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REMARKS ON A CASE

OF

COMPOUND DISLOCATION

OF THE ANKLE

WITH OTHER INJURIES;

ILLUSTRATING

THE ANTISEPTIC SYSTEM

OF TREATMENT.

BY

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EDINBURGH: EDMONSTON AND DOUGLAS.

1870.

Edinburgh: Printed by Thomas Constable,
FOR
EDMONSTON AND DOUGLAS.

LONDON . . . . . HAMILTON, ADAMS, AND CO.
CAMBRIDGE . . . . . MACMILLAN AND CO.
GLASGOW . . . . . JAMES MACLEHOSE.

ON A CASE OF
COMPOUND DISLOCATION OF THE ANKLE WITH OTHER INJURIES.

This case was first alluded to in a Lecture delivered February 14, 1870.

THE next case, Gentlemen, which I wish to bring under your notice, is that of a labourer thirty years of age, who was seriously injured on a railway three days ago. He was standing on the line, about a mile out of Edinburgh, at 6 A.M., when he suddenly saw an engine close upon him coming at considerable speed, and he had only just time to turn half round before it struck him on the left shoulder and hurled him to the ground between the rails. On recovering consciousness, he found himself unable to walk; but about half-an-hour later, his cap having been discovered above the buffers of the locomotive, the men in charge of the engine went in search of the owner, and, finding him lying helpless, conveyed him to the Infirmary. When I saw him about 8.30 A.M., he was suffering considerably from shock; and he feared, from severe pain which he felt in his chest, that he had received some serious internal injury,—an apprehension which has happily proved groundless. I

found the left foot much displaced inwards, and the external malleolus protruding through a vertical wound in the integument two or three inches in length. The tip of the malleolus had been broken off, and remained attached to the external lateral ligament; while the extremity of the protruding part was comminuted. The internal malleolus was of course fractured, as a necessary condition of such a displacement of the foot. Now, Gentlemen, if you were experienced surgeons, you would know that this was a most formidable injury. Recoveries from it were formerly exceptional. Mr. Syme informs me that at one time, on looking into the hospital records, he found that the last fourteen cases of compound dislocation of the ankle admitted into the Infirmary had all ended fatally. He therefore came to regard amputation at the ankle as the best treatment in most cases; though he sometimes modified his practice so far as to content himself with removing the end of the tibia, so converting the case into one of excision of the ankle.

In our patient, however, neither of these procedures has been adopted. For the purpose merely of facilitating the return of the protruding malleolus, I nipped off a portion of it with cutting pliers,[1] and, with the same object, enlarged slightly with scissors the lower end of the rent in the skin, which opposed a barrier to its passage. But to all intents and purposes the dislocation was simply reduced. The case, however, was treated antiseptically. Watery solution

[1] The portion removed was covered at its deeper surface with articular cartilage.

of carbolic acid, as strong as it can be made (one part of the crystals to twenty of water), was thrown into the joint with a syringe, the edges of the skin being held together to prevent its escape and cause its penetration to all the internal recesses of the wound; and this was further promoted by free manipulation of the injured part while the fluid was still in the interior. There was a time when we should have thought that to introduce an irritating liquid like this into the ankle-joint would be to take an unwarrantable liberty with the articulation. But we now understand that the transient irritation caused by the antiseptic lotion is nothing compared with the abiding influence of the far more acrid products of putrefaction. In the operation which you saw me perform just now [the removal of a fatty tumour], a lotion of half the strength (1 to 40) was employed; experience having proved that this is sufficient to ensure destruction of the putrefactive organisms in a wound just made, and made by the surgeon himself. But when the injury has been received some time before you see the patient, and inflicted, as in the present instance, in a rude way, involving the chance of foreign material having been introduced and mixed, perhaps, with clots of blood lying in inaccessible recesses of the wound, it seems wise to employ as strong a solution as water will produce. And as this will be your only chance of acting upon putrefactive particles lodged in the interior—as the work of their destruction must be done once for all at the outset—do not be afraid of dealing very freely with the injured part in introducing the germ-poison. [It is a mistake to mingle

spirit of wine or glycerine with the watery solution used for injecting the wound. The admixture of either of these materials with water containing a given amount of the acid in solution, gives it a greater hold upon the acid, and renders the lotion more bland, and at the same time more persistent in its action; and this may, under certain circumstances, be very useful for the purpose of an external dressing. But for the preliminary treatment of the interior of the wound an agent potent for the moment, but transient, is called for, to kill the putrefactive organisms, and, as soon as this is done, to leave the wound as speedily as possible to recover from the inevitable irritation of the antiseptic; and for this purpose no vehicle seems better for the acid than simple water.] The liquid introduced having been squeezed out, the process of injection and manipulation was performed a second time for greater security, and the skin in the vicinity having been previously well washed with the lotion, to destroy organisms adhering to it or to the hairs, an external dressing was applied, similar to that which you have seen used after removal of the fatty tumour. Lac plaster was wrapped in two layers round the limb, from three or four inches above the upper extremity of the wound to as far below its lower end—that is to say, extending well up the leg and embracing the heel and instep; the foot meanwhile being held in good position. A cloth, to absorb the blood and serum which would be discharged from beneath the margins of the plaster was then bandaged on, and a splint applied to the inner aspect of the leg and foot. [The lac plaster has been very much improved of late, by being incorporated with a soft cloth, instead of being spread upon starched calico. It is thus rendered beautifully flexible, and at the same time much more durable, the cloth incorporated with it enabling it to withstand any amount of wear and tear. But as in this form it is very thin, it is well, where much discharge is anticipated, or when a long time is intended to elapse between the dressings, to use it in two layers, so as to double the store of the acid in the application.[1]]

But, Gentlemen, the compound dislocation of the ankle was not the only injury which this poor man received. Observing some blood about his hair, I examined the head, and found four scalp wounds, varying in length from two to five inches, three of them exposing the bone, into which black dirt had been ground—probably, as he suggests, by the fire-pan of the engine. We used to reckon that when the bone was thus extensively exposed in a scalp wound, and subjected at the same time to such violence, the cure was pretty sure to prove tedious, protracted by the exfoliation of osseous scales of greater or less thickness. There was at the same time more or less risk of head symptoms or of erysipelas. It is, therefore, very satisfactory in such cases to be able to reckon on primary union under antiseptic management. The region occupied by the wounds being extensive, the greater part of the scalp was shaved, and thoroughly washed with the strong antiseptic lotion; and the wounds were treated just

[1] This plaster in its best form may be obtained from the Old Apothecaries' Company, Virginia Street, Glasgow.

like that at the ankle, except that their edges were approximated by antiseptic sutures. [The material which I have used of late for this purpose is silk steeped for a while in a mixture of melted bees'-wax with a certain proportion of carbolic acid—say a tenth part. As the silk is taken out of the hot liquid, it is drawn through a dry cloth to remove the superfluous wax; after which it may be wound on a reel, and kept in any close vessel. The wax, besides giving the knot a better hold, prevents the antiseptic from being washed out of the thread, and also, filling up the interstices of the fibres, renders the silk incapable of imbibing stimulating liquids; and so confers an unirritating quality corresponding to that of the metallic suture, over which the suppleness of the thread gives it a great superiority.] When all had been stitched up, each wound was once more injected with the strong watery solution, to correct any mischief that might possibly have been introduced by regurgitation of blood that had oozed into the cavity during the insertion of the stitches. A well overlapping cap of lac plaster, in double layer, was then applied, surrounded by a cloth to absorb discharge, secured by bandage and pins.

I cannot too strongly impress upon you the importance of having the plaster extend freely beyond the wound at every part, so that the discharge may have to travel a considerable distance beneath the impermeable antiseptic layer before reaching the sources of mischief externally. It is only in this way that you can guard securely against the spread of the putrefactive fermentation into the wound. Yet there is

nothing in the antiseptic treatment that I find more apt to be neglected.

After I had left the patient, Dr. Cleaver [the house-surgeon] discovered a compound fracture of the right olecranon. The patient thinks he must have fallen upon his elbow; and in this he is no doubt correct, the fracture having been thus caused by direct violence. The wound was not large (about an inch in length), but, from the relations of the bone, it necessarily communicated with the articulation. Here, then, was another injury, in itself sufficiently serious—a compound fracture into the elbow-joint. This Dr. Cleaver treated in a manner similar to that in which I had dressed the ankle, and applied an anterior splint to maintain extension of the elbow.

Now, Gentlemen, I do not hesitate to say that if our antiseptic means succeed as such—that is to say, if putrefaction is prevented from occurring in the wounds—neither of these severe injuries, the compound dislocation of the ankle, the compound fracture into the elbow-joint, nor the scalp wounds exposing and injuring the bone, will occasion either local or constitutional disturbance. You may perhaps think me bold to speak in this confident way at so early a period of the case, at the beginning of the fourth day, the very time when, under ordinary treatment, the region of the ankle would be red, swollen, and painful, preliminary to suppuration, and the pulse rising, with other indications of increasing fever. But the progress of the patient already goes far to justify me. All the injured parts are as yet in a perfectly quiet state, his pulse is daily descending, his tongue is clean and moist, and he relishes his food, and

complains of no pain whatever, except that of the contusions of his chest and shoulder. *You* cannot suspect me of exaggeration, for you have only to go to the patient's bed and inquire for yourselves; and any of you who are disposed to witness the dressing will see it done to-morrow at the visit hour.

But besides the favourable condition of this patient hitherto, I have ample experience to found upon. Since my attention was first drawn to antiseptic surgery I have been concerned in four other cases of compound dislocation of the ankle. One of them was treated in the Glasgow Infirmary just before I left it. The displacement of the foot was inwards, as in our patient, though produced in a very different way.[1] The treatment also was the same; and the wound, which was large, became a superficial sore without suppuration or any local or constitutional disturbance.

Another of the cases was also a dislocation inwards, caused by a lady being thrown out of a dog-cart. She was not under my care, but I was in so far concerned in the treatment that the son of her medical attendant (Dr. Coats, of Glasgow) being at that time one of my dressers, he was asked by his father to employ the means which he had seen me use at the hospital. In accordance with my practice at that time, an oily solution of carbolic acid was introduced into the joint and into the rest of the wound, and a layer of putty, rendered antiseptic by the admixture of a certain proportion of the acid, was used for the external dressing. The means were different, but their object was the same.

[1] See *The Lancet*, Jan. 1, 1870.

The oily solution destroyed organisms existing in the wound; and the putty, like the lac plaster, impermeable to watery fluid, communicated the volatile antiseptic stored up in its substance to the discharge that flowed out beneath it. The case was published by Dr. Coats,[1] who told how, after the first smarting caused by the acid had subsided, the patient was free from the pain previously experienced, and never after had any uneasiness in the part. Here also the wound closed without any deep-seated suppuration or any febrile disturbance.

In a third case, a gentleman about sixty years of age, of heavy frame, slipped in going down-stairs, and the foot was driven forcibly outwards, the fibula being broken, while the internal malleolus was thrust through the integument. I saw the patient in conjunction with Dr. George Buchanan of Glasgow; and Mr. Berkeley Hill of London, happening to be on a visit to me at the time, witnessed the first dressing. The lac plaster was used, but in a way which I have since abandoned, so that I need not trouble you with its details. [After the joint had been injected with watery solution of carbolic acid, and the dislocation reduced, a bit of thin block tin was placed over the wound to protect it from the stimulating action of the acid in the plaster wrapped round the foot. This was surrounded with a cloth and bandage, which were afterwards daily touched with a strong solution of carbolic acid in oil, to renew a supply of the antiseptic to the lac beneath, which was permanently retained. The tin has since been superseded; and I have found it, on the whole, better to change the entire

[1] See *The Lancet*, May 2, 1868.

dressings occasionally, in the manner to be described in the sequel.] Though the patient was of gouty habit, and in other ways by no means a very favourable subject, his progress was all that could have been desired had the case been one of simple fracture. [Not one drop of pus appeared till, five weeks having elapsed, and a little serous discharge still continuing, the deeper dressings were removed for the first time, and disclosed a superficial sore with pouting granulations, which healed in a few days under an astringent lotion.]

The fourth case was one in which the injury was inflicted by myself, but was of the same essential nature as those caused accidentally, though its effect was to remedy, not to produce, displacement. The foot had been driven backwards and outwards by the violence which occasioned a simple fracture of the fibula and internal malleolus four months before; and the faulty position having continued during the union of the fragments, the limb was perfectly useless, and the patient, a young man of twenty-nine, had the prospect of going on crutches for the rest of his life. Relying on our antiseptic means, I did not scruple to divide with pliers the callus of both tibia and fibula, though I knew that in so doing I was opening into the ankle-joint. For the case differed in this important particular from those which result from accident, that I could guard with certainty against the introduction of putrefactive mischief while making the wounds; whereas in the accidental cases we cannot help feeling a degree of uncertainty till the first few days are over, whether the organisms introduced before we see the patient have

been all destroyed, though in truth the method by injection and manipulation which I have described seems to have reduced this to something very nearly approaching certainty. The foot having been drawn forcibly into its proper position by means of pulleys, and retained by appropriate splints, while an external antiseptic dressing was employed on the same principle as the putty and lac plaster, though of different materials, the wounds became superficial without suppuration and without the slightest inflammation or fever;[1] and I have the satisfaction of knowing that he, like the other patients, has now a sound and useful foot.

You see, then, Gentlemen, that I had reason for the confidence with which I expressed myself.

In a Lecture on the 17*th of February the following remarks were made:—*

The case of complicated injury which we were considering three days since goes on in accordance with our anticipations; and I wish now to say something regarding its subsequent management and progress.

The dressings were changed entirely on the day after the accident. [In doing this the greatest care is requisite. For the antiseptic injected into the wound on the previous day having been absorbed into the circulation, the extravasated blood, and any portions of tissue killed by the violence of the injury, are as susceptible of putrefaction as if no such treatment had been pursued; and my experience leads me to believe that if, when the

[1] For further details of this case, see *The British Medical Journal*, Oct. 31, 1868.

dressings are removed, a single drop of serum were to be pressed out by the movements of the limb and then regurgitate into the interior, after being exposed even for a second to the influence of septic air, putrefaction would be pretty certain to occur. The skill required to guard against this risk during the first few days, before the wound has consolidated, used to be a serious drawback to the treatment. But the difficulty and uncertainty arising from this cause have been changed to facility and security by a most simple means—the employment of a syringe, the nozzle of which is inserted beneath the margin of the lac plaster, and, as this is raised, a stream of weak watery solution of carbolic acid (1 to 40) is made to play upon the wound till a piece of calico, soaked with the same lotion, has been placed upon it by an assistant, as a temporary security until the plaster is reapplied. Any examination of the wound that may be desired is made with freedom through the transparent solution thrown over it by the syringe, the wound being never left for an instant without an antiseptic guard. The cloths outside the lac plaster adhere to its edges through drying of the discharges which they absorb, and care must be taken in removing them to hold the plaster down over the region of the wound, sothat it may not be, even for a moment, dragged up along with them. These details, while essential to success, are, happily, easy of execution.[1]]

The dressing on the day after the accident and subsequently has differed from that used in the first instance in this respect, that, before applying the lac plaster, the

[1] The remarks included within these brackets were made on another occasion.

wound itself was covered with a layer of material designed to protect it from the stimulating and irritating influence of the carbolic acid in the antiseptic stratum. You have often seen this "protective" in use in other cases, but I desire now to direct your attention to it more particularly.

Of all those who use antiseptics in surgery, I suspect that I apply them least to the surface of the wound. After the first dressing, the object which I always aim at is to have the material in contact with the exposed tissues approximate as closely as possible to the perfectly bland and neutral characters of the healthy living textures. If you consider the circumstances of a simple fracture, which you cannot too often call to mind if you wish to keep your ideas clear and right upon this subject, —if you remember how the severe contused internal wound, with the interstices of the mangled tissues loaded with extravasated blood, recovers quickly and surely under the protection of the unbroken integument, it is plain that all that is required in an external wound is to guard it against the disturbing influence of external agency. The injured tissues do not need to be "stimulated" or treated with any mysterious "specific;" ALL THAT THEY NEED IS TO BE LET ALONE. Nature will then take care of them: those which are weakened will recover, and those which have been deprived of vitality by the injury will serve as pabulum for their living neighbours. Now, of all external agencies the most injurious by far is putrefaction, and this, above all, we endeavour to exclude. But a substance employed with this object, if sufficiently potent to destroy the life of the putrefac-

tive organisms, cannot fail to be abnormally stimulating to the exposed tissues; and these must be protected from its action if the wound is to progress exactly like a subcutaneous injury.

Our "protective," then, should be a material unstimulating in its own substance, and impervious to carbolic acid. At the same time it must be insoluble in the discharges, and sufficiently supple to apply itself readily to the part. But it is by no means easy to find anything fulfilling all these conditions. Gutta percha or caoutchouc, which naturally suggest themselves, transmit the acid from particle to particle of their substance with the utmost facility, and are utterly useless for this object. A metallic plate is quite impervious to the acid. But thin block tin, which I once used, is too rigid, while tinfoil soon wears into holes. I have been lately trying a microscopically thin layer of metal, in the form in which you see it in this specimen. Cotton cloth, coated on one side with caoutchouc, is gilded on the caoutchouc side, and then covered with a film of india-rubber applied in solution. We have ascertained that the gold-leaf thus enclosed between two layers of caoutchouc spread on cloth wears thoroughly well; and, if I can get a manufacturer to enter into the thing, I have hopes of obtaining at last something like a perfect protective. And when this is attained, as the lac plaster is quite trustworthy for excluding putrefaction, our treatment will yield to the full the beautiful results which theory indicates as possible.

There is one more point that must be mentioned with reference to the protective. It is essential that it should

be itself antiseptic at the moment of its application, otherwise there would be a risk of its communicating septic particles. This object can be attained by covering it with an extremely thin film of some material soluble in water; so that when dipped into a watery solution of the acid it may be uniformly moistened with the antiseptic, but in so small a quantity as will be rapidly absorbed by the wound and by the skin, so as not to interfere to any material extent with the purely protective office of the application. You will bear in mind that the protective is not designed to have any persistent antiseptic virtue; and that, like the wound at the first dressing, it must be freely overlapped at every point by the antiseptic plaster.

These principles will be found to apply whatever be the materials used for carrying out the antiseptic system. *An antiseptic to exclude putrefaction, with a protective to exclude the antiseptic, will by their joint action keep the wound free from abnormal stimulus.*

Though we have not yet got a perfect protective, that which we are now generally using answers very fairly, and has this advantage—that the materials for it can be obtained from any druggist's shop. The basis of it is the common oiled silk. I am indebted to my late house-surgeon, Dr. Joseph Coats, now Pathologist to the Glasgow Royal Infirmary, for calling my attention to the fact that carbolic acid does not pass nearly so readily through oiled silk as through gutta-percha. But if oiled silk is dipped into a carbolic lotion before applying it, the watery fluid runs from the surface as from a duck's back, and there is risk of septic particles being deposited

upon the dry parts, even during the rapid transfer from the vessel containing the lotion to the wound. I had reason to suspect that, in some cases of hollow wounds, putrefaction was actually brought about from this cause; and hence I was induced to abandon the oiled silk for a while. But of late I have had it coated with a soluble film, which entirely removes this objection. The oiled silk is brushed over with a mixture of one part of dextrine, two parts of powdered starch, and sixteen parts of cold watery solution of carbolic acid (1 to 20). The carbolic-acid solution is used rather than water, not for its antiseptic property, but because it makes the dextrine apply itself more readily to the oiled silk, and the granular starch is used for a similar purpose. The carbolic acid may be afterwards allowed to fly off without disadvantage; so that there is no need for keeping the protective, like the antiseptic plaster, in a close vessel. Oiled silk thus prepared becomes uniformly moistened when dipped in a watery solution of the acid, so that all risk of communicating putrefactive mischief along with it is avoided; and if it be used in two layers it opposes a pretty effectual barrier to carbolic acid, as is sufficiently illustrated by the progress of the present case.

On the day after the accident the cloths around the lac plaster applied to the ankle, and even the pasteboard splint and its padding, were found soaked with bloody discharge. On the second day, when the dressings were again changed, the cloths presented only a stain corresponding to a few drachms of tinged serum; so that I thought it safe to allow two days to pass before the next dressing. I believe it to be best in all cases to

change everything on the day following the injury; because the effusion from the wound is then of a bloody character, and though the lac plaster certainly sheds the discharge admirably, yet it is possible that a layer of clot may be lying beneath it, which might interfere with its antiseptic operation. But after the first day, sanguineous effusion having ceased, the interval between the times of dressing should be regulated by the amount of discharge to be anticipated; for the more copious it is, the sooner does it exhaust the carbolic acid in the plaster. The lac may happily be always trusted to retain enough of the acid for twenty-four hours, however free the discharge may be. If the stain on the cloths indicates an effusion of only a few drachms, the plaster may be safely left for two days. If the serous oozing be not more than a few minims, the interval may be extended in proportion to the smallness of the amount, till finally, when, as sometimes happens, the plaster is maintained as a precautionary measure though no discharge is present, it may be left for a week without losing its antiseptic virtue. When the interval between the dressings is thus prolonged, the pains taken during the first few days are rewarded by great saving of trouble, as well as by the satisfactory progress of the patient; and when the case is one of fracture, the avoidance of frequent disturbance of the limb is of course a matter of most material consequence.

At the next dressing, four days after the accident, the ankle presented an appearance which would have been impossible without antiseptic management. The hollow wound, about three inches long, and gaping about an

inch, was still occupied by the original coagulum on a level with the surrounding skin; while the discharge of the last two days had caused only a serous stain of a few minims on the cloths. But this state of things was not merely the result of *antiseptic* treatment. It implied that our *protective*, also, was answering its purpose well. Had the antiseptic been acting directly on the wound, the discharge would have been much more considerable, and we should probably have already had a hollow sore with commencing suppuration. Here I cannot help observing that it seems to me strange that some who have not scrupled to criticise me with great severity should have taken so little trouble to ascertain what I have written on this subject. From the remarks made by some persons, you would imagine that I regard putrefaction as the sole cause of suppuration; whereas my treatment of abscess depends essentially upon the fact that the pus in the unopened cavity, being the result of the inflammatory stimulus without atmospheric influence, is free from putrefaction, so that it is needless to apply the antiseptic to the interior, all that is requisite being to provide exit for the discharge while guarding against the entrance of putrefactive fermentation. Again, from the statements of others you would suppose me to have taught that, if you do but apply carbolic acid freely to a wound, you will prevent suppuration; whereas I have all along pointed out that carbolic acid, being a stimulating substance, will itself induce suppuration by long-continued action on the tissues.[1]

[1] See *The Lancet*, March 16th, 1867, and Sept. 21st, 1867; also *Brit. Med. Jour.*, Nov. 14th, 1868.

[The facts observed in developing the antiseptic system have thrown great light upon the causes which determine the occurrence of suppuration; and the subject is of such great practical importance that it may be well to take this opportunity of giving definite expression to the conclusions to which I have been led. It fell to my lot several years ago to establish, as the result of an experimental inquiry, that the tissues of the living body are liable to a temporary impairment or suspension of vital energy as the result of extreme irritation; and that this condition, which appears to be the essence of *intense* inflammation, may be brought about in two totally distinct ways—viz., either by the direct operation of a noxious agent upon the tissues, or indirectly through the medium of the nervous system.[1] The same law appears to hold with regard to the causes of the exaggerated but feeble cell-development which results from the continued action on the tissues of some abnormal stimulus in a less intense form, giving rise, according to its degree, to the various phenomena of inflammatory hypertrophy, granulation, and suppuration; the pus-cells being the extreme of excess of quantity and impairment of quality in the product of abnormally excited nutrition. Thus the causes of suppuration divide themselves into two great groups: first, those that operate through the nervous system, or, in other words, the inflammatory class, of which the common abscess presents a typical example; and, secondly, noxious agents or stimuli acting directly on the tissues. The latter group are, practically speaking, stimulating

[1] "On the Early Stages of Inflammation."—*Phil. Trans.* 1858.

salts, or chemical stimuli. These are best studied in the behaviour of a healing ulcer under different kinds of treatment. Small granulating sores sometimes heal by scabbing; and when the surface is thus protected by a crust of dried discharge from the influence of external agency, there is no further effusion either of pus or serum. This is of itself sufficient evidence that granulations have no inherent tendency to form pus (or, as is sometimes absurdly said, to *secrete* it), but only do so when stimulated. The same thing is equally clearly shown by the well-known fact that two granulating surfaces will coalesce when placed in contact with each other. This coalescence would be impossible if they continued to suppurate; and their juxtaposition could oppose no obstacle to pus-formation if they had any innate disposition to it. But their mutual contact excludes the operation of external agents upon them; being freed from stimulation, they cease to discharge; and they are then at liberty to coalesce. New examples of the same truth present themselves under the antiseptic system of treatment. The wall of an abscess is similar in nature to the granulations of a sore, and is often regarded as essentially "pyogenic." But if the abscess is opened antiseptically, the pyogenic membrane, being relieved from the inflammatory stimulus which the tension of the pus before induced, and being at the same time protected from the access of the stimulus of putrefaction, is left free from all disturbance, and never forms another drop of pus. But the most striking illustration I ever saw of the properties of granulations, when not subjected to stimulation, was presented by a case of compound fracture, in which an extensive portion of the shaft of the tibia had lost its vitality, and lay exposed in a large granulating sore. The granulations grew up and enclosed the dead bone, which, being prevented from putrefaction by the treatment employed, was destitute of the usual acrid properties of an exfoliation; so that the granulations, being not stimulated by it, not only formed no pus from the surface in contact with it, but gradually consumed the dead mass by absorption.[1]

The truth is, that so far from granulations having any inherent tendency to form pus-corpuscles, the imperfect tissue of which they consist is ever disposed to develop into higher forms as soon as it is left free from preternatural excitement. This is beautifully illustrated by the familiar phenomena of the healing ulcer. The granulations are still granulations—that is to say, possess still the same pathological structure, when covered by the pellicle of newly-formed epidermis at the edge of the sore, as when they were exposed. But no sooner does the film of young epithelium protect the imperfect tissue from the influence of external stimulus than the rudimentary structure of the granulations immediately proceeds to develop into the more and more perfect fibrous tissue of the cicatrix.

It being, then, clearly understood that granulations form pus only when abnormally stimulated, we are in a position to estimate the effects of different agents upon them. The simplest case is when an antiseptic substance, like chloride of zinc or carbolic acid, is applied,

[1] See *The Lancet*, March 23, 1867.

suitably diluted, to a healthy granulating sore. Not the slightest redness of the surrounding skin, or any other indication of inflammatory disturbance, is produced; yet the granulations, so far as they are exposed to the influence of the stimulating liquid, are excited to superficial suppuration, but form no pus where they are protected from the stimulus by the pellicle of epidermis at the margin. Here, then, we have entire absence of the inflammatory stimulus; but the chemical stimulus of the pungent antiseptic salt urges the superficial cells of the granulations to develop pus-corpuscles.

If the sore is treated with water-dressing, the serum first exuded putrefies in the lint, and the products of putrefaction, being acrid salts, cannot fail to stimulate the surface of the granulations; and accordingly superficial suppuration is induced without any appearance of inflammation, just as under the influence of the antiseptic. Thus, in their effects upon a granulating sore, an antiseptic and a putrid dressing are alike: both excite superficial suppuration by direct chemical stimulation of the granulations. But in their operation on a recent wound there is this all-important difference between them, that the antiseptic stimulates only the surface to which it is applied, and every drop of discharge which it induces dilutes it and renders it less stimulating; but putrefaction being a fermentation, the self-propagating ferment spreads throughout all the recesses of the wound, wherever extravasated blood, or serum, or portions of dead tissue afford nidus and pabulum for its development, and its products become more and more acrid the longer it continues in operation. Antiseptics, then,

though they do produce suppuration when applied continuously to a recent wound, are superficial in their action and utterly trivial compared with the deep and virulent effects of putrefaction, which, indeed, often causes death by irritation and blood-poisoning before suppuration has had time to be established.

These conclusions may be exhibited in a diagrammatic form as follows:—

Causes of Suppuration.

Abnormal stimulation of the tissues,	A	Through excited nervous action.	*Inflammatory.*
	B	From the direct action of stimulating salts.	*a. Putrefactive.*
			b. Antiseptic.

This scheme, though not strictly exhaustive,[1] applies to almost all circumstances met with in surgery; and it will be found to conduce to clearness to speak of suppuration as inflammatory, putrefactive, or antiseptic, according to the circumstances in which it occurs.[2]]

If the use of the protective be so advantageous, you may naturally inquire why I do not employ it at the first dressing. The reason is twofold. In the first place, there must necessarily be a considerable discharge of blood and serum during the first twenty-four hours, and hence this is the period in which there is greatest risk of

[1] The group *a* ought to include the products of other ferments besides those of putrefaction. For I am satisfied that inodorous ferments sometimes occur in the animal fluids, and produce salts which stimulate to suppuration. Also viruses inducing suppuration are very probably of the same essential nature (ferments), though some at least are odourless, as in the case of erysipelas. Again, the group *b*, to be complete, should include salts which, though not the products of putrefaction, cannot be said to be antiseptic, such as dilute chloride of sodium, etc.

