

this point I cannot yet speak with any confidence, because it appears to me that the investigation of the action of *paratriptics*, or those substances which seem to lessen the wear and tear of the textures of the body in the exercise of their several functions, involves considerations and precautions which have escaped the attention of experimentalists on this interesting question, and which my own experiments hitherto have not taken completely into account.

I have made no trials of the influence of *cuca* on disease, or the consequences of disease. Some notices in the journals on this subject show that it is attracting attention; but, so far as I see, it is a difficult one, and may prove extensive, and therefore it ought to fall into the hands of some able inquirer, who will be in no hurry to rush into print. I have been asked by correspondents in the south of England if *cuca* will do good to a weak heart, to an old paralysis, to the feebleness of advancing age, etc. My reply has been, that I know nothing of all this, and that no one should use it medicinally, but under the advice and observation of his medical attendant.

A more convenient form for use than that of a quid is very desirable. M. Laumailé, who rode, on very bad roads led, his bicycle 760 miles from Paris to Vienna in little more than twelve days, in the month of October, carried with him, as part of his scanty baggage, "a small supply of the liqueur de coca, an Indian tonic, by which he was always able to assuage the sudden and painful hunger which sometimes accompanies continued exertion".* Unfortunately, he gives us too little of his experience with it; but he observes that, when about sixty miles from Vienna, "continuing his way along a road of fluid mire, fatigue and sleep at length told upon him, but the marvellous liqueur de coca again supported him and gave him strength".* I have made by rule of thumb a very palatable liqueur, with only a fourth of rectified spirit, and containing in half-an-ounce the soluble part of sixty grains of leaves, but I have not yet tested its virtue. Pharmaceutical chemists, however, will soon solve this problem, and, it may be hoped, without looking for a patent.

SUPPLEMENT.

Since producing the preceding account to the Botanical Society, it has occurred to me that, on its appearance in a medical journal, there ought to be some notice of the experiments alluded to on the urinary secretion, although they are incomplete. During their performance, I took exactly the same breakfast—always at half-past eight—viz., twelve ounces of tea, containing 300 grains of sugar and one fluid ounce of cream, not over rich, one egg, weighing two ounces and a half, seven ounces of brown bread, and 360 grains of butter. No food or drink of any kind was taken after that till dinner, about six o'clock. I did not reduce that to positive rule; but, being simple, the nutriment was easily kept nearly equivalent, which was all that was necessary for my immediate object. I ascertained the urine solids separately every two hours during the interval between 8½ A.M. and 4½ or 5 P.M., but at longer intervals in the evening and night. It was sufficient for my purpose to ascertain the solids from the volume and the density, which I took very accurately by the weighing bottle; and in the calculation I used the formula proposed by me many years ago, and found by others to be correct for healthy urine, and which I again verified. This allows 2.33 grains per 1,000 of volume for every degree of density above that of distilled water. I have no doubt this estimate is correct in my own instance, when living, as on the occasion in question, regularly in all respects. More refined results require laborious chemical analysis; but that is not necessary for determining simply the relative wear and tear of the organs of the body, under a few simple conditions, as denoted by the secretion from the kidneys.

The following is a tabular view of my best observations—1, nearly at rest; 2, under hard exercise; 3, under the same hard exercise, but with the aid of *cuca*.

	Hourly Solids of the Urine under		
	Rest.	Exercise.	Exercise with <i>cuca</i> .
8½ A.M. to 10½ A.M.	27.1 grains	40.1 grs. 3 miles	32.6 grs. 4 miles
10½ A.M. to 12½ P.M.	31.7 "	40.0 " 3 "	32.5 " 6 miles
12½ P.M. to 2½ "	32.9 "	40.7 " 3 "	32.0 " rest & <i>cuca</i>
2½ " to 4½ "	30.8 "	28.6* " 6 "	32.0 " 6 m. & <i>cuca</i>
4½ " to 11 "	29.0 "	32.9 " rest	33.5 " rest
11 " to 4 A.M.	30.7 "	36.0 " sleep	39.5 " slp. distrbd.
4 A.M. to 8 A.M.	33.3 "	32.0 " sleep	27.1 " sound sleep.

