

such a blade, greater force is required to make it cut itself out.

Moreover, he found that the narrower the knife the less likely was the aqueous humor to escape prematurely. Ultimately he adopted an angle selected by Mr. Tyrrell, but reduced the length of the blade. For many years he has had smooth round wooden handles to all of his instruments, and rather later to his cataract knives, cedar handles, fac-similes of all of which may be obtained at Weiss's.

Original Communications.

CASE OF SUSPECTED POISONING BY LOBELIA INFLATA: WITH THE APPEARANCES AFTER DEATH.

By HENRY JOHNSON, M.D., Senior Physician to the Salop Infirmary.

MR. THOMAS WARD, a grocer, aged 38, residing in Shrewsbury, called upon me for advice, January 19th, 1858. He had symptoms of dyspepsia, of which the most prominent were, frequent vomiting and constipation. I saw him many times between the above date and Feb. 15th, when my attendance ceased. The vomiting was very much better for a time, when active aperients had been used; and about the second week in February, when he had quinsy, it ceased entirely, but returned as soon as the throat begun to get well, probably owing to his taking more food. On my last visit, Feb. 15th, I prescribed a blister to the epigastrium, a mixture containing bismuth, and some oxide of silver in pills. The blister I know was never applied; and the mixture and pills were probably not given. He then sent, at the instigation of a friend, for John Lacey, the local agent of "Dr." Coffin. I heard no more of him till Feb. 25th, when I was informed that, since my attendance had ceased, he had been under the care of the person above mentioned, and that he had died on Wednesday the 24th of February. I was also told that the coroner was going to hold an inquest on the case, and had ordered a *post mortem* examination to be made. The examination of the body took place on February 26th, and was made by Mr. James Bratton; Dr. Drury, Mr. Dickin, and myself, were also present. The following account is copied almost *verbatim* from my own notes, taken in pencil at the time.

A good deal of frothy mucus oozed out of the mouth before proceeding to open the body. There were no outward marks of blisters, or of any other counterirritants. On opening the cavity of the abdomen, the vessels of the abdomen, the vessels of the mesentery, mesocolon, stomach, duodenum, and colon, were very much engorged. On opening the stomach, about half a pint of thick brownish liquid was found, having a pungent smell; this afterwards became green, from exposure to air and light; it was preserved for further examination. The vessels distributed over the small and great curvatures of the stomach were much enlarged, and filled with blood. The inside of the stomach was very much *corrugated*, the rugæ, or folds, being very prominent. No ulceration was found; but in several places patches of greater vascularity than natural. Some were found near the cardiac, and some near the pyloric end of the stomach. There was a great deal of this hyper-vascularity near the pylorus, and the first few inches of the duodenum. The colon was unusually dark when seen from without, and the vessels were greatly enlarged. On cutting open the colon, the inner coat was very vascular, and in several places were small abrasions of the mucous membrane, and one very large ulcer, about two-thirds of an inch in diameter. The heart was large, round, and rather hypertrophied. No disease of the valves was present. Both lungs were excessively congested posteriorly, and the bronchi everywhere full of frothy mucus to their smallest divisions. Some serum was contained in the right pleural cavity. The anterior portions were less affected than the posterior, which were almost solid, in fact, hepatised. The cranium was very thick. The vessels of the dura and pia mater were very much distended. On the surface or top of the right hemisphere, there was a milky appearance, from deposit of lymph. The brain was rather more firm than natural. All the vessels everywhere were enlarged. Some fluid was contained in each lateral ventricle, especially in the right, and some in the fourth. Half an ounce of serum was found in the general cavity of the arachnoid. I remember that

three circumstances struck us all as remarkable, and unlike anything we had noticed before; viz.:

1. The peculiar aromatic smell arising from the stomach, which some present compared to that of pepper.

2. The very dark colour of the viscera of the abdomen, especially in the neighbourhood of the stomach; and the unusual distension of all the vessels in and near to the stomach.

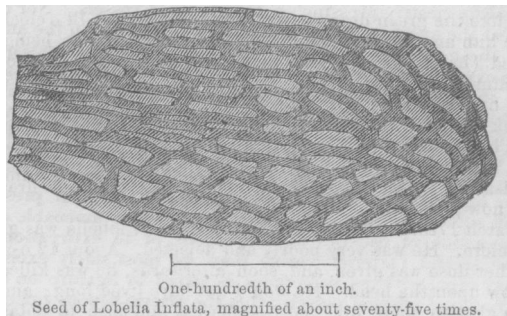
3. The most peculiar corrugated state of the stomach. I never saw anything like it, except in the stomach of the dog afterwards to be mentioned, to which I had given lobelia; but, I may remark, that at the time this autopsy was made, none of us had any idea of the presence of this or any other poison.