[2] Any special case, not falling under the scheme, may be called according to its special nature; thus we may speak of erysipelatous suppuration, variolous suppuration, etc.

putrefaction spreading into the wound, so that it does not seem wise to interpose anything that can interfere in the slightest degree with the antiseptic action of the dressing. And, in the second place, there is no chance of a suppurating sore being established by the direct action of the antiseptic upon the wound for a single day only. This leads me to speak of a condition of suppuration to which I have not before had occasion to advert—viz., the element of *time*. When the tissues are in a healthy state, no stimulus can induce them to suppurate. It appears that it is only when the tissues have been gradually degraded, under the influence of protracted abnormal stimulation, into the most imperfect of all tissues, which, when we see it at the surface of a sore, we term granulations, that they are in a condition, if further stimulated, to give birth to the still lower progeny of pus-corpuscles. In other words, granulation must precede suppuration, and it is a process which requires days for its completion.[1] Thus it is a familiar fact to all surgeons that a recent wound in healthy tissues does not suppurate for three or four days when subjected to ordinary treatment—that is to say, the stimulus of putrefying material must act for three or four days upon the tissues before it can induce them to suppurate; and when the first-formed pus is wiped from the wound, granulations may be seen upon the surface.

[1] An exception to this statement must be made for the case of the epithelium of some mucous membranes, the cells of which, originally of simple structure, soon form pus-corpuscles under slight abnormal stimulation. While thus adopting the language of the "Cellular Pathology," elaborated by Virchow and others following the path first opened up by Goodsir, I may remark that my own experience has tended to convince me of the truth of that doctrine.

The same holds with regard to the inflammatory stimulus. Inflammation does not produce suppuration in a day. Whether acute or chronic, it must first degrade the tissues to granulations before it can occasion the formation of pus. This is well illustrated by a common boil, which is a limited inflammation of the cutis vera, so severe at the centre as to destroy the vitality of a portion of the tissue, and gradually shading off to the state of health in the vicinity. Here, though all possible degrees of intensity of inflammation are present between the centre and the circumference, no pus is produced till some days have elapsed. Then the "core separates," as it is said, and the slough is found detached from the neighbouring living tissues, and surrounded by a few drops of odourless pus. But when the slough and the pus are removed, the cavity in which they lay is seen to be lined with granulations. The inflammatory stimulus, like the putrefactive, had induced granulation as a preliminary to suppuration.

In the same way, an antiseptic must act for days upon a wound before it can convert it into a granulating sore liable to suppuration; so that no harm is done by omitting the protective for the first twenty-four hours.

The other injuries in our patient have thus far proceeded as satisfactorily as that of the ankle. The four severe scalp wounds were dressed on the day after the accident, and each was covered with protective before the cap of lac plaster was reapplied. On the following day, the discharge to be seen on the cloth round the lac was so slight that I thought it safe to leave the head undisturbed for another day. The second dressing was

witnessed by some of you just after last lecture. The discharge of the two days amounted to only a few minims of serum, and there was entire absence of redness, puffiness, or tenderness of the scalp. I removed the numerous sutures, each coming out as clean as when it was introduced; and all the wounds seemed already completely healed, except a small superficial raw surface here and there.

The compound fracture into the elbow-joint, when last dressed, presented only a trace of serous discharge, so that I shall not think it needful to disturb it till five days shall have passed since that occasion.

The following remarks conclude the case:—

Before proceeding to relate the further progress of this case, I have to direct attention to another circumstance of great practical importance in the injury to the ankle. On the day after the accident it became apparent that the violence to which the part had been subjected had destroyed the vitality of portions of the integument, not only at the anterior margin of the wound, where a slough about half-an-inch in breadth existed, but also in detached patches at the outer aspect of the dorsum of the foot. Now, if any one of these dead pieces of skin had been left exposed to atmospheric influence, it would have putrefied; and the putrefaction would in all probability have spread along the extravasated blood and serum in the subcutaneous tissue till it had reached the seat of fracture and the articulation, and all our antiseptic treatment of the wound would have proved nugatory. I once saw a case

of compound fracture of the forearm, in which the antiseptic treatment had been pursued with thoroughly efficient means, but after the lapse of some days I was asked to look at the limb, in consequence of unsatisfactory appearances. I found the dressings applied perfectly correctly, and I had no reason to doubt that they had been so from the first; but the wound, when exposed, emitted an offensive discharge. On investigation I found a small slough of the skin, about half-an-inch in diameter, situated some inches from the wound, and just beyond the limits to which the lac plaster had been extended. The little slough had by this time undergone softening from putrefaction, so that the nozzle of a syringe could be introduced through it; and, on injecting some of the watery solution of carbolic acid, I found that it passed freely beneath the integument to the seat of fracture and to the external wound. Whether the skin had been thus extensively detached at the time of the accident, or whether the subcutaneous tissue had been simply loaded with extravasated blood, the spreading of the putrefactive fermentation from the slough exposed to the air was easily intelligible.

It is therefore essential that every isolated slough which may exist in the vicinity of a contused wound should be dressed antiseptically like the wound itself. But it may be asked, how is it possible to secure this at the time of the first dressing, seeing that there is nothing in the appearance of the skin in the first instance to indicate that vitality has been destroyed? The simple rule for attaining the desired object is to let the antiseptic plaster first applied overlap the ap-

parently uninjured skin far and wide in all directions. Then, on the following day, let the integument be carefully scrutinized, when any dead portions will be recognised by a dusky discoloration. Every such discoloured patch should then be dressed, as if it were a wound, with a piece of protective and well-overlapping lac plaster. If the protective were omitted, the slough would acquire stimulating properties from the carbolic acid perpetually communicated to it by the lac plaster, and would excite the neighbouring living parts to granulation and "antiseptic suppuration." But if efficiently protected from the antiseptic, as well as from putrefaction, the dead tissues will be absorbed and organized like the clots of blood, new living structures being formed at the expense of the effete but nutritious mass.

Such was the course pursued in the present case; and, the oiled silk protective having been used in two, and sometimes three, layers, the results have approached very closely to those which are theoretically attainable. Some of the smaller portions of slough have been entirely removed by absorption, their place being taken by vascular new tissue. Five weeks after the accident, the large slough at the anterior margin of the wound had been considerably reduced in superficial extent, without the formation of any line of separation. What remained of it was of firm consistence, though of yellowish-white colour. In order to ascertain to what extent the process of organization and vascularization had advanced in it, I scratched its central part with the point of a sharp knife, and found that the little incision bled when I reached a depth not above half that of the

cutis vera, whereas the original slough had undoubtedly involved, not only the entire cutis, but the subcutaneous fat. The mass of dead tissue, though superficially situated, being protected from the disturbing influence of external agency, was undergoing the same kind of change as is experienced by parts deprived of vitality in the subcutaneous injury of a simple fracture.

The appearances of the wound itself presented an equally striking difference from those met with under ordinary treatment. Even at that late period, five weeks after the accident, the original clot was still to be seen, of an orange-brown colour, on a level with the surrounding skin, but greatly diminished by contraction and also by cicatrization, epidermic formation having advanced considerably from all parts of the margin of the wound, except anteriorly, where the slough was present. An open sore healing by cicatrization without suppuration, or even granulation, is something new in the history of surgery, though exactly what might have been expected from what we know of healing by scabbing. At the lower extremity of the wound the new and vascular tissue which had been formed by organization of the clot was slightly more prominent than the rest, and had somewhat the characters of granulations covered with epidermis. But not a trace of pus had been produced. On the occasion when these observations were made, eight days had been allowed to pass since the last dressing, and in order to estimate accurately the quantity and quality of the discharge, I removed the lac plaster without injecting any watery solution beneath it, knowing that at this late period no risk

would be incurred by free exposure of the wound. The bandage outside the plaster being free from stain, the whole discharge of eight days had accumulated beneath the impermeable layer of lac, and consisted only of about two minims of white but thin fluid, together with some desquamated epidermis. I subjected the milky liquid to microscopic examination, and found that the opaque element was composed exclusively of epidermic scales.

The vascularization of the clot, like that of the sloughs, had been advancing from below as well as round the margins. Fifteen days after the accident I cut into the central part of the then chocolate-coloured coagulum, under the protection of a stream of watery solution of carbolic acid, and found that it did not bleed, though the knife penetrated about a quarter of an inch. But on a repetition of the experiment twelve days later, blood oozed up from an incision carried to only about the depth of an eighth of an inch.

The process of organization of clots and sloughs thus observed in an external wound, though of the same essential nature as that which occurs in subcutaneous injuries, was undoubtedly retarded by a certain degree of abnormal stimulation inseparable from the method of treatment. For, besides the fact that the protective was not perfect—*i.e.*, not absolutely impermeable to the carbolic acid furnished by the lac plaster—the clot and sloughs were more or less soaked with the antiseptic lotion every time the dressings were changed; and though the acid is soon diffused and carried away by the circulation, this circumstance necessarily operated

as a disturbing cause. Hence the rate of healing will be more rapid in proportion to the efficiency of the protective, and also to the length of the intervals that can be allowed to pass between the dressings consistently with security against putrefaction. In the present case, the period between the dressings was extended as the discharge diminished, and it may be worth while to mention the successive intervals. From the date of the accident they were as follows:—one day; one day; two days; three days; three days; five days; five days; seven days; and finally eight days; bringing the time up to five weeks from the receipt of the injury. But I am not prepared to recommend a longer time than a week, and even that only when the discharge is practically *nil*. Indeed, in our patient, putrefaction did take place in the period following that of eight days. I had intended allowing another week to pass before meddling with the limb, but at the close of the sixth day my house-surgeon informed me that the patient had got up two days before, without leave, and had made his way, on chairs as crutches, to the fire, a distance of several yards; and, further, that there was an appearance of a stain upon the bandage. I therefore exposed the limb, and found that the discharge was considerably greater (amounting to perhaps half a drachm), fetid, and, for the first time since the accident, unmistakably puriform. The dressings removed on the last occasion had been perfectly odourless; and the most probable explanation seemed to be, that the vascular engorgement of the limb occasioned by the dependent posture had induced an unusual exudation

of serum from the wound, and that this circumstance, combined perhaps with some movements of the foot, had proved too much for the antiseptic power of the lac plaster at that period after its application. Happily the occurrence was of no consequence, as the wound was practically superficial, and beyond the reach of danger from putrefaction. But it may serve as a warning. And it must ever be borne in mind that, in the earlier stages of such a case as this, where the avoidance of putrefaction may be a matter of life and death, it is better to err on the side of dressing too often, rather than too seldom.

The putrefaction had evidently occurred quite recently, for the clot and sloughs were not yet detached. I clipped away most of the slough, and scraped off the clot till I got down to bleeding tissue, and, with the view of correcting the putrefaction in such portions of dead material as remained, I treated the sore with a strong solution of carbolic acid in spirit of wine (one part to five), and, having washed the skin around with watery solution, applied lac plaster, omitting the protective. Next day, however, the putrefaction was reproduced; showing that the antiseptic employed had not thoroughly penetrated the adhering portions of slough. Having at hand some saturated solution of chlorine gas in water (the liquor chlori of the British Pharmacopœia), I applied it freely to the sore and also to the surrounding integument, and then dressed with protective dipped in chlorine water and covered with overlapping lac, as formerly. On the following day the sore was destitute of odour of any kind, while the discharge was greatly reduced. For the future it will be treated as a superficial ulcer.

With regard to the injury to the ankle, it only remains to be mentioned that, at the present time, six weeks after the accident, the fracture of the internal malleolus has united firmly, and the foot is in good position; while the patient has already considerable movement of the ankle-joint.

The four severe scalp wounds—three of which, it will be remembered, involved exposure and injury of the bone—healed completely, without the formation of a drop of pus. And it was an interesting circumstance that, on the removal of some scabs, one of the silk sutures, which had been accidentally left, was found still securely in its place, three weeks after its introduction, and came away clean and dry, like a metallic stitch.

The compound fracture into the elbow-joint also healed without any suppuration. Five weeks after the receipt of the injury the splint was removed. The broken olecranon was found firmly united, and the patient has now free motion of the articulation.

Edinburgh, *March* 26, 1870.

EDINBURGH: T. CONSTABLE,
PRINTER TO THE QUEEN, AND TO THE UNIVERSITY.

[*From the* Proceedings of the Royal Society, No. 120, 1870.]

EXPERIMENTS

ON

THE EFFECTS OF ALCOHOL
(ETHYL ALCOHOL)

ON THE HUMAN BODY.

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As a knowledge of the physiological effects of alcohol on the human body is a matter of great importance, and as previous observations leave some points in doubt, we took the opportunity which the willingness and zeal of a very intelligent healthy soldier afforded us of investigating this subject.

In order not to lengthen the paper, we have given only our own observations, without referring to those of others.

The plan of observation was as follows:—For twenty-six days the man remained on a diet precisely similar as to food and times of meals in every respect, except that for the first eight days he took only water (in the shape of coffee, tea, and simple water); for the next six days he added to this diet rectified spirit, in such proportion that he took, in divided quantities, on the first day one fluid ounce (=28·4 cub. centims.) of absolute alcohol; on the second day two fluid ounces; on the third day four ounces, and on the fifth and sixth days eight ounces on each day. He then returned to water for six days, and then for three days took on each day half a bottle (=12 ounces, or 341 c. c.) of fine brandy, containing 48 per cent. of alcohol. Then for three days more he returned to water.

There were thus five periods, viz. of water-drinking, alcohol, water, brandy, water.

Before commencing the experiments, the man, who had been accustomed to take one or two pints of beer daily, abstained altogether from any alcoholic liquid for ten days.

This man, F. B., is twenty-eight years of age, 5 feet 6 inches in height, and his usual weight is 134 or 136 lbs. He is finely formed, with little fat, and with largely developed powerful muscles; he has a clean smooth skin, a clear bright eye, good teeth, and is in all respects in perfect health. He is very intelligent, and assisted us so much that we are quite certain that there has not been a mistake even for a minute in the time of taking the temperatures and passing the urine. As he had always been accustomed to smoke, we thought it proper to allow him half an ounce of tobacco daily, for fear the deprivation of it might disturb his health.

In addition to the experiments recorded in this paper, we tested the accuracy of his vision, and the muscular power before and during the use of alcohol; but as we could not detect any difference, we do not give the experiments.

Our object being to test the dietetic effects of alcohol, we gave it in small and large quantities, but avoided producing any extreme symptoms of narcotism.

FOOD.

Amount of solid food taken daily through the whole period:—

	Ounces. Avoirdupois.	Amount of nitrogen. Grains.
Bread	16	60·99
Beefsteak	12	173*
Fat for frying ditto	2	?
Butter	1	?
Sugar	3	
Milk	6	16·5
Potatoes	16	16
Salt	$\frac{1}{16}$	
		266·49
		or 17·27 grammes.

The meat was fried in the fat. The meals were taken always at the same time, viz. at 8 A.M., 1.30 P.M., and 5 P.M.; at 10 P.M. he took four ounces of water.

The amount of water taken was:—

First period before alcohol.	In fluid ounces. 48	In c. c. 1363
Alcoholic period.		
First day	47	1334
Second day	46	1306
Third day	44·5	1263·8
Fourth day	42·7	1214
Fifth day	41	1164
Sixth day	41	1164
After alcohol	48	1363
Brandy period	42	1164
After brandy	48	1363

It was not intended that the quantity of water should be altered; but through a misconception, the man thought the spirit and brandy were to take the place of the water, and took therefore less water in proportion. In one respect the mistake was fortunate. The total amount of water taken in the so-called solid food, and as drink, was about 72½ fluid ounces, or 2059 c. c. daily during the water days, and a little less during the days on which he took alcohol and brandy.

* The nitrogen in the beefsteak was determined once; the result was almost identical with the results given in experiments in exercise recorded in No. 94 (1867) of the Proceedings of the Royal Society. As the bread was analyzed on a former occasion, it was not so now; its composition is very constant, the same amount of flour, water, and yeast being always used in the hospital bakery at Netley.

Weight of Body without clothes.

(Accuracy of Machine = turns with one ounce avoirdupois.)

Taken at 8 A.M., after the bladder was emptied, before breakfast and at the end of the twenty-four hours constituting the day.

Days.	Water alone or alcohol and water, taken as drink.	Weight in lbs.	Weight in kilogrammes.
1	Water	133·5	60·68
2	Water	133·75	60·795
3	Water	133·75	60·795
4	Water	134·5	61·1
5	Water	135·5	61·59
6	Water	135·8	61·72
7	Water	135·9	61·77
8	Water	136	61·81
9	One fluid ounce of absolute alcohol	136	61·81
10	Two fluid ounces	136	61·81
11	Four fluid ounces	135·75	61·7
12	Six fluid ounces	136	61·81
13	Eight fluid ounces	136	61·81
14	Eight fluid ounces	136	61·81
15	Water	136	61·81
16	Water	136	61·81
17	Water	135·5	61·59
18	Water	135·25	61·477
19	Water	135·5	61·59
20	Water	135·5	61·59
21	Brandy twelve fluid ounces (containing six fluid ounces of alcohol)	135·5	61·59
22	" "	135·5	61·59
23	" "	136	61·81
24	Water	136	61·81
25	Water	136	61·81
26	Water	136	61·81

During the first few days there was a gradual increase in weight, owing probably to the food being rather greater and the exercise less than before; equilibrium was reached on the eighth day, and the weight remained almost unchanged during the alcoholic period. There was slight decrease after alcohol; and on the last brandy day a slight increase, which was maintained in the after period. The general result appears to be that (other conditions remaining constant) the effect of alcohol in modifying weight is quite unimportant.

The Temperature of the Axilla and Rectum.

The temperature of the axilla was taken (in Fahr. degrees) every two hours, from 8 A.M. to 10 P.M., the man being in bed and covered with the clothes. The temperature of the rectum was taken at 10 A.M., 2 P.M., and 10 P.M. The thermometer was in each case kept in for twenty minutes. We did not take the night temperatures for fear of injuring the health by destroying rest.

Axilla Temperatures.

The temperatures of the first day are omitted.

First Period, before Alcohol.

Hours.	Days.						
	Second, water.	Third, water.	Fourth, water.	Fifth, water.	Sixth, water.	Seventh, water.	Eighth, water.
8 a.m.	97·1	98	97·2	98·6	97	98·5	98·4
10 "	97·7	97·2	98·1	98·7	98	98·5	99
12 noon	97·8	97·9	97·9	98·2	98·1	99·1	98
2 p.m.	98·3	97·9	98·1	98·0	98	98·1	98
4 "	98·3	97·9	98·0	99·0	97·7	98·9	98·4
6 "	97·7	97·4	98·2	99·0	97·4	99	99·4
8 "	98·3	97·4	98·0	98·2	97·8	99	100·4
10 "	97·9	97·8	97·9	98·0	97·7	98	100·4
Means	97·9	97·7	97·9	98·46	97·7	98·69	99·1

Second Period, with Alcohol.

Hours.	Days.					
	Ninth, 1 fl. oz. alcohol.	Tenth, 2 fl. oz. alcohol.	Eleventh, 4 fl. oz. alcohol.	Twelfth, 6 fl. oz. alcohol.	Thirteenth, 8 fl. oz. alcohol.	Fourteenth, 8 fl. oz. alcohol.
8 a.m.	97·8	98·2	98·4	97·7	98·6	98·4
10 "	98	98	98·4	98·5	100·3	98·2
12 noon	97·6	98·6	98·4	99·4	100·4	98·4
2 p.m.	98·4	97·8	100·1	98	99	97·8
4 "	97·6	99·5	98·5	98·4	98·9	97·6
6 "	98·2	98·2	99	100	98·6	98·4
8 "	98·4	99·6	98·6	99·2	99·2	98·4
10 "	98	97·8	98	98·8	97·6	97·8
Means	98	98·46	98·7	98·6	99·08	98·1

Third Period, after Alcohol.

Hours.	Days.					
	Fifteenth, water.	Sixteenth, water.	Seventeenth, water.	Eighteenth, water.	Nineteenth, water.	Twentieth, water.
8 a.m.	98·2	98·1	98·2	98·2	98·2	98
10 "	99	98·8	97·6	98	97·8	98·4
12 noon	98·2	98·8	98·4	97·4	98·5	98
2 p.m.	97·8	98·2	98·4	98·4	98·6	98
4 "	97·6	98·2	98·0	98·6	98	98
6 "	98·4	99	98·4	97	98·4	98·6
8 "	98·4	100·7	98·0	99·4	97·8	98·2
10 "	97·8	97·6	98·6	98	98	98
Means	98·17	98·8	98·2	98·12	98·16	98·15

Fourth and Fifth Period. Brandy and after Brandy.

Hours.	Days.					
	21st, 12 fl. oz. brandy.	22nd, 12 fl. oz. brandy.	23rd, 12 fl. oz. Brandy.	24th, water.	25th, water.	26th, wate
8 a.m.	98·2	98·6	97·8	98·2	98	98·2
10 „	98·4	98·8	98·4	98·5	98·4	98·4
12 noon ...	98·4	99·4	98·2	98	98·2	98·2
2 p.m.....	98·9	97·4	98·0	98·4	99	99
4 „	99	98·8	98·0	98·4	97·8	98·7
6 „	99·6	99	98·8	98·8	98·2	98
8 „	99·4	98·4	98·8	98·2	98	97·8
10 „	99·2	97·8	98·2	98·	97·8	98·7
Means	98·8	98·5	98·25	98·3	98·17	98·35

If the means of the days of the 5 periods be put together, and the means for each period be taken, the results are—

	Mean temperature.
Before alcohol	98·207
During alcohol	98·49
After alcohol	98·266
During brandy	98·51
After brandy	98·27

These experiments show that alcohol and brandy produce little change in the temperature of the axilla in healthy men; but what effect there is appears to be rather in the direction of increase than of diminution. But that the effect of 8 ounces (=227 c.c.) of absolute alcohol, taken in 24 hours, is really trifling is seen by the Table; on the 13th day, when this large quantity was taken, the temperature rose higher than on any other day; the thermometer was over 100° at 10 and 12 o'clock, and the mean of the 8 observations was 99°; it might have been thought that alcohol really increased the temperature, but on the next day, with the same amount of alcohol, the temperature was lower throughout, and the mean of the day was only 98°·1. On the 12th and 13th days in fact the man had a slight febrile catarrh, as will be noticed further on, and the temperature rose during this attack.

We draw the conclusion that the changes in temperature in the axilla were insignificant.

Temperature of the Rectum.

Days.	Fluid taken.	Hours.				
		8 a.m.	2 p.m.	4 p.m.	6 p.m.	10 p.m.
1	Water.....	.....	.....	.....	.....	.....
2	Water.....	.....	98·9	.....	.....	97·9
3	Water.....	98·2	99	.....	.....	98·1
4	Water.....	98·1	99·2	.....	.....	98·9
5	Water.....	98·6	99·1	.....	.....	98·1
6	Water.....	98·1	99	.....	.....	99·1
7	Water.....	99·2	98·9	.....	.....	99
8	Water.....	99	100·4	.....	.....	101
9	Alcohol, 1 fluid ounce	99·4	101	.....	99·4	98·2
10	Alcohol, 2 fluid ounces.....	98·4	99·6	.....	100	99·6
11	Alcohol, 4 fluid ounces.....	98·6	99·5	.....	99·6	99·6
12	Alcohol, 6 fluid ounces.....	97·6	99·7	99·9	99·7	100·2
13	Alcohol, 8 fluid ounces.....	100·2	100·4	100·5	99·2	98·2
14	Alcohol, 8 fluid ounces.....	99·6	99·6	.....	.....	98·4
15	Water.....	99	98·8	.....	.....	98·8
16	Water.....	98·8	99·4	.....	.....	98·2
17	Water.....	98·6	99·4	.....	.....	98
18	Water.....	98·4	99·5	.....	.....	98·4
19	Water.....	99	98·4	.....	.....	98·6
20	Water.....	99	99·6	.....	.....	99·5
21	Brandy, 12 fluid ounces ...	99·6	99	.....	.....	99·8
22	Brandy, 12 fluid ounces ...	100	99·4	.....	.....	99·1
23	Brandy, 12 fluid ounces ...	98·6	99·6	.....	.....	99
24	Water.....	99	99·8	.....	.....	98·8
25	Water.....	98·8	99·6	.....	.. ...	98·6
26	Water.....	99·2	99·6	.....	.....	99·5

The mean results are as follows:—

Hours.	Rectum mean temperature.				
	First period. Water.	Second period. Alcohol.	Third period. Water.	Fourth period. Brandy.	Fifth period. Water.
8 a.m.	98·5	98·96	98·8	99·4	99
2 p.m.	99·21	99·96	99·18	99·3	99·66
10 p.m.	98·87	99·03	98·6	99·3	98·96
Mean of the three observations	98·86	99·31	98·86	99·33	99·21

The rectal observations show that alcohol and brandy in the above quantities cause no lessening of temperature in the rectum; on the contrary, there is slight increase in both the second and fourth periods as compared with the first and third (which were precisely the same), though, as in the case of the axilla, the difference is not great, being in each case very nearly half a degree Fahr.

In this man the rectum temperature is slightly greater than the axillary. As no great number of observations have been made on this point,

the following notes of a single day (the eighteenth, when the man was taking water) may be interesting:—

Hour.	Axilla temperature.	Rectum temperature.
	°	°
8 a.m.	98·2	98·4
10 „	98	
11 „	98	98·6
12 noon	97·4	98·2
1 „	97·6	98·4
2 „	98·4	99·5
3 „	98·2	99·4
4 „	98·6	99·2
5 „	97·4	98·6
6 „	97	98
7 „		97·6
8 „	99·4	98·2
9 „	97·6	98·2
10 „	98	98·4
Mean	97·98	98·51

The mean difference on this day in favour of the rectum is 0°·53; but, as appears from the former Tables, the rectum sometimes has a temperature of 1°, or even 2°, more than the axilla: but such difference as the last number seldom occurred.

The general result from all these observations surprised us, considering the numerous experiments on men and animals in which the temperature has been found to be lowered by alcohol. An explanation may, however, be possible. Our experiments being to ascertain the dietetic properties of alcohol, we never aimed at producing very decided narcotism or marked symptoms of poisoning; and as we had to deal with a perfectly healthy resisting organism, which received always the same quantity of food, the effect of alcohol in lowering temperature might not be so well marked as in an ill-fed or unhealthy body. We do not dispute the accuracy of the observations which show that large and narcotic doses of alcohol lower the temperature of the body in men and animals; but our experiments prove that alcohol, in the limits we have stated and with an equal supply of food, did not have this effect in a perfectly healthy man.

The rising of mean temperature which seemed to occur was not considerable enough to make it probable that it was due to heat derived from combustion of alcohol; it was more probably owing to quickened circulation, and in addition the slight febrile attack which occurred on the twelfth and thirteenth days, augmented the mean temperature of the alcoholic period; but this would not account for the similar slight increase in the brandy period.

The Effect on the Circulation.

The pulse (taken usually every two hours) was decidedly more frequent when alcohol and brandy were used. The mean of all the observations in the recumbent position was 73·57 beats per minute in the first period when water was taken; during the alcoholic days the mean number of beats was 88·5; after alcohol 78·6; during the brandy days 91·4, and after brandy 81·1.

If particular hours are taken the same results come out, as shown in the following Table:—

	Mean pulse at 10 a.m.	Mean pulse at 2 p.m.	Mean pulse at 10 p.m.
Before alcohol	75·5	80·8	73
During „	99	94	80·8
After „	89·66	87·5	71·6
During brandy	96·6	93	92
After „	88·6	84	73

There is therefore no doubt that the frequency of the pulse was increased, and the effect was also persistent; for, though it fell after the alcohol was left off, it had not reached in six days the point which was proper to it before the alcohol.

The pulse was not only increased in rapidity, but it was fuller; it appeared to have more volume.

The highest mean pulse on any day before alcohol was 77·5 beats; the mean pulse of the first alcoholic day (one fluid ounce of absolute alcohol) was 80; with two ounces of alcohol 78·3; with four ounces 86; with six ounces 98·3 (but there was exceptional fever); with eight ounces 93·6; and on the last day, with eight ounces, 94·7. On the first day after alcohol it sank to 80.

The effect on the circulation in the small vessels of the skin was very marked. The face, ears, and neck were flushed, and on the days of the large doses the face was slightly swollen. The skin of the trunk, as well as of the face, appeared hot to the man himself, and this was no doubt dependent on the same cause. It was some time before the turgescence of the small cutaneous vessels lessened. Accompanying it was a sense of fulness and heaviness in the head, as if the intracranial vessels were also enlarged, and there was a feeling of warmth at the epigastrium.

Sphygmographic observations were made on the right radial artery. They were always taken with the same instrument, with an equal pressure, and when the man was in a recumbent position. Altogether more than 150 tracings were taken, but some were spoilt in photographing*. All the remainder are subjoined.

One fluid ounce of absolute alcohol in twenty-four hours altered the

* They were taken and photographed with great care by Mr. James Sylvester, Apothecary to the Forces, who also gave us much assistance in various ways.

tracings, as will be seen on comparing the 10 p.m. curves of the first period with that of the ninth day. The larger quantities of alcohol produced, however, greater effects, and the tracings of the twelfth, thirteenth, and fourteenth days are very striking. They show, of course, a greatly increased rapidity of beat. The first event (to use Dr. Burdon-Sanderson's terms), or systolic wave, is better marked; the ascent of the lever is more vertical, and is greater in amount; the summit is sometimes sharp, but in most cases rounded. The second event, or arterial pressure, is not apparently so much altered, and in most cases probably is not changed. The third event, or disastolic collapse, is more rapid than before alcohol; there is very little evidence of the fourth event, or diastolic expansion.