It is fruitless to attempt to explain all the deviations here indicated from what might have been anticipated according to received doctrines.

* *Paris to Vienna by Bicycle.* By W. Saunders. Tinsley Brothers, London, 1875, pp. 7 and 28.

I think I see how further experiment may clear them up. At present, I may only observe that great fallacies surround all inquiries in which the condition of the urine is taken only in the aggregate for four-and-twenty hours; and that the sudden decrease of urine-solids noted thus* raises a suspicion that, under a sense of much fatigue, such as was felt at this period of exercise, the action of the kidneys may languish like other functions.

CLINICAL LECTURE

ON
A CASE OF PENETRATING WOUND
OF THE THORAX.

Delivered in University College Hospital, London.

By CHRISTOPHER HEATH, F.R.C.S.,
Holme Professor of Clinical Surgery in University College, and Surgeon to the Hospital.

GENTLEMEN,—I regret to have to bring you into the *post mortem* room instead of the clinical theatre to-day, because I would rather speak of a living than a deceased patient; but the case of injury to the chest which you have watched in Ward I for the last three weeks has unfortunately ended fatally; and, whilst Mr. Barker is making the necessary preliminary steps of the *post mortem* examination, I will recall a few particulars of the patient's history to your memories.

The patient was a healthy man aged 24, a carpenter by trade, who was playing with a fellow-workman on October 29th, when the latter tried to hit him with the flat of an inch-and-a-half chisel, and unfortunately the blade flew from the handle and struck him in the back. When admitted half an hour afterwards, the man was suffering from some degree of collapse; there was some difficulty of breathing, but no hæmoptysis. He was bleeding, but not profusely, from a clean cut wound one inch and a half long, placed between the ninth and tenth ribs of the right side, and parallel to them, about an inch and a half from the spine. Mr. Collens, the house-surgeon, applied a compress over the wound, and gave the patient ice to suck and turpentine to inhale; and, when I came to make the visit about an hour afterwards, you had the opportunity of seeing the case with me. We then ascertained that air passed in and out of the chest during respiration, and this current was strong enough during an effort of the patient to blow out a lighted candle. There was no emphysema about the wound; there was normal resonance over the right side of the chest, and the breath-sounds were healthy. There could be no doubt, then, that the cavity of the chest had been opened and the lung, in all probability, wounded; for, although air might be sucked into and driven out of the pleural cavity by the action of the diaphragm, which would rise to near the level of the wound, the current would not be strong enough to blow out a candle, nor could we explain the flow of blood save by a wound of the lung itself. And yet there had been no hæmoptysis, none of that violent coughing up of florid frothy blood which you may have been led to expect as the invariable accompaniment of a wounded lung, but which does not occur unless some large pulmonary vessel is divided. Again, the admission of air into the pleura did not produce much effect upon the lung; which certainly did not collapse, and, therefore, we had no pneumothorax in the ordinary acceptation of the term.

And next as regards treatment: with a clean cut wound done by a sharp instrument, there could be no question of foreign body in the chest, and no object, therefore, if there ever be, in probing the wound or inserting the finger. To restore the pleural cavity to its normal condition, and to secure rest for the lung, were the objects to be attained; and I, therefore, had the wound carefully drawn together with plaster, applied collodion over it, and put a broad bandage round the lower part of the man's chest. Then, with the view of preventing the inevitable pleurisy from running too acute a course, I ordered small doses of antimony and opium in combination every four hours, and put him on milk-diet, with ice to suck.

You will find that there have been differences of opinion on the question of closing the opening in cases of penetrating wound of the chest; but the best authorities are agreed that, in clean cut wounds, union should be encouraged, although it may be necessary later on to reopen the wound or tap the chest to let out accumulated effusions. In our case, as you will hear, Nature saved us any trouble on that score by reopening the wound when the pleuritic effusions had accumulated.