The contents of the stomach were afterwards sent to me by the coroner to be examined. I carefully tested for antimony, mercury, copper, and zinc; but no trace of any of these was found. Some minute, white shining particles were discovered at the bottom of the basin; these were certainly silicious, probably from sand accidentally introduced. There were also some coarse black grains, which I supposed to be black pepper. But the greatest part of the contents of the stomach consisted of *green matter*, evidently of vegetable origin.

The quantity of liquid sent to me was about four fluidounces, which was rendered thick as gruel by the presence of this vegetable matter. It is called a *brownish liquid* in my account of the autopsy; but it was always *green* after having been some time taken out of the stomach. I had then, as I have said, no suspicion of the presence of lobelia inflata, nor had any hint been given to me that any particular poison was suspected. I satisfied myself that it was not ipecacuanha, squill, nor colchicum.

The inquest was held on Wednesday, March 3rd, which did not give me time for any lengthened investigation. But afterwards, the *possible* presence of lobelia inflata having been suggested to me, I tried the chemical tests recommended by Dr. Taylor, namely, nitric acid, sulphuric acid, watery solution of iodine, and solution of proto- and persulphate of iron. The effects of these re-agents with the *green matter* corresponded very exactly with those produced by the same upon genuine lobelia, and as they are described by Dr. Taylor. With the microscope I found not only abundance of vegetable or woody fibre, but punctated or dotted cells, both in the green matter and in genuine lobelia powder. I was now quite convinced in my own mind that this poison was present. At the request of the town clerk (Mr. J. J. Peele), I sent some of the green matter to Dr. A. H. Hassall of London to be examined. Dr. Hassall's report states (March 16th), that the powder sent to him contained several different vegetable substances, and among these "were very probably the stems of lobelia inflata." But, he was not able to speak positively until he had seen the seeds. He had searched in vain for these in the specimen sent up to London. When he came down here (Shrewsbury) to the assizes (March 18th), and examined another portion of the same green matter in my possession, having found the seed, he was prepared to assert positively that lobelia inflata was contained therein.

For the sake of others in our profession who may be called upon to decide in a similar case, I here mention, that it is quite easy to recognise the *seeds*, and to speak positively as to their nature, if examined under a good one-inch object glass. It was Dr. Hassall who first shewed them to me. Under a common pocket lens they are seen as small, oval, yellow bodies; under the microscope the yellow colour may be observed to



depend upon a network of yellow streaks which covers the whole seed, leaving white or transparent spaces between. They may be examined by transmitted or by reflected light. They are best seen in the latter mode, as opaque objects, when

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the yellow colour becomes brown. The seeds are visible as a mere speck to the naked eye (if a good one), and easily with the assistance of spectacles or of a lens. They measure about 3-100ths of an inch in length, and 1-100th, or a little more, in diameter.

As the case had now assumed a serious aspect (a verdict of manslaughter having been brought in by the jury at the coroner's inquest), and the agent, John Lacey, being about to be tried at the forthcoming assizes, I was anxious to investigate the whole matter as far as possible, and learn what are the effects of the poison upon animals. Not being then acquainted with any published experiments of this nature, I made the following myself.

EXPERIMENT I. March 15th, at 4 p.m. I gave a female rabbit two scruples of lobelia inflata in powder, mixed up with water. It was given pretty readily with a syringe. The animal sat very quietly, but refused food which was placed in her way. She had another dose at 5-50 p.m., and a third at 9 p.m. Of the two samples weighed out and intended to be given, about one-half would be really introduced into the stomach each time.

The next day she was obviously very ill, sitting very quietly in a corner, and breathing very quickly. She seemed very indifferent to the presence of strangers, and even to the company of the other victim, a dog, afterwards to be mentioned. She would not eat even fresh cabbage leaf. The excretions were voided as usual, and in abundance. Three more doses were given this day (March 16th). After the last, which was about 8-30 p.m., she gasped a little, rattled in the throat, and then died very quietly, but quickly, without convulsion. There was great insensibility before death. The pupils of the eyes were very much dilated; and the poor thing took no notice even when I put my finger close to the eye.

POST MORTEM APPEARANCES. The vessels on the outside of the stomach were much injected with dark blood. Inside the stomach contained a quantity of tenacious mucus; the mucous membrane was very dark, soft, and easily separated. The duodenum was darker than natural. The colon was much injected and darker than natural. The whole of the bowels were the seat of hyperæmia. The vessels of the brain were gorged with dark blood. A clot occupied the whole of the base of the cranium. There were also clots at the apex of each orbit. The lachrymal gland was larger than natural. The vessels of the pia mater were much congested with dark blood. The lungs were healthy.