The interpretation is that there is increased frequency of the ventricular contractions, and increased rapidity of each contraction; the ventricle therefore is doing more work in a given time, the period of rest for the heart is much shortened, the blood moves more freely than usual through the capillaries, so that the increased quantity of blood which it is to be presumed is thrown into the arteries, is very quickly got rid of.

SPHYGMOGRAPHIC TRACINGS.

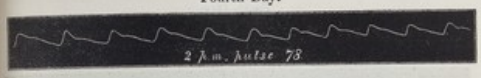
Right Radial Artery.

First Period.—8 days Water-drinking.

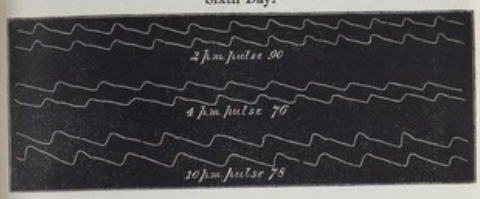
Second Day.

Third Day.

Fourth Day.

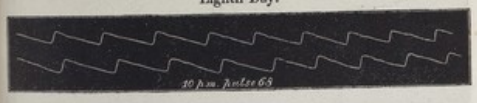


Sixth Day.



Seventh Day.

Eighth Day.



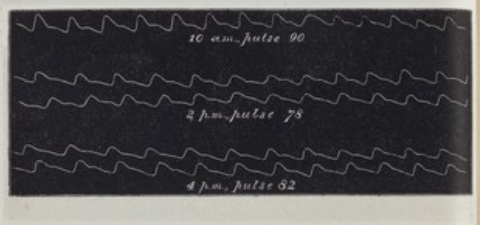
Second Period.—6 days Alcohol.

Ninth Day.

Half fluid ounce of alcohol at 8 a.m.
" " " 1.30 p.m.

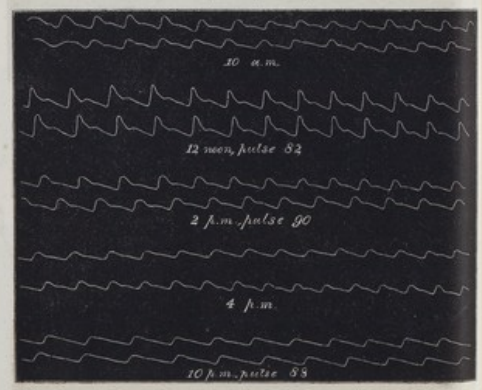
Tenth Day.

One ounce of alcohol at 8 a.m.
„ „ „ 1.30 p.m.



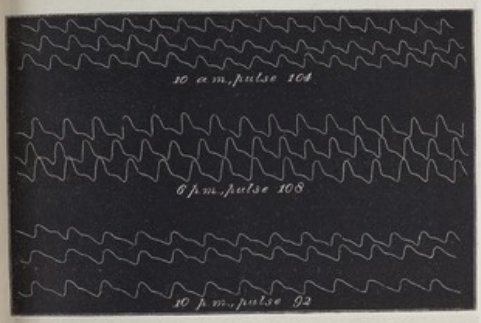
Eleventh Day.

Two ounces of alcohol at 8 a.m.
One ounce „ 1.30 p.m.
One „ „ 5 p.m.



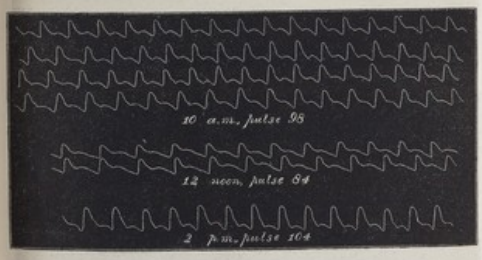
Twelfth Day.

3 ounces of alcohol at 8 a.m.
1½ ounce „ 1.30 p.m.
1½ „ „ 5 p.m.



Thirteenth Day.

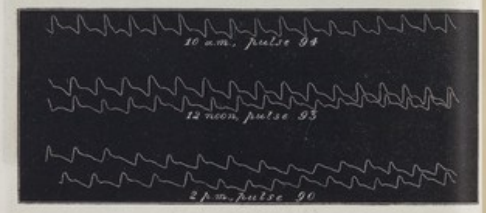
3 ounces of alcohol at 8 a.m.
2½ „ „ 1.30 p.m.
2½ „ „ 5 p.m.



Fourth Period.—3 days Brandy.

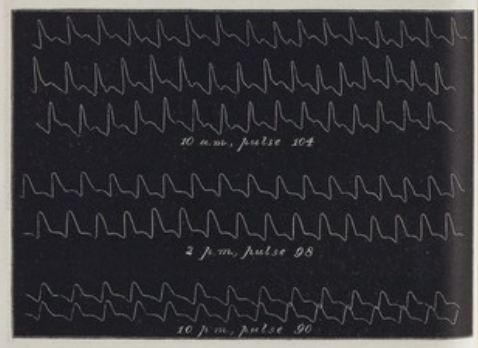
Twenty-first Day.

Four ounces at 8 a.m.
„ „ 1.30 p.m.
„ „ 5 p.m.



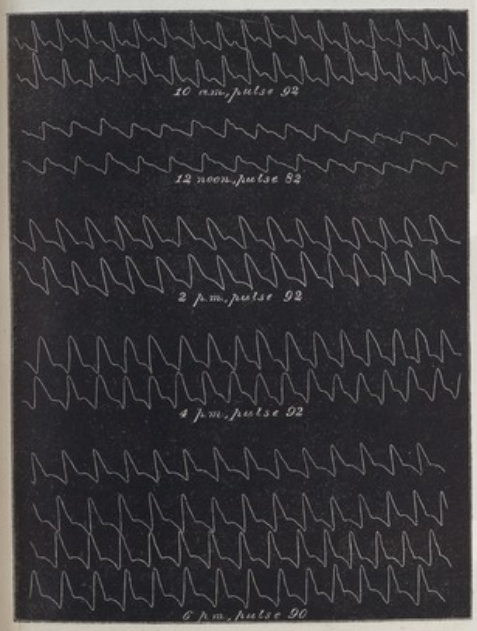
Twenty-second Day.

Four ounces of brandy at 8 a.m.
„ „ 1.30 p.m.
„ „ 5 p.m.



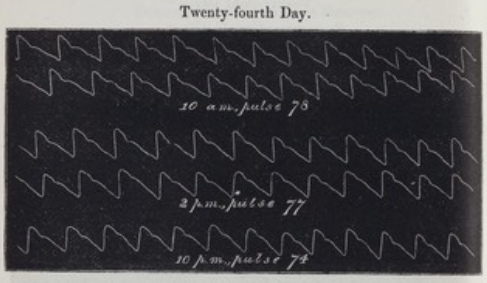
Twenty-third Day.

Four ounces of brandy at 8 a.m.
„ „ 1.30 p.m.
„ „ 5 p.m.

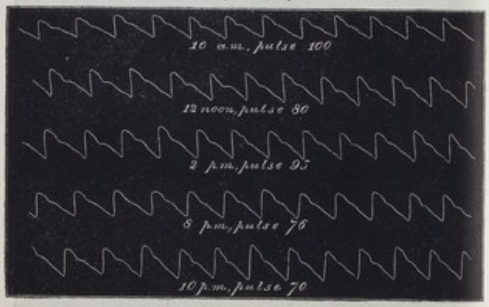


FIFTH PERIOD.—WATER.

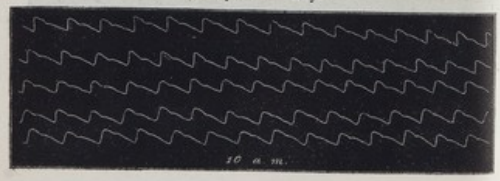
Twenty-fourth Day.



Twenty-fifth Day.



Twenty-seventh Day.



Seven days after.

(15 minutes after taking a glass of beer.)

After the alcohol was left off the tracings show indications of its influence, even to the sixth day. The tracing on the eighteenth day (the fourth after the cessation of alcohol) shows a weak and quickly acting heart; but allowance must be made for the fact that that was a day of complete rest in bed. On the sixth day after alcohol the mean pulse was 76·2 per minute, and the tracing shows still rapidity and feebleness of the heart's action. This seems to confirm the usual doctrine that increased rapidity of contraction from the action of alcohol is followed by exhaustion; but it also shows that this effect does not ensue so immediately as is supposed, but that the effect of the alcohol is more persistent.

When brandy was then given, the effect on the exhausted heart was very obvious; the ventricle commenced to contract again more rapidly, and, in fact, the effect of the brandy is more marked than that of alcohol.

It is difficult perhaps to explain all the indications of the brandy tracings, but there seems no doubt that the ventricular contraction was very sudden; the aortic valves opened with violence; a rapid wave traversed the blood, sending the lever up very high; the summit of the curve is sharp, and the equilibrium of tension between ventricle and artery must have been soon reached; the arteries emptied themselves very rapidly.

After the brandy was left off the tracings are seen gradually returning to the curve of health, though they had not reached it on the morning of the twenty-seventh day (the fourth after brandy), when the experiments were obliged to be discontinued.

Seven days later the pulse was nearly healthy again.

It is noticeable that twelve ounces of brandy (containing 48 per cent. of alcohol) had more effect than eight ounces of absolute alcohol, but it must be remembered that when the brandy was given the heart had not recovered from the influence of the alcohol; in other words, it was not perfectly healthy *.

* Dr. Burdon-Sanderson was kind enough to look at three tracings, No. 1 of the water period, No. 2 of the alcoholic period, and No. 3 of the brandy period. He writes as follows:—

"I think (1) that No. 1 is a normal pulse.

"(2) That the changes exhibited in Nos. 2 and 3 are of the same nature, but different in degree; *i. e.* that the degree of modification is greater in 3 than in 2. Hence the explanation of both must be the same.

"(3) The alteration of form is partly due to the mere increase of frequency; but in

Putting together the evidence derived from the pulse as felt by the finger, from the state of the cutaneous vessels, and from the sphygmographic tracings, it seems fair to conclude that the chief effects of alcohol on the circulation in health are on the ventricles (the rapidity with which contractions are accomplished being greatly increased), and on the capillaries (which are dilated and allow blood to pass more freely through them). The valuable observations of Dr. Anstie have shown that in many febrile cases, when alcohol is acting usefully, the arterial tension is increased; while in other cases, when there is narcotism, the tension is lowered. In this healthy man the effect of either small or large doses on the arterial tension is not perhaps well marked.

Action on the Urine.

Elimination of water by the kidneys.

Days.	Fluid taken in twenty-four hours in food and drink.	Quantity of urine in c. c.
1	72½ fluid ounces of water, or 2059 c. c.	1726
2	72½ fluid ounces of water, or 2059 c. c.	1197
3	72½ fluid ounces of water, or 2059 c. c.	1290
4	72½ fluid ounces of water, or 2059 c. c.	1220
5	72½ fluid ounces of water, or 2059 c. c.	950
6	72½ fluid ounces of water, or 2059 c. c.	1167
7	72½ fluid ounces of water, or 2059 c. c.	1205
8	72½ fluid ounces of water, or 2059 c. c.	1000
9	71·5 fluid ounces, or 2030 c. c., and 1 fluid ounce of alcohol	1300
10	70·5 fluid ounces, or 2002 c. c., and 2 fluid ounces of alcohol	1550
11	69 fluid ounces, or 1959 c. c., and 4 fluid ounces of alcohol	1440
12	67 fluid ounces, or 1902 c. c., and 6 fluid ounces of alcohol	1060
13	65.5 fluid ounces. or 1860 c. c., and 8 fluid ounces of alcohol	1800
14	65·5 fluid ounces, or 1860 c. c., and 8 fluid ounces of alcohol	1020
15	72½ fluid ounces of water, or 2059 c. c.	980
16	72½ fluid ounces of water, or 2059 c. c.	1600
17	72½ fluid ounces of water, or 2059 c. c.	1400
18	72½ fluid ounces of water, or 2059 c. c.	1660
19	72½ fluid ounces of water, or 2059 c. c.	1180
20	72½ fluid ounces of water, or 2059 c. c.	1110
21	66·5 fluid ounces of water, or 1880 c. c., and 6 ounces of alcoholic brandy	1610
22	66·5 fluid ounces of water, or 1880 c. c., and 6 ounces of alcoholic brandy	1270
23	66·5 fluid ounces of water, or 1880 c. c., and 6 ounces of alcoholic brandy	1260
24	72½ fluid ounces, or 2059 c. c.	1100
25	72½ fluid ounces, or 2059 c. c.	1330
26	72½ fluid ounces, or 2059 c. c.	1580

addition to this the tracing shows the special characters of the pulsus celer, the description of which in my book, page 14, seems still correct (Handbook of the Sphygmograph. 1867).

"(4) The celerity or shortness of the expansile movement I understand to signify that the left ventricle performs its contraction *within a shorter period*, and therefore uses more force within a given time than in its natural state.

"(5) I do not see any reason for supposing that the arterial pressure is increased."

The mean amounts are as follows:—

Period.	Mean amount of water taken in food and drink. cub. centims.	Mean amount of urine passed. cub. centims.
First period (without alcohol)	2059	1219
Second period (with alcohol)	1935	1361
Third period (with water)	2059	1321
Fourth period (with brandy)	1889	1380
Fifth period (with water)	2059	1337

As the amount of urine increased in the alcoholic period 142 cub. centims., while the water taken was less by 124 cubic centims., and the same result in a less degree occurred in the brandy period, there is no doubt that the alcohol increased the urinary water. Whether this was the consequence, as seems possible, of the greater frequency of the heart's action, or whether it arose from any purely diuretic influence of the alcohol, is uncertain. Was the body left poorer in water, or was the exit through the skin or lungs hindered?

As 4·3 ounces less of water passed in, and 5·3 ounces more passed out, in the alcoholic period, and as the mean amount of alcohol passing in was under 5 fluid ounces, the body ought to have lost weight, and perhaps would have done so but for one circumstance.

The possible amount of change of weight in this way would be of course slight, viz. about 4 ounces, and it happened that there was a less excretion of alvine matter (viz. 1 ounce less daily than during the first period), which would tend to cover the possible loss of water by the increased flow of urine. Also the error of the machine may be one ounce. We draw the conclusion that there was no decided evidence of lessening of elimination of water by other channels sufficient to account for the increased urinary flow.

The Nitrogen of the Urine.

The urea of 24 hours was determined by Liebig's mercuric nitrate solution, the chlorine being got rid of; and, in addition, the total nitrogen was determined by burning with soda-lime after the method of Voit, and leading the ammonia into a standard solution of sulphuric acid. In this way any error in the determination by either process was sure to be detected.

Days.	Fluid taken.	Urea, in grammes.	Nitrogen in urea, in grammes.	Nitrogen by soda-lime.
1	Water	37·000	17·266	17·151
2	,, ...	33·960	15·848	16·142
3	,, ...	33·080	15·437	16·238
4	,, ...	38·040	17·752	17·752
5	,, ...	33·540	15·652	16·525
6	,, ...	35·100	16·380	16·070
7	,, ...	30·980	14·457	13·770
8	,, ...	32·990	15·396	14·555
9	Alcohol	35·938	16·771	16·614
10	,, ...	36·758	17·150	17·387
11	,, ...	32·126	14·992	15·029
12	,, ...	38·658	18·052	20·300
13	,, ...	34·047	15·890	15·592
14	,, ...	34·129	15·930	15·715
15	Water	35·457	16·436	16·700
16	,, ...	40·352	18·831	18·170
17	,, ...	37·073	17·301	17·890
18	,, ...	35·000	16·330	17·090
19	,, ...	37·770	17·640	17·930
20	,, ...	31·224	14·571	14·185
21	Brandy	34·357	16·030	16·003
22	,, ...	35·712	16·666	17·140
23	,, ...	34·344	16·027	16·109
24	Water	34·677	16·182	16·167
25	,, ...	32·250	15·000	15·108
26	,, ...	36·780	17·165	17·050

The mean daily amounts are :—

	Urea.	Nitrogen in urea.	Nitrogen by soda-lime.
	grammes.	grammes.	grammes.
First period (water)	34·336	16·023	16·033
Second period (alcohol).....	35·276	16·464	16·773
Third period (water).....	36·146	16·851	16·954
Fourth period (brandy).....	34·804	16·241	16·417
Fifth period (water)	34·569	16·113	16·108

As 17·27 grammes of nitrogen (or probably a little more) entered with the food, and as, in the two stools which were examined, 1·6 and 2 grammes of nitrogen passed off respectively, it is certain that in this, as in other cases recorded, the whole of the nitrogen passed off by the kidneys and bowels, and none emerged by the skin or lungs. Of the 17¼ or 17½ grammes which entered as food, 16 or 16¼ passed off with the urine and 1¼ or 1½, or from $\frac{1}{11}$ to $\frac{1}{13}$, by the bowels.

The effect of alcohol and brandy on the elimination of nitrogen was not great. In the alcoholic period there was a slight increase over the previous period, but this was dependent (partly, at any rate) on an accidental circumstance. On the twelfth day (during alcohol) the weather was very cold,

and the man had a chill ; there was slight shivering, pain in the hips, and frequent sneezing. The temperature of the axilla reached 100° at 6 P.M., and 99°·2 at 8 P.M. ; the temperature of the rectum at 10 P.M. was 100°·2. The urine decreased greatly in amount (from 1440 cub. centims. to 1060 cub. centims.), and became very turbid from lithates. The urea increased to 38·65 grammes, giving 18·05 grammes of nitrogen, and the nitrogen by soda-lime was no less than 20·32 grammes. As this large excess surprised us, both processes were repeated three times with the same results ; and it is therefore to be concluded that, in consequence of this ephemeral fever, there was a larger amount of urea (*i. e.* of substances precipitated by mercuric nitrate), and also a great excess of nitrogenous substances not precipitated by mercuric nitrate.

On the following day the ephemeral fever was better, though the temperature was high in the early part of the day : the amount of urine then became excessive (1800 cub. centims.), but the urea and the nitrogen determined by soda-lime both fell to the average. If this fever-day be deducted, the average of the five remaining alcoholic-days gives 16·067 grammes of nitrogen, or practically the same as in the water-period.

We draw the conclusion that some, probably all, the excess of nitrogenous elimination during the alcoholic period was due to this transient fever, which, it may be noted, was neither hindered in coming on nor apparently prevented in passing off, by the 6 and 8 ounces of absolute alcohol which were taken on those days.

In the period after the alcohol the amount, both of ureal and total nitrogen, increased. The excess was chiefly due to a great elimination on the sixteenth day. On this day again a slight febrile attack recurred, and the temperature ran high. At 8 P.M. it reached 100°·7, and then fell rapidly, so that at 10 P.M. it was normal in both axilla and rectum. The mean temperature of the day was 98°·8, which was considerably higher than on any other day in this period.

On the following three days the nitrogen continued high, and fell on the next day far below the average. In the brandy period it continued to fall, and in the last period (three days of water-drinking) was almost precisely the same as in the first.

The disturbing influences from these febrile attacks being allowed for, and the small amount of the changes in the quantity of nitrogen, even if these attacks are included, being taken into account, it may be concluded that alcohol in the above quantities produces no effect of importance in altering the elimination of nitrogen in the healthy body when the ingress of nitrogen is constant. If any change does occur, which is not certain, it is on the side of increase ; and this might possibly be accounted for by the increased rapidity of the heart's action, and the augmented flow of urine, which would carry a little more urea with it.

Our conclusion is quite contrary to the observations formerly made on this subject, which indicated that nitrogen is largely retained in the body when alcohol is used, and that in this way alcohol both increases assimilation or, when food is deficient, saves the tissues from destruction and husbands strength. Whatever may be the case in febrile diseases (and on this point the evidence is defective), we are quite certain that this is not true for health, and that as long as the ingress of nitrogen is the same, 8 ounces of absolute alcohol and 12 ounces of brandy, containing nearly 6 ounces of alcohol, have no effect, or a trifling effect, on the processes which end in the elimination of nitrogen by the urine, and most decidedly do not lessen the elimination *.

The Phosphoric Acid, Chlorine, and Free Acidity of the Urine.

The phosphoric acid was determined by nitrate of uranium, the chlorine by nitrate of silver, the acidity by the graduated alkaline solution:—

* It may be noted with regard to the two processes for determining nitrogen, viz. precipitation by Liebig's mercuric nitrate and burning by soda-lime, that the mercuric nitrate throws down other nitrogenous matters besides the urea. Indeed, Voit considers (Zeitschr. für Biologie, Band ii. p. 470) that the total nitrogen in the urine of men may be safely concluded from this test. But this appears not to be so in all men. In the man now experimented upon, the nitrogen by soda-lime is actually very nearly the same as that calculated from the mercuric-nitrate precipitate. But in other men, and even in this man now and then, the former process gave a much larger result than the latter.

It will be observed that occasionally the process by soda-lime gives a smaller result than that by mercuric nitrate. The same fact is observable in the table given by Voit in the paper above referred to (p. 469). The explanation is probably this:—Possibly some of the non-ureal substances thrown down by mercuric nitrate may contain less nitrogen than urea, and the calculation is therefore incorrect; but the chief cause appears to be the following:—Both processes are liable to error. The mercuric nitrate being a colour test, is often difficult to estimate exactly; its failure is on the side of excess, and the amount of failure may be 2 or perhaps 3 per cent. On the other hand, the process by soda-lime has an error in the other direction: there is sometimes a difficulty in getting off the last traces of ammonia, and there may be therefore a slight error on the side of defect. If in any urine in which the amount of nitrogen by soda-lime ought really to coincide with that by mercuric nitrate, but in which each error of manipulation reaches its maximum limit (viz. that the mercuric-nitrate solution shows more nitrogen than exists, and the soda-lime process less), the amount of nitrogen by the latter plan may appear considerably less than by the former.

Days.	Period.	Phosphoric acid.	Chlorine.	Free acidity = crystallized oxalic acid.
		grammes.	grammes.	grammes.
1	Water	2·554	10·507	2·119
2	,, ...	2·239	5·524	1·313
3	,, ...	2·161	7·342	...
4	,, ...	1·891	7·648	1·977
5	,, ...	1·876	4·584	2·483
6	,, ...	2·020	6·152	...
7	,, ...	1·711	7·265	2·173
8	,, ...	2·000	6·003	1·778
Mean.		2·056	6·915	1·974
9	Alcohol	2·184	7·776	2·174
10	,, ...	2·821	7·126	2·592
11	,, ...	2·117	7·082	2·485
12	,, ...	2·400	7·826	2·345
13	,, ...	1·870	7·508	2·116
14	,, ...	1·990	8·780	2·202
Mean.		2·228	7·586	2·342
15	Water	2·107	6·608	2·930
16	,, ...	2·560	9·656	1·633
17	,, ...	2·716	10·437	1·902
18	,, ...	2·407	9·257	2·035
19	,, ...	2·690	8·796	2·840
20	,, ...	1·953	6·698	1·909
Mean.		2·405	8·577	2·208
21	Brandy	2·592	8·773	2·525
22	,, ...	2·413	10·363	2·636
23	,, ...	1·890	10·735	2·171
Mean.		2·298	9·943	2·451
24	Water	2·233	7·712	2·307
25	,, ...	2·367	9·206	1·391
26	,, ...	2·607	11·218	2·520
Mean.		2·405	9·378	2·073

The changes in the phosphoric acid are so slight, that it is certain the alcohol exerted little effect. Thus, the mean of the first period being 2·056 grammes, on the two last days of the alcohol period, when 8 ounces of absolute alcohol were taken each day, the amount of phosphoric acid was 1·87 and 1·99 grammes respectively, which is the same as the mean of the first period. Now, if alcohol exerted any effect, we should expect these two days to show it. The mean of the next, or water period, when the body was in reality still impregnated with alcohol, was a little more (2·405 grammes). On the third day of brandy, when a bottle and a half had been taken in three days, the excretion was 1·89 gramme, or practically the same as in the first period.

Looking to the amounts of phosphoric acid excreted on the two last alcoholic days and the last brandy day, when the effect of the spirit, if any, would be most marked, it seems clear, if the phosphoric acid in the urine be in any way a measure of the metamorphosis of the nervous tissue (which

we do not affirm), that these experiments do not warrant any assertion that the alcohol interferes with such metamorphosis. The phosphoric acid was in fact unaffected even by such large quantities as 454 cub. centims., or not much less than ½ litre of absolute alcohol in 48 hours.

The chlorine was in larger quantities in the latter period of the experiments; but whether this was owing to the alcohol is doubtful. As the chlorine also passes off by the skin and bowels, variations in the amount eliminated by these channels affect the urine. On the 10th of February cold weather set in, and continued until the 18th; and it seems probable that some lessened action of the skin caused more chloride of sodium to pass in the urine.

The free acidity appeared to be increased in the alcoholic, and still more in the brandy period; but whether the increase is large enough to take it out of the limits of usual variation is not certain. It seems singular, if alcohol increases the free acidity, that on the two days when 8 fluid ounces were taken each day, the acidity was less than two days in the first period, and less than on the second alcoholic days, when only 2 ounces of alcohol were taken.

The acidity during the three brandy days was, however, high throughout, and it fell afterwards considerably, so that probably brandy does somewhat increase the acidity.

It is noticeable that the febrile attack on the twelfth day, which so influenced the nitrogen, and caused a large deposit of urates, was without influence on the free acidity.

On the whole, it may be concluded that the influence of alcohol on these three urinary constituents is inconsiderable.

The Alvine Discharges.

The discharges from the bowels were weighed every day; they were always natural except on the two first days, when there was some looseness. On those days the stools were rather liquid, and weighed 13¼ and 11½ ounces. Excluding these discharges, the mean numbers are as follows:—

	Weight in ounces avoirdupois.	Weight in grammes.
First period (water, last 6 days)	4·81	136·6
Second period (alcohol).....	3·8	107·9
Third period (water).....	3·04	86·34
Fourth period (brandy).....	5·35	166
Fifth period (water)	3·41	96·8

The nitrogen was determined twice, viz. on the fifth day (water), and on the 12th day (6 ounces of alcohol); it amounted to 1·639 and 2·087 grammes respectively.

The alcohol, therefore, did not lessen the elimination of nitrogen by the bowels; and, considering the usual great variations in the weights of the stools from day to day, it is probable that it did not lessen their amount.

The Pulmonary Excretion.

On this point we made no experiments. The method of Professor von Pettenkofer has accustomed physiologists to such accuracy in the determination of the elimination of carbon, and there is so general a feeling that this method, as dealing with long periods, is the best that can be employed, that, as we had not Pettenkofer's appliances, we preferred doing nothing to falling short of a perfectly satisfactory and unquestionable result.

The Elimination of Alcohol.

The question as to the destruction or otherwise of alcohol in the body is very difficult to answer, owing to the impossibility of collecting all the excreta. The experiments of Schulinus, and especially of Anstie and Dupré, seem to show clearly that only a small part can be recovered from the body of animals or from the excreta. The latter authors, by using the bichromate of potassium and sulphuric-acid solution as a colour-test, and also by converting the alcohol into acetic acid and estimating it by an alkaline solution, could only prove the elimination of very small quantities by the urine; and the elimination was soon accomplished.

Owing to the number of experiments we had to make, we found we could not attempt to solve this very difficult question of elimination; and we will here merely briefly give the qualitative observations which alone we were able to make, and which, as far as they go, confirm the results arrived at by Perrin and Lallemand, Edward Smith, and others.

We used for this purpose the chromate test proposed by Masing, and used by most observers since.

Elimination by the Lungs.

During the first or water period, the man breathed several times daily, for 15 minutes at a time, through the solution of bichromate of potassium in sulphuric acid, without any change of colour being produced. On the fifth day (water) he breathed through a glass tube surrounded by a freezing mixture. About 1·7 cub. centim. of fluid were obtained, which gave no green reaction with the test. On the first day of alcohol (1 fluid ounce) no alcohol was indicated in the breath by the test; on the second day (2 fluid ounces) the test was slightly affected; on the four following days (4, 6, 8, and 8 ounces of alcohol) markedly so, but with variable intensity at different times of the day.

On the last day of alcohol the water in the breath was condensed during 15 minutes, in a glass tube surrounded by ice; ·7 cub. centim. of fluid were obtained, which gave a strong green reaction with the bichromate test.

On the following day breathing had no effect on the fluid.

During the brandy days the breath always produced a green tint, and usually it was very marked.

We did not attempt any determination of quantity by this colour test; and Anstie has pointed out that the bichromate test is so delicate that the

quantity passing off may easily be overrated; but it can hardly be doubted that in twenty-four hours there must be a good deal of elimination by this channel.

Elimination by the Skin.

On the seventh day, when only water was taken, the whole arm was placed in a glass jar, which was closed by india-rubber. A little fluid was collected, which gave no evidence of alcohol with the bichromate test.

