symptoms in every case were proportionate to the amount of wine taken.

All the fatal cases terminated in from 19 to 28 hours.

After death the features assumed a placid quiet expression; dependent parts of the body were tinged blue.

A FATAL CASES.

No.	Name.	Age.	Amount taken.	When taken.	When deceased.	Interval between taking and death.	Occupation and Appearance, &c.	Special Symptoms.
		Years.	Ozs.		Nov. 27, 1873.	Hours.		
1	Benjamin Thyer.....	12	4	November 26th, 1873, 5 p.m.	12.00 a.m.	19	None. Stout and healthy lad.	After vomiting had an attack resembling convulsions.
2	Mary J. Drennan....*...	25	8		2.30 p.m.	21½	None. Paramour of Flaherty. Dissipated.	Slight convulsive movements of head and arms before death.
3	William Flaherty, *.....	24	8		3.00 p.m.	22	Professed sneak thief. Emaciated and miserable.	Nothing peculiar.
4	William Hawky.....	33	10		6.00 p.m.	25	Day labourer. Strong and able-bodied.	
5	Mrs. Dunn.....	45	3		6.30 p.m.	25½	Invalid—respectable.	Purging was very slight—vomiting not so severe as in the others.
6	Elizabeth Drennan.....	30	8		7.00 p.m.	26	Paramour of Edward Hawky. Intemperate.	Nothing special.
7	William Drennan.....	22	8		9.00 p.m.	29	None. Strong young man.	Showed great desire for quiet. Features particularly livid.

The Winchester bottle contains 94 ozs. (5lbs. 14ozs.,) and was quite full.

* Willie Hawky, aged 17 years, a cripple, was with Flaherty when the bottle was stolen, and tasted it the first day, but was absent from home when it was freely partaken of on the 26th November.

No.	Name.	Age.	Amount taken.	When taken.	Duration of Convalesence.	If retained on stomach and how long.	Special Remarks.
			Ozs.		Days.		
1	Edward Hawky.....	35	11	5 p.m., Nov. 26.	26	1¾ hours.	Very marked pain in left shoulder and scapula.
2	Andrew Lang.....	17	2	6 p.m., Nov. 26.	11	1 hour.	Marked pain in left shoulder and scapula.
3	Mary Qurk, wife of W. Hawky, deceased.....	39	3	9 p.m., Nov. 26. and 9 a.m., Nov. 27.	3	No vomiting occurred for 20 hours.	Symptoms did not occur until late on the second day. Had been drinking.
4	Annie Hawky.....	9	1½	9 p.m., Nov. 26.	2	Retained—Violent symptoms.	Very high pulse and severe vomiting, coldness of extremities well marked.
5	Millie Hawky.....	3	½	9 p.m., Nov. 26.	Vomited almost immediately.	Rejected some after.	Coldness of surface.
6	John Dunn.....	10	All partook sparingly, and if swallowed, vomited.	From 5 to 6 p.m. November 26.	Indisposed for 24 or 48 hours.	If in very small amount retained—if a little more, rejected very soon after.	Reliable information as to quantity consumed, could not be obtained. The quantity must have been very small, 4 to 6 drams at most. Purging and coldness of the extremities was noted. All crowding round the stoves. Appetite impaired, &c.
7	Louisa Dunn.....	14		Do. Do.	Do. Do.		
8	Lucy Dunn.....	13		Do. Do.	Do. Do.		
9	John Peacock.....	13		Do. Do.	Do. Do.		
10	John Rogers.....	17		Do. Do.	Do. Do.		

Case of Excision of the left Superior Maxillary and Malar Bones, and one half of the Nose; by M. METIVIER, Holyoke, Mass.

A few weeks since, Dr. Metivier operated on a woman suffering from a large cancerous tumour, which involved the left cheek, and left side of the nose, together with the Superior Maxillary and Malar bones, on the same side. As a large portion of the integument and tissues below the eye had been removed by ulceration, and a large gap was left, it was not possible to make a flap in the usual way; the following plan was therefore adopted. The patient was seated in a chair, and put slightly under the influence of chloroform, the head leaning well forward, to prevent the blood from running into the throat. An incision was then made, beginning on the middle of the nose, at the nasal process of the superior Maxillary bone, and was carried downwards, dividing the nose at the edge of the septum, and opening up the nostril. It was then carried down, dividing the upper lip in the middle line, into the mouth. A second incision was made from the zygoma, horizontal to the superior border of the malar bone, and on the margin of the orbital plate. This incision curved upwards. A third incision was then made, beginning at the external angular process of the frontal bone, and running obliquely downwards to the lower margin of the nostril, connecting with the first incision, and leaving a large triangular portion of integument to be excised with the tumour. Several arteries required to be tied at this stage of the operation. The soft parts of the hard palate were then divided, and a tooth drawn; the alveolar process was sawed through, and the palatine and orbital plates divided with the bone pliers. The saw was again used to divide the Malar bone, and the Zygomatic process. A few sweeps of the knife, with strong depression, brought down the mass out of its place, leaving a large hole. The patient was roused from under the influence of chloroform several times during the operation, in order that she might clear the

throat from clots of blood, and also that she might take a stimulant. The bleeding was slight, not amounting to more than three ounces. In order to replace the lost integuments which had been excised with the tumour, the incision on the zygoma and the dissection of the integuments was extended almost to the ear. The flap was stretched and attached to the root of the nose by interrupted sutures. It was cut of the proper shape to adapt itself to form the lost half of the nose, and then was attached to the whole length of the side of the nose, and also the lip. It was also fixed to the lower eyelid by several sutures. The cheek was filled up with a large piece of linen soaked in carbolic acid and oil, and carbolic acid water dressing was applied externally to the whole wound. The patient walked to bed after the operation, saying that she was not weak, and did not suffer any pain. In one month's time the wound had healed, leaving scarcely any disfigurement, much to the satisfaction of the patient, who could not be persuaded that the disease would certainly recur.

Medicine.

ON THE RIGHT USE OF DISINFECTANTS. (8).