Thus far I have quoted, not my own words, but those of Mr. Dickin, the able house-surgeon of our Infirmary, who assisted me in my experiments and in the examinations. The stomach was distended with the vegetable powder given, very little, if any, having passed off. Other parts were healthy.

EXPERIMENT II. On March 15th, at 3-30 p.m., I gave a small spaniel dog a drachm of powder of lobelia mixed up in milk. In ten minutes he looked very dull, and "batted," i.e., winked his eyes very much, as if sleepy. In another ten minutes he was hardly able to keep his balance sitting up; and at the end of half an hour he appeared to sleep sitting, and several times was near falling down sideways, being unable to keep his balance. In little more than an hour the effects began to go off, and we gave him another dose. A drachm of the powder was made into two boluses with butter and given to the dog. At 9 p.m. the same dose was repeated, and he was left for the night. Milk had been placed within his reach, but he did not touch it all day.

March 16th. The dog was quite sharp and brisk. He had vomited twice in the night, bringing up the bolus in a mass, just like the green droppings of a goose. About 12 o'clock we gave him another dose, and the greater part of this being rejected (having been given in water), we gave him another drachm in the form of bolus. At 4 p.m. he was pretty well, and had another dose. At 8-30 p.m., he was quite brisk, and drank some milk with a great appetite. We generally found that he recovered in the night, by having vomited all the poison that had been given to him in the day, and it was found in the undissolved form that I have mentioned. Another drachm was now given him.

March 17th. At 10 a.m., another drachm of lobelia was given as before. He was very poorly and dejected. About 12 o'clock another dose was given, and, soon afterwards, he was killed by a blow upon the head. He would not have lived long; and we were glad to spare him more suffering, and also to obtain a *post mortem* examination at this time, to compare the appearances with those found in the rabbit.

POST MORTEM APPEARANCES IMMEDIATELY AFTER DEATH. On opening the abdomen, the effects were much more striking

than in the rabbit, and yet they were exactly similar. All the vessels supplying the stomach were greatly distended, as if injected. Those of the mesentery were just the same, even to their small ramifications over the intestinal canal. The duodenum was actually thickened by the state of continued irritation kept up. The internal coat of the stomach was excessively corrugated, and its mucous lining was congested and softened. No ulceration existed. The blood vessels on the outer surface of the stomach were so distended as to stand out in bold relief, like pieces of whipcord. The lungs were congested. The heart distended with blood. The vessels of the brain were injected a good deal, but not so much as in the rabbit.

I had no idea that the *post mortem* appearances would so nearly correspond, in these two experiments, with what we found in the body of Mr. Ward. They entirely convinced me that the latter, like the former, were caused by the lobelia given. Considering that one drachm, or even less, had been known to prove fatal to man (*Medical Times*, New Series, vol. vi. pp. 270, 271), I was surprised at the quantity of the poison which these small animals could bear. But the dog every night got rid of his day's doses by vomiting, so that the effects went off by the next morning. Perhaps, also, the butter mixed with the powder retarded its solution in the stomach. Neither of these causes operated in the case of the rabbit; and it died in twenty-nine hours, although much less than one-half of the poison prescribed was really received into the stomach.

Dr. Hassall and myself were subpoenaed for the trial of Lacey, and kept in attendance for three days, and, after all, were not called into Court. Only two witnesses, both relations of the deceased, were examined, and the case was then dismissed. But I have nothing here to do with the trial. If the law, in its present state, will not convict a man who ignorantly administers such a potent drug as lobelia inflata, there is no doubt that, thanks to chemical testing and the microscope, there will in future be no difficulty in recognising the powder of lobelia, and its effects, when we are called upon to do so.

I had written thus far, and was about to conclude, when a friend suggested to me the probability that inflammation of the lungs was, perhaps, an effect of the poison itself, as it existed in several fatal cases and experiments; he urged me, therefore, to try some more experiments.

EXPERIMENT III. On May 11th, at 4 p.m., I gave half a drachm of lobelia to a small rabbit, three months old, and very lean. Its stomach was quite full of food, and the powder had no effect, and no more was therefore given till the next day.