In the evening of the day of admission, the patient was in a fairly comfortable state; temperature, 99.8 deg.; pulse, 66; respirations, 26. He did not get much sleep, however, and the next morning complained of pain in the back, shooting through the chest and interfering with his breathing. On the following day (31st), a friction-sound was heard in the right axilla and down the back on that side, and he had a good deal of constitutional disturbance, the temperature having risen to 102.6 deg., the pulse to 114, and the respirations to 54 per minute. It thus became evident that pleurisy had, as we had anticipated, set in, and the patient's breathing became somewhat embarrassed by the effusion which rapidly took place, the apex of the heart being, on November 1st, pushed over to the left of the nipple. On November 2nd, Dr. Roberts kindly examined the patient, and agreed as to the presence of considerable pleuritic effusion with slight pneumothorax and some deep pneumonia, but did not recommend paracentesis. In the evening of that day, however, Nature solved the question; for at 6.15 P.M. the patient coughed, and then said he was bleeding, when it was found that blood-stained serous fluid was escaping from the wound, which spouted when he coughed. About half a pint of this was collected, and more was passed into the bed, the patient feeling much relieved after its escape.

It was useless to close the wound again, and I therefore had a linseed poultice applied over the back of the chest; and, as the serous discharge would tend to weaken the patient, who had also a certain amount of pneumonia of the right lung to contend with, he was, on November 4th, ordered three ounces of brandy and four eggs *per diem*, with beef-tea. Under this treatment, the patient improved, the temperature on November 6th being 100.8 deg.; pulse, 96; respirations, 40; but on the 8th a slight hæmorrhage from the lung occurred, which ceased spontaneously. On November 10th, the patient said he felt better. He had a slight cough, with expectoration frothy, rather tenacious, opaque, and muco-purulent. Dr. Roberts saw him on this day, and found the chest-sounds improved; and he was ordered the following draught every six hours. Ammon. carb. gr. iij; sp. chloroform. ℥v; tinct. opii ℥iij; aquæ camph. ʒj. On November 11th, with the view of restricting the movements of the right side of the chest, broad straps of plaster were applied above and below the wound, as for fractured ribs. Late the same night, the patient had a fit of coughing, and a quantity of bloody purulent fluid, with clots of blood, was discharged from the wound. On the 12th, finding the bloody purulent discharge continuing, and fearing the decomposition of clot within the chest, I introduced a catheter through the wound, and washed out the pleura with warm Condé's fluid and water, an oakum pad being afterwards applied to the chest to soak up the discharge. The report for this day shows that the right lung had become considerably affected by pneumonia, for the whole of the right back was deficient in resonance, and harsh bronchial breathing was to be heard in the suprascapular fossa, with loud *râles* at the inferior angle of the scapula. The washing out of the pleura was practised daily with good effect, the patient taking his food well and gaining strength. The temperature, however, rose two degrees or more every night, and on the 15th he was, therefore, ordered two grains of quinine three times daily, and the brandy was increased to four ounces, and on the 17th to six ounces, with two bottles of ale. On the evening of the 17th, after the house-surgeon had washed out the pleura, the patient lost a considerable quantity of bright blood and fainted, and, from the low state to which he was thus reduced, it became necessary to double his brandy and to give him ammonia and ether every four hours. On the occurrence of the hæmorrhage, the house-surgeon very properly closed the wound, and this was left undisturbed for two days; but then, feeling certain that a quantity of decomposing blood-clot was shut up in the pleura, I thought it right to interfere, and accordingly enlarged the opening slightly with a bistoury, and extracted with a pair of polypus forceps a mass of offensive clot, subsequently washing out the cavity with the stomach-pump until the injected Condé's fluid returned of its natural colour. By this the patient was relieved, and his temperature at 7 P.M. was 101.4 deg., instead of 104.4 deg., which it had stood at on the two previous evenings at the same hour. His breathing did not improve, however, and he complained of an increase of pain in the left side, where there had been a slight pleuritic rub. The house-surgeon saw him more than once in the night, and he was taking his nourishment well; but, about 6 A.M. on the 20th, he became faint, and died half an hour afterwards.