In the afternoon of the eleventh day (the third of alcohol), when he had taken seven fluid ounces in three days, the arm was enclosed for six hours in the glass jar. About 12 c. c. of an acid fluid were collected; a small quantity of which gave an immediate and strong green reaction with the bichromate test.

On the fourteenth day (the sixth of alcohol), the arm was again enclosed in the jar, and 8 c. c. of an opalescent fluid collected, which gave a very decided reaction with the bichromate.

On the twenty-third day (the third of brandy) the arm was again placed in the jar for six hours; 10 c. c. of an acid fluid collected, which gave a strong green reaction with the bichromate test.

The general result of these experiments indicated that the skin is a considerable emunctory of alcohol, perhaps more so than the lungs, if the bichromate test is a safe one, which we are inclined to doubt.

Elimination by the Kidneys.

The examination was conducted as follows:—250 c. c. of the urine without any addition were placed in a large retort and distilled at a low heat, till about 150 c. c. had passed over. It was tested with bichromate; then 50 c. c. were redistilled, and about 15 c. c. were allowed to pass over. The following table gives the results:—

Day.	Fluid taken.	Reaction of first distillate with bichromate test.	Reaction of second distillate with bichromate test.
3.	Water.....	None.	
9.	Alcohol, 1 fluid ounce ...	None.	None.
10.	Alcohol, 2 fluid ounces...	None.	Distinct.
11.	Alcohol, 4 fluid ounces...	Slight.	Distinct.
12.	Alcohol, 6 fluid ounces..	Distinct.	Very strong.
13.	Alcohol, 8 fluid ounces...	Very strong.	Very strong.
14.	Alcohol, 8 fluid ounces...	Very strong.	Very great.
20.	Water, and the same for 5 days before	Very slight, just possible to be affirmed.	
21.	Brandy, 12 fluid ounces.	Very strong.	
22.	Brandy, 12 fluid ounces.	Very strong.	
23.	Brandy, 12 fluid ounces.	Very strong.	

This table shows distinctly that with one ounce of alcohol in twenty-four hours, none was detected in the urine of that day; it was detected when two fluid ounces were taken; and then, as the amount of alcohol was increased, more and more passed into the urine, until at last the reaction

became very strong. As to the exact amount of alcohol passing off, we can say nothing; but, looking to the delicacy of the test, it was probably not great.

In the case of the brandy, we attempted on the first day to determine the quantity by the method of Dupré, viz. converting the alcohol into acetic acid by heating with chrome-alum.

The results indicated rather a larger quantity than he found; but still the amount was small. In the whole day's urine only ·1763 gramme, or 2·7 grains of alcohol were discoverable by this method.

Elimination by the Bowels.

The stools were mixed with distilled water; and after standing for seven or eight days in covered vessels, the water was poured off, and 30 c. c. were distilled from 250 c. c.

Day.	Fluid taken.	Reaction of distillate with the bichromate test.
11.	Alcohol.	Decided, but not great.
12.	"	"
13.	"	"
14.	"	"

We think it can scarcely be doubted that the elimination of alcohol does not take place so rapidly as is supposed. Looking to the evidence of the pulse, of the sphygmographic tracings, and of the urine on the twentieth day, we must conclude that, twenty-nine fluid ounces of absolute alcohol having been taken in six days, the body had still traces of it on the sixth day after the alcohol was left off.

The evidence of Anstie and Dupré is certainly strong against the urine being a great channel of elimination; but possibly, though not excessive at any one time, the exit is longer continued than they supposed; and when the constant passage from the skin and from the lungs and bowels is remembered, we can easily suppose that the totality of elimination may be really considerable.

But whether all the alcohol thus passes off, or whether some is destroyed, our experiments do not enable us to state.

GENERAL CONCLUSIONS.

1. One and two fluid ounces (28·4 c. c. and 56·8 c. c.) of absolute alcohol given in divided quantities in 24 hours to a perfectly healthy man seemed to increase the appetite. Four fluid ounces lessened it considerably; and larger quantities almost entirely destroyed it. On the last day of alcohol the man was three quarters of an hour eating 8 ounces of bread, and could hardly do so. Had he been left to his own wishes the amount of food taken would have been much diminished.

It appears, therefore, that in this individual some point near 2 fluid ounces of absolute alcohol is the limit of the useful action on appetite; but

it is possible that if the alcohol had been continued a smaller quantity would have lessened appetite.

In other healthy persons it may be different from the above; in most cases of disease, when digestion is weakened, it seems probable that a much smaller amount of alcohol would destroy appetite.

2. The average number of beats of the heart in 24 hours (as calculated from 8 observations made in 14 hours), during the first or water period, was 106,000; in the alcoholic period it was 127,000, or about 21,000 more; and in the brandy period it was 131,000, or 25,000 more.

The highest of the daily means of the pulse observed during the first or water period was 77·5; but on this day two observations are deficient. The next highest daily mean was 77 beats.

If instead of the mean of the 8 days or 73·57 we compare the mean of this one day, viz. 77 beats per minute, with the alcoholic days, so as to be sure not to overestimate the action of the alcohol, we find:—

On the 9th day, with 1 fluid ounce of alcohol, the heart beat 4,300 times more.
On the 10th day, with 2 fluid ounces, 1872 times more.
On the 11th day, with 4 fluid ounces, 12,960 times more.
On the 12th day, with 6 fluid ounces, 30,672 times more.
On the 13th day, with 8 fluid ounces, 23,904 times more.
On the 14th day, with 8 fluid ounces, 25,488 times more.

But as there was ephemeral fever on the 12th day, it is right to make a deduction, and to estimate the number of beats in that day as midway between the 11th and 13th days, or 18,432. Adopting this, the mean daily excess of beats during the alcoholic days was 14,492, or an increase of rather more than 13 per cent.

The first day of alcohol gave an excess of 4 per cent., and the last of 23 per cent.; and the mean of these two gives almost the same percentage of excess as the mean of the 6 days.

Admitting that each beat of the heart was as strong during the alcoholic period as in the water period (and it was really more powerful), the heart on the last two days of alcohol was doing one-fifth more work.

Adopting the lowest estimate which has been given of the daily work done by the heart, viz. as equal to 122 tons lifted one foot, the heart during the alcoholic period did daily work in excess equal to lifting 15·8 tons one foot, and in the last two days did extra work to the amount of 24 tons lifted as far.

The period of rest for the heart was shortened, though perhaps not to such an extent as would be inferred from the number of beats; for each contraction was sooner over.

The heart on the fifth and sixth days after alcohol was left off, and apparently at the time when the last traces of alcohol were eliminated, showed in the sphygmographic tracings signs of unusual feebleness; and, perhaps in consequence of this, when the brandy quickened the heart again, the tracings show a more rapid contraction of the ventricles, but less power than in the alcoholic period. The brandy acted, in fact, on a heart whose nutrition had not been perfectly restored.

The peripheral circulation was accelerated and the vessels were enlarged; and the effect was so marked as to show that this is an important influence for good or for evil when alcohol is used.

Referring only to this healthy man, it is clear that the amount of alcohol the heart will bear without losing its healthy sphygmographic tracing is small, and it must be supposed that some disease of heart or vessels would eventually follow the overaction produced by large doses of alcohol.

3. Although large doses of alcohol lessened appetite, they did not appear to impede primary digestion, as far as this could be judged of by the sensations of the man; nor did they seem to check the normal chemical changes in the body which end in the elimination of nitrogenous excreta, of phosphoric acid, and of free acidity. In other words, we were unable to trace either the good or the evil ascribed to alcohol in this direction: it neither depressed these chemical changes nor obviously increased them; it neither saved the tissues nor exhausted them; and even in the period of ephemeral fever its effects were negative.

But, of course, in these experiments we were not dealing with diseased tissues, nor with structures altered in composition by long-continued excess of alcohol. The results in such cases might be different; and it may be desirable to repeat that though appetite was lessened, the amount of food taken was the same each day.

4. Neither pure alcohol nor brandy, in the quantities given, lessened the temperature; in other words, they did not arrest the chemical changes which produce animal heat, or lessen the processes which regulate its amount, any more than they influenced nitrogenous tissue-change. Alcohol in no way influenced the rise of temperature during the attack of ephemeral fever; it neither lowered nor increased it. This appears to us conclusive against the proposal to use alcohol as a reducer of febrile heat.

On the other hand it is not clear that alcohol increased the temperature: it produced subjective feelings of warmth in the stomach, in the face, round the loins, and over the shoulders; but at the time when these were felt (for about one hour after tolerably large doses) the thermometer in the axilla and rectum showed no rise. This is best seen by comparing the two o'clock observations, which were taken about half an hour after dinner. The feelings result from the enlargement of the vessels and the greater flow of blood through them; so, also, the ephemeral fever was decidedly not made worse by it.

5. An effect on the nervous system was not proved by any evidence of increase or decline in the amount of phosphoric acid; but there were marked subjective feelings; and possibly also the increased action of the heart was a nervous condition, as the short contractions of the ventricle were like those ascribed to alterations in the nervous currents. The feelings which

were produced by four fluid ounces daily, and in a still higher degree by the larger quantities of alcohol, proved that narcotism was produced. There was no exhilaration, but a degree of heaviness, indisposition to exertion, and loss of cheerfulness and alacrity; there was slight headache, and even some torpor and sleepiness. All these effects were more marked with brandy. The commencement of narcotism was therefore produced in this man by some quantity much less than 4 fluid ounces, and probably nearer 2. It was nearly this amount which also commenced to destroy the appetite; and it may also be observed that a considerable rise in the frequency of the pulse occurred on the third day of alcohol, when 4 ounces were taken, whereas on the days with one or two ounces the pulse, though quickened, was so in a much less degree.

Putting therefore these points together, viz. that the obvious effect on the nervous system (*i. e.* narcotism), the loss of appetite, and a great rise in the quickness and frequency of the heart's beats occurred at the same time, it seems fair to conclude that there must be a relation between the phenomena, or, in other words, that all were owing to nervous implication.

It appears, then, clear that any quantity over two ounces of absolute alcohol daily would certainly do harm to this man; but whether this, or even a smaller quantity, might not be hurtful if it were continued day after day, the experiments do not show. It is quite obvious that alcohol is not necessary for him; that is, that every function was perfectly performed without alcohol, and that even one ounce in twenty-four hours produced a decided effect on his heart, which was not necessary for his health, and perhaps, if the effect continued, would eventually lead to alterations in circulation, and to degeneration of tissues. It is not difficult to say what would be excess for him; but it is not easy to decide what would be moderation; it is only certain that it would be something under two fluid ounces of absolute alcohol in twenty-four hours.

It will be seen that the general result of our experiments is to confirm the opinions held by physicians as to what must be the indications of alcohol both in health and disease. The effects on appetite and on circulation are the practical points to seize; and if we are correct in our inferences, the commencement of narcotism marks the point when both appetite and circulation will begin to be damaged. As to the metamorphosis of nitrogenous tissues or to animal heat, it seems improbable that alcohol in quantities that can be properly used in diet has any effect; it appears to us unlikely (in the face of the chemical results) that it can enable the body to perform more work on less food, though by quickening a failing heart it may enable work to be done which otherwise could not be so. It may then act like the spur in the side of a horse, eliciting force, though not supplying it.

The employment of alcohol in health and disease is so great a subject that we should have felt tempted to extend these remarks to some points of medical practice, had it been desirable to do so in this place. We will only say that while we recognize in these experiments the great practical

use of alcohol in rousing a failing appetite, exciting a feeble heart, and accelerating a languid capillary circulation, we have been strongly impressed with the necessity for great moderation and caution. In spite of our previous experience in the use of alcohol and brandy, we were hardly prepared for the ease with which appetite may be destroyed, the heart unduly excited, and the capillary circulation improperly increased. Considering its daily and almost universal use, there is no agent which seems to us to require more caution and more skill to obtain the good and to avoid the evil which its use entails.

We wish to guard ourselves against the supposition that in speaking of alcohol and brandy we refer at all to wine and beer, which contain substances, in addition to alcohol, which may make their action in nutrition somewhat different.

CLINICAL

OBSERVATIONS IN SURGERY,

BY

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No. XL.

TRACHEOTOMY.

The following detailed history of eleven cases of Tracheotomy illustrates many points of importance that are likely to occur in connection with this operation. An analysis of each case, with such remarks as are of clinical significance, will be therefore useful as well as interesting.

The tabular statement shews the relative proportion of the sexes, race, and age; the disease which rendered the operation necessary, and the number of fatal and successful cases: the latter, I regret to say, bearing a small proportion to the former.

Most of the cases were of the severest character, and the operation could hardly hold out more than a faint hope of relief, but such cases are as instructive as those that have resulted favourably, and therefore I have recorded them in detail.

Sex.	Age.	Race.	Cause.	Result.	Remarks.
	Years.				
F.	3	Hindoo.	Custard Apple seed.	Death.	From obstruction of the tube.
M.	3	Eurasian.	Ulceration & Œdema.	Ditto.	Ditto ditto.
M.	20	Hindoo.	Ditto ditto.	Recovery.	Obliged to wear the tube.
M.	57	Portuguese.	Cancer of Larynx.	Death.	Died of Cancer.
M.	2½	English.	Diptheria.	Ditto.	Died of Toxæmia.
F.	4	Eurasian.	Ditto.	Ditto.	Ditto ditto.
M.	60	French.	Aneurism Innominate.	Ditto.	Died of Aneurism.
M.	23	Hindoo.	Ulceration.	Recovery.	Obliged to wear the tube.
F.	30	Eurasian.	Ditto.	Ditto.	Rapidly recovered.
M.	3	Hindoo.	Ditto.	Death.	Exhaustion.
M.	45	English.	Ditto.	Ditto.	Pneumonia and formation of clots in trachea and bronchial tubes.

In the first and second cases, which occurred in children of three years of age, success was frustrated by the blocking up of the tube with inspissated mucus; whatever the result might have otherwise been, the conclusion is inevitable that, to this untoward accident, failure was immediately attributable.

In the third and eighth cases, life was saved, and health restored, but the patients were obliged to wear the tube permanently, as structural changes in the larynx had occurred which rendered respiration through the natural channel impossible.

In the fourth case, life was saved for a time, but death occurred subsequently from cancer.

In the fifth and sixth cases, temporary relief was afforded to one, but death resulted ultimately in both from pyæmia, and probably the formation of coagula in the right side of the heart. In the seventh case, death was caused by aneurism of the innominate artery, and the pressure exerted by it on the trachea, the rings of which were necrosed, and by laryngismus from tension of the recurrent laryngeal nerve. The ninth case was the most satisfactory of all, for it terminated rapidly in perfect recovery. In the tenth, life was restored, when the child was in the greatest extremity of danger; but it sank subsequently from exhaustion, and extension of mischief from the wound. The eleventh terminated fatally from broncho-pneumonia, and the formation of clots in the trachea.

Thus, out of the eleven cases, three only permanently recovered, whilst life was prolonged and suffering greatly relieved in others. In the case of aneurism only, and in one of diptheria, no relief was afforded.

Of the eleven cases, five were in children under four years of age; of these, three were boys, two girls. One was English, two Eurasians, two Hindus. The ages of the rest were between 60 and 20. Five were males, one female. Two were English, one French, one Portuguese, two Hindus, and one, the female, Eurasian. The operation was rendered necessary in one case by the presence of a foreign body in the air tube; in six cases by ulceration and œdema of the larynx; in one by cancer of the larynx; in two by diptheria; in one by laryngismus from aneurism of the innominate artery. Some points of importance in connection with this operation, are illustrated in these cases, and especially the difficulties that are likely to occur, in stout adults and in children.

As a general rule, tracheotomy, either above or below the isthmus of the thyroid gland, in an adult of ordinary size and

moderate muscular development, is by no means a difficult operation, though more so than would be supposed from experience only on the dead; but in the case of either a stout and short-necked adult, or of a young child, the difficulties are at times very great; indeed I know no occasion in which the presence of mind and self-reliance of the Surgeon are more taxed. The subsequent dangers and difficulties after the first great one is surmounted, are not unimportant, such as the difficulty of retaining the tube *in situ*, the ulceration and irritation of the integument and air-passages; the inflammatory changes, or the formation of mucous or blood coagula in the trachea, the danger of the tube or of the wind-pipe itself becoming obstructed; and in the case of children, the danger of inanition, when from paralysis or loss of co-ordinating power in the muscles of deglutition, the food passes down the wind-pipe, instead of the Œsophagus, and is thus regurgitated through the wound, or passed down into the bronchial tubes.

With reference to the operation in diptheria or diptheritic croup, I believe that, if performed early, it may be of benefit, and may save or prolong life; but it must be remembered that the operation itself is a formidable one; and, in children, is attended with subsequent dangers, and therefore should not be resorted to, until it appears evident that life is in imminent peril. The exact time at which it should be performed, is a difficult and anxious question, and one on which no general rules can be laid down.

In the two cases of diptheria here recorded, there was no room for doubt, for the children were at the point of death when the operation was performed; in one case life was prolonged, and great relief conferred for several hours; in the other, the disease had progressed so far, and the child was so much exhausted, that it was too late to be of any service.

Much difference of opinion has existed, and does exist on this question; but it is not my intention to discuss it at present; I would merely say, that I believe tracheotomy may be of great benefit if performed early enough, before the blood has been thoroughly poisoned, and before the deposition of fibrous coagula has taken place in the heart.

With reference to the case in which aneurism existed, I may say that this disease had been suspected by his medical attendants, but no physical sign had made it certain.

I cannot doubt the propriety of the operation in similar cases, were the cause clearly perceptible, for although there could not be permanent, there certainly might be temporary relief. In this case, no doubt, fits of dyspnœa had frequently occurred previously, from the gradually increasing pressure on the trachea and bronchial tubes; it was, however, the laryngismus caused by irritation and tension of the recurrent laryngeal nerve that caused death. Very slight relief was obtained from the operation; but the season of the year, the intense and damp heat of July, the failing condition of the patient's heart and the congested state of his lungs were sufficient to prevent restoration of the respiration, even for a time, and the result was consequently unsuccessful. I believe that if it had been done earlier, temporary relief might have been conferred, and even that would have been of importance, not only to the sufferer, but to his friends.

All these cases present some points of interest for consideration, and, therefore, I propose to make a few remarks on each.

Case 1.

A Brahmin girl, aged three years, was admitted, on the morning of the 15th August, 1862, into the Medical College Hospital,

with great difficulty of breathing. It appears that five days ago when eating a custard apple, one of the seeds slipped into the wind-pipe, and gave rise to the symptoms from which she was suffering.

She was in great distress, breathing hurriedly and harshly, very little air entering the lungs, the efforts at inspiration were violent and distressing, the ribs expanding, and the intercostal spaces and ensiform cartilage being drawn inwards. The pulse was feeble, the countenance livid, and all the signs of impending suffocation were present.

I held her up by the feet, patting her smartly on the back, in the hope of displacing the seed, but with no good result. Chloroform was then administered, but the breathing became so much worse, that it was discontinued. It was evident that, if the air-tube were not soon opened, the child would be suffocated. The father would not at first give his consent to any operation, but just as the child appeared to be dying, he did so. I immediately opened the trachea, the air rushed in and out with freedom, and the child was quickly restored to consciousness. Great difficulty was experienced in getting a tube to fit the trachea, and I extemporized one by cutting off a piece of a large catheter, until a small tracheotomy tube could be procured. The child soon became quite quiet and easy, and slept.

Shortly after, the child suddenly snatched at the tube and displaced it, the difficulty of breathing again returned, and she became insensible, livid, and, to all appearances, dead. The wound was dilated, and artificial respiration practised. In about five minutes, the child began to regain consciousness; and in half an hour, she was again breathing easily and quietly through the tube.

She was placed in a secluded part of the ward and closely watched. The bed was surrounded with curtains, and a stream of vapour conducted therein.

I saw her again at 3 P. M., she was doing well, breathing easily, and quiet. The tube requiring frequent cleaning. The catheter tube was now removed, and a larger tracheotomy tube introduced, I left her at 3-30 P. M. breathing easily. She had taken some milk, and the bowels had acted. No attempt had been as yet made to search for the seed, as the least irritation brought on such struggling, that life was endangered by it.

10 P. M.—Found the child again in great distress, almost asphyxiated. The officer on duty, seeing her very restless, and not appreciating the true cause, gave a dose of laudanum. I placed her on a table, removed the tube, inflated the lungs and she partially revived. The wound having contracted, I enlarged it with a scalpel, and re-introduced the tube, but the child sank shortly after. On examining the tube, I found it had become blocked up at the distal end by inspissated mucus, so hard, that it was difficult to push it out of the tube. Thus, notwithstanding all the care and precaution taken to save the child, it sank, slowly asphyxiated. After death I passed a probe through the rima glottidis, and also examined it with the finger which passed readily into the larynx. The seed had disappeared, whether ejected in one of the fits of coughing after the operation, or having passed into the mouth and been swallowed, I am unable to say. The friends would not allow any *post mortem* examination to be held.

Remarks.

In this case the obstruction to the respiration was due to the entry of a custard apple seed into the larynx, and it was not until all other means of relieving the patient had failed, that the trachea was opened. This was followed by great relief, which, there was reason to believe, might have been permanent, had the tube not become obstructed by the inspissated mucus, which had collected in the distal end of the tube which unfortunately was a single one.

The seed was not removed, and it is possible that it may have remained in a ventricle of the larynx; the relief caused by opening the trachea having been so complete, it is reasonable to believe that it was not in the bronchial tubes. After the operation, no immediate effort to explore the larynx was made, as rest was much needed, and the child was so irritable, that the least excitement was dangerous.

This case shews the necessity of having a double tube, with a view of keeping the outer one free from any deposit. It appears to be impossible to keep a single tube free without frequently removing it from the wound, and this in a timid and irritable child would be, for obvious reasons, most objectionable. It is very important after tracheotomy that the condition of the tube should be closely attended to, and frequent examinations should be made by removing the inner one to see that no deposit is taking place. Mucus may be slowly collecting and diminishing the calibre of the tube, while the diminished supply of air is slowly inducing asphyxia. The symptoms of this are somewhat insidious, and may proceed so far as to endanger life if not understood early. This case illustrates a danger to be apprehended after the operation, and it is one that may be averted by care on the part of the attendants, if it be carefully watched for.

The actual position of the custard apple seed, which is about the size of, cherry stone, was never discovered, as no *post mortem* examination was permitted by the parents.

Case 2.

At 10-30 P. M. on the 13th March, 1863, I was requested to see an East Indian child of three years of age, who had just been admitted into the Medical College Hospital, with symptoms of laryngismus

which had come on within the last 12 hours, supervening on an attack of tonsillitis, with which there was no sign of any diptheritic exudation.

The boy had been ailing previously with congestion of the liver. He was in great distress when I saw him, breathing with great difficulty, and the ensiform cartilage drawn in towards the spine at each effort at inspiration. His face and lips were becoming quite livid; no air could be heard to enter the chest, the pulse was feeble, and a comatose condition with convulsions was rapidly coming on. It was evident that no time was to be lost. I opened the trachea with some difficulty, owing to the imperfect light afforded by candles, the great venous congestion of the neck, and the struggles of the patient; the venous hæmorrhage was profuse. The tube having been introduced, and respiration established, the bleeding ceased, and the air entered, and left his lungs freely. His lips regained their colour, the distress passed away, and he fell asleep. The pulse began to rise, it had become imperceptible when the operation was performed.

14th. 7-30 A. M.—I found the child sinking, and it died whilst I was present, with all the appearances of asphyxia. I found the tube at its lower end obstructed by viscid mucus, which had become quite hard. The dressers in attendance say, they cleaned it out frequently during the night. They also say that the child had difficulty of breathing, with expectoration of blood and mucus through the tube, and that there was a return of hæmorrhage from the wound. This, no doubt, occurred when the tube having gradually become obstructed, the respiration was again embarrassed. The child was, in fact, slowly asppyxiated by the gradual closure of the tube by inspissated mucus.

Remarks.

This child, when in a low state of health from hepatic disorder, was attacked with inflammation, and probably ulceration

of an erysipelatous character, which, spreading to the glottis, and probably being accompanied by œdema, rapidly induced the dangerous condition into which he had passed when tracheotomy was performed. During the operation, a difficulty arose, one which is likely enough to occur at night, from the imperfect light given by the candles, which were used on the occasion.

A point of importance to be noted was the engorged condition and consequent hæmorrhage from the veins of the neck. This being due to asphyxia rapidly ceased when respiration was re-established: taking every precaution to prevent the flow of blood into the trachea through the wound, as little time as possible was lost in introducing the tube, for delay would have been serious, and the patient's life placed in great peril.

The operation restored life, and gave great relief; respiration was quickly re-established, and the hæmorrhage ceased. The subsequent history is less favorable, the tube became slowly encrusted, and the child sank in nine hours after the operation.

Unfortunately no double tube small enough could be found at the time, and a single one was used; from not being thoroughly cleaned out during the night, the gradual accumulation of viscid mucus closed its lower end, and thus gradually arrested the supply of air; what the result might have been, had the tube been kept clear, it is impossible to say; but the case shews the great necessity of using a double tube, the inner one exceeding the outer in length, so that no collection of inspissated mucus can take place. In this case, the mucus had dried and hardened not only in the end of the single tube, but also around and

beyond its extremity, so that, even supposing the bent probe, with its end wrapped in lint, had passed down the entire length of the tube, it could not have kept it clear. This is a point of great practical importance in reference to the operation, and should be borne in mind, especially in the case of children, where the opening is small.

It is obvious that if there be a double tube, the inner one of which protrudes considerably, no collection, such as occurred in either of these cases could place, if the inner tube be frequently removed and cleaned.

The occlusion of the tube in this case could not be regarded as the result of neglect or carelessness, but rather of accident, for it was frequently cleaned out, unfortunately not having been removed from the wound, its end became the seat of the deposit, which gradually obstructed the entrance of air.

No *post mortem* examination was permitted.

Case 3.

Ram Chunder, Hindoo Ooryah, aged 20 years, residing at Juggernath Ghât, admitted on the 8th May, 1863, with the following symptoms:—

Had a cough about a month ago, attended with much expectoration; about twenty days ago had fever which lasted for some days, during which time he attended one of the Dispensaries as an out-patient. For the last week, his voice has been hoarse, and his respiration difficult. He says he has never had syphilis. Does not know if his parents had it. About three years ago, he suffered from ulceration of the nose, lower and upper lips and chin, the puckered cicatrices of these ulcerations remain, giving him a pinched and distorted

expression of countenance. He has had ulcerated fauces. He is of weak constitution and feeble muscular development, and has a cough.

I was requested to see him by the second Physician, into whose wards he had been admitted, at 2-30 P. M. of the 8th May, and I found him in a state of great urgency. The dyspnœa was intense; at each inspiratory effort, the sternum was tucked in towards the spine. He had had two or three paroxysms of great severity. Whilst being placed in position for tracheotomy, which was urgently needed, another paroxysm of dyspnœa came on, and he was all but suffocated. The operation was at once performed. Having divided the integument and fascia, and separated the muscles, I seized the trachea with a tenaculum, and having drawn it forwards, and steadied it, I ran the scalpel quickly through three of its rings, and introduced the tube. He expelled a quantity of bloody mucus through the tube, and after a few forcible inspirations, was rapidly relieved and rescued from impending suffocation. There was considerable venous hæmorrhage during the operation, but it ceased as soon as respiration was fully established through the tube.

May 9th.—Doing well, breathing easily; ordered Potas-Iodid. Diet, soup, milk, and wine.

The inner tube is frequently removed to be cleaned, as it has a tendency to be blocked up with inspissated mucus. The bowels have acted.

10*th.*—Doing well. The skin round the wound is inflamed; Nitrate of Silver solution applied.

11*th.*—Breathing easily through the tube, pulse quick and feeble. He looks so wretchedly cachectic, and anæmic that I fear the result. Examined the throat and fauces; there was superficial ulceration and old cicatrices. The posterior part of the throat has a blanched

appearance. Sponged the surface with solution of Nitrate of Silver; ordered Cod Liver Oil, and plenty of soup and wine.

15*th.*—He is better, and seems rather stronger. Has taken his food well. He cannot bear the least obstruction of the mouth of the tube, and there is still a profuse muco-purulent discharge from the tube.

17*th.*—Sponged the throat again with the solution of Nitrate of Silver.

He is depressed and won't eat; but he breathes easily through the tube, and the larynx; is evidently improving, as he can breathe for a minute or so, when the tube is closed.

Continue the Iodide of Potash, and diet with wine as usual.

20*th.*—Has improved in general health, but is unable to dispense with the tube. He is to take the Tr. Ferri Muriatis, gtt. x, ter in die.

25*th.*—Removed the tube, he breathes pretty well without it when the aperture is closed by the finger, but he cannot dispense with it long.

June 4th.—He is doing well, but still he cannot do without the tube.

13*th.*—He is strong and well, but still wears the tube.

20*th.*—Caught cold, coughing again; ordered some simple cough medicine.

23*rd.*—Cough much better, general health good; but he is quite unable to do without the tube, though he has repeatedly tried.

July 19*th.*—I took out the tube this morning, but in a short time his breathing became seriously embarrassed, and it was re-introduced;

the student, who was watching him, did not give timely notice, he was nearly suffocated, and fell over insensible, had not Dr. Chevers happened to be at hand, to replace the tube, he would have died. It is evident that he cannot dispense with it.

