

tinal fever broke out nearly at once in all the thirteen houses in which the tainted water had been drunk. In almost every house of the thirteen, two or three persons were laid up, and in some a much larger number. Amongst others, the case of a school for young ladies was very striking. The first to suffer in the school was the lady of the house. She was taken ill on the first Monday in the month. Four of her pupils were seized on the following day; and before the end of the week, the mistress, six school girls, and two maid-servants, were all in bed with intestinal fever. In the beginning of the week following, two more were added to the list. Three children who were sent home on the first outbreak of the disorder, and three others who remained at the school, were the only persons who escaped.

The houses in which the same specific fever thus simultaneously broke out on so large a scale were many of them far apart in the length of the terrace, and their inmates were, for the most part, not in the habit of personal intercourse. The other families on the terrace, *living side by side with these*, continued all the while to be perfectly free from fever. The only important circumstance in which those who suffered so severely differed from those who did not suffer at all, was that the former had drunk of the tainted well, and the latter had not.

Only a few doors from the school already mentioned there was another girls' school, with about the same number of pupils. In all that related to their internal economy the two schools were exactly alike; but while, in the one, eleven persons out of seventeen were struck down with fever, in the other there was not a single case. The one was supplied with drinking water from the poisoned well, the other from an entirely different source. The circumstances gave to the contrast, here, all the force of an experiment. In complex questions it is not often, indeed, that even experiment yields results so clear and precise.

Amongst the sufferers at Richmond-terrace were nine servants, who were removed to the Bristol Infirmary soon after being attacked. To make the case complete, I have only to add that all nine presented in full development the diagnostic marks of intestinal fever. Two of the number, who were my own patients, offered perfectly typical specimens of the disorder. In two others, who died, the small intestine was crowded with the ulcerations which are characteristic of the disease.\*

(To be concluded.)

## REPORTS OF THREE CASES

ILLUSTRATIVE OF

### THE GOOD EFFECTS OF PRESSURE IN STRUMOUS SYNOVITIS.

BY R. BARWELL, Esq., F.R.C.S.,

ASSISTANT-SURGEON TO CHARING-CROSS HOSPITAL.

It was, I believe, Dr. Scott, of Bromley, who first used pressure by means of strapping plaster in strumous joint cases. The practice has from some cause gradually declined, and now it is seldom that the plan of treatment is to be seen in our metropolitan hospitals; yet it is very advantageous, often gives the patient great relief, and sometimes does more towards subduing the remnants of unhealthy inflammation than any other plan with which I am acquainted. In illustration of these facts, the following cases may be cited:—

I was asked on the 4th of August, 1858, to see C. E—, a young lady, aged ten, on account of a swelling of the right knee-joint. She is rather tall for her age, pale, with long, thick, dark eyelashes and blue eyes; thin, well-formed lips, and the nasal cartilages sharp and defined. The right knee was considerably swollen from fluid in the synovial membrane; it fluctuated; the shape was roundish, and the patella lifted from the bone. The measurements were—Left knee (normal): above patella,  $11\frac{1}{2}$  inch.; round patella,  $11\frac{1}{4}$  inch.; below patella,  $10\frac{1}{2}$  inch. Right knee (diseased): above,  $11\frac{3}{8}$  inch.; middle,  $11\frac{1}{8}$  inch.; below,  $10\frac{1}{2}$  inch. There was no pain whatever in the joint at the time of my seeing her. She was running about and playing with her younger sisters; she confessed

\* For some additional particulars of this very interesting outbreak, see the Report to the General Board of Health on the Sanitary State of Bristol, by S. T. Clark. 1850.

that at night her knee ached. The swelling had been observed a fortnight before I was sent for. I applied a light pasteboard splint, the limb being semi-flexed; ordered four leeches, two to be applied to each side of the ligamentum patellæ; cod-liver oil, with iodide of iron, to be taken thrice a day, with quinine and acid mixture.

Aug. 16th.—She remained in much the same condition up to the 13th, when the knee became painful; it is now even more swollen. A blister was ordered, and two grains of iodide of potassium in gentian.

24th.—The splint was removed, and the knee examined. It measured—above patella,  $12\frac{1}{2}$  inches; across patella, 13; below patella,  $11\frac{1}{4}$ ; therefore is still more swollen. Splint readjusted.

27th.—Another blister was applied.

Sept. 3rd.—Much the same.

8th.—The swelling is perhaps a little less; there is now no fluctuation in the joint, but it is soft and quaggy, as though filled with a semi-fluid material; this decrease in size is therefore no improvement.

13th.—The knee is more painful; she describes the pain as of something large in the joint, that is pressing the bones apart. Seeing that my treatment had been hitherto unavailing, I determined to try the effects of pressure. In order to begin by degrees, having removed the splint, I bound a bandage on the limb from the foot upward; arrived at the knee, I placed a little pad on either side of the ligamentum patellæ, and tightened this part of the bandage very considerably.

16th.—The patient found the pressure very comfortable. I therefore applied strapping-plaster very tightly over the joint, with pads in the same situation as before.