You can now see for yourselves the condition of the thoracic contents. On the right side, the lung was bound down by adhesions to the diaphragm and chest-wall; but, now that it is turned forward, you can see that both layers of the pleura are much thickened and coated with lymph. A semi-decomposed clot occupies the wound (showing that, with all our efforts, the cavity had not been quite cleansed), which is,

as diagnosed, between the ninth and tenth ribs, close to their angles. The lower lobe of the right lung shows a wound corresponding to this opening partially closed by the effusion of lymph, and the whole lung is consolidated, except near the apex, and is contracted towards the root. On the left side, we have all the signs of recent pleurisy with effusion, the pleura being injected and covered with flakes of lymph, and the cavity containing about ten ounces of serum and half an ounce of pus or flaky lymph at the bottom. The left lung is slightly congested, but this is probably only from position, and it is otherwise healthy. The pericardium contains one ounce and a half of fluid, the result of *post mortem* change.

We have now the whole case before us; and it is evident that, while the injury of the right lung and pleura was the remote cause of death, the immediate cause of the fatal result was the pleurisy and effusion on the left side. The right lung was temporarily disabled by pneumonia, and, when the left lung became embarrassed by the pleuritic effusion, the patient's heart failed, and he necessarily died. This is unfortunately too often the termination of chest-wounds, and the same thing occurred in a case which made some sensation here a few years ago—the Life Guardsman who was shot through the chest in the street by a Fenian.

In the case before us, we had all the complications of chest-wounds which you will find enumerated by authors, with two exceptions. We had hæmorrhage from the wound and into the pleura (hæmothorax); but we had no hæmoptysis, and this is explained by the fact that the margin of the lung only was wounded, and no considerable bronchus by which the blood would find its way into the trachea and be coughed up. We had not even the prune-juice fluid which is often coughed up a day or two after a wound of the lung, because the blood drained so easily into the pleura that there was none to find its way along the air-passages. Then, again, we had pneumothorax, pleurisy, and emphysema, but we had no emphysema, and this because the free wound allowed the air to pass into and out of the pleura without difficulty, and without getting into the cellular tissue of the thorax. Emphysema is much more common with broken ribs than with wounds, and for obvious reasons, since the unbroken skin prevents the egress of the air. Last year, we had a woman in Ward 5 who had emphysema over the whole of the upper part of the trunk, head, and arms, and in whom the characteristic crackling of air could be felt on the backs of the hands; and yet she made a good recovery, because she had no pneumothorax. The explanation of such a case is that, by previous pleurisy, the lung has become adherent to the chest-wall, and that the pleural cavity is wanting at the point where the rib perforates. But pneumothorax may be recovered from, if it be only on one side. If pneumothorax occur on both sides, the patient of necessity dies, both pleuræ becoming distended with air, and the lungs being so compressed, that, at a *post mortem* examination, they are found shrunk up into very small compass on each side of the vertebrae.

And now as regards treatment. The first indication in a case of wound of the lung is to arrest hæmorrhage. But, as I have said, hæmoptysis is not a constant sign of lung-injury, though, if it be present, it is alarming to both the patient and bystanders. Hæmorrhage from small vessels may be satisfactorily treated by the inhalation of the vapour of turpentine sprinkled on a handkerchief; but, if it be more violent, it might be necessary to take more active measures. I have never had occasion to resort to venesection for the arrest of hæmorrhage, but I should have no hesitation in doing so, if occasion arose; and I would remind you that, the object of the operation being to produce an immediate effect upon the heart, the blood should be taken rapidly from a large opening, the patient being supported in an upright position until faintness is produced. Although all military surgeons of the present day agree in condemning the wholesale venesection of the Peninsular War, they rely upon it for the arrest of hæmorrhage, both external and internal, as much as Guthrie or Hennen. But, as Mr. Lawson remarks, in his essay on *Gunshot-Wounds of the Thorax*, "having succeeded in placing the patient out of the danger of death from bleeding, the lancet-case should be closed, or, if from the first there have been no external hæmorrhage or symptoms of internal, venesection need never be resorted to".