25*th*.—He has been very well since last report; is anxious to leave the Hospital. Is able to take out and replace the tube, and can speak in a hoarse voice when he closes it with his finger. He left the Hospital shortly after this.

The form of the rima glottidis and of the interior of the larynx must have been so changed by ulceration that, when cicatrization had taken place, although a certain quantity of air could escape, none could enter. The consequence being, that the tube is necessary for the rest of his life.

Remarks.

It is probable that in this case, although denied by the patient, the origin of the mischief was due to constitutional syphilis. The ulceration in the lips, nose, and chin, the appearance of the cicatrices, the cachetic condition, and the chronic ulceration in the throat, are all suggestive, if not confirmative, of it.

The attack of dyspnœa from laryngeal mischief which rendered the operation necessary, was not the first from which he had suffered, but none had been so severe as to endanger his life. There was nothing remarkable in this operation; the trachea was easily opened below the thyroid gland; the tube readily introduced and retained, and the breathing was rapidly relieved.

Iodide of Potash, with a view to the probably syphilitic origin of the ulceration, was administered, and the fauces and

rima glottidis were sponged with a solution of Nitrate of Silver. Cod Liver Oil and a nutritious diet were also given. He steadily improved under this treatment, and his general health became much better; respiration was carried on easily through the tube, but he was unable, after many trials to dispense with it; each time it was removed, he fell into great difficulty, and it had to be replaced. On one occasion he nearly lost his life, the tube having been taken out to be cleaned, during its short absence, the wound contracted so much, that the attendant was unable to replace it. Dr. Chevers fortunately happened to be near, and arrived in time to re-introduce it, and thus resuscitated the patient who had become all but asphyxiated.

He subsequently became so accustomed to the tube, that he was able to take it out and replace it himself, and he shortly after left the Hospital.

He could speak in a hoarse voice when the orifice was closed with the finger, air could find its way out by the rima glottidis, but not in: some change had resulted from the ulceration, which permanently closed the natural entrance for air.

Case 4.

T. P., aged 57, Portuguese, a thin delicate looking man, was admitted on the 3rd February, 1864, with symptoms of laryngeal disease. He admits having suffered from primary syphilis 39 years ago, but it was not followed by any secondary symptoms. His general health has been tolerably good until about six months ago, when he was attacked with swelling of the cervical glands and sore-throat. Difficulty of breathing came on suddenly on the night of the 2nd February.

The patient is emaciated and is breathing with difficulty. There is some enlargement and thickening about the thyroid gland, and

along the course of the trachea. The voice is husky, he has difficulty and pain in swallowing; at the left angle of the jaw, there are one or two enlarged cervical glands. He was ordered hot fomentation, an emetic of antimony and carbonate of ammonia, and steam to the larynx.

February 4th.—He did not improve much after the first slight relief given by treatment, and good diet with wine. At 3 P. M. I found him very restless and depressed, extremities cold, pulse very feeble, countenance dusky, respiration feeble and embarrassed. He appeared to be sinking from exhaustion and slow asphyxia.

I performed tracheotomy immediately. The trachea was prominent and thinly covered by emaciated tissues, several large veins lay in the way, but I avoided them by drawing them aside, and the hæmorrhage was very slight. The operation gave great relief, not very suddenly; but by the next morning he was much better, and asked for food.

11*th.*—He has been improving daily, and is much stronger.

Is taking Potas: Iodid: gr. iii ter in die. Has a nutritious diet and wine.

Tr. Iodine is applied over the throat, and the rima glottidis sponged with a strong solution of Nitrate of Silver. There is some mucous expectoration through the tube, but he is much better in every way.

For some days after this, he improved slightly, the thickening about the larynx, thyroid, and trachea seemed to diminish, and he had less pain and difficulty in swallowing.

The large tube was exchanged for a smaller one, and attempts were made to dispense with the tube altogether, but it was found to be impossible.

March 10th.—He is getting weaker, pulse more feeble, difficulty and pain in deglution increasing. Is able to take very little nourishment. I examined with the laryngoscope, but could only ascertain that the epiglottis was swollen. There is much thickening and induration about the larynx and trachea. I suspect it is carcimonatous.

13*th.*—He is getting weaker; deglution more difficult, thickening increasing about the larynx, œsophagus, and trachea.

Ordered Beef tea Enemata, and carefully to attempt to introduce food by the stomach-pump.

16*th.*—He died quietly of asthenia last night, at 8 P. M.

Post Mortem.

Extensive carcimonatous deposits in œsophagus and larynx; both passages were almost entirely obstructed by it, its growth had been very rapid lately. The thoracic viscera healthy. The liver contained several small abscesses, with carcimonatous deposits.

Remarks.

This patient was a prematurely old and feeble man, whose constitution seemed to be broken down by constitutional disease, which was attributed partly to syphilis, though carcimona was suspected.

The chief point of interest before the operation was performed, was the slow and insidious form in which asphyxia set in. The depression and gradual exhaustion had more the appearance of sinking from debility than from an imperfect supply of air, and I was informed at 3 P. M. on leaving the lecture-room that he was sinking from asthenia.

He, however, improved after tracheotomy, which was performed immediately, and lived for some time: he died on the 16th of

March, that is, 42 days after the operation, not from any respiratory difficulty, but rather from inanition due to rapid extension of the cancerous mischief, which had invaded the larynx, œsophagus, and surrounding tissues.

The *post mortem* condition has already been described.

Case 5.

On the 25th February, 1864, I was asked to see an English boy, aged 2½ years, who was suffering from difficulty of breathing. I found a strong, otherwise healthy looking child almost asphyxiated; his face and lips were livid; his skin cold, pulse feeble and rapid; respiration painfully difficult, and the sternum drawn in towards the spine at each effort to inspire. He had been put in a warm bath, which did not relieve him. The account I received was, that he had been ailing for two days, with sore-throat and aphonia, and much difficulty of breathing at night. The fauces had been sponged that morning with a solution of Nitrate of Silver 20 grains to an ounce. He had been relieved by this application and fell asleep in the afternoon. In the afternoon he awoke suddenly, suffocating, some remedies had been administered, and the warm bath, in which I found him. This suffocative state had been going on for some time when I was summoned. He had had ipecacuanha wine, mustard poultices, turpentine stupes; but little or no relief followed; the urgency increased. With the consent of two other medical men, I proposed tracheotomy as it seemed to offer the only hope of saving life. The operation was accordingly performed by candle light, (it was 6-30 P. M.,) without any delay; chloroform was administered carefully. The operation was somewhat difficult in a fat child, with an imperfect light, but the tube was soon introduced, and he rapidly began to recover, and was soon breathing with comparative ease.

February 26th.—The breathing soon became rapid. The tube was removed, and carefully examined to see that it was quite within the trachea, it was then exchanged for one rather larger to give a freer ingress of air.

The breathing did not improve, it remained short and hurried, though air entered and escaped freely by the tube. The lungs did not expand; the countenance again became dusky, pulse rapid, and feeble. The skin cold and damp. The chest sounds were feeble, and obscured by the tracheal sounds, but it was evident that there was capillary bronchitis, and probably partial atalectasis. He sank quietly, and died at about 8-30 P. M., rather more 26 hours after the operation. The physician who attended him, assured me that there had been no diptheritic exudation, though in the morning the fauces were red and congested, and that there was a small ulcer in the tonsil. He had not regarded it at first as a case of either croup or diptheria. It is remarkable that the other two children in the house were both complaining of slight sorethroat, and that one of them, aged 1½ year got worse and died with similar symptoms on the 2nd of the following month.

I did not see the other children, nor had I any opportunity of making a *post mortem* examination of the one upon whom I operated.

Remarks.

This was a case of diptheria, or diptheritic croup, and before I saw it, the disease had advanced so far, that life was in extreme danger; tracheotomy afforded the only hope of saving life even for a time, and it was at once performed. Great relief was afforded for several hours, but the respiration again became difficult, and it was evident that the child was sinking from extension of mischief to the lungs.

The dangerous condition in which I found the child, seems to have supervened rapidly, for there had been nothing at the last visit of the physician who was attending the case, to cause immediate anxiety. It is possible that tracheotomy, if performed earlier, might determine a favourable issue in such cases; but it needs the greatest confidence in its

efficacy, to incur the danger of so serious an operation. In this case I believe it acted merely as a palliative, and that death was caused by extension of the original inflammatory mischief to the contents of the chest. It is, however, sufficient that it saved the child from the present horrors of strangulation, to encourage one to repeat it in similar cases even should the result be no better than in this one.

Case 6.

On the 26th of April, 1864, I was summoned by a medical man to see an East Indian girl, aged four years, who was in great danger from laryngeal disease. I found her cold and depressed, with face and lips livid, pulse very rapid and feeble; dyspnœa very urgent. The ensiform cartilage at every inspiration drawn in towards the spine. She had been suffering from cough and sore-throat for some days. The physician in attendance had been consulted that day too late to benefit her by medicine. Emetics had been given, and a blister applied. As the child was evidently at the point of death, I at once, as the only hope of saving life, performed tracheotomy. Several large veins had to be drawn aside. When the trachea was opened, a quantity of puriform fluid escaped, on inserting the tube, it was filled with it. There were a few more attempts made to breathe through the tube, but the child rapidly sank, dying not so much from asphyxia as from blood poisoning, and the formation of fibrinous coagula in the right cavities of the heart; on opening the child's mouth, no exudation could be seen on the fauces, but there was a profuse quantity of it in a puriform condition in the trachea, from croup of a diptheritic character. It is probable that, even had tracheotomy been performed earlier, the result would still have been fatal.

Remarks.

Whatever the good effects of tracheotomy might have been if performed sufficiently early, in this case it was done too late to offer any hope of recovery. The trachea was filled with the

aplastic exudation which welled out through the tube directly it entered. A few efforts were made at inspiration, but with no favorable result; the child sank from exhaustion, the result of blood-poisoning, and probably, from what is common in such diseases, the formation of fibrinous coagula in the right side of the heart.

In opening the trachea, the prospect of relief was very small, but it was not right to withhold any chance of saving life; and as the operation in such a case could only have a good effect, it was done as a last resource.

Case 7.

The subject of this operation was a stout elderly European gentleman, with a very short and thick neck. He had been labouring for about seven days under some difficulty of breathing. I saw him on 7th January, 1865, in consultation with two medical men, who had been treating him. His breathing was then stridulous and oppressed, the countenance anxious, but not livid. The pulse 120 and weak. The respiratory murmur faintly audible, much obscured by the tracheal sounds. The cardiac sounds were faint and muffled, but there was neither murmur nor other abnormal sound distinguishable.

He lay always on the right side as turning to the left caused intolerable difficulty of breathing. Various antispasmodics had been giving without effect, and it appeared that the dyspnœa might only be relieved by opening the trachea; at this juncture, I saw the patient; it was determined to wait till 4 P. M. (this was about noon) unless any increase in the urgency of the symptoms should render earlier interference necessary. Meanwhile, a cathartic enema was administered, and hot stupes to the chest and throat. The enema operated freely.

At about 4 P. M. he became worse, his breathing was more stridulous and difficult: the countenance and lips began to appear livid; his pulse became weaker and more frequent. He was evidently beginning to sink from the circulation of non-aerated blood, and there was no

time to be lost in opening the trachea. He was accordingly placed on his back on a table, and the throat exposed by allowing the head to hang back over a pillow. The aspect of the neck was most unpromising it was very short, and loaded with fat. The chin appeared to commence almost at the sternum. The usual incision was made in the median line, and the trachea reached with a little dissection, though it lay very deep the whole length of the forefinger from the surface. The hæmorrhage was not severe and there was only one gush of venous blood of any importance. A hook was fixed into the trachea; two or three rings were divided, and a tube introduced, which almost buried itself in the wound, it was very difficult to keep it *in situ* without the external orifice becoming buried in the fat, and consequently a little blood passed into the trachea and bronchial tubes. Air entered and found exit easily, but respiration was not satisfactorily re-established until the tube had been wiped out with a feather. It improved somewhat after this, but the stridulous sounds still continued. Chloroform was administered by Dr. Beatson; at the commencement of the operation, the patient came easily under its influence which was gently maintained until the tube was introduced. It produced neither convulsion nor untoward symptom of any kind.

Consciousness, however, was not completely restored. The breathing became easier, but weaker; the weakness increased, the surface of the body became cold, the pulse became weak, irregular, and intermittent. Artificial respiration was practised, stimulants were given, warm coverings, hot bottles, sinapisms applied, and an enema of brandy thrown into the rectum, but life gradually ebbed, and he died within two hours after the operation.

A *post mortem* examination was made, thirteen hours after death. The larynx, trachea, lungs, and heart were removed together, and dissection revealed, what had been suspected, the presence of an aneurismal swelling of the arteria innominata about the size of a small hen's egg. This was well lined with firm fibrinous coagula, and formed a hard

mass pressing against the right side of the trachea, and having stretched over it, the recurrent laryngeal nerve. The rings of the trachea against which it pressed, were partially necrosed, but the lining membrane of the tube was intact. The epiglottis and upper part of the larynx presented no morbid appearance. The lining membrane of the trachea was healthy, and the tubes, being slit open, contained only a very small quantity of fluid blood. The lungs were slightly congested and somewhat collapsed. The heart was loaded with fat. Its muscular walls thin, soft, and in a state of partial fatty degeneration. The cavities contained only a very little blood. The valves were all, with the exception of those of the aorta, healthy, which were slightly thickened. There was also a small aneurismal pouch bulging from the outer side of the ascending aorta. The left arm of this patient had been amputated, which prevented a comparison during life, of the radial pulses.

Remarks.

I saw this case only at the last, and when he was in great urgency of breathing. There was no positive evidence of the presence of aneurism, but the laryngeal difficulty was most urgent.

The operation offered a hope of relief, but a sudden increase in the urgency of the symptoms so much exhausted him, the weather being at the same time very unfavourable, the heat and damp excessive, that he sank before respiration could be thoroughly re-established.

The *post mortem* examination shewed that pressure and stretching of the recurrent laryngeal nerve, as well as pressure on the trachea had caused the fatal attack; no doubt the heat had much to say to the development of the unfavorable symptoms that preceded his death.

The congested state of the lungs and exhausted state of the nerve centres due to great heat, had doubtless much influence in causing the additional irritation which brought on the fatal laryngismus. The pressure of the tumour on the trachea itself had been slow and progressive; enough to cause much inconvenience, and rendered fatal when the additional difficulty arose from irritation of the recurrent laryngeal nerve.

I think that there cannot be a doubt of the propriety of the operation in such a case. Even had the indication of thoracic aneurism been positive, it would not only have been justifiable, but imperatively necessary, for, as the result proved, the laryngeal difficulties may be due to spasm of the glottis from pressure on, or irritation of, the laryngeal nerves: the actual pressure on the trachea itself having but little to say to the increased dyspnœa.

Case 8.

I was asked this morning, June 7th, 1867, to see a case of laryngeal disease in a man, named Hurry Narain, a Hindoo sweet-meat-maker, aged 23 years; who had been under treatment for ulceration or abscess about the larynx. He had expectorated a quantity of purulent matter. He had been treated by sponging the larynx with Nitrate of Silver, and Dover's Powder internally. Had had much pain and aphonia for the last 20 days with purulent expectoration. The fauces, soft palate and epiglottis are thickened and vascular. There is considerable difficulty of breathing which has increased since last night. The disease has probably a syphilitic origin, but the history is not very clear.

When I saw him, he was in great stress and urgency of breathing. The ensiform cartilage being tucked in towards the spine at each effort at inspiration; very little air was entering through the contracted opening, and that with a noisy, stridulous sound. His pulse was becoming feeble, skin cold, face and lips dusky; in fact he was being

slowly asphyxiated, and was beginning to sink. I proposed immediate tracheotomy, and arrangements were at once made for that operation.

I observed on examining the neck, that there was a preternatural fullness about the throat, especially near the thyroid cartilage.

I had no difficulty in opening the trachea, or in introducing the tube. He took just enough chloroform to deaden the pain of the operation. There was much venous hæmorrhage, but it ceased as soon as the respiration was established through the tube, which took place after a few gasping efforts, and the forcible expulsion of some frothy bloody and mucus through the tube. He was soon much relieved; and when I left him, he was breathing tranquilly through the tube.

June 8th.—He is much better this morning, but was low yesterday, requiring to be kept up with frequent stimuli and enemata of brandy and beef tea. He has great difficulty in swallowing. His pulse is much better this morning: he is free from pain, except on pressure over the larynx.

I ordered Tr. Iodine to be applied externally, and a poultice. The Rima glottidis to be sponged with a solution of Nitrate of Silver, and a liberal diet, with wine to be given. The frothy and purulent discharge ejected from the larynx is less copious to-day.

9th.—He is better: pulse slower and firmer. He breathes easily through the tube, and his blood appears to be thoroughly aerated. Examined the fauces and epiglottis. A quantity of muco-purulent matter still comes from the larynx, and is secreted so fast that laryngoscopic examination is very difficult. Ordered the rima glottidis to be sponged with a solution of Nitrate of Silver $3\frac{1}{2}$ to water $3\frac{1}{2}$ and that he should take Tr. Ferri Sesquichlorid: ten drops every third hour. He has less pain, and difficulty in swallowing to-day.

10th.—He seems to be much the same state as he was yesterday. Repeat every thing.

12th.—He is slowly improving: swallows with less pain, and is stronger. There is still some muco-purulent discharge from the

mouth, but much less is ejected through the tube than formerly. Less pain on pressure over the larynx. The solution of Nitrate of Silver is applied every day.

13*th*.—He is improving, has less pain and less discharge from the larynx. Takes his food well, and is stronger. Took out the tube to try if he could breathe through the natural passage, but found that he could not do so; replaced the tube immediately.

17*th*.—He improves daily; swallows well: no pain on pressure over the larynx; purulent discharge has ceased. But he is quite unable to breathe without the tube.

He is now taking Cod Liver Oil in addition to other things before noticed.

18*th*.—Tried him without the tube again to-day, but was obliged to replace it. He breathes through the wound, but not at all through the larynx, and as the wound quickly begins to contract, the tube has to be re-introduced almost immediately, on closing the wound with the finger, when the tube is out, dyspnœa rapidly comes on.

The Nitrate of Silver solution is applied daily; and, as I should have before mentioned, inhalation of steam combined with the vapor of Iodine.

27*th*.—He is not so well: has an attack of erysipelas in the neck especially about the tube. Let him be well purged, and the part painted with a solution of Nitrate of Silver. Continue the Tr. Ferri.

July 2*nd*.—He is much better, but still quite unable to dispense with the tube for any length of time; he can speak a little, with a very hoarse voice when the tube is removed, and the aperture closed.

5*th*.—He is doing well in all respects; but he cannot do without the tube. The larynx is daily sponged with the Nitrate of Silver solution.

September 16*th*.—Still in hospital; he is in excellent health, but cannot breathe without the tube; a certain amount of air can escape from the laryngeal opening, but none, apparently, can enter. He can speak in a hoarse voice when he closes the aperture, but every attempt to breathe through the natural passage is followed in a minute or two by all the symptoms of impending asphyxia.

There is still a profuse secretion of frothy mucus from the laryngeal opening, which makes examination very difficult. The vocal cords cannot be seen. But the congested and swollen appearance of the parts above the cords, shew that important structural changes have taken place. He remained in hospital until the 22nd of November, his health was then perfectly good, but he was just as unable as ever to breathe without the tube. He was discharged at his own request.

Some weeks after I saw him in the street looking very well, still wearing the tube. He takes it out and cleans it himself, and seems perfectly contented. By closing the mouth of the tube with his finger, he can make his voice audible.

Remarks.

In this case the power of breathing by the natural channel was never restored. The laryngoscope sufficiently indicated the changes that had occurred in the larynx; to prevent inspiration, air could pass out, but it could not enter, a sort of valvular condition of the Rima glottidis having resulted from the inflammatory changes. There was nothing remarkable in the case beyond this; the operation presented no difficulties, and it conferred immediate relief.

The laryngoscope was of service in demonstrating the structural changes in the glottis.

CASE 9.

An East Indian, named Mary Anne R—, aged 30 years, was admitted into my ward on the 5th of October, 1867, in great difficulty of breathing caused by an ulcerated state of the palate, fauces, and probably of the larynx. It appears that she had been under treatment in the hospital about two months ago for the same disease, which is of syphilitic origin, and had left the hospital much improved. The symptoms had recently recurred, and she was in great urgency when admitted into my ward.

The respiration was very difficult; the lungs imperfectly filling with air, and the ensiform cartilage drawn in at each inspiration. The great distress mitigated occasionally, but recurring in paroxysms.

On examining the fauces and upper part of the larynx with the laryngoscope, as well as the urgency of the symptoms would admit of, extensive ulceration was detected, and as life was in imminent danger, it was decided that tracheotomy should be performed without delay.

I accordingly opened the trachea below the isthmus of the thyroid gland at about 9 A. M. The trachea lay very deep, and was very small, being much overlapped by the thyroid. There was not much bleeding, but some difficulty in making the opening and introducing the tube into the trachea. This having been effected, she was soon much relieved; and after expectorating a quantity of frothy blood and mucus, she began to breathe easily.

6*th*.—She is better, has passed a tranquil night, and is breathing easily through the tube. Pulse weak, about 96; ordered nourishing diet and wine.

7*th*.—She breathes easily and seems much better. The neck is rather inflamed about the entrance of the tube. It was dressed with carbolic acid and oil.

10*th*.—She is doing well, breathes easily. A solution of Nitrate of Silver. xxx grs. to ℥i applied to the ulcer in the throat and larynx. Potas: Iodid: v grain doses, and Cod Liver Oil ordered. Edges of wound dressed with carbolic acid.

12*th*.—Doing well, except that there is some ulceration about the tube, and the lower part of the wound in the neck which has opened out again.

The laryngeal mischief seems to be abating. The caustic wash is applied daily.

The tube is now taken out, and when the opening in the trachea is closed, the air enters much more freely by the natural channel. Laryngoscopic examination shews much improvement. She continued to improve daily, and was discharged cured; the wound in the throat, which was dressed with carbolic acid, had healed, and respiration was going on freely by the natural channel on the 25th November.

REMARKS.

The result of the operation in this case was very satisfactory, for not only was life preserved, but in all probability the ulcerated condition of the larynx which was of a chronic character and of syphilitic origin, was allowed to heal. The perfect state of rest in which the muscles of the larynx were placed by the admission of air through the tube, no doubt mainly conduced to this favorable result. The remedies used, had also a beneficial effect, and the carbolic acid applied as a dressing to the wound, was useful in inducing healthy action and cicatrization; she left the hospital perfectly cured in a month and twenty days after the operation. This case illustrates well the great advantage of tracheotomy in ulceration of the larynx, by conferring perfect rest on the ulcerated parts.

CASE 10.

On the 23rd December, 1867, I was asked to see a little boy, aged three years, (the son of a native gentleman), who was suffering from urgent symtoms of dyspnœa owing to laryngeal mischief.

It appeared from the account given by his friends, that the boy had been ailing for a few days with cold and cough; that during the night, he became suddenly worse with great difficulty of breathing.

I found him very low, with gasping respiration, the air entering the lungs very imperfectly, the chest not expanding, and the ensiform cartilage being drawn in towards the spine at each effort at inspiration. His pulse was thread-like and very rapid. The lips livid, and consciousness almost gone, he was tossing about in bed in extreme restlessness, in fact he seemed at the point of death.

Counter-irritants had been applied. An emetic, and after it, stimulants had been administered. I examined the fauces, and found the tonsils ulcerated, but there was no diptheritic exudation.

Some delay occurred before the parent's consent could be obtained to an operation; and when at last it was given, the child appeared to be dying.

I opened the trachea below the isthmus of the thyroid gland; there was no hæmorrhage. The tube was introduced immediately; and in fifteen minutes, the little fellow had so far recovered, that he had become perfectly conscious, and then fell asleep, breathing easily with the natural colour of his lips and face restored. The air entered freely through the tube, and caused an almost normal vesicular murmur. Stimulants, milk, and broth were freely given, and readily taken by the child. I left him shortly after to be closely watched by his own medical attendant.

6 P. M.—He is doing well, breathing easily, and has taken food. No fever; his pulse improved. In the afternoon was feverish, but is now better.

24*th*.—Appears to be doing well.

29*th*.—Has been going on favourably since last report; breathing easily, and taking his nourishment with avidity. The breathing is going on easily, with occasional exceptions; on one occasion he was nearly choked by mucus having became inspissated below the tube, just where it terminated in the trachea; it was fortunately coughed up, and the respiration went on again. To-day he is free from fever, but he is weaker, and the wound about the tube is ulcerating considerably. It has been washed with a solution of caustic, and the fauces and upper part of the larynx sponged with the same solution. To-day he does not take his food so freely, and part of the milk is regurgitated through the tube when he swallows; this must be due either to paralysis of the epiglottis and muscles of the pharynx, or it may be that an opening has ulcerated into the œsophagus from behind the tube. I took out the tube this morning, but found that he was quite unable to breathe by the larynx. On looking into the wound, the course of the trachea upwards cannot be seen, either from contraction or the effusion of lymph. I should remark that the larynx is sponged with the caustic solution, and that he takes iron and quinine with a nutritious diet and Port Wine. The bowels are easily kept open by the enema.

30*th*.—He is doing well. The tube was taken out this morning and milk given, much of it ran out of the wound. The tube had to be replaced very quickly. The wound is large, but it looks healthy.

After this he gradually began to decline, it was found impossible to remove the tube, as without it, he was unable to breathe. Latterly the milk or broth came almost entirely out of the wound. He had occasional attacks of fever and symptoms of congestion of the lungs with capillary bronchitis set in. He sank at last on the 13th of January, just three weeks after the operation. I was unable to obtain a *post mortem* examination, but there is no doubt, his death was caused by inanition, and obstruction in the bronchial tubes.

Difficulties were made about administering nutrient enemata, the only hope of keeping up the strength when the food was rejected through the tube and thus lost.

I looked carefully into the wound, and there was no sign of any ulcerated opening into the œsophagus from the trachea; as the child made an effort to swallow, when the tube was out, the milk could be seen trickling down into the wound, evidently proving that it had entered by the larynx, the loss of co-ordinating power in the pharyngeal and laryngeal muscles being the cause.

Remarks.

This case which at one time seemed to hold out hopes of success, illustrates some of the difficulties and dangers that may arise after the operation in children, and are, to some extent, referrible to the operation itself. The ulceration of the wound, the loss of co-ordinating power in the muscles of deglutition by which the food found its way into the air tube, as well as into the œsophagus, the capillary bronchitis due partly to the extension of original mischief to the lungs, and partly to the entrance of portions of food into the bronchial tubes, and the exhaustion from inanition, owing to the food not passing into the stomach, are all points of interest, as accidents that are liable to occur after tracheotomy, and are, as it were, independent of the original disease, which rendered the operation necessary and endangered life.

It was a matter of regret that enemata and nutrient fluids were not given, but nothing could overcome the prejudices of caste, which were opposed to the proceeding. For the same reason no *post mortem* examination could be obtained, and thus the opportunity of examining the state of the larynx, of the trachea and lungs was lost, much to our disappointment; as in each of these organs, changes of importance and interest had no doubt occurred.

Case 11.

On the morning of the 14th January, 1868, I opened the trachea in a case of chronic ulceration of the larynx of some weeks' duration. The patient, a sea Captain, aged about 46, a stout, muscular, and otherwise healthy looking man, appeared to have caught cold, which was followed by loss of voice, difficulty of breathing, expectoration of muco-purulent matter tinged with blood: and pain in the throat, on pressure over the larynx. He had been under treatment for some time: had had counter-irritation, inhalations of medicated vapour, and a solution of Nitrate of Silver applied to the glottis with a sponge. He had also taken morphia and sulphuric ether, with temporary benefit. I had seen him twice or thrice in consultation with his own medical adviser, and on the last occasion the breathing was so much embarassed, that we thought it better that he should be removed to the hospital, as he was in momentary peril of suffocation. At this time, he was breathing with great difficulty, sitting up in bed, and each effort at inspiration, attended with a stridulous croupy sound. His voice was almost entirely gone. His countenance was expressive of great suffering. As yet the face and lips were of a good colour, and his pulse was good. The paroxysm of dyspnœa were spasmodic, and at times the urgency was very great; he complained also of great muscular pain in the thorax from the constant efforts at forcible inspiration. The air entered the lungs slowly and with difficulty, and its entrance through the ulcerated and contracted glottis was attended by a stridulous whistling sound. There were, as yet, no symptoms of bronchitis or pneumonia. The sputa were discoloured, but this was probably from the laryngeal discharge.

He was removed to the hospital on the 13th of January. He passed a restless night, and on the morning of the 14th, after consultation with my colleagues, it was decided that, as he was in no way improved, trecheotomy should be performed, with the view of placing the ulcerated larynx at rest, and of obviating the impending danger of asphyxia, which was gradually increasing, and might at any moment, be suddenly aggravated.