By H. Letheby, M.B., M.A., etc., Professor of Chemistry in the College of the London Hospital; Medical Officer of Health and Public Analyst for the City of London; and President of the Society of Medical Officers of Health.

I am induced, gentlemen, to bring this subject under your consideration for the purpose of removing the many dangerous fallacies which beset it, and of arresting, if possible, the unblushing quackery which disgraces it. A glance, indeed, at the so-called sanitary literature of the day will show how boldly and how confidently the use of certain inert bodies is recommended to the public as powerful disinfectors. The danger of this, gentlemen, cannot be overrated; for when by such means undue confidence is placed

in the disinfecting power of an agent which fails in its purpose, the result is not merely a waste of materials and a loss of valuable time, but it is also a serious danger to the public. Therefore it is that we should be most careful in the selection of disinfectants—using those only which are known to be effective. It is necessary also that we should be thoroughly conversant with their several modes of action, and that in applying them we should be guided by rational principles suggested by the scientific aspects of the subject.

It is hardly necessary to say that the question in all its relations is very large and extensive; for by the term "disinfection" I mean the removal, or neutralization, or destruction of that which is offensive to the senses or hurtful to the body, limiting it of course to those cases where offensive effluvia, or noxious matters, or specific contagia are the subjects of treatment; and here I may remark that, although the questions before us are undoubtedly connected with the difficult problems now occupying the attention of physiologists, pathologists, and chemists as to the origin of infusorial life, and the cause of specific infectious maladies, as well as of organic decomposition, yet it is at the same time sufficiently independent of these abstruse inquiries as to be capable of very effective practical treatment at our hands, without much reference to the conflicting theories of genesis. To us, indeed, it is of little importance, except to the scientific elucidation and explanation of our empirical facts, whether the manifestations of life in a decomposing liquid be the *cause* of putrefaction and fermentation, or the *effect* of it; and whether it comes "*ex vivo*"—that is, from pre-existing life, as the Biogenists, the Homogenists, and the Panspermatists believe; or "*de novo*," as the Abiogenists, the Heterogenists, and the Non-Panspermatists maintain. Nor does it concern us in our practical treatment of the subject whether each distinct kind of spontaneous organic decomposition and each specific form of infectious disease are the results of the vital manifestations of special germs —differing in each case—or whether they are caused by the

molecular movements of organic matter in peculiar states of decay; for that which we aim at, and which we undoubtedly are able to accomplish, is the destruction or prevention of the hurtful thing which causes offence or produces disease. And as in many cases this is associated with the changes incidental to organic decomposition, it may be effected in one of four ways—as, first, by strengthening the affinities of organic substance, and thus enabling them to resist decay; secondly, by so acting upon them with chemical agents as to produce new compounds which are not susceptible of organization or decay; thirdly, by hurrying on the changes of decomposition and oxidation, so that the particles may quickly arrive at their final stages of decay, and be brought to rest; and fourthly, by the use of special agents which are found to have specific powers of disinfection.

As examples of the first of these methods of preventing decay I may allude to the effect of cold and to the desiccation of organic matters.

As instances of the second I will refer experimentally to the coagulation of albuminous matters by alcohol, creosote, the mineral acids, and most mineral salts,

Under the third head are the oxidising influences of chlorine, hypochlorous acid, permanganate of potash, and atmospheric air, aided by water and porous substances.

And as examples of the fourth method of disinfection I may allude to sulphurous acid, to carbolic and cresylic acids, and to the volatile oils.

The relative value of these several disinfecting substances have again and again been tested by experiment. As far back as the year 1858 I entered very fully into the question of their action on sewage; but very recently they have been examined by Dr. John Dougall, of Glasgow, and Dr. Crace Calvert, of Manchester, with the view of ascertaining their respective disinfecting powers, as tested by their action on protoplasmic and fungus life, and on vaccine lymph. I have tabulated the principal results of these experiments, and submit them to you for examination. Let us therefore

discuss them in the order in which they are there placed:—

1. THE MINERAL ACIDS.—These are *Sulphurous Acid, Nitric Acid, Hydrochloric* or *Muriatic Acid, Sulphuric Acid,* and *Chromic Acid.* This is the order in which Dr. Dougall found they prevented the development of infusoria in infusion of hay, in uriue, and in a mixture of beef-juice and egg albumen—sulphurous acid being the least effective, and chromic acid the most; for in the first place as much as one part of sulphurous acid in 117 of water was required to prevent such life during six days, while in the last case as little as one part in 2200 of water was sufficient. A like conclusion was arrived at when a solution of one part of the substance in 500 of water was used with a little beef-juice or egg albumen. Dr, Crace Calvert, however, found that sulphurous acid was more powerful in its action than nitric or sulphuric acid when used in the proportion of one part in a thousand of solution of albumen, for in the case of sulphurous acid it required eleven days to produce vibro-life and twenty-one days for fungus life, there being no putrid or mouldy odour for more than forty days; whereas with the like proportion of nitric or sulphuric acid the existence of such life was observed on the ninth and tenth days. In all cases the addition of these acids in small proportions, as from 1 to 2 per cent., to putrid matters swarming with animalcules immediately arrested life. In like manner the vitality of vaccine lymph was completely destroyed by the vapours of these acids. It would seem, therefore, that they are all powerful disinfectants, and this accords with experience; for as far back as the year 1773 Guyton Morveau, one of the most distinguished chemists of France, recommended muriatic-acid vapour as a means of disinfecting hospitals; and in 1797 Dr. Carmichael Smith obtained a Parliamentary grant of £5000 for the successful use of nitrous fumes in the disinfection of our prisons. But sulphurous acid enjoys a reputation of much more ancient date. Homer tells us that Ulysses, after destroying the

suitors, fumigated the rooms in which the bodies lay, as well as the rest of the palace, with the fumes of "pest-averting sulphur." Ovid, too, in the "Fasti" speaks of the cleansing and purifying power of sulphur; and Pliny, in his "Natural History," says "that brimstone is employed ceremoniously in hallowing of houses, for many are of opinion that the perfume and burning thereof will keep out all inchantments —yea, and drive away any foul fiends and evil spirits that do haunt the place." The Chinese have always attached considerable importance to the action of burning sulphur as a disinfectant, and have from time immemorial used pastilles of sulphur for internal fumigation, and squibs and crackers for external.