May 12th, at 9-30 p.m., half a drachm of the powder was again given as before, mixed up with water. The animal was affected immediately; it sat very quiet, looked dull, and appeared to me sleepy. About noon, it had quite recovered its vivacity and ate some food. At 5-30 p.m., another half drachm was given. It again became drowsy, so much so as to close its eyes; it could, however, be readily roused. I saw it again at 7-30 p.m. It was very quiet, and appeared comfortable, but breathed deeply, as if with an effort. It took food, notwithstanding, and preferred dandelion to cabbage leaf. There was frequently a singular kind of convulsive motion like *singultus*, or a suppressed cough, in which the diaphragm and abdominal walls were spasmodically moved. The excreta were passed as usual.

May 13th. The rabbit was apparently revived, but the breathing was not natural. Another half-drachm was given without spilling much of the liquid. It became immediately sleepy, inactive, and repeatedly opened its mouth, as if gasping for breath or to take in cool air—the breathing deep and laborious. There was a mucous discharge from the nostrils. Some of the powder had passed through the nostrils. In an hour afterwards, the fore and hind legs were convulsed, and before I could see the poor animal it was dead.

POST MORTEM EXAMINATION FOUR HOURS AFTER DEATH. The vessels of the external surface of the stomach were unusually injected. Stomach full of green matter (food had been given at 7 in the morning, contrary to my intentions). Inner surface of stomach much corrugated, and there were two distinct patches of inflammation of a bright colour. Under the microscope (even after soaking in Goodby's solution), the former (the internal surface generally) was quite pale and without visible vessels; the latter was seen as if injected. The internal coat was easily torn with the nail. The lungs were injected with blood; and in the posterior lobes were large, deep red patches, showing great congestion or hepatisation. I think the former; for when seen under the microscope,

the bronchi were generally open and free from mucus. But the state of hyperæmia, even after soaking (in spirits of wine), was very marked. The cerebrum and cerebellum were injected, especially the latter. The kidneys were perfectly healthy. The urinary bladder was fully distended with urine. The latter was pale yellow, acid, and yielded a trace of sugar. Our house dog scratched up the carcass of this rabbit after it had been buried. He was seen pulling it about and biting it; but I do not think he ate much if any, of it. He was, however, very sick the two next days. The stomach had been removed.

I took five grains of the powder of lobelia, which produced the most distressing sickness for about an hour, and a very disagreeable burning taste in the mouth and throat—quite *sui generis*.

It had been my intention to kill a rabbit by a blow on the head, in order to get an opportunity of examining the normal state of the lungs, stomach, and brain. A little *mal-adresse*, however, in performing two of my experiments, gave me this opportunity when I did not expect it.

EXPERIMENT IV. Whilst injecting the poison, a very small quantity got the wrong way, and the poor animal (a rabbit) was choked, and died in a few seconds. I opened the body immediately. A very few particles only of the powder were found in the trachea below the epiglottis; but none had got into the lungs, which were quite healthy, and not injected at all. The heart was distended. The stomach was quite full of food; its internal surface was somewhat corrugated. After maceration in spirit of wine, the internal mucous coat had a very slight pink tint, but no red patches; nor were vessels discernible even with the microscope.

EXPERIMENT V. The same accident happened to another rabbit. It was choked, and died in a few seconds. I found (twenty-four hours *post mortem*) a very small quantity of poison in the trachea. The lungs were white, and full of air at the fore parts, but the posterior lobes were dark red, and loaded with blood, even to a greater extent than in Experiment III. I have seen this in two rabbits to-day (May 20th), which had been killed for the table, and were quite fresh. There was no remarkable injection of the vessels of the stomach and intestines. The stomach was full of food; it was very little corrugated, and that only in one place. *It was not at all inflamed.* The greater part had the natural dull red colour and velvety appearance usual at the time of digestion; but no vessels were visible even under the microscope. The brain was not unusually vascular or injected. The heart was distended.

I much regret that I have not at present any means of access to any experiments upon animals similar to those which I have related. So far as these few experiments warrant us to draw any conclusions, they show that lobelia inflata is a powerful acro-narcotic poison; that it acts especially upon the brain and the stomach; that its action is manifested on the former by drowsiness and convulsions during life—by increased vascularity and effusions of blood and serum after death. Its effects on the stomach are evinced by nausea and vomiting during life, and inflammation after death.

REMARKS ON EPIDEMIC SORE-THROAT.

By JOHN ATCHERLEY, Esq., Surgeon to the South Dispensary, Liverpool.

THE occurrence of sore-throat, which has prevailed epidemically throughout this town for the last few months, is deserving of a few passing remarks, chiefly from the peculiarity which characterises its general features, and tends to distinguish it from the ordinary psoradic cynanche with which we are so familiar.