He was accordingly placed under the influence of chloroform by Dr. Mackenzie, who very slowly and carefully administered the anæsthetic. I then proceeded to open the trachea. He was a very stout and muscular man, with rather a short neck, in which the trachea lay very deep. Owing to the depth and to his great restlessness, even under chloroform, I had some difficulty in opening it; and during the operation, he was in great urgency of breathing. One or two vessels bled very profusely, owing to the turgid state of the neck. With some difficulty I got the tube into the trachea, and after some spasmodic efforts at inspiration, he began to revive after ejecting a quantity of blood and mucus, and forcing out the tube itself more than once. Owing to the great depth, it was very difficult to introduce the tube, and still more so to retain it. We succeeded, however, in securing it in its place; and in a few minutes he was breathing easily through it, and expressed himself as much relieved.

He was placed in a secluded part of the ward, screened off by blankets, and a kettle of boiling water placed near him, to keep the air moist.

He was closely watched, the inner tube occasionally removed and cleaned to make sure that the opening was patent. He was much better in the afternoon, and had lost altogether the look of agony that expressed his sufferings before the operation. He took a little nourishment, beef tea, milk, and sago in the course of the day.

15*th*.—He is doing well, breathing easily, and is relieved from pain: pulse good. Ordered inhalation of steam and vapour of Iodine, and Tincture of Iodine to be applied over the larynx. I should note that one or two attempts had been made at examination with the laryngoscope before the operation, but not very successfully, owing to the dyspnœa, and consequent intolerance of the instrument, enough however to ascertain that there was much inflammation and ulceration in the larynx.

16*th*.—He appears to be doing well. The tube requires constant watching and attendance, for it is liable to be forced out when a collection of mucus brings on violent expiratory efforts, and the inner tube quickly becomes clogged. The depth of the wound is remarkable, the longest tracheotomy tube only just reaches the trachea.

He has no fever: pulse fair. Bowels have acted. The expectoration through the tube is profuse, but it is neither so bloody, nor so viscid as it was. The back of the throat and the rima glottidis were sponged with a solution of Argent. Nit. xxx grs. to 5i this morning, and he has inhalations and fomentations frequently.

18*th*.—He is not doing so well I fear. The mischief has extended downwards, and the trachea is inflamed. He cannot bear the tube, The trachea lies so deep, that no ordinary tracheotomy tube reaches it properly, and the end has more than once slipped out of the windpipe remaining in the wound, air escaping and entering by its side, and causing great irritation. There is profuse secretion of mucopurulent matter from the tube. The laryngeal mischief is apparently somewhat better.

In the evening he was weak and exhausted, he could not bear the first tube, nor a longer one made on purpose, and the wound had to be kept dilated with blunt hooks. There are symptoms of mischief both bronchial and pneumonic coming on. He has beef tea and a moderate amount of Port Wine given frequently. Hot fomentations to the chest. The wound is kept open with probes or a silver spring. The breathing is becoming more hurried, and the countenance dusky, with lividity of the lips. He is getting an imperfect supply of air, and congestive or inflammatory mischief is taking place in the bronchial tubes or lungs. There is some dulness with bronchial tubes, but the sounds are a good deal obscured by the noisy tracheal breathing. His pulse is small and feeble, skin moist, but hot; ordered frequent stimulants with ether and ammonia. This condition gradually aggravated, and he sank on the morning of the 22nd, at about 8 A. M.

He had been better at times, but with no permanent improvement, and he sank at last from slow asphyxia, the result of an imperfect supply of air, and the pathological changes in the chest. During the two last days of his life, he had been able to bear the tube, and the difficulty of breathing seemed much diminished. The pulse continued only 120, and very feeble. He took nourishment very well during the last few days; and the day before he died, he was still able to express his wishes in writing on a slate. He became rather suddenly worse, and died about 8 A. M. of the 22nd January.

The *post mortem* examination took place about eight hours after death. The lungs were congested, and in all stages of inflammation. The trachea much inflamed. The wound for two days before death had a black and sloughing appearance. The opening in the trachea lay just below the cricoid cartilage, and one or two of the rings were necrosed. There was a long firm blood clot extending down the trachea and branching off into the smaller sub-divisions of the bronchial tubes, which was drawn out in the form of a tree.

The larynx was found to be extensively ulcerated, and the cartilages and part of the hyoid bone dead and exfoliating. The left vocal cord was entirely destroyed by ulceration, and the laryngeal sac was deeply excavated by an ulcer. The other tissues were sound.

The heart was normal, and the abdominal viscera were healthy.

I measured the depth of the wound in the neck shortly before death, it was extactly two inches from the outer edge to the tracheal opening.

Remarks.

This is a very interesting case, both in a surgical and pathological point of view.

The difficulty of the operation was great, owing to the depth of the trachea in a stout muscular man, with a short neck.

None of the ordinary tubes were long enough, and the greatest difficulty was experienced in keeping the opening patent. This, however, was accomplished, and for a time he experienced great relief. On the fifth day unfavourable symptoms began to appear, and the respiration gradually became more difficult with symptoms of broncho-pneumonia gradually increasing. He finally sank on the ninth day after the operation. The *post mortem* examination revealed extensive pneumonia and bronchitis. The wound was in a sloughing state, and a long firm blood clot occupied the air tubes below the tracheal wound, extending into the finer bronchial ramifications. The rings of the trachea were also partially necrosed, where they had been divided. The original disease in the larynx was found, as recorded in the notes on the Autopsy, to have been very extensive.

ADDRESS IN SURGERY,

BY J. FAYRER, M. D., F. R. S. E.,

TO THE ANNUAL MEETING OF THE

B. B. BRITISH MEDICAL ASSOCIATION.

MARCH, 1868.

MR. PRESIDENT AND GENTLEMEN,—A period of three years has elapsed since I had the honor of addressing an Annual Meeting of this Association; on that occasion I took the opportunity, in alluding to the state of Surgery in Bengal, of especially soliciting your attention to certain pathological conditions arising in the medullary structure of the bones and productive of great mortality from blood poisoning among those who had suffered accident, or undergone surgical operation, in the Hospitals of this city. In connection with, and closely allied to, this subject, I described, what seemed to me, in some measure, to account for the prevalence of this form of disease, and I stated that vitiated health before admission into defectively constructed Hospitals was one great cause. This vitiated state of health I attribute to imperfect nutrition, to residence in a crowded and badly drained and ventilated city, and to that consequent general deterioration of constitutional vigour implied in a want of nervous energy, and the existence of a defective condition of the blood making apparatus, which in persons, under such circumstances, living in a damp tropical climate, and on the alluvial delta of a large river, is aggravated by the ever-present existence of that peculiar poison, or state, which, for want of a better name, we call malaria. I endeavoured to suggest how far, and to what extent, each of these causes may be held to be

responsible for the occurrence of disease; and in speaking of the share in it, that may be due to nosocomial influences. I was careful to avoid what might appear to be animadversion on any one, for whatever the defects of the Calcutta Hospitals, and especially of that of the Medical College may be, it is to be borne in mind, that at the period when constructed, they were probably all that the Sanitary Science of the time considered necessary, and that any condemnation now pronounced must, on similar grounds, apply to most of the great European Hospitals.

The experience and improved knowledge of the last fifteen years have so changed the pre-existing views on these subjects, and have so entirely revolutionized the ideas of Hospital construction, that it is no reflection on any one, but simply a matter of duty, to point out defects where we find them, and to profit in all respects by the errors and experience of the past. During the last three years, the Medical College Hospital and its defects have been much discussed, and a Committee appointed by Government has thoroughly investigated the question, reported and made suggestions for alteration and improvement. The Committee consisted of Medical men, Civilians, Engineers, Merchants, and independent gentlemen, including a member of the native community, so that all interests were represented; and after careful investigation and comparison, and after taking evidence from the Medical Officers of the Hospital, they have confirmed the unfavourable report that brought about the nomination of the Committee. It is a matter of regret that the eminent Physician to whom the Hospital owes so much for its very existence, was not in India at the time these matters were under consideration, to have added the weight of that great and scientific experience, which has so much benefited other departments of the public service, to the deliberations and suggestions of the Committee; for I feel certain that no one would more

willingly than Dr. Mouat have contributed to the subject all the advantages of the increased practical and scientific knowledge of late years.

The recommendations of the Committee have not as yet been all carried into effect, though, I trust, they shortly will be; but one, and perhaps the most important change in the internal arrangements of the Hospital had already, at the instance of the Medical Officers, been carried out—the reduction of the number of beds from 25 to 16 in each ward, and this has been followed by undoubtedly good results, as I propose to shew.

The reduction of the number of beds in the wards of a large Hospital from 25 to 16 in each, *i. e.*, about 88 in all, is, in a great city ill-provided like Calcutta with accommodation for the sick, a matter of serious importance, and not to be undertaken without due consideration and assurance of its necessity. That such was the case, and that the change was needed, I am quite satisfied, and feel sure that the results have already been such as not only to justify, but to prove the necessity for the change.

It is to be noted that, although the cubic space, even before the change was considerable and perhaps so far equal to what is now considered to be sufficient, the superficial area was much below the ordinary requirements, owing to the disproportion between the height and the length and breadth of the wards. It is an axiom in Hospital hygiene that a certain minimum proportion of cubic space is required for a sick European soldier, but it is no less one of its canons that he must have a certain proportion of superficial space, and that you may not increase the one at the expense of the other. Height is a great advantage in a hot climate, but it must not be gained at a sacrifice of superficial area.

Taking the average of the ordinary sized wards, I find from a table furnished to me by Mr. Bouser, the Purveyor of the Hospital, that, when we admitted 25 into one ward, each patient had an average of 61 superficial, and 1,530 cubic feet of space ; and since we reduced the number from 25 to 16, that each patient has 95 superficial and 2,391 cubic feet of space; now it has been laid down that each European in this country is to have in Hospital 120 superficial feet, 10 feet of wall space, and 2,400 cubic feet ; whilst each native shall have 99 superficial feet, 9 of wall space, and 1,584 cubic space, so that, taking the actual average of the wards, the patients therein accommodated are still, notwithstanding the reduction, rather under than over the regulation allowance.

When, therefore, the question of the propriety of reduction of our numbers, in view of the limited extent of Hospital accommodation in Calcutta is raised, as it has been, by the Municipal authorities, the answer is clear, that it is better to secure the welfare of 16 than endanger 25 ; nor is this a mere theoretical or imaginary notion, it is a simple practical truth, and will stand the test of enquiry. Now I would not have you suppose that I mean that contracted space alone is inevitably to be followed by evil results, far from it, I am willing to admit that the ideal is seldom attained, that we must frequently depart from, rarely expect to realize it, and yet we may have fair results ; but I am not prepared to say so much in the case of a Hospital, whose other faults of construction are prominent, and where it consequently behoves us to do as much as we can to make up for, and not add to existing defects.

The recognised principles of Hospital construction are now so well known that I need hardly refer to them ; but as what I say is of general interest, and may be heard by others than

medical men, I would briefly remark that, though few and simple, they are essentially requisite to the well-being of the sick. I may also add in anticipation, that neither Hospital nor any other building in Calcutta that I know of, in any way fulfils these simple conditions : we know that it has been the fashion in years past to construct our great European Hospitals in one mass or block of building, capable of holding a large number of sick, often compressed into small space ; and that in the fulfilment of this idea, no regard was had, because, indeed, none was considered necessary, to due segregation, isolation, or classification of disease. Some of these large edifices are plain, others ornate, many of them costly in the extreme, liberally endowed, and munificently found in all that was supposed to be necessary to comfort, as well as health ; ventilation and cubic space, decoration of the walls and a cheerful aspect, with many other amenities that sympathy and kindness could dictate were not wanting ; and as far as the hygienic knowledge of the time went, they were perfect ; and if we criticise and find fault now, it must be done with all deference to the limited knowledge of our predecessors, and in the full consciousness that our ideas of to-day may 20 years hence be regarded as equally obsolete as theirs are now. But it is our plain and positive duty in such an important matter as the welfare of the sick, and in dealing with that very plastic element, the life, or rather, I should say, the death figure, to note the errors taught us by the experience of the past, and not only to point them out, irrespective of all considerations, but to apply our improved knowledge to the benefit of the present and the future. It seems to me that no duty is more imperative on Municipal, Provincial, or Imperial Government than that of making provision, on a liberal scale, for the inevitable sick. In any given population, a certain number must, at all times, be laid aside by sickness, and of the number, a certain proportion is as surely unable to provide for

itself, and therefore becomes a responsible and inevitable charge on the rest of the community. The sanitary knowledge of the time indicates the best, the most economical, and, at the same time the most rational method of providing for their wants; a charge as important and serious as any that has to be sustained. Calcutta is, I fear, as badly prepared to meet its liabilities in this respect, as any other great city, and it is certain that such provision as it has, is, according to present views, of an imperfect nature. But it is gratifying to know that the subject is now attracting attention, and that the influence of Hospital construction and hygiene on the welfare of the sick, and especially on those in whom the Surgeon is most interested, is daily being more recognized; new hospitals are constructed in compliance with the principles laid down as essential for the welfare of the sick, and in many cases such alterations as they were capable of, have been, or are being made, with the view of improving existing buildings. For much interesting matter connected with this subject, I would refer you to a most able report by Dr. Sutherland on the Hospitals and barracks of the United Kingdom, published in 1861. On a large scale too, it has been well tested by the Americans in the great campaigns which have recently terminated, and no one who has read the valuable report, styled Circular No. 6, Surgeon General's Office, War Department, Washington, 1865, can fail to have been struck with the great success attending their adoption of the new system of Hospital construction and administration in their Regimental and Field Hospitals.

The same principles, modified, are applicable in civil life; and as they have to do with fixed and permanent institutions, all the more reason why they should be adopted. The great difficulty, no doubt, is expense, but this ought not, for a moment, to be allowed to stand in the way of the accomplishment of

what is a most obvious duty, and the tendency to admit this argument is, I am happy to think, becoming more evident daily. With reference to the suggestions of the Committee that reported on the Medical College Hospital in February 1867, I may say that, like those of Dr. Sutherland, in the case of the European Hospitals, they had in view the improvement of the sanitary condition of the present Hospital, provided it should be deemed impossible to construct a new one; and I am glad to say that, after a year's delay, some part of the work has at last been commenced; though from the original defects of construction it is improbable that any very satisfactory or radical improvement can result from what may be done.

In a few words, the requisites of a good Hospital, according to present views, are the following, and it is beyond a doubt that all Hospitals, however large or small, should be constructed on this principle, that they should be multiples of what is laid down as the *ward unit*, viz., a simple chamber, capable of accommodating any number up to 25 patients in two rows, with from 1,500 to 2,500 cubic feet, and 90 to 120 superficial feet for each individual. It is essential, moreover, that these apartments should have cross ventilation, and that the walls be pierced with a sufficient number of windows and doors to admit of free egress and ingress of air. This ward must be built on well-drained and wholesome ground, and be protected by verandahs in hot, and warming apparatus in cold climates. Lavatories and latrines should be constructed outside, and the administration should be so arranged, that each ward may receive its due share of care and attention. Every Hospital, however large, should be a multiple of this unit, arranged in a variety of ways, V shaped, or échellon shaped, half moon, or star shaped, or in parallel pavillions, according to individual circumstances. All blocking or crowding together of sick into

one apartment, however spacious, must be avoided; and in Surgical cases, especially after operation, the more perfect the isolation, the better. For the mode in which the principle has been applied in America, I might refer here to the report already mentioned, and in England, as I believe, it may be seen in the Herbert Hospital at Woolwich, in the Riboisierè* in Paris, in the Colonies, and I am happy to say almost everywhere (except in Calcutta) in India.

To quote from the writings of a scientific living Surgeon, Mr. S. Wells:—"Not only must communication of wards with each other be avoided, but there must be separate wards containing one, or at most two beds, for patients recently operated on, and in lying-in Hospitals for women recently confined, before we can hope to reduce mortality from the excessive to the unavoidable rate."

I have said that the diminution of the number of beds appear to have been followed by an improvement in the results of the Surgical cases, and partly to another cause, to which I shall request your attention presently, the improvement, may, I believe, be attributed. I have to thank Dr. Ewart, who has so ably administered the affairs of the Hospital during the absence of Dr. Chevers, for a return of the Surgical operations performed in the Hospital during the two years that preceded and the two years that succeeded the diminution in the beds, and from it I make out the fact that blood-poisoning diseases have decreased.

* I believe that La Riboisierè has not proved so good a hospital as it was expected to be.

Statement shewing the Diseases which have caused death after Surgical Operations and Injuries in the Medical College Hospital during the years 1864, 1865, 1866, and 1867.

	Blood Poisoning Diseases.											Other Diseases.																				
Year.	Total number of operations and injuries.	Pyæmia and Osteomyelitis.	Gangrene.	Exhaustion.	Diarrhœa.	Dysentery.	Erysipelas.	Embolism of Heart.	Pneumonia.	Peritonitis and Liver Abscess.	Total.	Percentage of deaths to total operations.	Peritonitis.	Peritonitis, with internal Hernia.	Tetanus.	Shock.	Coma.	Uræmia.	Pelvic Cellulitis.	Sloughing of Bowels.	Phthisis Pulmonalis.	Compressio Cerebri.	Cholera.	Embolism of Basilar Artery.	Laceration of Brain.	Fatty Heart.	Total.	Percentage of deaths to total operations.	Grand Total.	Percentage to total operations.
1864	195	22	4	4	2	1	0	0	0	1	34	17.43	0	0	0	4	0	0	0	0	0	0	0	0	0	0	4	2.05	38	19.48
1865	165	15	4	10	3	2	1	0	1	0	36	21.68	0	0	3	1	1	0	1	0	0	0	0	0	0	0	6	3.61	42	25.30
1866	153	12	3	12	2	0	1	2	0	0	32	20.91	0	1	2	1	0	1	1	1	1	0	0	0	0	0	8	5.22	40	26.14
1867	161	10	0	6	0	0	2	0	0	0	18	11.18	2	0	5	4	0	0	0	0	0	0	0	2	2	1	18	11.18	36	22.36

The results of the year of the change can hardly be taken as a fair criterion; for during that period, so many of the sick and famine-stricken creatures who came into the city during the great calamity of that year were admitted, that the ordinary nature of the Hospital returns was, of necessity, different from what is usual. It appears from these returns of the Surgical operations, and they are perhaps the best test that can be applied to the sanitary condition of an Hospital, that, in the year 1864, there were one hundred and ninety-five important operations performed by Professor Partridge and myself, that, out of these, twenty-two died of Pyæmia and Osteo-myelitis, four of Gangrene, four of Exhaustion, two of Diarrhœa, one of Dysentery, one of Peritonitis and Liver Abscess, making a total of thirty-four deaths (or 17.34 per cent.) out of one hundred and ninety-five cases, from what may be truly called blood-poisoning diseases. Of other diseases, there were, out of the number, four from Shock, (or 2.05 per cent. out of the whole number,) or in all thirty-eight deaths out of one hundred and ninety-five cases (or 19.48 per cent.).

In 1865 the record shews one hundred and sixty-five cases of operation, out of which fifteen died of Pyæmia and Osteo-myelitis, four of Gangrene, ten of Exhaustion, five of Diarrhœa and Dysentery, one of Erysipelas, and one of Pneumonia; being a total of thirty-six cases of blood-poisoning diseases in one hundred and sixty-five cases, or 21.68 per cent.

There were also out of this number of one hundred and sixty-five cases, three deaths from Tetanus, one from Shock, one from Coma, one from Anæmia, making six deaths, or a total of forty-two, or 25.30 per cent. of the whole number. These were before the diminution of beds took place.

In 1866 it appears that there were one hundred and fifty-three important operations, of which twelve died of Pyæmia and Osteo-myelitis, three of Gangrene, twelve of Exhaustion, two of Diarrhœa, one, where the most evident cause of death was plugging of the right side of the heart, and two from Pneumonia, making in all thirty-two deaths from blood-poisoning, or 20.91 per cent. out of one hundred and fifty-three cases. There were also out of this number, one death from internal Hernia, two from Tetanus, one from Shock, four from other causes, making a total of forty out of one hundred and fifty-three, or 26.14 per cent. of the whole. Not much improvement you will say, excepting in the item of Pyæmia, where you have twelve out of one hundred and fifty-two, against fifteen out of one hundred and sixty-five in the previous year, and twenty-two out of one hundred and ninety-five in the year before that.

In 1867 the record tells of one hundred and sixty-one important operations, with ten deaths from Pyæmia and Osteo-myelitis, six from Exhaustion, two from Erysipelas, eighteen in all from blood-poisoning diseases, or 11.18 per cent. There were also five deaths from Tetanus, four from Shock, two from Cholera, and seven from other causes, making a total of eighteen, or thirty-six in all, or a percentage of 22.38.

Now these facts may not shew anything very definite, but still they are sufficient to prove that there is a diminution in the particular class of cases, viz. Pyæmia and Osteo-myelitis, to which I more particularly referred in my last address in 1865; and so far I think that, even by the imperfect evidence of statistics on a small scale (and they are only really reliable on a large one) it is proved that the condition of the Hospital has improved during the past two years.

I avail myself of this opportunity of requesting your attention to certain other interesting Surgical matters, and first of all to one to which, I believe, we are in no small degree indebted for the diminution in blood-poisoning diseases after Surgical operations, wounds and accidents, and that is, the application of the antiseptic principle in the treatment of Surgical disease. It is within the last eight or ten years that the discoveries of Pasteur Schrœder, Pouchet, Davaine and others, of the existence in the atmosphere, of myriads of germs of vegetable infusorial organisms, capable of the most rapid multiplication, and of resisting a temperature above 240° Fahrenheit, have thrown much light on the occurrence of blood-poisoning after injuries and operations. These germs develop rapidly in the presence of organic fluids and give use to putrefactive changes, some require the presence of Oxygen for their action, such as the Bacteria. The Vibrios, on the other hand, develop where Oxygen is wanting. They require an organic fluid (a menstruum) for their reproduction, and putrefactive or fermentative changes accompany their growth. These germs increase according to the amount of organic impurity in the air, and therefore abound richly wherever men, and especially sick men, are crowded together. This constitutes what is called the septic condition of the atmosphere, and it is one that has a great influence on wounds and Surgical operations. These germs of Bacteria-termo are most abundant. There are also Mycoderms, Mucedines, and Torulæ, and they not only have these properties of rapid development and of inducing various changes, such as the alcoholic, acetous, butyric, and lactic fermentations, but they rapidly induce putrefaction in organic matters, and give rise to septic conditions by which the blood is contaminated.

They have great power of resisting destruction, a temperature of 260° Fahrenheit it is said being necessary to ensure

their death. Now, it has been ascertained that, when an organic infusion has been deprived of these germs by a high temperature, and is protected from their further access from the air, it remains as unalterable as any ordinary chemical solution; no tendency is shown to decomposition, no symptom of life is manifested. The germs that are developed in organic infusions, are certainly according to this theory introduced from the air.*

* Professor J. H. Bennett has recently, in a lecture delivered before the Royal College of Surgeons in Edinburgh, expressed his dissent from these views of the origin of germs in relation to septic poisoning, and adduces arguments which, to say the least of it, are apparently as cogent as those of the physiologists whose theories he denies. Professor Bennett says:—"They originate in oleo-albuminous molecules, which are formed in organic fluids, and which floating to the surface form a pellicle or proligerous matter. There, under the influence of certain conditions, such as temperature, light, chemical changes, density, pressure, and composition of atmospheric air, and of the fluid, etc. the molecules by their coalescence, produce the lower forms of vegetable and animal life," and this process of development, Dr. Bennett illustrates by the penicillium crustaceum, which, he says, is formed in this way. This is a question in fact, of the molecular theory of organization which inculcates that all the tissues are formed by the successive production of histogenetic or formative, and histolytic or disintegrative molecules. And as to the doctrine "omne vivum ex ovo," he says this expression is a formula, which only imposes on the understanding, checks the search after truth, and is already overthrown by the advance of science. "The notion of every particle being necessarily derived from its like is erroneous; the law of descent from parents, which we recognize in the higher animals, changes as we descend in the scale: first to *parthenogenesis*, whereby this direct descent is broken, and ultimately to heterogenesis, in which it is lost. This theory is certainly startling and revives the question of spontaneous generation. But if true, it still explains the beneficial action of the carbolic acid, which in this case must be regarded chiefly for its local value as an arrester of germ development in the fluids of the wound itself, and not in the air. The application of the principle would thus be narrowed from its general to its local utility."

Professor Lister of Glasgow, in studying the effects of these septic changes in wounds and injuries, conceived the idea of excluding these noxious elements entirely from wounds and suppurating surfaces, and thus of protecting the natural restorative power of the tissues. To quote his own words: "The material which I have employed is Carbolic or Phenic Acid, a volatile organic compound, which appears to exercise a peculiarly destructive influence on low forms of life, and hence is the most powerful antiseptic with which we are at present acquainted. The first class of cases to which I applied it, was that of compound fractures, in which the effects of decomposition on the part are especially striking and pernicious. The results have been such as to establish conclusively the great principle that all the local inflammatory mischief and general febrile disturbance, which follow these injuries, are due to the irritating and poisoning influence of decomposing blood or sloughs. These evils are entirely avoided by the antiseptic treatment, so that limbs, which otherwise would be unhesitatingly condemned to amputation, may be retained with confidence of the best results. Since the antiseptic treatment has been brought into full operation, and wounds and abscesses no longer poison the atmosphere with putrid exhalations; my wards, though in other respects under precisely the same circumstances as before, have completely changed their character; so that, during the last nine months not a single instance of Pyæmia, Hospital Gangrene or Erysipelas has occurred in them."

The main object of this antiseptic mode of treatment is the purification of the air, which is to gain access to the wound, and not the local application of a specific agent to the wound itself. To fulfil this intention, it is necessary that the injured part should be enveloped in the antiseptic agent, which according to Professor Lister, is Carbolic Acid, according to others,

Sulphurous acid, or any other agent that has the power of destroying these germs.

The process of repair is thus allowed to proceed undisturbed by contaminated atmosphere, and there is reason to believe that when this can be really effected, the powers of nature are equal to much more than is generally supposed.

The Carbolic Acid is thus used as a protective, and not as a corrective, and it is this point in particular that Professor Lister has demonstrated. No doubt as a local application, and as a deodorizer and local antiseptic, destroying organic effluviæ which have already existed, it is also very useful, and is or should be, much used on a large scale. But this, though important, is, as you will perceive, very different from its application as a purifier of the air, and a preventive of septic poisoning. For some months this principle has been freely applied by my colleague and myself, in the wards of this Hospital, and if we cannot speak with the unqualified enthusiasm of some of its advocates, we can, at all events say, that we have found in it an important addition to our means of combating Pyæmic disease.

I have with the aid of my house Surgeon, Baboo Mohendro Nath Guptoo, made out a list of cases treated by Carbolic Acid during the last three or four months. It is too long to read, but I have abstracted from it the results of the most interesting cases; and though I am hardly in a position to prove by figures that our success has been greater than usual, I am able to state my conviction (and it is that of my colleague also) that many of these cases would, without the Carbolic acid, certainly have done badly, and one or two cases I shall request your attention to, as singularly illustrative of the facts.

Carbolic Acid Cases.

	No.	Bone.	Date of Admission.	Date of Discharge.	Number of days under treatment.	Result.
Compound Fractures.	1	Right Tibia	2nd Augt. 1867	11th Nov. 1867	3 months 9 days	Recovered.
	2	Right Tibia and Fibula	1st Sept. 1867	15th Nov. 1867	2 months 15 days	Ditto
	3	Right Tibia	29th Sept. 1867	20th Jan. 1868	3 months 20 days	Ditto
	4	Right Tibia and Fibula	21st Octr. 1867	25th Jan. 1868	3 months 4 days	Ditto
	5	Ring Finger	8th Dec. 1867	27th Jan. 1868	1 month 19 days	Ditto
	6	Index Finger	13th Jany. 1868	Still under treatment, very nearly well.		
Amputations.	1	Symes' Amputation Foot	23rd Sept. 1867	27th Sept. 1867	4 days	Died from Pyæmia.
	2	Leg by modified circular method	21st Octr. 1867	25th Jan. 1868	3 months 4 days	Recovered.
	1 3	Finger, with a portion of metacarpal bone	8th Dec. 1867	27th Jan. 1868	1 month 19 days	Ditto
	4	Ditto	14th Jan. 1868	Still in Hospital.		
	5	Ditto	16th Jan. 1868	Ditto ditto		

Carbolic Acid Cases.—*(Continued.)*

	No.	Part.	Date of Admission.	Date of Discharge.	Number of days under treatment.	Result.
Wounds.	1	Head.	4th Oct. 1867	29th Oct. 1867	25 days	Recovery.
	2	Scrotal Tumor.	11th Oct. 1867	12th Jan. 1868	2 months 15 days From the date of operation.	Ditto.
	3	Leg.	14th Oct. 1867	26th Oct. 1867	12 days	Died from Tetanus.
	4	Head.	18th Oct. 1867	7th Nov. 1867	20 days	Recovery.
	5	Leg.	25th Oct. 1867	25th Jan. 1868	3 months	Ditto.
	6	Scrotal Tumor.	28th Oct. 1867	17th Dec. 1867	12 days, from the date of operation.	Died from Tetanus.
	7	Hand.	30th Oct. 1867	26th Dec. 1867	1 month 26 days	Recovery.
	8	Scrotal Tumor.	6th Nov. 1867	22nd Dec. 1867	18 days, from the date of operation.	Died from Diarrhœa and Exhaustion.
	9	Leg.	12th Nov. 1867	20th Nov. 1867	8 days	Died from Diarrhœa.
	10	Behind Ear.	13th Nov. 1867	15th Jan. 1868	2 months 2 days	Recovery.
	11	Right Elbow.	27th Nov. 1867	20th Dec. 1867	23 days	Ditto.
	12	Mammary Region.	4th Dec. 1867	21st Dec. 1867	17 days	Ditto.
	13	Head.	25th Dec. 1867	12th Jan. 1868	17 days	Ditto.
	14	Foot.	28th Dec. 1867	22nd Jan. 1868	25 days	Ditto.
	15	Perineum.	18th Dec. 1867	12th Feb. 1868	1 month 24 days	Ditto.