In the act of generating the gas by burning sulphur in atmospheric air, thirty-two parts of it by weight combine with the same weight of oxygen to produce sixty-four parts of sulphurous anhydride, which occupies precisely the same bulk or volume as that of the oxygen consumed. The density of the gas is considerable, for its specific gravity is 2·247, or very nearly twice and and a quarter that of atmospheric air; a cubic foot of the gas, therefore, weighs a trifle less than 1206 grains, and it takes 603 grains of sulphur and a cubic foot of oxygen, representing five cubic feet of air, to produce it. Its chief characteristic is its powerful odour; for as little as one part or volume of the gas in 100,000 volumes of air is readily discoverable by the nose; nine parts of it in 100,000 of air are disagreeable, and provoke coughing; twenty parts of it in that quantity of air are powerfully irritating; and forty-three parts of it in 100,000 of air, or rather more than four parts in 10,000 of air, are actually irrespirable, and a much smaller quantity than this will rapidly kill plants. Water absorbs from forty to fifty times its bulk of the gas, and produces a solution of powerful antiseptic and disinfecting properties. The same is the case with the combinations of the acid with alkalies forming the sulphites and bisulphites.

2. THE ORGANIC ACIDS—as—*Carbolic, Cresylic, Acetic, Picric,* and *Benzoic Acids*—are all disinfectant and antiseptic. According to Dr. Dougall, the most powerful of them is benzoic acid, for as little as one part of it in 533 of water will prevent the appearance of infusorial life, whereas as much as one part of acetic acid in 125 of water is necessary for this purpose. Carbolic acid occupies an intermediate position for it requires one part of the acid 267 of an orgaaic solution to arrest the development of animalcules for six days; moreover, according to Dr. Dougall, the addition of one part of carbolic acid to 200 parts of a solution swarming with infusoria had no injurious action on them, although the like proportion of picric or cenzoic acid was immediately fatal to them. So also with respect to vaccine lymph: air saturated with the vapour of carbolic acid at ordinary temperatures had no destructive effect on its vitality after exposure thereto for twenty-four hours; and even when mixed with the lymph in the propostion of 1 per cent., and allowed to dry, the activity of the virus was not impaired. Pettenkofer, indeed, has shown that although carbolic acid will arrest the development of ferment cells, it does not destroy their vitality; for if after such treatment they are freely diluted with water, they again start into activity. Its antiseptic power, however, is evidently great; for aecording to Dr. Crace Calvert, the presence of one part of the acid in 1000 of an organic solution will check decomposition and prevent the appearance of vibro or fungus life for more than forty days. At the Morgue in Paris, where the acid has been freely used, Dr. Devergie found that in hot summer weather one part of Carbolic acid [No. 5, which contains 85 per cent. of carbolic and cresylic acids] in 1900 of water, freely applied to the dead bodies, completely prevented putrefation; and even when diluted to the extent of one part in 4000 of water the effect was most marked. In my own experiments in the city of London I have noticed that a very small quantity of carbolic acid in the sewers prevented decomposition, and that a solution of 1 per cent. of it upon meat arrested putrefaction.

Specimens of the acid are upon the table, there being several varieties of it in commerce for different purposes. The pure acid is a camphor-like solid, which fuses at 95° F. and boils at 366 o F., the boiling point of cresylic acid, with which it is commonly associated, being 397 o. It is not very soluble in water—only to the extent of about 3 per cent.—but it is freely soluble in alcohol, ether and glycerine. It has no acid reaction on litmus paper, although it combines with the alkalies to form salts. A good test, indeed, for the purity of carbolic acid is the solubility of five parts of it in one part of caustic soda dissolved in ten of water. You have seen its powerful coagulating action on albumen, and I hardly need say it is an energetic caustic.

The commercial preparations of it are—1, the pure crystals for medical use; 2, the fluid crystals of the British Pharmacopœia strength for surgical purposes; 3, the loose crystals for disinfection; and No. 4 and No. 6 for commoner purposes. The last-named variety, as prepared by Messrs. Calvert and Co., is guaranteed to contain 85 per cent. of carbolic and cresylic acids, free from tar oils and sulphuretted hydrogen, and this is well suited for all the commoner kinds of disinfection. It may be used in the proportion of half a pint of the acid to two gallons of water, and if the odour is objectionable, the purer quality, No. 4, may be employed. Other preparations of it are "*the powder*" (carbolate of lime), which should contain at least 15 per cent. of acid as shown by the neutralisation of the lime with hydrochloric acid; "*McDougall's fluid carbolate*," which is the acid in neutral combination;" "*Cliff's antiseptic liquid*," which is a solution of the acid in soap; "*Westerton's patent zymotic fluid*," which is a mixture of carbolic acid, pyroligneous acid, and ether, with a little scent; and there are several kinds of carbolic acid and coal tar soaps. But it is best to avoid these nostrums and rely on the action of the pure or nearly pure acid.

3. THE ALKALIES—*Lime, Potash, Soda,* and *Ammonia* are not very powerful disinfectants unless they are used in a somewhat concentrated state, when they are useful for detergent purposes and for the destruction of organic matter. Cream of lime, for example as well as a strong solution of potash and soda, may be advantageously employed in cleansing rooms, stables, cattle-sheds, slaughter-houses, etc.; and powdered lime, sprinkled freely about cellars, church vaults, cattle lairs, etc., will absorb moisture, carbonic acid, etc., and help the oxidation of organic matters. Added to sewage in the proportion of from ten to twenty grains per gallon, it combines with the carbonic and phosphoric acids, forming a flocculent precipitate which rapidly subsides, and carries with it all suspended matters as well as a notable proportion of soluble organic matter. It likewise kills the infusoria of sewage, and checks the decomposition of it for several days.