24th.—The strapping being loose, she of her own accord asked for its reapplication. This was done as tightly as I possibly could.

30th.—She does not complain of pain. She is to leave off the iodide of potassium, and to return to the cod-liver oil and quinine. Strapping reapplied.

Oct. 4th.—The knee looks now hardly swollen; it is a little stiff from constant maintenance in the same posture; it measured, however, only very little more than that on the sound side. I applied a bandage tightly as before, and took leave of my patient.

I saw the young lady (not professionally) in May, 1859, and she assured me she felt no inconvenience from the knee.

William M—, aged fourteen, came to me at the Charing-cross Hospital on the 3rd of January, 1859, on account of a swollen and painful elbow (right). He is a pale, thin, strumous boy. The elbow is a good deal swollen, and hot, but not red; he keeps it semi-flexed, and holds the wrist in his left hand. The swelling is well marked; the fossa on either side of the olecranon is lost, and the juncture between the head of the radius and outer condyle is not to be felt on account of the swelling at that spot. He says this disease has been coming on about a month. He is not aware of having strained or bruised the arm. It began with some swelling and very little pain at first. The arm was put on a splint, and cold water applied; he had a senna draught. Measurements were not taken.

Jan. 6th.—Easier, but still as much swollen. Blister; cod-liver oil and quinine.

This treatment was continued for five weeks. A blister was always kept open; sometimes the splint was put on the inside, sometimes on the outside, so as to allow of blistering at different spots. At the end of five weeks, the skin was permitted to heal, and then the part was examined. It is still swollen, but not so much as at first, and the swelling is less fluid and more gelatinous in feeling; movement of the limb is painful. He says that, since the blisters have been discontinued, the joint is "more painful and bursting-like" than during their use. His general aspect and health have improved. A little sulphate of iron was added to his quinine mixture. The elbow was firmly strapped.

Feb. 26th.—The strapping gives relief; he has less pain and no feeling of distension in the joint. To be repeated.

March 3rd.—Pressure has been continued by means of strapping up to the present time. There is still a little swelling, but he wants to go to work again; he is permitted to do so, but is to come twice a week that the arm may be tightly bandaged.

May 13th.—The boy's arm seems now perfectly well.

Jane E—, aged twenty-seven, married, has two children, came to me, at Charing-cross Hospital, February 10th last, with a swollen and painful knee. She is a tall, robust woman, whose father had died of phthisis, and who has herself a somewhat strumous appearance. Ten days ago she knelt

down on a thimble; the part where it struck the left knee was just inside the ligament of the patella. From that day the knee has been painful and swollen. She says that it is not so large now as it was three days after the accident, but is more painful. Right knee (normal): above patella, 12 inches; across patella, 12 $\frac{1}{4}$  inches; below patella, 11 $\frac{1}{2}$  inches. Left knee (diseased): above patella, 12 $\frac{3}{8}$  inches; across patella, 12 $\frac{3}{4}$  inches; below patella, 11 $\frac{3}{4}$  inches. The swelling was not fluctuating, but soft and quaggy. The pain was not great; was most at night, as though "the joint would burst." I intended from the first to try the effect of pressure in this case; but as the knee was hot I believed that the inflammation was still too active. I, therefore, had a pasteboard splint applied, and ordered six leeches, to be followed by a blister. An aperient of tartrate of potash and senna. As she lived near, I promised to see her in a day or two.

Feb. 16th.—The pain in the knee was less; the blister still open; the draught had acted sufficiently. To have three grains of iodide of potassium and infusion of gentian three times a day. To dress the blister with lint and cold water.

19th.—Blister healed, and the pain returned; but the joint is not hot, or at least hardly perceptibly more so than the other. A bandage very tight at the knee, with a pad on each side of the ligamentum patellæ, was applied.

21st.—The pressure gives ease, and, therefore, tight strapping with pad in the same places was employed with benefit.

March 4th.—The patient is very much better, but on account of family duties must move about, more than is desirable, and is impatient of the restraint caused by the strapping. The left knee measures above the patella, 12 $\frac{1}{4}$  in.; across the patella, 12 $\frac{3}{8}$  in.; below the patella, 11 $\frac{1}{2}$  in. This is very little more than the right; but as she is not likely to use the bandage as well or as much as she should, the improvement will hardly be permanent.

Other cases might be given, but these suffice. I have wrapped the joint, before applying the plaster, in lint spread with blue ointment, as recommended by Dr. Scott. This plan is not advisable in strumous cases. I have once used iodide of lead ointment in the same way. It may have been advantageous, at all events was not injurious; but the mere mechanical pressure appears to me to be the beneficial agent. In strumous inflammation of the synovial membrane, that sac is, as we know, filled with a soft, more or less translucent, and but slightly vascular jelly, which tends to spread and to permeate all the surrounding structures, and it seems that pressure prevents such luxurious growth, causes a greater concentration of this material, and subsequently its absorption. The cases, however, for this application must be properly chosen, or it will give not merely no relief to the patient, but absolute torture. There must be no active inflammation—a point which can be best ascertained by the absence of heat in the part, and of acute pain on pressing with the finger. Furthermore, those cases are most benefited where the patient complains of a pain as though the bones of the joint were being forced asunder, or of a sense of distension and bursting—a pain which results, I believe, from the interstitial fungus like growth, which the gelatinous infiltration is constantly undergoing.