Carbolic Acid Cases.—*(Continued.)*

No.	Part.	Date of Admission.	Date of Discharge.	Number of days under treatment.	Result.
16	Below the Chin.	5th Jan. 1868	15th Feb. 1868	1 month 10 days	Recovery
17	Perineum.	10th Jan. 1867	27th Jan. 1868	17 days	Ditto.
18	Head.	16th Jan. 1868	22nd Jan. 1868	6 days	Relieved.
19	Hand.	17th Jan. 1868	18th Jan. 1868	1 day	Ditto.
20	Forehead.	3rd Feb. 1868	19th Feb. 1868	16 days	Recovery
21	Ditto.	26th Jan. 1868	28th Feb. 1868	1 month 2 days	Ditto.
	Ditto.	27th Jan. 1868	28th Feb. 1868	1 month	Ditto.
22	Lower Jaw.	27th Jan. 1868	Still in Hospital.		
23	Head.	26th Jan. 1868	Ditto	ditto.	
24	Thigh.	19th Feb. 1868	Ditto	ditto.	
25	Fore-arm.	24th Feb. 1868	Ditto	ditto.	
26	Leg.	20th Jan. 1868	Ditto	ditto.	
27	Knee.	28th Jan. 1868	Ditto	ditto.	
28	Nose.	19th Feb. 1868	Ditto	ditto.	
29	Labium.	1st Nov. 1867	Ditto	ditto.	
30	Breast.	11th Oct. 1867	Ditto	ditto.	

Wounds.

Carbolic Acid Cases.—*(Continued.)*

No.	Part.	Date of Admission.	Date of Discharge.	Number of days under treatment.	Result.
31	Finger.	13th Jan. 1868	Still in Hospital.		
32	Inguinal Region.	10th Feb. 1868	Ditto	ditto.	
33	Chest.	14th Feb. 1868	Ditto	ditto.	
34	Inguinal Region.	22nd Jan. 1868	Ditto	ditto.	
35	Head.	28th Feb. 1868	Ditto	ditto.	
36	Foot.	9th Dec. 1867	Ditto	ditto.	
37	Scrotal Tumor.	20th Dec. 1867	Ditto	ditto.	
38	Arm and Chest	30th Dec. 1867	Ditto	ditto.	
39	Inguinal Region.	8th Jan. 1868	Ditto	ditto.	
40	Legs.	8th Jan. 1868	Ditto	ditto.	
41	Scrotal Tumor.	20th Dec. 1867	Ditto	ditto.	
42	Ditto.	24th Feb. 1868	Ditto	ditto.	

Wounds.

Carbolic Acid Cases—*(Continued.)*

	No.	Where.	Date of Admission.	Date of Discharge.	Number of days under treatment.	Result.
Ulcers.	1	Penis.	11th Sept. 1867	30th Sept. 1867	19 days	Recovery
	2	Leg.	27th Sept. 1867	26th Jan. 1868	4 months	Ditto.
	3	Penis.	7th Nov. 1867	6th Dec. 1867	1 month	Ditto.
	4	Foot.	22nd Nov. 1867	13th Dec. 1867	20 days	Ditto.
	5	Soft Palate.	2nd Dec. 1867	5th Dec. 1867	3 days	Death.
	6	Scrotum.	18th Dec. 1867	10th Feb. 1868	23 days	Recovery
	7	Leg.	30th Oct. 1867	24th Feb. 1868	3 months 24 days	Ditto.
	8	Ditto.	19th Feb. 1868	Still in the Hospital.		
	9	Elbow.	11th Oct. 1867	Ditto	ditto.	
	10	Ankle.	5th Jan. 1868	Ditto	ditto.	
	11	Leg.	10th Jan. 1868	Ditto	ditto.	

Recovered ...	... 32
Relieved ...	... 2
Died ...	... 6
Remaining ...	... 25
Grand Total,	... 65 cases.

Abstract of Cases treated in the First Surgeon's Ward, with a mixture of one part of Carbolic Acid, and five of Linseed Oil.

Date of Admission.	Number	Names.	Sex.	Disease.	Result.	Date of Result.	Remarks.
2nd August 1867	1	Ramlal Ghose,	M	Compound commtd. fracture of Tibia.	Recovery	11th Nov. 1867	Compound commtd. fracture of right Tibia at its middle, caused by a fall from his horse.
1st Sept. 1867	2	Prankissen Mullik,	"	Compound fracture of right Tibia and Fibula just above the ankle.	Ditto	15th Nov. 1867	Compound fracture of right Tibia and Fibula above the ankle, by a fall from a height of about of 10 feet.
4th Sept. 1867	3	Golucknauth Roy,	"	Necrosis of the last metatarsal bone of right foot and of the phalangeal bones.	Death	27th Sept. 1867	Symes' amputation at the foot performed on the 23rd September, and the patient died on the 27th, of Pyæmia.
11th Sept. 1867	4	Jadooputty Haldar,	"	Sloughing of Penis.	Recovery	30th Sept. 1867	Patient had an attack of cholera, and was taken away by his friends.
27th Sept. 1867	5	Jhagoo,	"	Sloughing ulcers of leg.	Ditto	26th Jan. 1868	Suffering from two sloughing ulcers of the legs since last 13 month. One placed above inner malleolus of left leg, and the other at the middle of the right.

Date of Admission.	Number.	Names.	Sex.	Disease.	Result.	Date of Result.	Remarks.
29th Sept. 1867	6	J. L.	M	Compound fracture of right Tibia.	Recovery	20th Jan. 1868	Fracture was simple on admission, but subsequently became compound by the formation of two or three openings.
4th Oct. 1867	7	Gopaulchunder Aitch,	„	Contused wound on the head.	Ditto	20th Oct. 1867	Had a contused wound on the head by the fall of a piece of wood from a height of 12 feet. Bone not denuded.
11th Oct. 1867	8	Tarruknauth Doss,	„	Scrotal Tumor.	Ditto	12th Jan. 1868	Scrotal Tumor about the size of a cocoanut for the last seven years. Operated on the 28th October 1867, dressed with carbolic and oil.
14th Oct. 1867	9	Sabaram,	F	Incised wounds.	Death	26th Oct. 1867	Sustained several incised wounds of the legs, by falling upon a heap of broken bottles. Patient was doing very well as regards wounds, but died of traumatic tetanus.
18th Oct. 1867	10	Sopna,	M	Vascular Tumor.	Recovery	7th Nov. 1867	Has had a tumour about the size of a marble on the right side of his head for the last 1½ month. Tumour removed on the 18th October 1867 under chloroform.
21st Oct. 1867	11	Nowbuth Khalasee,	„	Compound commtd. fracture of both bones of left leg at their middle.	Ditto	25th Jan. 1868	Caused by the limb being run over by the wheel of a Railway Engine half an hour before admission. Primary amputation performed at the upper part of the leg. Patient came in very low. Discharged with a wooden leg.
25th Oct. 1867	12	Gourchunder Ghose,	„	Necrosis of left Tibia,	Ditto	25th Jan. 1868	The disease first commenced with an abscess about six months ago. Necrosed portions removed. There was ulceration of the leg.
28th Oct. 1867	13	Mudhoosudun,	„	Scrotal Tumor of 20 years' standing.	Death	17th Dec. 1867	In consequence of bad health, the operation was postponed till the 5th December 1867, when it was performed. Patient was doing very well; but for the traumatic tetanus which came on on the 15th December 1867, of which he died.
30th Oct. 1867	14	Lukhun,	„	Large lacerated wound on the palm of left hand.	Recovery	26th Dec. 1867	Caused by fall of a block of wood.
6th Nov. 1867	15	Hossney,	„	Scrotal Tumor of 10 years' standing, of the size of a large cocoanut.	Death	22nd Dec. 1867	Operated on the 4th December 1857, died on the 22nd December 1867 of diarrhœa and exhaustion. Had elephantiasis of both the legs.
7th Nov. 1867	16	C. W.	„	Sloughing chancre.	Recovery	6th Dec. 1867	Ditto ditto ditto.
12th Nov. 1867	17	Ramdeen,	„	Necrosis of right Tibia.	Death	20th Nov. 1867	Died of chronic diarrhœa.

Abstract of Carbolic Acid Cases in the First Surgeon's Ward.

Date of Admission.	Number.	Names.	Sex.	Disease.	Result.	Date of Result.	Remarks.
13th Nov. 1867	18	Radhachurn,	M	Medullary tumor behind the ear.	Recovery	15th Jan. 1868	Has had a tumour of the size of a goose's egg behind the right ear for the last year. Tumour removed on the 26th November 1867.
22nd Nov. 1867	19	Gyah,	F	Sloughing ulcer of the toes.	Ditto	15th Dec. 1867	Ditto ditto ditto.
27th Nov. 1867	20	Doloo,	M	Cystic tumor on the inner side of right elbow of one year standing.	Ditto	20th Dec. 1867	Tumour removed on the 27th of November 1867.
4th Dec. 1867	21	A. M.	F	Mammary Tumour.	Ditto	21st Dec. 1867	Ditto ditto ditto.
25th Dec. 1867	22	B. V.	M	Contused wound.	Ditto	12th Jan. 1868	
2nd Dec. 1867	23	Soorathnauth Mookerjee,	,,	Sloughing ulcer of soft palate.	Death	5th Dec. 1867	Patient came in moribund, suffering from enlarged spleen and low intermittent fever.
8th Dec. 1867	24	Ojeer,	,,	Compound commtd. fracture of left ring finger.	Recovery	27th Jan. 1868	Amputation of the finger, with head of metatarsal bone.

28th Dec. 1867	25	Kallydoss Mookerjee,	,,	Epithelioma of great toe.	Ditto	22nd Jan. 1868	Toe removed under chloroform.
18th Dec. 1867	26	E. P.	,,	Sloughing of scrotum.	Ditto	10th Feb. 1868	Ditto ditto ditto.
18th Dec. 1867	27	Obhoychurun Mittra,	,,	Fistula in ano.	Ditto	12th Feb. 1868	Fistula laid open on the 18th December 1867.
5th Jan. 1868	28	Shaik Omad,	,,	Epithelioma removed on the 8th January 1868.	Ditto	15th Feb. 1868	An Epithelioma, about the size of an eight anna piece below the lower lip of seven months' standing, commencing first as a small pimple.
10th Jan. 1868	29	Sittanauth,	,,	Fistula in ano.	Ditto	27th Jan. 1868	Fistula laid open on the 10th January 1868.
16th Jan. 1868	30	E. P.	,,	Contused wound on the head.	Relieved	22nd Jan. 1868	Patient was discharged at his own request.
17th Jan. 1868	31	H. J.	,,	Lacerated wound.	Ditto	18th Jan. 1868	Ditto ditto ditto.
3rd Feb. 1868	32	Bheem Doss,	,,	Contused wound on the forehead.	Cure	19th Feb. 1868	
26th Jan. 1868	33	Bamah Dossee,	F	Ditto ditto.	Ditto	28th Feb. 1868	Wound healed long before her discharge, but she was detained by the injury to her hip.
27th Jan. 1868	34	Shaik Alloo,	M	Ditto ditto.	Ditto	28th Feb. 1868	
13th Feb. 1868	35	S. R.	F	Contused wound of the head.	Ditto	26th Feb. 1868	
30th Oct. 1867	36	Naseebun,	,,	Sloughing ulcer of leg,	Ditto	24th Feb. 1868	Patient took grs. iii of opium every three hours.

Following cases still in the Hospital.

Date of Admission.	No.	Names.	Sex.	Disease.	Result.	Date of Result.	Remarks.
27th Jan. 1868	1	Ramrutun,	M	Necrosis of lower jaw.	Cure	.....	Necrosis of right lower jaw of 2½ years' standing. Four sequestra removed on the 29th January 1868, and the patient is now nearly well.
26th Feb. 1868	2	Abdool Kader,	„	Contused wound on the forehead.	Ditto	.....	The wound is very nearly well.
13th Jan. 1868	3	Jonardhone,	„	Compound commtd. fracture of left index finger.	Ditto	.....	Amputation at the line of the wound performed on 14th January 1868, and the patient is nearly well.
19th Feb. 1868	4	Judoonauth Ghose,	„	Sinus in the thigh	Doing well	.....	Patient came in with a large sinus on the upper and outer part of left thigh extending upwards, but not leading to necrosed bone.
19th Feb. 1868	5	Juggessur	„	Sloughing ulcer of leg.	Ditto	.....	Ulcer is now granulating, all the sloughs separated.
24th Feb. 1868	6	Nutto,	„	Incised wound on the fore-arm.	Ditto	.....	There is slight suppuration of the wound.
20th Jan. 1868	7	Troylukonauth Banerjee,	„	Necrosis of fibula.	Ditto	.....	Sequestrum removed on the 8th February 1868, and since then patient doing well.

11th Oct. 1867	8	Kadernauth Doss,	„	Chronic ulcer about the elbow.	Ditto	.....	Excision of the elbow performed on the 25th October 1867, and the patient doing well at present.
5th Jan. 1868	9	Mathoor,	„	Hypertrophy and ulceration about the ankle.	Ditto	.....	A fish wounded his left ankle a year ago when bathing.
28th Jan. 1868	10	Toolsee,	F	Incised wound behind the left knee.	Ditto	.....	Wound and the surrounding tissues became gangrenous; but since the application of carbolic acid, wound is doing well. Gangrenous portions separated.
19th Feb. 1868	11	Johorum,	„	Polypus of nose.	Ditto	.....	Polypus removed on the 24th February 1868, and the incised part dressed with carbolic acid and oil. Slight suppuration in the wound.
1st Nov. 1867	12	Kally,	„	Hypertrophy of both labia majora.	Ditto	.....	Hypertrophied parts removed on the 17th December 1867, the patient is very nearly well.
11th Oct 1867	13	Mrs. M. C. A.	„	Cancer of breast.	Ditto	.....	Breast removed on the 9th December 1867, the wound is very nearly cicatrized.
13th Jan. 1868	14	J. N.	M	Paronychia right middle finger.	Ditto	.....	Finger removed on the 26th January 1868. Patient is nearly well.
10th Feb. 1868	15	J. W.	„	Inguinal hernia left side.	Ditto	.....	Operated on the 25th February 1868, the wounds dressed with carbolic acid and oil, after the plug was removed.
10th Jan. 1868	16	T. T.	„	Chronic ulcer of the left leg.	Ditto	.....	Ulcer cicatrizing; before applying the carbolic acid, Liquor Lyttæ had been applied.

Remaining in the Hospital.

Date of Admission.	No.	Names.	Sex.	Disease.	Result.	Date of Result	Remarks.
14th Feb. 1868	17	A. P.	M	Stabbed wound.	Doing well	.....	Stabbed wound in the left hypochondrium.
22nd Jan. 1868	18	T. P.	"	Inguinal hernia direct left side.	Ditto	.....	Wounds dressed with carbolic acid and oil after the removal of plug. Operated on the 18th February 1868. Ditto ditto.
28th Feb. 1868	19	Gopaul Kahar,	"	Contused wound on the head.	Ditto	.....	
9th Dec. 1867	20	Shaik Kadu,	"	Lacerated wound behind the right heel.	Ditto	.....	Came in with a large lacerated wound behind the heel, caused by the fall of a bar of iron. Wound dividing the tendo achilles and fracturing the os calcis.
20th Dec. 1867	21	Shaik Omur,	"	Scrotal tumor.	Ditto	.....	Tumor removed on 9th January 1868, and the patient very nearly well.
30th Dec. 1867	22	Mohendronauth,	"	Adhesion of arm to the side of the chest.	Ditto	.....	Result of a burn cicatrix dissected out the 20th January 1868.
24th Jan. 1868	23	W. W.	"	Inguinal hernia right side.	Ditto	.....	Operated on the 27th January 1868 Patient doing well.
8th Jan. 1868	24	Azim,	"	Syphilitic periostitis.	Ditto	.....	Abscess opened, notwithstanding the use of Potas. Iodid. and the application of Liquor Lyttæ.
20th Dec. 1867	25	Judoo Doss,	"	Scrotal tumor.	Ditto	.....	Tumor removed on the 20th of December 1867, the wound cicatrized rapidly.
24th Feb. 1868	26	Ramessur,	"	Ditto	Ditto	.....	Tumor removed on the 2nd March 1868, weighed 1 lbs. 15oz.

Carbolic acid is used in various ways: the pure acid is sometimes applied at once to the surface of a wound, it not only protects it against contamination, but it guards against any possible septic absorption, by congulating albuminous fluids and blood, and thus plugging the open vessels. As an oleate or glycerate, *i. e.* one part of the strong acid to four or five of oil or glycerine, it is most frequently used for ordinary dressing. Professor Lister also applies it in the form of a paste. As a lotion, in the proportion of one to four drachms to a pint, it is an excellent stimulant, detergent, and antiseptic wash. The paste we have not used here.

The result in these cases has been so favourable, so different from what we have been accustomed to; so exactly what we might expect, if the theory of M. Pasteur and Mr. Lister's application of it be true, that I think the conclusion is inevitable, that we have at our disposal a new and powerful auxiliary in the treatment of disease. It seems to have inspired equal confidence in Europe, and appears to be freely used in most large metropolitan and provincial hospitals in Great Britain. We trust it will fulfil the great expectations it has raised, and that it may be freely used, not only in hospitals as a preventive of disease, but wherever large numbers of men are crowded together, as a preservative from those septic conditions which there is too much reason to believe cause mischief to wounds and injuries, and are largely concerned in the production and spread of zymotic disease.

The following is an abstract of some of the most important cases that have been treated with carbolic acid in my wards, since its introduction into the practice of this hospital:—

Five amputations, of which four recovered and one died, the death in this case occurred from pyæmic symptoms in an

enfeebled constitutions; the operation was an amputation of the foot.

Six cases of compound fracture, all recovered; four of these were of the lower extremity and were very severe; in these, perhaps more than in other cases, the benefit of the carbolic acid was shewn.

Of wounds and surgical operations, including the removal of scrotal and other tumours, there were forty-three cases; twenty-one of these resulted as follows:—seventeen cured or relieved, and four died. There are twenty-two cases still under treatment, and they are for the most part doing well.

Of abscesses, ulcers, sloughing sores, &c., there were eleven well-marked cases; six were discharged cured, one died, and the remainder are doing well under treatment.

There is not much in this return, perhaps, to convey definitive proof of the beneficial results of carbolic acid; but to the surgeons who treated and watched the cases, its good effects were very apparent, and the circumstance of each have impressed them with the most satisfactory evidence of its value. It was frequently obvious that, just at a point in its progress, where the supervention of unfavourable symptoms was dreaded, the aspect of a case became favourable, when former experience would have led them to anticipate the reverse; and the impression left on their minds, certainly on mine, is that they have found a valuable auxiliary in the treatment of surgical disease. I shall read you one or two cases, more in detail, illustrative of the action of carbolic acid, and those who have had experience of such cases, will be able to form an opinion on the subject for themselves.

CASE 1.

Gun-shot Fracture of Femur.

Woozir Ally, aged 25 years, admitted 2nd Surgeon's Ward, 11th February 1868, with compound comminuted fracture of the right femur, at the junction of the middle with the lower third, caused by a bullet wound. A splinter of the femur, about 2½ inches long, and 1 broad, was removed. Wound dressed with carbolic acid and oil, and leg and thigh put on a long splint. For the first few days after the accident, the patient suffered from attacks of fever, with the pulse at 128, and temperature 103°, but there were no rigors.

April 20th.—At present the patient is doing well; pulse on an average 100. Temperature 103°. Tongue clean. Wound contracting with slight discharge of healthy pus.

Doing very well; on 12th May another small piece of bone separated. I am indebted to Dr. Partridge for this important case.

CASE 2.

Compound Fracture of Leg.

Joomun Khan, aged 36 years, Mahomedan, Police Sowar, was admitted into Dr. Partridge's Ward, on the 16th of July, 1867, having sustained a compound fracture of the right leg, by a fall from his horse. A lacerated wound communicated with the fracture. The tibia was denuded of its periosteum to the extent of about an inch above and below the fracture. There was a good deal of bleeding; and the ends of the bones were considerably displaced.

On admission the fracture was reduced, and side-splints were applied to the leg, the wound was dressed with carbolic acid,

after the bleeding had ceased. On the 4th day after admission, a McIntyre's splint was applied.

There was considerable suppuration about the seat of fracture, and superficial sloughing attended with fever for about a fortnight after admission: carbolic acid dressing was continued.

On the 29th July a piece of bone, about two inches long, was removed from the wound.

Sloughs gradually separated, and the wound assumed a healthy aspect. There was ulceration in different parts of the leg from the pressure of the splint.

A piece of bone, about an inch long, was removed on the 21st August from the upper fractured end; and on the 22nd September, a piece, about two inches long, from the lower fractured end; several small pieces of bone exfoliated subsequently.

By the end of September 1867 the wound was much smaller, and the fracture was somewhat firm.

21st October 1867 the wound over the fracture is about the size of an eight anna bit; bed-sore and ulcers on other parts of the same leg healing; fracture firmer.

On the 8th November 1867 the fractured bone not yet quite firm; ulcer healing; strength much reduced.

On the 27th November the McIntyre splint was removed, and a side-splint applied to the inner side of the leg.

On the 10th January 1868, the ulcer over the fracture was quite healed, union of fracture firm.

On the 21st January the splint was removed.

On the 6th March the fracture was quite firm; there are superficial ulcers in three or four places, brought on originally by pressure of the splint; he is in very weak health.

The wounds were dressed throughout with carbolic acid mixed with linseed oil, in the proportion of acid ʒi with oil ʒiv.

He died afterwards of diarrhœa, having recovered from the fracture; but being much reduced by long confinement, he sunk under the exhaustion of the attack of diarrhœa.

Case 3.

Compound Fracture of Leg.

Prankissen Mullik, aged 14 years, admitted 1st September, 1867, with compound fracture of right tibia and fibula, about two inches above the ankle, caused by a fall from a height of about 10 feet, two hours before admission. About two inches of the upper fragment of the tibia protruded through a large lacerated wound, with the periosteum stripped off here and there. Bones reduced. Wounds dressed with carbolic acid and oil, and the leg put on a MacIntyre's splint. The patient did very well throughout the whole period of the treatment; there was no constitutional disturbance of any kind, except slight fever, for the first three or four days after admission; after which the wound, from which there was hardly any suppuration, began to heal.

On the 21st October 1867 the splint was removed. Union seemed pretty firm. Wound very nearly healed. No shortening. Simple bandage applied.

By the 5th November 1867 the union was quite firm. Wound entirely healed; he could walk pretty well. No shortening.

On the 15th November 1867, discharged—Carbolic acid and oil dressing had been applied throughout the whole period.

CASE 4.

Compound Fracture of Leg, Amputation.

Nowbuth Khalasee, aged 25 years, admitted 21st October, 1867, with compound comminuted fracture of both the bones of the left leg, about the middle, caused by the limb being run over by the wheel of a Railway engine, an hour before admission. Bones were smashed into pieces, splinters projecting in all directions, with extensive laceration of the muscles, vessels, &c., &c.

Immediate amputation (one hour after accident) of the leg, three inches below the tuberosity was performed by Dr. Fayrer's modified circular method. Patient became very low on the operating table. The cut ends of the bones were dressed with carbolic acid. The surface of the wound was sponged with the same, and the whole wound dressed in like manner. Dressing changed next day. Patient began to gain strength rapidly, and the wound to heal, without much suppuration.

On the 3rd January 1868 the stump was quite healed, and the general health was good.

He remained in hospital till the wound had cicatrized, when he was discharged with a wooden leg.

CASE 5.

A native lady, aged about 30 years, of healthy constitution, and in the eighth (8th) month of pregnancy, had had the cavity

of the left knee joint opened by an incision made with the view of evacuating a collection of fluid, the result of inflammatory action. I saw her some days after the injury had been inflicted. There was considerable constitutional disturbance due to the formation of an enormous popliteal abscess, as well as irritation from the wound of the joint. A probe passed freely into the joint, touching the surfaces of the bones. The abscess in the popliteal space was opened, and about 20 ounces of pus evacuated. The wounds were then dressed with the glycerate, *i. e.* carbolic acid one part, glycerine three parts, and placed on a splint. She never had after this, whilst under my observation, a single untoward symptom.

She rapidly recovered. The wounds healed; and within a month, she returned to her home, with the knee joint slightly flexed, but with no anchylosis, and evidently no mischief in the cartilages.

This is a most unusual result of a wound of the knee joint, and the favourable termination may, I think to a great extent, be attributed to the antiseptic.

I have said that, to a certain extent, I believe the general health of the majority of our patients is compromised by malaria; that certain tendencies to disease are thereby impressed, and that the phenomena of other disordered conditions are modified and characterised by its presence. I probably express no novel view of this matter, when I say that an ague fit is perhaps one of the least frequent forms in which malaria expresses itself, and that a thousand other symptoms, affecting chiefly the nervous and the vascular systems, indicate its operation as distinctly as the best marked quotidian or tertian could do. It is certainly in my experience that persons may be, so to speak, saturated with

malaria, and yet never have had fever, until the change of climate, or the sea voyage, that was to renovate the broken-down general health, developed it, much to the astonishment of the sufferer; or the accident that to another would have proved slight, gives rise to an attack of fever which prostrated the patient completely. I think that I have remarked the influence of malaria in another instance, which must be within the experience of almost every surgeon who has practised in Bengal, and that is, the great tendency to fever of a paroxysmal character after catheterism—a condition which, when developed, may be called urethral fever.

It is well known to surgeons everywhere, that the passage of a bougie or catheter is sometimes followed by constitutional disturbance very similar to an attack of ague, *viz.* rigors followed by pyrexia and profuse sweating; or if the actual ague fit be absent, there is often a state of lassitude, with muscular pains and debility, loss of appetite, nervous exhaustion, and turbid urine, shewing elimination by the kidneys of phosphates, or nitrogenous detritus a low febrile condition, with a dry tongue and herpetic eruptions about the lips; this condition may last for some days and finally pass away, leaving the patient weak and broken down in physical, as well as mental, strength. These symptoms may occur even when there is no urethral disease, after the passage of an instrument for the purpose of relieving or exploring the bladder, and they may assume any intensity, from that of a simple transient feeling of malaise to the most deadly paroxysm of fever. I say may, because it is not always that any constitutional disturbance follows catheterism, fortunately in a large number of cases, no such untoward result occurs. In certain individuals, nor is it possible that I am aware of to say in whom, it will happen; but in those who suffer from stricture of the urethra, it appears that the proclivity is most marked; and in such cases

the passage of an instrument may give rise to constitutional disturbance of the most serious character, especially, as I am inclined to believe, in the malarious climate of Bengal.

It was supposed by Sedillot that the morbid changes found in cases of ordinary urethral fever were due to septic absorption, and that they only occurred when the mucous membrane of the urethra had been lacerated in the operation. But it can hardly be so, for they are not confined to cases where the urethra has been injured, nor are they frequently found to occur after the most severe operation on the urethra through the perineum. It is, I believe, chiefly in cases of old stricture, that the most formidable symptoms arise, and happily it is rare that the passage of a bougie or catheter is followed in ordinary cases by anything worse than an ague-like paroxysm. But in certain old strictures, where there is a combination of organic obstruction with spasm, and probably a thickened bladder, and kidneys and prostate in an incipient state of disease, we must bear in mind this morbid tendency, and not only endeavour to prepare the patient by rest, sedatives, and other appropriate treatment, but effect the dilatation as gently and carefully as possible, when we commence the treatment. The pathological condition under consideration has been explained to be due either to reflex action from the urethra through the nerve centres, or to septic absorption from the lacerated mucous membrane of the urethra. I cannot altogether accept the latter explanation, although I think it possible that in some cases it may be the case, for the results are generally quite disproportionate to the injury; and in the most striking examples, the symptoms of constitutional disturbance follow too rapidly after the operation to admit of such an explanation. I should rather attribute it to reflex action through the nervous system, and it is perhaps one of the best examples of what our predecessors called "constitutional irritation," expressed in one case by

the mildest, in another by the severest disturbance, and even death. Though the precise method or channel by which this is brought about may not be apparent, it is not more difficult to comprehend than that tetanic spasm of the muscles of the jaws should follow the insertion of a thorn into the finger; convulsions attend the cutting of an infant's tooth; or hæmorrhoids give rise to a pain in the sole of the foot.

The true cause of this urethral fever is to be sought for in common with those that explain the phenomenon of fever generally, such as the cold, the shivering, and the hot fits; and however the first impression may be produced, whether by retention in the blood, or the absorption into it, of some morbid material; or by the irritation of certain peripheral nerve filaments and reflex action through the nerve centres, thus affecting the whole economy, the phenomena and results are similar. I have selected two cases as strikingly illustrative of the worst consequences of this accident; though such are fortunately not frequent, they serve to shew what may occur in the treatment of stricture, and are the severest expressions of a condition which, as in other fevers, may be, in one instance, a mere chill, in another a rigor that precedes death.