4. THE HALOIDS.—The most important of these are *Iodine, Chlorine, Chloride of Lime, Chloride of Zinc, Chloride of Aluminium, (Chloralum)* and *common Salt, Iodine* is not of much practical importance, although it has been recommended for use in the sick-chamber. *Chlorine,* however, is a powerful disinfectant, and has been used with considerable success from the time (1791–92) when Fourcroy, the distinguished French chemist, proposed it as a fumigating agent. It is easily prepared by adding black oxide of manganese to strong muriatic acid—using about a quarter of a pound of the former to half a pint of the latter in a basin or dish,—frequently stirring the mixture and, if possible, heating it. It is also produced by the gradual addition of muriatic acid to permanganate of potash (Condy's fluid); and this, indeed, is very like the preparation now advertised under the name of *chlorozone*—the muriatic or hydrochlorous acid having been added in comparatively small proportion. Chlorine is a heavy gas, its specific gravity being as nearly as possible two and a half times

that of atmospheric air. It is extremely irritating, and, like sulphurous acid, cannot be effectively and safely used in the sick-chamber except for sweetening the air, as the quantity necessary to disinfect is irrespirable. The same is the case with chloride of lime, when its acid (hypochlorous) is set free by carbonic or muriatic acid, as it must be to become an effective aerial disinfectant. In proper proportions, however, both of these agents are powerful disinfectants, as they not only check putridity and the development of and the animalcles in organic solutions, but they also kill such creatures when added in the proportion of about 4 per cent., and they destroy the vitality of vaccine lymph. Like other agents which favor oxidation, they actually promote decay and the generation of infusorial life when used in small proportion. To disinfect with chlorine, therefore, or with hypochlorous acid, the chamber must be vacated, so that the air may become charged with at least 1 per cent. of these agents, and then the destruction of the miasm or contagium is insured. A solution of chloride of lime in the proportion of one pound to two gallons of water, [5 per cent.] is useful for washing floors, etc., but it must be used cautiously for the disinfection of clothing, as solutions of this strength act injuriously on animal tissues, although they are not so hurtful to vegetable fibres.

Chloride of Soda (Labarraque's liquid) is a compound homologous with chloride of lime, and it enters into the composition of Watts's chlorinated soap; but, as it rapidly undergoes decomposition, the antiseptic power of the soap is *nil.*

Chloride of Zinc [Sir William Burnett's fluid] is a liquid which ranges from 1309 to 1594 of specific gravity—the former containing about 30 per cent. of the chloride, and the latter about 54. Its action is evidently due to its power of coagulating albumen, and of absorbing ammonia and sulphuretted hydrogen. Used in the proportion of one part of the chloride to 300 of water it instantly destroys

infusorial life, and even when diluted so as to contain but one part in 1000 of an organic liquid it checks decomposition, and prevents the appearance of animalcules and fungi for more than forty days. Its chief use, however, is as a disinfectant of fœcal matters; for it has no power as an aerial disinfectant, and is too corrosive in its action for textile fabrics.

Chloride of Aluminium or *Chloralum*, which is a solution containing about 15 per cent. of the salt, appears from the researches of Dr. Dougall, to be powerfully antiseptic, for when used in the proportion of only one part of the substance to 933 of water it prevented the development of animalcules for six days. Dr. Crace Calvert also found that an organic solution containing one part of chloralum in 1000 of the solution did not exhibit vibrio life until after ten days. In another experiment, however, with albumen and starch-paste —each containing 2 per cent. of the substance—decomposition with offensive odour began in nine or ten days; and in my own researches I found that putrefactive decomposition could not be prevented with less than 4 per cent. of the substance. In the illustrations before you, you will notice how ineffective it is in checking putrefactive decomposition. Moreover it is not an aerial disinfectant, and is therefore worthless in a sick-room; and with regard to its deodorising power it manifestly does not contain anything which is capable of absorbing putrid miasms. Like common alum, however, and crude sulphate of alumina, it is a good precipitating agent for sewage, and when combined with the action of lime it thoroughly defecates such matters.

5. MINERAL SULPHATES—as *Sulphate of Zinc, Sulphate of Iron, common Alum*, and *Sulphate of Copper*, as well as the waste solutions of metallic salts from wire-working, iron-galvanising, lacquering, etc.—are useful disinfectants when the object is to coagulate albuminous matters, and to destroy living organisms, as well as to neutralise offensive miasms.

Each of these substances will prevent the manifestation of infusorial life in organic solutions containing from one to four parts of the salt in the 1000; and a solution composed of from one to two pounds of the substance in a gallon of water is a good disinfectant of drains and of fecal matters directly they are discharged from the body. Mudie's disinfectant is sulphate of iron or green copperas, which is the cheapest of all these substances. None of them, however, can be advantageously used as aerial disinfectants, as they are not in any case volatile.

6. *Permanganate of Potash* and *Chlorozone* are both oxidising agents, and do not appear to exert much action on vital manifestations, but they are very active in the destruction of dead organic matter. The use, therefore, of these agents in the sick-room as disinfectants is altogether fallacious, for we have no reliable evidence of their power of destroying contagia. The sheet, indeed, saturated with Condy's fluid, which is recommended to be hung up in the sick-chamber, will quickly, like other dead organic matter, decompose the fluid and render it inert. This property, however, of attacking and oxidising dead and decaying organic matter gives it value as a means of purifying potable water, and for this purpose it is alone useful. The same may be said of chlorozone, for the small quantity of free chlorine present in it is not capable of much energy of action.