Internal hæmorrhage, if severe, is more fatal than external, since it arises from large vessels in the root of the lung, which are beyond the control of the surgeon; but slight internal hæmorrhage, such as we had in our patient, was not sufficient to compress the lung, and required no special treatment. The subsequent hæmorrhage into the pleura was, however, of vital importance, since it occurred when the man's strength was already pulled down, and when the pleura was secreting pus, so that it was impossible to leave the clot to be absorbed, as might have been done in a case of primary hæmothorax. Supposing that primary internal hæmorrhage is profuse, it is clearly

much better to close the wound at once, and allow the blood to accumulate in the pleura, and thus compress the lung, than to allow it to drain out of the chest by placing the patient on the wounded side. If subsequently an accumulation of liquid blood remain in the chest, it is readily removed by paracentesis, in the same way that pleuritic effusion may be evacuated. This treatment is more applicable, however, to clean cut stabs than to the ragged wounds resulting from gunshot injuries, and especially those accidental discharges of small-shot which occur more or less frequently every shooting season. In such cases, it is well to remember that it is possible to plug the wound effectually, and so prolong, if not save, a valuable life, by spreading a handkerchief over the wound, and then pushing into it any soft material at hand, so as to form an effectual plug without running any risk of foreign bodies entering the chest. Ordinarily, the closure of the wound with plaster, and the application of a pad and bandage, form the best treatment; and, although theoretically the patient should be laid on the wounded side, so as to allow the healthy lung more freedom, yet practically it is best to let him assume the position he finds most comfortable.

The question of paracentesis for the evacuation of the pleuritic fluid was solved in our patient by its spontaneous evacuation through the wound, which was so low as to afford an efficient drain for the pus subsequently secreted. But, in a case where the opening was higher, it would be necessary to perform paracentesis in the usual way, and subsequently either to introduce a drainage-tube or, what I think much better, to make a free incision into the chest to evacuate the pus, and to allow the cavity of the chest to be washed out. I have seen a great deal of irritation and some considerable hæmorrhage excited by the presence of a drainage-tube in the pleura, but I have never seen any harm result from a free incision, and have now performed that operation in a considerable number of cases of empyema.

Cases of penetrating wound of the thorax are confessedly some of the most fatal met with in warfare, and unfortunately the experience of civil practice is not much better. Stabs are less dangerous than gunshot-wounds, but in either the prognosis is most unfavourable.

CLINICAL MEMORANDA.

ATROPINE POISONING BY OPHTHALMIC DROPS.

SOME years ago, I wished to compare a sound eye with an amaurotic eye, which I was about to examine with the ophthalmoscope. For this purpose, I dropped into my servant's eye as well as my patient's, two drops of a solution of atropine, four grains to the ounce. This was repeated twice in the course of half an hour. In the evening, my servant complained that he felt very giddy and strange in his head, that he could not see; that his throat was sore; and that he could not swallow. His pupils of course were widely dilated, and the throat was of a deep red hue. The pupils remained dilated for eight days. My patient complained next day that she had had similar symptoms, and had nearly fallen down on her way homewards. The amount of atropine absorbed must have been infinitesimal, but the symptoms were undoubtedly those of atropine poisoning.

R. L. BOWLES, M.D., Folkestone.

TREATMENT OF SPINA BIFIDA.

IN the BRITISH MEDICAL JOURNAL of April 22nd, Dr. Mark Long of Hackney publishes a case of death following the operation of injection with the iodo-glycerine solution. For this he is to be commended, more especially as it seems to be the exception, rather than the rule, to disclose failures, which are often instructive. When I first proposed this mode of dealing with spina bifida, it was plainly stated that it would be utopian to expect that every case would prove successful, though as yet the success has been beyond expectation. It must be noted, that our patients are weak and imperfectly developed children. Dr. Long does not say that the lower limbs of his patient were paralysed, but that "the knees and hip joints were rather stiff", and it will be observed that considerable draining of the cerebro-spinal fluid took place, which always has a most injurious effect. These are circumstances to be considered. The situation of the tumour in Dr. Long's case is one of the most favourable for successful injection.