Old Burlington-street, October, 1859.

ON

## A CASE OF POISONING BY STRYCHNINE, AND RECOVERY.

By GEORGE BENNETT, M.D., F.R.C.S.

ABOUT a quarter to seven A.M. of the 13th of October, 1856, I was requested to attend a lady, aged forty-two, who had, in a fit of despondency, taken the entire contents of a packet of "Battle's rat poison." On my arrival, I found that about half-past six A.M. she had mixed the powder in a tumbler of water, drank it, and by adding water again, had taken every particle of the powder. The bitter taste, she afterwards remarked to me, was not perceived until some little time after the powder had been swallowed, which I have observed is peculiar to strychnine. After taking the poison, she went and dressed the children; but, suddenly repenting of the crime she had committed, she informed her husband, who, after giving a dose of antimonial wine, which produced no emetic effect, came for me. She told me what she had taken, and appeared agitated;

but having no symptoms to guide me as to the nature of the poison, and as vomiting had not occurred, I administered scruple doses of sulphate of zinc, and sent for the stomach-pump after a short space of time. On giving her some water, I perceived some slight spasmodic twitchings, which gradually increased in violence. I then suspected that strychnine was the poison taken, and as no vomiting had been excited, and the spasms precluded the use of the stomach-pump, I sent for the compound tincture of iodine. Before it arrived, however, the spasms had increased so violently that life appeared extinct; the face and hands were livid, the eyeballs protruded, and there was violent opisthotonos; pulse not perceptible. The most severe spasmodic action came on about a quarter to eight A.M., and about two minutes after the subsidence of a severe fit, the medicine having arrived, I gave her twenty drops in a wine-glass of water. Soon after a very violent fit came on, and in this the respiration was so feeble that we all considered she was dead. However, she again rallied; and as soon as she was capable of swallowing, being about ten to fifteen minutes after the administration of the first dose, I gave her thirty drops of the tincture of iodine. She soon had another fit; but it was evident to all about her that it was less severe, and lasted but for a very short period of time. On the fit subsiding, in about ten minutes I gave another dose of thirty drops of the tincture. The convulsive fits had now ceased, and in about twenty minutes from the cessation of the last fit, violent vomiting came on; and this being assisted by diluents, the stomach appeared clear of the poison. Now, a question may arise how the iodine acted in this case. Probably by forming an insoluble compound of hydriodate of strychnine, and by relieving the system from the spasmodic action of the poison upon the spinal nerves, the emetics which had been administered were enabled to take effect. She continued free from any further spasm; and, after an hour, I left her. On returning in about an hour, I found she still continued better, with the exception of a few very slight twitchings. She complained of great debility; and the pulse being very feeble, I ordered her nourishing diet of milk and arrowroot, and gave an ammonia mixture, with compound sulphuric ether; and, under their influence, she rallied very rapidly. I remarked that during the convulsive paroxysms no screams were uttered; and on making inquiry after her recovery, she informed me that no pain was felt during the fits, only an inconvenience from the spasms drawing the legs so rigidly down. She also stated she was sensible during the fits to everything around her, retaining the most perfect consciousness of all that was said or done—was unable to speak, but never felt any inclination to scream or cry out. In the evening she complained of a little soreness of the throat, and a slight feeling of cramps over the lower extremities.

On the following morning (Oct. 14th), I found her much better; pulse regular; had passed rather a restless night; soreness of the throat had subsided; and she enjoyed some tea for breakfast. She had no pain, and complained only of a feeling of lassitude. The next day I found she had slept well; but the bowels not having been relieved, an aperient mixture was ordered, which, however, did not operate until the evening. The stimulating mixture was continued occasionally, and afforded great relief from the feelings of nervous debility which came over her. From the 16th to the 18th she improved daily; and on the latter day she was able to leave her room.

The next question that arises is as to the quantity of strychnine taken. I first tested one of the powders by the colour test, and by using sulphuric acid and the bichromate of potass an intense maroon or deep violet colour was produced, diffusing itself over the whole of the liquid and remaining for a few minutes. On one of the powders being analyzed by Professor Smith, of the Sydney University, it was found that a paper containing ten grains of a bluish powder (probably smalt) with which the strychnine had been mixed, gave a grain of very pure strychnine. On administering one of the powders to a young dog, it remained for fully an hour without manifesting any effect or inconvenience from the poison, when suddenly the convulsive spasms came on, and, increasing in severity, the animal died in three minutes. An older and larger dog had one of the powders given to it, and about an hour after the dose had been administered a severe fit occurred, but it rallied in ten minutes, and moved about, with slight paralysis of the hinder extremities; it appeared quite free from any suffering, and was even wagging its tail and seemed to be recovering for nearly half an hour, when the spasmodic twitchings again commenced and gradually increased in severity, until one strong convulsive fit terminated its existence. The bodies of both the animals—as I have observed in the human subject—re-