7. The Volatile Oils—as *Camphor, Turpentine*, etc.—are probably effective to some extent, for we not only perceive that they hinder the development of animalcules and fungi, but they also generate ozone; for ages, indeed, these substances have enjoyed a high reputation as trustworthy disinfectants and deodorisers. They are the correctives universally employed in religious worship, and from time immemorial they have entered into the composition of the ointments of the high priest and the incense of the altar. Among eastern nations the practice of fumigating the house

with costly spice and rich-smelling drugs has been contemporaneous with history, During the middle ages, when the plague, the black death, and the sweating sickness decimated the cities of Europe, immense importance was attached to these agents as disinfectants. The advice of the learned Dr. Caius, who wrote of the sweating sicknes in 1552, was to "have always your handkerchief perfumed with a mixture of spices for your nose and your mouth, both within your house and without, and in your mouth a piece either of setwel or of the root of *Emula campana* well steeped before in vinegar roseate, or a mace, or berie of juniper. In want of such perfumes, as before said, take of myrrh and dried rose-leaves, of each a like quantity, with a little frankincense, for the like purpose, and cast it upon the coals, or burn juniper and their berries." Until very recently, too, the practice in our criminal courts was to lay a bunch of rue on each side of the prisoner, to prevent the spread of contagion brought from the infected gaol. Now, it is a curious fact, as I will show you experimentally, that the oxidation of perfumes and volatile oils is generally accompanied with an active ozonisation of the atmosphere—indeed, Professor Paolo Mantegazza, of Pavia, who has carefully investigated this subject, says that this is a very convenient method of obtaining ozone: for under the influence of light [especially solar light] and air, the essential oils, even in small quantities, will ozonise comparatively large proportions of atmospheric oxygen. It may well be, therefore, that the volatile oils and essences deserve the reputation they have so long enjoyed as purifying agents; and that the recommendation of Empedocles, to plant aromatic and balsamic herbs about your house as preventives of pestilence, is supported by scientific as well as empirical facts. Moreover, as benzoic acid is a large constituent of the incense used in the Latin and Greek churches, it is possible, looking at its antiseptic powers, that this also may be useful as a disinfectant.

(To be continued.)

HOSPITAL REPORTS.

Case of Senile Gangrene.— Death.—Thomas Whelan, aged 70 years, well known in Montreal for many years as a cab-driver, applied for admission on account of a slight erysipelatous blush on the right shin. It appeared to be a very trifling matter, so much so that the attending physician hesitated to admit him, and he was, indeed, taken in more on account of his general debilitated condition than for the disease of which he complained. He was ordered the ordinary Goulard's lotion and good nourishing diet. The redness of the shin had disappeared on the third day, but he appeared more helpless than ever, and not any stronger. One cold night, on going to the closet without slippers or stockings, he caught cold, and an attack of pneumonia of the right base followed. The disease, however, never assumed a very active form, and remained in the base of the lung. For this, counter irritation with iodine tincture was employed, and a mixture used of carbonate of ammonia and senega extract; wine was also given somewhat freely. He became weaker, however, and was often delirious, and occasionally, even in the day-time, he would talk strangely.

On about the twenty-fifth day after admission, and when the lung trouble was resolving slowly, the nurse drew attention to a remarkable condition of the fourth toe of the right foot. This, on examination, was found to be quite cold, black, and, in a word, gangrenous. The old man never knew of the state of things until it was pointed out to him, and from this fact it is clear he suffered no pain or uneasiness in the member while this morbid change was taking place. Being of an inventive turn he very soon had a number of theories propounded to account for the phenomenon, among others, and certainly the most rational, that the same toe had been frost-bitten some three years

before, and that he had since experienced at times odd sensations it. There is little doubt that the mortification had been going on for some little time before noticed, but it certainly extended with alarming rapidity, as will presently be seen. On the third day after the nurse discovered it the toe was removed with a pair of scissors, and the gangrene had extended fully half an inch beyond the metatarsophalangeal articulation. The third toe was noticed to be slightly discoloured on its outer side.

As to treatment—Charcoal poultices were applied to the foot; eight ounces of whiskey were ordered to be given in the twenty-four hours; and the following dose every fourth hour: Quinæ sulph. gr. j., sol. morph. mxv. That the heart sounds were weak, and the entire arterial system the seat of atheromatous degeneration, were facts long known in connection with the case, but it was not discovered until now that neither dorsalis pedis artery nor posterior tibial could be felt in either foot. The veins of both legs were varicose. The vessels throughout had the peculiar ipecacuanha root feel so characteristic of that form of degeneration. Within a week from the removal of the toe first diseased, the third and fifth had also to be amputated by simply cutting the tendons. The pulse was now always weak, irregular and frequent, ranging from 110 to 130; tongue dry; lips and teeth covered with sordes; a pinched appearance of countenance; extremities cold and blue; a slight trace of albumen in urine; sp. gr. 1016; bowels inclining to be relaxed. The gangrene continued to extend until all the toes came away, and thence upwards to the tarso-metatarsal articulation. Vomiting and diarrhoea became troublesome complications and at length the patient died of what appeared to be asthenia as much as anything else. He lived just six weeks after the gangrene was first seen. Before death the other foot, the hands and ears became exceedingly dark in colour and would all no doubt have ultimately taken on the same gangrenons action.

An autopsy was not held.

The above case is interesting and instructive from many points of view. This question, for instance, might be asked; could the trifling erysipelatous inflammation of which he first complained have had anything to do with the subsequent sudden plugging of the vessels. Again why was this fourth toe the first victim? The frost bite may serve fairly enough to account for this phenomenon, leaving that toe a weaker member than the rest. The case differs also from those of ordinary senile gangrene in the almost total absence of pain. The question also arises as to whether the attack of pneumonia may not have assisted materially in bringing about the gangrenous action indirectly by the interference with the circulation produced by the inflammation. The gangrene appeared to have the characters of both the dry and moist variety. As the foot became involved the gangrene assumed more of the moist variety.

Case of Compound Comminuted Fracture of Bones in Leg. — Recovering with useful limb. — L. C. a French Canadian carter aged 43 years, stout, of intemperate habits, was brought to Hospital and placed in one of Dr. Drake's wards. On examination there was found about the middle and front part of the right leg, a wound upwards of four inches in length, and through the centre of this protruded a portion an inch and a half long, of the tibia, chiefly the crest. There was also a small but deep wound through the fleshy portion of the anterior tibial region. It was found impossible to return the protruding portion through the opening, and consequently about three quarters of an inch were snipped off with a bone forceps, when the remainder could be readily put back, and placed in pretty fair position. The openings were now thoroughly syringed out with a solution of carbolic acid of the strength of 1 x 20. Three or four fragmentary portions of the tibia were removed with the fingers, and the wound then brought together by interrupted wire sutures. The fibula was broken trans-

versely a little higher than the tibia. The accident had occurred, by the man in stepping from his cab, placing his foot between the spokes of the wheel instead of on the steps or axle as he intended, and the horse starting forward, he was thrown down and dragged for some distance, his foot remaining entangled. The limb was put on a McIntyre splint and the wounds dressed with weak carbolic lotion. In forty eight hours the tension, from inflammatory effusion became so great that the sutures had all to be removed from the wound and poultices substituted for the carbolic dressing,—a change decidedly for the better, as the parts had already assumed an almost erysipelatous aspect.