As a set off to this case, I may refer Dr. Long and others to three cases successfully treated by Mr. J. H. Ewart of Manchester, and published by him in the *Liverpool and Manchester Medical and Surgical Reports* for 1876, to which my attention was called only yesterday. I must thank Dr. Long and Mr. Ewart for making such cases known.

JAMES MORTON, M.D., Glasgow.

ABSTRACT OF A CLINICAL LECTURE

ON

EXCISION OF THE CUBOID BONE FOR EXAGGERATED CASES OF TALIPES EQUINO-VARUS.

Delivered at the Westminster Hospital.

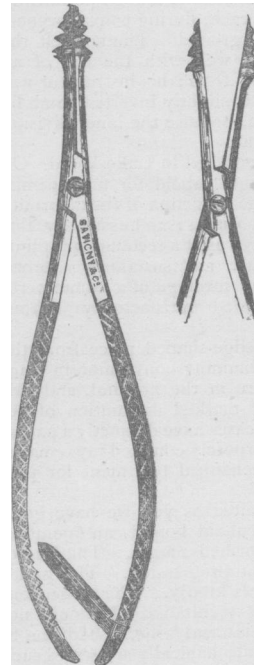
BY RICHARD DAVY, F.R.C.S.,
Surgeon to the Hospital.

GENTLEMEN,—I bring before your notice to-day the third case in which the cuboid bone has been removed for exaggerated and confirmed talipes equino-varus. The considerations that have led me to perform this operation are as follow:—1. The intractability and relapsing character of the deformity, notwithstanding division of tendons and plantar fasciæ; 2. The great trouble and expense to poor patients in procuring talipes instruments, and the necessity for prolonged surgical treatment; 3. The anatomical facts connected with the cuboid bone; and 4. The pathological evidence obtained from a case in which Mr. Barnard Holt had removed the cuboid bone for caries, unattended with club-foot. The two first named considerations are matters of daily experience, and need not now occupy our time; but the anatomical facts are important, and worthy of statement.

The cuboid acts as a direct supporting block of bone to the two external toes (third and fourth metatarsal bones), having for its base the anterior articular facet of the os calcis; it acts as a supporting wedge to the scaphoid and external cuneiform bones; and the ligaments attaching it to the os calcis are for the most part blended with other bones, notably the long calcaneo-cuboid, extending from the under tubercles of the os calcis to the metatarsal bases of the second, third, and fourth toes. There is but one muscle attached to it, viz., a tendinous slip of the flexor brevis pollicis. The tendon of the peroneus longus grooves its under surface, and supports it considerably as a sling.

The fourth consideration is a pathological one. Some few years ago, Mr. Barnard Holt removed nearly the whole of a left cuboid bone for caries, and last year the boy was in Matthew Ward for talipes valgus (the antagonistic deformity to varus); and I show you the cast taken from our museum. Now, on the same plan as you set a thief to catch a thief, so you artificially induce a talipes valgus to counteract varus by ablation of the cuboid.

Operation.—Use chloroform and Esmarch's bandage. Cut directly down on the cuboid from the outer side of the foot, through the indurated skin and bursa, and make the cut T-shaped by extending it over the dorsum of the foot; insert two stout wires, one into each flap, and use these as retractors during the operation. Having definitely exposed the upper and outer surfaces of the cuboid, screw the bone-forceps into the cancellous structure of the cuboid, and expand the blades until a firm leverage is gained. Then carefully divide the ligaments around the bone; wrench it out; and also avoid injuring the peroneus longus tendon beneath, by closely cutting on the bone itself with the knife. You will then notice the synovial membranes involved; and link your T-shaped aperture together by one or more sutures. No dressing whatever is to be applied to the wound, but an internal foot-and-leg splint, with a gum and chalk bandage. Here are specimens of two intact cuboid bones that have been so excised.



this knowledge has led, the operation of excision of the cuboid bone