The invasion of this disease, which may with propriety be denominated epidemic pharyngitis, occurs with unequal severity in different cases; but, generally speaking, it is more sudden than what we notice in common sore-throat, the constitutional disturbance runs higher, the rigors are more violent and of longer continuance, the headache is more intense, accompanied in some cases with delirium, and an overwhelming sense of depression, restlessness, and anxiety, with an aspect of dejection; these symptoms, taken collectively, portray unequivocal evidence of the action of a specific poison in the system. It differs from scarlatinal sore-throat in the following particulars:—1. The fauces have not the bright vivid colour and papular appearance as in scarlet fever; the tongue is coated with a thick yellow fur; the papillæ are not projecting; and the edges and tip are pale and flabby. 2. There is not any efflorescence or desquamation of the skin. 3. The urine is high coloured, having an acid reaction, and depositing a

copious sediment of lithate of ammonia, containing no albumen, blood-globules, or epithelium-scales.

In cynanche tonsillaris the amount of inflammatory fever is dependent upon the extent of the local disease; but in the present epidemic cynanche, the constitutional suffering bears no adequate relation to the local inflammation.

Upon inspecting the throat, more or less inflammatory redness and swelling are seen, with small patches of erosion here and there, on the tonsils, velum or uvula; there is no ulceration properly so called, but simple abrasion of the epithelium without loss of substance of the mucous tissue; although the act of swallowing is painful and difficult, the swelling is never so great as to impede deglutition from the increased size of the tonsils, and abscess of these organs never takes place, or is of very rare occurrence; the aspect of the fauces is that of a dusky red colour, inclining to purple, instead of the florid redness seen in cynanche tonsillaris. The inflammation is not limited to the mucous membrane of the mouth, but generally involves the submaxillary, and sometimes the parotid glands. This is more especially the case in children; the neighbouring areolar tissue partakes of the inflammation, giving rise to considerable tumefaction, and in acute cases, terminating in abscess.

The debility consequent upon an attack of this kind is far greater than could have been supposed, judging from the apparently slight nature of the local affection; the prostration far exceeding any of the most aggravated cases seen in common cynanche, convalescence being frequently protracted for many weeks.

Although this disease is mainly produced by some inscrutable influence which resides in the atmosphere, forming its epidemic constitution, I have every reason to believe that it is communicable from one person to another; at the same time, from the obscurity which surrounds diseases of a kindred origin, I am quite sensible of the difficulty there is in attempting to establish the fact of its contagious property; but in confirmation of the opinion, I may say that I have attended six members of the same family, suffering from this disease at the same time. The attack was not simultaneous, but it occurred at distinct and distant intervals, varying from one to three weeks. These patients were all in immediate communication with each other, officiating successively as nurses one to the other, as each became attacked. In the same house there were servants who had no direct intercourse with the invalid family, but whose sole duty it was to attend to the domestic arrangements. They were not allowed to go into the suite of rooms occupied by the sick, so strong was the impression that the disease was infectious. As these servants escaped the disease, I would scarcely look upon their immunity as an ordinary coincidence; so, with a desire to profit by this precautionary measure, I isolated the first person attacked in the next family I attended, and by pursuing a rigid course of exclusion, I thereby prevented the extension of the disease to other branches of the family.

Although it may be impossible in so wide spreading an affection thus to confine its ravages in every instance, still I am satisfied from the numerous examples I have had, that by a well directed surveillance its propagation may be considerably limited, and its duration greatly abridged.

We have some early records of epidemic pharyngitis as it appeared in Holland, Spain, Naples, and America, likewise in Paris and England, in the seventeenth and eighteenth centuries. This was essentially an inflammation of the mucous membrane of the pharynx, serious in its nature and complicated in its relations, attended with a pseudo-membraneous exudation called diphtherite, so ably described by M.M. Bretonneau, Rilliet, and Barthez. This affection was confined principally to children, and I am not aware that any author has given us an account of an epidemic pharyngitis uncomplicated with exudation either in children or adults.

Some difference of opinion prevailed whether diphtherite, which is an analogous disease to the epidemic pharyngitis we are now considering, was contagious or not; but from the facts collected by M. Guersant, he believed it was so, in which opinion Rilliet and Barthez concurred.

As regards treatment, I have found nothing so effective as chlorate of potash, given every four to six hours in five-grain doses. It appears to exert a specific influence over inflammatory affections of the mouth and throat; its local effect in the shape of gargle is of no less importance than its internal administration. It lessens the fœtor and imparts a healthy stimulus to the mucous membrane, rendering the secretion less viscid, and the painful efforts to hawk up less distressing.