An interesting feature in the case, especially considering the favourable results, is in the fact that the man was a notoriously hard drinker. He positively asserts that it was not an uncommon practice with him to consume a pint of whiskey before eating his breakfast in the morning. He never took breakfast without taking at least a couple of gills, and for the past fifteen years had not known what it was to be satisfied with less than a pint of whiskey in the twenty-four hours. His wife and brother confirm all his statements in this connection. With such a history it is needless to say that his grog was not suddenly cut off on entering the hospital with such a serious accident, but on the contrary six ounces of whiskey was ordered in the twenty-four hours, with abundance of beef juice and milk.

On removing the sutures the wound gaped considerably and exposed some of the bone, which latter however became rapidly covered over with granulations. An occasional fragment of bone would slowly make its appearance on the surface and be removed, preceded, however, as a rule by a feeble attempt at the formation of an abscess over the threatened place of exit. With this exception nothing occured to interfere with the process of healing, his health remained excellent. As to the stimulant after a week the quantity of whiskey was reduced by one ounce every second day, until the end of the third week he became a

total abstainer, and this not through force of circumstances, but by honest conviction, as he declares that he will never again, of his own free will, "touch, taste, or handle."

At the end of the eleventh week the splint was removed, and a glue bandage supplemented with an outside paste board splint, immediately applied. A corner of the wound had not yet quite healed, so that it became necessary to make a trap door in the hardened glue splint, through which to dress this part.

During the thirteenth week the patient went to his home in one of the suburbs with orders to keep on the glue bandage for a fortnight longer.

Powdered Coal-Tar for Wounds.

M. MAGNIS-LAHENS, of Toulouse, adds charcoal to the coal-tar (33 per cent. of the latter), and thus obtains a light and porous powder, which does not irritate wounds, and which is easily washed off with cold water. This combination is a very useful mixture of two antiseptic substances. The charcoal absorbs the gases formed by fermentation, coagulates the albumen, and prevents its decomposition; thus effectually assisting the carbolic acid contained in the coal-tar. Some wounds do not bear powdered applications; for these, 100 parts of the powdered coal-tar should be allowed to macerate for some hours with 400 parts of spirit, and filtrated. The spirit should be of only 18° Cartier, as a stronger would dissolve the resins. As coal-tar principally acts through the carbolic acid it contains, the above-mentioned maceration may be replaced by the following solution: crystallised carbolic acid, 1 part; spirit (at 18° Cartier), 99 parts. This solution is cheap and very effectual.—*Lancet.*

Reviews and Notices of Books.

Laceration of the Female perineum, and Vesico-Vaginal Fistula; their History and Treatment. By D. Hayes Agnew, M. D., Professor of Surgery in the University of Pennsylvania, with numerous illustrations, 8vo. pp. 140. Philadelphia, Lindsay and Blakiston, 1873.

This monograph which treats of two of the most distressing accidents to which the parturient woman is liable, consists principally of material which has already been placed before a limited medical public,—the first portion having been published in the Pennsylvania Hospital Reports, and the second in the Medical and Surgical Reporter, edited by Dr. Butler. But, owing as stated by the author to repeated applications for copies of these papers, he has thought it proper to place them before the profession in their present form.—They are certainly valuable to any one interested in gynæcology: they contain a very full history of the gradual advance in medical knowledge which has been made in both those troublesome complaints, and at the same time very copious bibliographical references are given which may be of great service for scientific purposes. —We do not find that there is anything in these essays which can really be called new, for in neither does the author's mode of operating differ in any material point from that of others who have preceded him—nor indeed is any more than this laid claim to. But whilst not possessing the agreeable excitement of novelty to recommend it, yet the work is very acceptable as embodying the personal experience of such an accomplished operator as Dr. Agnew in the performance of two operations requiring the possession of considerable manual dexterity, and the observance of many minute and wearisome details.—

With reference to lacerations of the perineum, after reviewing the variously modified operations practised for its cure, the author concludes by giving the preference to the interrupted suture with shot, over the quilled suture, and believes that in all cases a cure can be effected without the necessity of dividing the sphincter ani muscle as formerly recommended by Dr. Baker Brown.—A series of cases successfully treated in this way are recorded.—For vesico-vaginal fistula Dr. Agnew has operated about 60 times with 3 deaths, all of which were from some kind of septicæmia and are attributed (no doubt justly) to an impure hospital atmosphere.—Besides these, 4 or 5 failures—an amount of success which is very gratifying.—Dr. A. operates after the manner now so well known as that of Marion Sims to whom of course full credit is given—minute directions being furnished concerning those many points the careful observance of which it often is that tends so much to promote our ultimate success.

A Hand-book of the Theory and Practice of Medicine. By Frederick T. Roberts, M.D., B. Sc., M.R.C.P., Fellow of University College, Assistant Physician, and Assistant Teacher of Clinical Medicine, University College Hospital. 8vo., pp. 1052; Philadelphia, Lindsay & Blakiston, 1874.

A new text book on the Theory and Practice of Medicine, one would suppose it a difficult task to attempt at the present day, to embody all that is essential to know on this vast subject within the scope of a single volume. When we see an entire volume devoted to a single department of the theory and practice of medicine, to even the consideration of a single disease, of the many which come before the physician, it does seem a most difficult task to accomplish, the writing of a book on Theory and Practice of Medicine which will be readable, concise, and contain the essentials of the art.

Dr. Roberts intends his book mainly for students, his object being to give in a single volume such information as is necessary for those preparing for examination, and also to guide them in the acquisition of that Clinical knowledge so essential to the practitioner, and which can alone qualify him for the active duties of his profession. The author expresses a modest hope that the contents of the work will be, in some measure, found of service to the busy practitioner who may have but few opportunities for perusal of larger treatises or special monographs.

This work is divided into three sections : In section one, we have three chapters ; an excellent introductory chapter, showing the importance of a proper system of training. The mistake of walking through the wards of an hospital without some system of observation, or case taking, is fully explained. The necessity of a previous knowledge of disease or the theory of disease, is fully illustrated, and then the author proceeds to the method of case taking, mentioning in outline what is necessary to observe and record,—but not only does our author advise the careful noting of cases, he likewise recommends commentaries to be made on each case by the student, the advantages of which cannot be over-estimated. In chapter ii. of this section, the subject of causation of disease, is discussed, and chapter iii. is devoted to symptomatology. These are necessarily concise, but afford much useful information which is not to be met with elsewhere in the same clear and concise style. In the second section the author takes up certain morbid conditions which come properly under the heading of "General Pathology," of which he considers it necessary to possess a comprehensive knowledge before studying them in connection with special diseases, such as Hyperemia, Dropsy, Hæmorrhage, Inflammation, Hypertrophy, Atrophy, Degeneration, and Fever ; to each of these subjects the author assigns a chapter.

Section III. is divided into two parts ; in the first is considered general diseases which affect more or less the

entire system, and although local morbid conditions are sometimes present, yet they arise secondarily as an accidental consequence of the general disorder. The second part of this section is devoted to the consideration of Local Diseases, or the various affections of the organs and tissues of the body. The classification and arrangement of this portion of the work, as also the nomenclature, is in accordance with that recognised by the Royal College of Physicians.

There is one peculiar feature of this work, which, in our opinion, most materially enhances its value. The author before entering on the description of individual diseases, gives a general outline of the Clinical phenomena bearing on the disease or its class, and also on the method of clinical investigation—for instance on the subject of acute Febrile cases. The necessity of arriving at a correct diagnosis as soon as possible is shewn. The special points to be observed are given, and then the value of Thermometric observation is fully discussed. This portion of the work is in smaller type, but as the author observes in his preface, this does not imply that it is of minor importance.

We confess ourselves most favourably impressed with the excellence of this work, we think the author has performed his task most creditably, and we cordially recommend this book to our readers. To the Student of Medicine it will be found a most valuable text book, and the busy practitioner will benefit materially by its perusal. The work is most beautifully printed, on excellent paper well impressed, and is got up in the best style of the well-known publishing house of Messrs. Lindsay & Blakiston ; it is to be had of Messrs. Dawson Bros., St. James street.

CANADA
Medical and Surgical Journal.

A SMALL-POX HOSPITAL.

Who will gainsay the dictum that Small Pox is an eminently contagious disease.—Few men there are who will willingly and unnecessarily expose themselves to the contagion of that disease—so long as we are not personally inconvenienced by the result of exposure to the contagious nature of such a disease as Small Pox, so long do we consider ourselves safe by simply withdrawing into our shell —Such appears to be the action of our civic authorities.—Such we regret to say appears to be the action of the authorities of our Montreal General Hospital, and such appears to be the action of the community at large.—As to the civic authorities, they have in this matter so far shown themselves unworthy of the confidence of their fellow citizens. Two years ago, the subject of isolation in Small Pox was fully discussed, and Mr. Councillor this and Mr. Alderman that relieved themselves of much froth.—Resolutions were passed, the Health Committee were instructed to seek an interview with the authorities of our Hotel Dieu and the English Hospital,—they were directed to personaly seek out a site, whereon to build a Small-Pox Hospital,—cabs were put in requisition and the Committee took on various occasions an airing, but such a thing as a site whereon to build an Hospital still remains in the womb of time.—The Montreal General Hospital some years since, put up on their grounds a fever hospital which is a separate building, it was deemed at the time perfectly safe to the other inmates, to permit Small Pox patients to be placed in this isolated building. Soon however the contagion was found to spread, and cases originating in the wards among

the other patients became too common, life was sacrificed, and the committee of management at length determined to exclude the infected. Then the clause of the vaccination act was cited and brought to their notice, which reads thus :—1. "No warrant shall hereafter issue for the pay-"ment of any sum of money granted by the Legisla-"ture to any Hospital, unless, nor until, a certificate, "signed by a medical officer of such hospital, to the effect "that, there is in such hospital a distinct and separate "ward set apart for the exclusive accommodation of patients "afflicted with Small Pox, has been filed with the clerk of "the Executive Council."

It was argued that this clause virtually prevented the authorities of the Montreal General Hospital from closing their doors to Small Pox patients, inasmuch as being a corporate body and in the receipt of a public grant they could not legally refuse such cases.—This opinion we believe has been given by two of our learned counsel at the bar, and possibly may be the reading and meaning of the clause.—It would be time lost for us to try and explain the object and meaning of that clause; to ascertain its actual meaning we require to look at the custom which had prevailed in our Hospital administration prior to the passing of that act.—It is well known that before that eminently practical paper by the late Sir J. Y. Simpson, on the stamping out of Small Pox saw the light, many hospitals admitted Small Pox patients into their wards—and we have seen ourselves, in several hospitals little or no isolation of these cases.—Necessarily this led to the spread of the disease and many lives were sacrificed.—The epidemic of 1860 and 1861, caused alarm, and the Legislature in order to enforce what they considered sufficient isolation; passed the clause cited.—It was not that they deemed it necessary to have a Small Pox ward attached to each Hospital—but that it must be separate and distinct.—Cannot any one see the actual meaning of this clause? If not, let them search out the debate which took place on the

occasion of the passing of that act.—Had the Legislature of that day contemplated that in the case of our Hospital, some hundreds of lives are unwarrantably exposed to a fell and loathsome disease every year—the clause would have run somewhat differently. But, to the remedy, may we not ask our Legislature to relieve us of this absurd clause—which is a blot and stain on our statute book—To the public we say, shake off your apathy, you are interested and proud of that noble charity the Montreal General Hospital.—It has become an institution with which the country at large is identified.—Do not permit its usefulness to be tampered with, the city is increasing in all its borders, the poor of the city have but this hospital alone, which bears the name of a public charity to go to for relief, let not the poor and the sick, the halt and the blind, be forced to accept the benefit of this charity, and at the same time be exposed to the serious risk of contracting within its walls a horribly loathsome disease, one which will place their lives in jeopardy or if they escape with life, may leave the dregs behind of disease from which they may never recover.—The scheme of the city council of giving a subsidy for the building of a Protestant, and a Roman Catholic Small Pox Hospital, to be two separate and distinct institutions, under separate management, is beneath notice.

THE CANADA LANCET.

It was with regret we were forced, in self defence, to call attention to the acquisitiveness of our contemporary the *Canada Lancet*. We are sorry to observe that in place of acknowledging its error, the *Lancet* attempts a justification of the wrong. The Editor in accounting for his having in the most bare-faced manner, published among his original articles, two communications which had appeared in our journal months before, accuses us of being systematically late. In explanation further on he says, that some time

in August he received from Dr. Howard printed copies of the articles in question. One of these articles was a reprint from the type of the July No. of the *Canada Medical and Surgical Journal*, and yet the Editor of the *Canada Lancet* has the effrontery to say that he did not receive this July number until after his September number was issued. We can only state that the July number of the *Canada Medical and Surgical Journal* was mailed in Montreal on the 8th day of July, 1873, so that if the *Canada Lancet* did not receive its copy before the month of September, it must have remained conveniently unopened, or probably in its drawer in the Toronto Post-office.

GRATIFYING TESTIMONIAL.

It is not often that communities acknowledge their indebtedness, for services rendered, to members of the Medical Profession. As a rule individuals pay their doctor after all other liabilities have been satisfied, that is if anything be left over, if not the doctor can go without. It is therefore refreshing to meet with an action such as we record below, more especially when it is known that the recipient was worthy of such a graceful acknowledgment. We congratulate our old friend Dr. Worthington on this tangible recognition of his valuable services to his fellow-townsmen. We copy from the *Sherbrooke News* of the 4th Dec., instant:—

PRESENTATION.

On Monday evening a number of the friends of E. D. Worthington, Esq., M. D., met at his house to present him with a handsome English gold hunting watch as a testimonial of their appreciation of his services in the timely discovery of the existence of small pox in the town last spring, and of his exertions in the adoption of means for preventing the spreading of that foul disease.

The occasion chosen for the presentation was the Doctor's birthday.

The address was read by E. T. Brooks, Esq., M. P., who supplemented the expressions of regard therein, by a brief personal recognition of the professional career of the Doctor during his thirty years of practice in Sherbrooke.

The address is as follows:

To EDWARD D. WORTHINGTON, Esq. M. D.

Sherbrooke, Que.

We the undersigned, residents of the Town of Sherbrooke and vicinity beg to tender you our most sincere thanks for the great public service, rendered by you professionally to this community in May last, by which the existence of that fearful epidemic—the Small Pox—then in our midst—but unknown to us—was discovered, and such steps were,—by your instrumentality taken,—as prevented the spread of the disease amongst us; and as a slight token of our appreciation of your services, ask you to accept the testimonial which we have caused to be procured for that purpose.

We have no hesitation in saying that—but for the prompt and efficient action taken by you at that time—that dreadful disease, must and would, in all human probability, have spread throughout this community and the result have been most disastrous.

We cannot refrain from expressing our belief, that your action was solely prompted by a desire for the public good and the safety and welfare of the people amongst whom you have, for so many years, practiced your profession with marked success; and whose esteem and affection you have won by your invariable attention and kindness.

You will pardon us we trust, if we here express also our appreciation of—what is so well known to the inhabitants of this Town and vicinity—the unselfish attendance which you have always given to the poor of the place, and in which you have been so charitably assisted by Mrs. Worthington.

Trusting that Mrs. Worthington and yourself may be long spared to reside amongst us,

We are,

Your friends:

Thos Logan
R Smith
T J Tuck
Geo H Bradford
W J Hunt
M McCarthy
Alex G Lomas
Thos S Morey
G C Foote
Wm White
A Lomas
Paton Man'f'g Co'y
W Chamberlin
Stephen Edgell
E Pellew Felton
H B Brown
E T Brooks
W R Bradley
Robt N Hall
Jno C Eaton
Friend
Jno Elliott
Medical Hall
Geo W Brooks, Jr.
A Duff
H Corrigan
James A Gordon
James Davidson, Jr.
A D Bostwick
John Weir
Wm A Morehouse
A L Grindrod
H Wilson
Edward Dale
Arkly and Loomis
S J Foss
C Armstrong
A M Greenshields
E H Duff
L Farwell
H Hubbard
Wm Farwell, Jr.
Jas Woodward
J Dean
H A Elkins
Geo Brooks
D Thomas
W B Ives
E Clark

The Doctor replied as follows :

GENTLEMEN :—I assure you that I am deeply grateful for this expression of your approval of my professional conduct, on the occasion to which you refer, and for the magnificent present you offer for my acceptance.

I believe it to be the duty of every medical man, the moment he recognizes the presence of any epidemic or contagious disease, in the community in which he practices, to inform the authorities, so that such sanitary and restrictive measures may be instantly adopted as may tend to prevent the spread of the disease, and to save human life.

While there is no disease so loathsome in its character as small pox—thanks to the researches of the noble men of former days in our profession—there is no disease in the whole category of 'the ills that flesh is heir to' that can be so effectually kept within bounds.

In doing what I did, I have to say that I did what I conceived to be my duty and only my duty—and that when I did it I had no hope or expectation of reward.

Your recognition of the performance of this duty, and the friendly and generous manner in which you have rewarded my efforts shall ever be most gratefully remembered by me.

I have received so many acts of kindness from the people of Sherbrooke that I can hardly find words to express my gratitude to the Providence that guided me here to cast my lot amongst you, and to become a Sherbrooke man.

Over and above any reward for medical services, public or private, are kind expressions of approval, and when they come, as they do to-night, they make an impression that time will never remove.

I thank you for your good wishes to my wife, and trust that we may always have your friendship and approval.

I am, thankfully, Yours,

E. D. WORTHINGTON.

After the close of "business' the company were invited to partake of an excellent supper, to which they did full justice.