Case 1.

A healthy-looking Englishman, J. E. N., aged 38 years, cook of a ship, admitted 14th June 1867, with irritable organic stricture of the urethra.

He was in the First Surgeon's Ward of Medical College Hospital about two years ago for the same complaint, and was discharged relieved after three months' treatment. The stricture was of a very irritable nature, and had great tendency to contract after dilatation. No special treatment was resorted to, except slow dilatation of

the stricture by the bougie; division of the stricture was proposed as the only chance of giving permanent relief, but not submitted to.

Since his discharge the urethra has contracted again. He has been in another hospital for some time, where, he says, the stricture was split by a dilator, but without permanent benefit. The operation was not attended, however, with much constitutional disturbance.

He was in a Liverpool hospital also a few months ago for stricture of urethra, where instruments were passed.

He has been in the habit of passing No. 6 catheter himself, when he feels difficulty in micturating.

15*th*.—The stricture was dilated with Holt's dilator. No. 12 catheter was passed afterwards and urine withdrawn. There was slight difficulty in introducing the catheter on account of the spasm.

R. Quinine, gr. v.
Tr. Opii min. xxv. immediately.
Fomentations every four hours.

6 P. M.—Has passed only a few drops of water since the operation, with much straining. Bladder not distended, slight oozing of blood from the urethra. Has considerable pain and fever, which was preceded by a rigor. Catheterism was gently, but not successfully, tried, on account of spasm.

Diaphoretic mixture, with Tr. Hyoscyami every three hours.
Opium Suppository.
Fomentations every four hours.

16*th*.—Has, with much straining, succeeded in passing a few drops of urine. Complaining of pain all over the abdomen, which is tense, hard and tympanitic. Tongue dryish and furred at the centre. No more bleeding from the urethra. Extremities rather cold. Pulse very weak. Can retain neither food nor medicine.

A catheter was passed, no urine found in the bladder.

Ordered.—Turpentine stupes to the abdomen, and fomentation every two hours.

Opium, gr. i. every three hours.
Castor Oil and Turpentine enema.
Mustard plaster to the abdomen.
20 leeches to the abdomen.
Brandy and Soda-water frequently.

2 P. M.—Leeches have fallen off after drawing blood freely. No more vomiting. Two stools. Pain in the abdomen easier. Pulse very weak. Has not made water—not drowsy. Very restless and thirsty, quite conscious up to the last.

Died at 5 P. M.

Post Mortem Examination.

Urethra dissected out. There was some ecchymosis in the bulbous portion of the urethra, and a small clot of extravasated blood outside it. The stricture was in front of the membranous, extending into the bulbous portion of the urethra. Two old false passages led downwards to the bulb, but did not perforate it; urethra otherwise entire. At the seat of stricture, the urethra was slightly split, but only in the mucous

membrane. Abdomen opened. Small intestines somewhat congested, no peritonitis or effusion of lymph in the abdomen. Both lungs much congested. The right having two or three tubercular deposits in its apex. The bases of both œdematous and not crepitant. Heart adherent to the pericardium by old ligamentous bands. Right ventricle contained some dark fluid blood. Liver enlarged and fatty, weighing 4 lbs. 1 oz. Kidneys much congested, capsules tearing off easily. Bladder thickened, contracted, and empty.

No sign of inflammation or mischief of any kind about the bladder or in the pelvis.

Remarks.

This may be regarded, at first sight, as death caused by uræmia. But the symptoms were not such as to justify the supposition. The fever and great prostration after it, with the tympanitic state of the abdomen, made me think at first that some injury had been done to the peritoneum, and that peritonitis was the result, but the "*post mortem*" shewed that such was not the case, and that there was nothing whatever in the urethra to account for it, excepting through the medium of the nervous system. The perfect consciousness and clearness of intellect until the moment of death, are also opposed to the supposition that death was caused by uræmia.

Remarks by Dr. Colles on the Post Mortem Examination.

Bladder and part of urethra of J. E. N. aged 38, admitted 14th June, with stricture of years' standing. Holt's dilator used on 15th, patient died on 16th.

No peritonitis was found. The heart was united to the pericardium by old adhesions; its muscular tissue was healthy,

no fatty degeneration, valves healthy. Lungs somewhat congested. Kidneys highly engorged with blood; the tubules in the cortical portion full of imperfectly formed epithelial scales. Bladder is healthy; somewhat thickened. Urethra contains two false passages, just in front of the prostate, going a little way beneath the mucous membrane. Nearer the bladder is seen the superficial rupture of the mucous membrane caused by the dilatation.

CASE 2.

P. H. R—, a healthy-looking East Indian trader, aged 41 years, was admitted on the 21st June 1867, with stricture of the urethra of 13 years' duration. He passed water formerly in a very fine stream; but for the last four years in drops; it dribbles day and night soiling his dress.

Never had complete retention of urine; catheterism was once tried about two years ago unsuccessfully. Had no perineal abscess or fistula. On the day of his admission, catheterism was tried, but the instrument could not be introduced into the bladder. The stricture was hard and occupied the bulbous and the front of the membranous portion of the urethra.

6 P. M.—Has had fever since 2 P. M. preceded by a rigour. Passed water more freely; slight bleeding from the urethra.

Effervescing draught, with Tincture of Hyoscyamus every three hours.

22*nd*.—Fever still continuing. Pulse 96. Tongue moist. Bleeding from the urethra has stopped.

Diaphoretic Mixture ʒi.
Potas: Bicarb: gr. x, every three hours.
Milk, sago and soup; iced water.

23*rd*.—Two stools. No fever. Slept well. No thirst. Feels weak, otherwise better in every respect. No. 5 catheter passed into the bladder, commencing from No. 2.

R. Quinine gr. x.
Tr. Opii min. xxv. station.

24*th*.—Has had fever since last night, but no rigors. Passing urine as before in drops.

6 P. M.—No fever now. Had a rigor. Bowels open.

Quinine gr. v. every four hours.

25*th*.—Had shivering again in the night. Pulse 100 full. Two stools. Some pain in the perineum, no swelling. Tongue clean.

Continue Diaphoretic Mixture.
Fomentations to the perineum.

26*th*.—Pulse 100. Temperature 102°. Fever still continuing. No more shivering. One stool.

Continue medicine.

5 P. M.—Passed four thin stools. Complains of a griping pain.

Tr. Opii mini. xxx. statim.

7 P. M.—Pulse 108, very weak. Temperature 102°. Vomited three times. Tongue clean and moist. Has taken very little food. Passed water. Omit all medicines.

Mustard plaster over the stomach.
Beef tea and brandy half an ounce of each every hour, soda-water and ice.

27th.—Two stools in the night passed in bed clothes. Tongue warm and moist. No vomiting. Made urine. Extremities cold. Pulse imperceptible at the wrist. Carotid 140. Respirations 52. Temperature in axilla 102°. Hand 92°. Mouth 102°.

Mustard plaster over the heart.
Brandy ʒiv.
Ether Chloric min: xx.
Spirit Ammo: Aromatic: min: x. every half hour.

4 P. M.—Pulse in the carotid 132. At the wrist *nil*. Temperature 103°. Respiration 48. Two stools consisting of a slight brownish fluid. No more vomiting. Extremities cold. No reaction yet. Quite conscious. Eyes somewhat congested. Occasionally delirious, but for the most part conscious until just before death. Died at midnight.

Post Mortem Examination.

Coats of the bladder hypertrophied. Its inner surface much congested. Ureters dilated and thickened. Kidneys partially congested and fatty. The stricture was in front of the membranous portion of urethra. Lungs healthy, hypostatically congested. There were no clots in the right cavities of the heart. Some atheromatous deposit in the tricuspid and mitral valves. Slight suppuration in the bulbous portion of urethra.

Notes on the Post Mortem Examination by Dr. Colles.

Bladder, urethra, and kidneys of P. H. R—, an East Indian, æt. 41, admitted 21st June, with stricture of 13 years' standing. For four years he has only passed water in drops. No. 2 catheter was passed on 23rd. He died on 27th.

The stricture is seen just at the bulb; there is slight laceration of the mucous membrane, and a shallow old false passage which existed on admission. The bladder is thickened and sacculated; its mucous membrane is full of ridges and pits; the former when the viscus was opened, being of a dark purple colour from intense congestion, with patches of extravasation of blood. Both ureters slightly dilated. Kidneys; cortical structure pale; on pressing papillæ of the tubular portion, some purulent-looking fluid escaped, consisting wholly of large flattened irregular epithelial cells, with large nuclei and nucleoli, and, mixed with these bodies, which may be either free nuclei or pus cells. The structure of the cortical portion shews numerous epithelial cells, mixed with granules, singly or in masses. The liver was pale, rather friable, and with the lobules ill-marked. The cells under the microscope are seen to be full of fat globules (which are also scattered through the parenchyma), and with their nuclei indistinct.

The muscular fibres of the heart were not fatty.

Remarks.

This was a case of urethral fever induced in a strong, healthy-looking man by the simple passage of an instrument. There was no injury. There was evidence neither of pyæmia nor of embolism. Death occurred as in the collapse of any exhaustive disease. It is true that he had diarrhœa the last two days of his life, but this was, I believe, due to the same cause as the collapse generally and when death was approaching.

In neither of these cases was there any injury done to the urethra that could be considered sufficient in itself to cause death, nor were there any indications of pyæmia or embolism. In one case a slight tear in the urethra where the stricture had been split, in the other slight suppuration about the seat of dilata-

tion, but nowhere any inflammatory changes to suggest blood-poisoning or embolism. It is true that both were men more advanced in life than their ages of thirty-eight and forty-one implied, and that in the one case the liver, and in the other the kidneys, were somewhat fatty; but there was nothing in either, that indicated, before the operation was performed, any structural or organic disease, and they both were quite as healthy and strong in appearance as the majority of persons who undergo surgical treatment. In neither case was any violence used in dilating the stricture, nor was there at the time anything to indicate suffering or unusual injury; far less indeed than we frequently see inflicted in the dilatation of obstinate strictures that slowly yield to treatment, and are unattended by constitutional disturbance.

It is evident that catheterism has a tendency to induce this condition of fever through reflex action, and that it may do so, in certain constitutions, especially where old strictures exist in malarious persons, if the viscera be in the least diseased.

I have not recorded any other cases, as it seems to me that these sufficiently illustrate the most serious consequences that may result from catheterism. It is almost our daily experience that the operation is followed by a rigor; in some cases by a severe attack of fever; and I can recall to my memory several instances in which it was followed by serious internal changes; in one an abscess in the wrist joint, in another in the eye-ball, and in a third in the liver. Can we in any case predicate that such constitutional mischief will follow? I fear not! But it behoves the surgeon in all cases to be most careful to use the instrument with as little violence and with as much patience as possible, and to avoid, if he can, inflicting injury on the lining membrane of the urethra. In cases of stricture, and especially those that are old and irritable, rest for some time before and after

the passage of the instrument, with the use of antiperiodics and sedatives may be productive of much benefit; above all, if the first attempt at catheterism have developed the tendency to febrile disturbance, it is right to wait until that has entirely passed away, before any attempt be resumed to pass the instrument. Patience is most essential, and no urgency on the patient's part should induce the surgeon to force the dilatation, which is more likely to be followed by delay than speed. The increase in size of the instruments passed should be gradual, a new number every second or third day. "Festina lente" should be the motto to guide us in such cases, and we may rest assured, it will prove to be the best economy of time as well as of labour.

I have yet another subject to which I wish to request your attention, and I will do it as briefly as possible considering its importance. In the year 1862 I introduced into my wards a new and, as it seemed to me, more simple method of operating for the radical cure of hernia. I had previously practised that which is known as "Wütz er's," or some of its modifications, such as that by Mr. Redfern Davis, with some success; but owing to the complicated apparatus, and the tedium of the treatment, I was led to search for something that might prove as efficacious and, at the same time, more simple. I was indebted for the idea to Mr. Syme's plan of treating hernia, and that I have adopted and now practise, and which I propose to explain, is a modification of Professor Syme's method. I have, up to the end of 1866, operated on 67 cases in the hospital, and have had several since; some of these cases are still under treatment, and those who are capable of being brought before the meeting I submit for your inspection, that you may have an opportunity of seeing the treatment in this stage. I also hope to shew you certain cases that have been operated on some time ago, and have thus satisfactorily

solved the doubtful question whether the operation which at first is successful, can be permanent in its good results.

The object of the operation is to close or so far contract the opening in the abdominal wall on its inner peritoneal aspect that the protrusion of the hernia shall be limited, or altogether prevented; and the mode in which this is accomplished, is by procuring adhesion or contraction of the margin of the opening, whether at the internal ring in oblique inguinal hernia, or of the direct opening in the other form. I believe that unless the operation effect this purpose it is not likely to be successful; and as it is not possible to make certain of always accomplishing this end, a proportion of cases will fail. I find that, out of the 67 cases operated on in the hospital, 11 failed altogether, 9 were only relieved, that is, though not successful altogether, yet were so much improved that the hernia was controllable by a truss; one case only died; and in this instance, death was not due to peritonitis, but to erysipelas affecting the thorax; so that, although no doubt death was indirectly due to the operation, it was not the immediate result of it. Indeed, I know of no operation of importance attended with so little danger. Wound of the peritoneum does not necessarily involve dangerous consequences; more than once I have injured it by puncture, as proved by the free discharge of peritoneal fluid, but no ill result followed; in one case related in the Annals, this happened; the patient recovered and wrote to me from Ceylon some months after to say that he was perfectly well. The recoveries in nearly all the cases have been rapid, and the proportion of success most gratifying; when we consider the importance of a favourable result, it is impossible not to feel satisfied that so simple a surgical proceeding should suffice so often to ensure it.

I have placed the instruments with which I operate on the table for your inspection, and you will see that they are very simple; a plug of wood, with two ligatures, and a curved needle to pass the ligatures through the abdominal wall; a second small piece of wood to knot the ligatures over, completes the apparatus. The method of performing the operation is simple, but it requires some care and confidence for its effective completion. The fore-finger of the left hand oiled, is inserted into the inguinal canal, and the scrotum invaginated is pushed before it up to the internal ring with firm and decided pressure. One ligature, strong and well waxed, is then threaded in the needle, the point of which is insinuated along the palmar aspect of the finger on its radial side, until it has reached the extreme apex of the invagination; it is then forced through the abdominal parietes, and appears on a line with the anterior superior spine of the ilium; about 1½ or 2 inches internal to. The needle is then unthreaded and withdrawn, to be threaded with the second ligature, and again introduced, this time on the other side of the finger to be pushed through the abdominal wall as before; this time transfixing a short distance from the point where it first pierced, but emerging though the same opening in the integument.

The needle is again unthreaded and withdrawn. The plug is now pulled into the canal, the apex being tied firmly against the apex of the invagination, and the threads firmly knotted over the small piece of wood. The operation is thus completed.

The plug is left in situ for three or four days or more, until pus appears to flow freely from besides the ligatures. These are then cut, and the plug withdrawn. The discharge is gently pressed out, a pad and spika bandage are applied, and the patient is kept in bed and cautioned not to strain at stool for some days;

as soon as the wounds have cicatrized, a truss may be applied, which should be worn for some months, especially when any exertion is made; it may gradually be left off when the tissues have become firmly consolidated. The time occupied in treatment varies from a month to six weeks in ordinary cases; if there be much suppuration, and that have burrowed among the abdominal muscles, there may be delay, and counter-openings may be necessary, but such cases are the exception. The only one was that of a native who was attacked with erysipelas and died of pyæmia, the result of cellulitis.

During the period of the insertion of the plug, the bowels generally remain confined, and indeed for several days after its removal; should they act, the patient must be warned against efforts at straining.

I find, by referring to the records of my wards, that I have, up to the end of 1867, operated sixty-seven times. In 1862 fifteen cases, of which ten succeeded, one was relieved, and four failed. In 1863 eight cases, of which five were successful, two were only relieved, and one failed. In 1864 eight cases, of which six were successful, two relieved. In 1865 fourteen cases, of which ten were successful, three relieved, one failed. In 1866 seven cases, five successful, two failed. In 1867 fifteen cases, of which ten were successful, one was relieved, three failed, and one died.

The fatal case, Ram Coomar Doss, was admitted on the 27th February 1867.

Ram Coomar Doss admitted on the 27th February 1867, with inguinal hernia of left side; operated on the 5th March 1867, died on the 26th March 1867 of erysipelas. Extensive

suppuration was set up between the muscles. Erysipelas took place in the chest, the cellular tissue sloughed, and free incisions were made to expose the sloughy tissues. After death, consolidation was found of two lower lobes of right lung, and one large pyæmic patch of upper lobe. There were no cardiac coagula.

There was thus a total of sixty-seven cases, of which forty-six were apparently successful; nine were relieved; eleven failed altogether, and one died.

Before discharging any of those returned as cured, they were submitted to the severest tests, lifting weights, climbing up a pole, jumping, running up and down-stairs without a truss; and unless they were able to bear this test, they were not considered as cured. In many of these I fear the hernia may have returned afterwards. But I have seen some after a long interval, and am happy to say there can be no doubt that, in these cases, the improvement is permanent.

I have placed on the table a specimen illustrative of the mode in which the occlusion is effected; it was the case of a French sailor, who had been operated on some months before he met with an accident, which caused his death. You will see that the internal ring is perfectly closed. I have also brought into the room several patients who are recovering from the operation, and so far they promise to do well. I have also some persons who were operated on at different periods of time past, and you will be able to judge by them how far we may, in favourable cases, hope to succeed.

I would here repeat what I have often before stated that I regard the operation as one of a somewhat uncertain character as

to its results, but offering a sufficient prospect of success to warrant the surgeon, and justify the patient, in attempting it.

I must not detain you further, and thank you for giving me your attention so long.

SANITARY REPORT OF THE EUROPEAN FEMALE ORPHAN ASYLUM FOR THE PAST SIX YEARS, COMMENCING JANUARY, 1863.

By Joseph Fayrer, M. D., C. S. I.

During the past six years, the monthly average of each year of the number of girls in the school has been, in round numbers—

In 1863—68
1864—70
1865—67
1866—66
1867—59
1868—60

The ages vary from one to eighteen years, the great proportion being between the ages of 5 and 16.

The sanitary history of this Institution is as gratifying as it has been during previous years, and is not less remarkable for the absence of disease, than for the generally vigorous state of health enjoyed by the inmates.

The abstracts of admission into hospital show that there has been great immunity from epidemic disease of any severity, and the very small mortality, as well as the small amount of sickness, prove that the European child under proper hygienic

conditions, and careful physical training, may live and thrive in the plains of Bengal almost as well as in its native country.

It is not merely in the absence of any serious disease and the low death-rate that this is manifested, but in the vigorous healthy appearance of the children generally.

This was remarkably noticeable at the last yearly distribution of prizes, when the girls were assembled for the purpose, and it is no exaggeration to say that their appearance on that occasion would have borne favorable contrast with that of the girls of any similar Institution in Europe.

For this very satisfactory state of matters, the thanks of all interested in the Institution are due to the very careful and judicious management of the Ladies Committee, who have supervised the Institution, and especially to the Lady Superintendents who have under their directions so vigilantly watched over the moral, mental, and physical education of their charges. It is impossible too highly to estimate the advantages of such management, and I am glad to have this opportunity of recording my impressions on the subject and of declaring how much the high state of efficiency of the school, as well as the continued good health of its inmates, is due to the unwearied exertions and admirable administration of the past and present Lady Superintendents.

There are several points of interest in the sanitary history of this school that might be considered, but I shall only advert to those which are most appropriate to this brief report, and which appear most interesting to those to whom it is addressed, the friends and guardians of the children, and the supporters of the school.

And first I would remark on the absence of any severe form of epidemic disease. In looking over the monthly abstracts of admissions into hospital, I find that there has not been a single case of cholera; and that the only death from dysentery, which is the disease peculiarly to be dreaded in Calcutta, was that of——aged 5 years, which occurred in 1863, and this was rather a case of dysenteric diarrhœa in a naturally delicate child.

With reference to the class of disorders peculiar to early female life, I may say on this head that nothing could be more favourable, and that although there be certain indications of the influence of climate in either accelerating or modifying the usual functions, the state of health of the girls is, in this respect, most satisfactory.

The disease returned as measles was a rubeoloid fever of a mild form, slightly contagious, shewing little tendency to spread which has occurred from time to time, and has not been followed in any case by those grave sequelæ that so frequently result from measles in Europe.

Two cases of modified small-pox only are recorded, and there has never been any tendency in the disease to spread.

The children have all been protected by vaccination, which has succeeded admirably in all upon whom it had not previously been tried.

A few cases of genuine typhoid or enteric fever have occurred, one of which proved fatal in 1868, the case of——aged 5. The other forms of fever have been of the simple continued form, or mild manifestations of the influence of malaria.

The same may be said of the cases of convulsions, a few of which have occurred.

Hooping Cough has been altogether absent.

A few cases of skin disease, but those of a simple and tractable kind, have occurred.

As might be expected among so large a number of children, strumous disease has not been altogether absent, and one death from pyæmia in the Medical College hospital after amputation of the thigh, the other thigh having been previously amputated a year before, for extensive disease of the knee joint; and another from marasmus, the result of strumous disease of the mesenteric glands, have been recorded.

Of acute inflammatory disease, whether of the head, chest, or abdomen, there has been almost none.

Diseases of the liver or spleen, whether from malaria or other causes, have been also singularly few, if not altogether absent.

Pulmonary and Bronchial complaints have been very few and slight, with the exception of one case of capillary bronchitis with atalectasis in a child aged 14 months, that came in ill and died a week after admission, and a few slight catarrhal attacks involving the bronchial tubes, none are recorded. Indeed the mildness of disease, and the absence of those forms of it, with few exceptions, that characterize the Indian climate, has been remarkable. The number of children under 2 years of age has been small, and therefore it is not to be expected that the diseases of first dentition

should occupy a marked place; indeed they have been almost altogether absent. The cases of convulsions recorded were due more probably to either centric irritation, or the influence of malaria on the nerve centres. But the evidences of malaria have been, on the whole I am bound to say, very slight, as may be readily seen in the fresh color and red lips of the children.

I would here remark in proof of the improved sanitary condition of the girls, that lateral spinal curvature, of which ten years ago there were several cases, has now disappeared from the school.

There can be no doubt that the very satisfactory state of health enjoyed by these children is mainly due to the excellent hygienic arrangements, and the moral as well as physical discipline, under which they live.

They inhabit a well-built, ventilated, and commodious house, surrounded by a large open space of garden or ground, in which they find amusement and healthy recreation in gardening, or play in the open air. The nature of their occupations is such as to conduce to their moral, alike with their physical, well-being. They have sufficient mental labor to develop without fatiguing their intellects, and of a character suited to the sphere of life in which they are intended to live. With this is combined methodic occupation of a fitting character, regular hours, a good but plain and nutritious diet; and all that could tend to injure the health from constant or overwork of any special kind, is strictly avoided.

The following statement of their daily occupations, diet, and recreation by the Lady Superintendent explains how

the time is passed, and it is a system that might well be followed by other educational establishments here and elsewhere.

The conditions of a healthy mind in a healthy body, are here all existent, and the results shew how materially a just combination of mental and physical training will, when supported by example in those whose duty it is to teach, conduce even in the climate of Bengal, to ensure a high standard of moral and physical health.

There are some points upon which I would note, that if the means of the Institution admitted, improvements might be made. Increased sleeping accommodation is the most important, for at present they are certainly somewhat overcrowded; and were it not for the greatest attention being paid to the ventilation of the dormitories, this crowding would produce its usual effects.

The verandah in the front of the house should also be covered in with sun-shades, and if possible a covered playground should be provided for the children for exercise and play in the hot weather. These, however important, I do not insist on as absolutely essential at present, but in the event of the acquisition of the means, through the liberality of any of the admirers of this truly valuable Institution, I do not think the money could be applied to a better purpose.

In reference to the question of growth and development of the European child brought up and educated in Bengal,

I may give the following illustration from the average measurements of five girls at 16 years of age which was—

Height, 5·4¼ inches
Weight, 7 stone 11 lbs.
Girth of chest, 34·7 inches.
Girth of Hip, 35·7 inches.

A stature and weight which would probably not be much exceeded in Europe.

Appended are the Monthly Abstracts of Disease for the past six years, and the Yearly Abstract of the numbers treated, also the Lady Superintendent's Memo. of the Diet and Occupations of the children.

MONTHLY ABSTRACT FOR JANUARY, 1863.

Diseases.	Remaining.	Admitted.	Total.	Discharged cured.	Died.	Remaining.	Total.	Remarks.
Dysenteria ...	1	0	1	0	1	0	0	
Varicella ...	0	1	1	0	0	1	1	
Vaccinia ...	0	2	2	2	0	0	2	
Furunculus ...	0	1	1	1	0	0	1	
Total in Month...	1	4	5	3	1	1	4	
FEBRUARY, 1863.								
Varicella ...	1	3	4	4	0	0	4	
Tumor ...	0	1	1	1	0	0	1	
Catarrh ...	0	2	2	1	0	1	2	
Febricula ...	0	1	1	1	0	0	1	
Rubeoloid ...	0	1	1	0	0	1	1	
Total in Month...	1	8	9	7	0	2	9	
MARCH, 1863.								
Rubeoloid ...	1	3	4	4	0	0	4	
Catarrh ...	1	0	1	1	0	0	1	
Diarrhœa ...	0	1	1	0	0	1	1	
Total in Month...	2	4	6	5	0	1	6	

APRIL, 1863.

Diseases.	Remaining.	Admitted.	Total.	Discharged cured.	Died.	Remaining.	Total.	Remarks.
Diarrhœa ...	1	1	2	2	0	0	2	
Rubeoloid ...	0	5	5	5	0	0	5	
Furunculus ...	0	1	1	1	0	0	1	
Apthæ ...	0	1	1	0	0	1	1	
Total in Month...	1	8	9	8	0	1	9	
MAY, 1863.								
Vulnus Capitis ...	0	1	1	1	0	0	1	
Diarrhœa ...	0	1	1	1	0	0	1	
Adenitis ...	0	1	1	1	0	0	1	
Ædema ...	0	1	1	1	0	0	1	
Icterus ...	0	1	1	1	0	0	1	
Dyspepsia ...	0	7	7	7	0	0	7	
Furunculus ...	0	1	1	1	0	0	1	
Conjunctivitis ...	0	1	1	1	0	0	1	
Total in Month...	0	14	14	14	0	0	14	

JUNE, 1863.

Diseases.	Remaining.	Admitted.	Total.	Discharged cured.	Died.	Remaining.	Total.	Remarks.
Dyspepsia ...	0	2	2	2	0	0	2	
Torticollis ...	0	1	1	1	0	0	1	
Total in Month...	0	3	3	3	0	0	3	

JULY, 1863.

Diarrhœa ...	0	1	1	1	0	0	1
Catarrh ...	0	10	10	10	0	0	10
Total in Month...	0	11	11	11	0	0	11

AUGUST, 1863.

Febris, c. c. ...	0	2	2	2	0	0	2
Febricula ...	0	2	2	2	0	0	2
Dyspepsia ...	0	1	1	1	0	0	1
Total in Month...	0	5	5	5	0	0	5

SEPTEMBER, 1863.

Diseases.	Remaining.	Admitted.	Total.	Discharged cured.	Died.	Remaining.	Total.	Remarks.
Febris, c. c. ...	0	10	10	6	0	4	10	
Lumbrici ...	0	1	1	1	0	0	1	
Diarrhœa ...	0	1	1	1	0	0	1	
Total in Month ...	0	12	12	8	0	4	12	

OCTOBER, 1863.

Febris, c. c. ...	4	7	11	11	0	0	11
Icterus ...	0	1	1	1	0	0	1
Convulsio ...	0	1	1	0	0	1	1
Dyspepsia ...	0	2	2	2	0	0	2
Pleurodynia ...	0	1	1	0	0	1	1
Diarrhœa ...	0	0	0	0	0	0	0
Total in Month ...	4	12	16	14	0	2	16

NOVEMBER, 1863.

Diseases.	Remaining.	Admitted.	Total.	Discharged cured.	Died.	Remaining.	Total.	Remarks.
Convulsions ...	1	0	1	1	0	0	1	
Pleurodynia ...	1	0	1	1	0	0	1	
Dysenteria ...	0	2	2	1	0	1	2	
Dyspepsia ...	0	1	1	0	0	1	1	
Febricula ...	0	1	1	1	0	0	1	
Total in Month ...	2	4	6	4	0	2	6	

DECEMBER, 1863.

Dyspepsia ...	1	0	1	1	0	0	1	
Dysenteria ...	1	1	2	2	0	0	2	
Catarrh ...	0	1	1	1	0	0	1	
Total in Month ...	2	2	4	4	0	0	4	

JANUARY, 1864.

Convulsions ...	0	1	1	0	0	1	1	
Dysenteria ...	0	1	1	1	0	0	1	
Herpes ...	0	1	1	0	0	1	1	
Total in Month ...	0	3	3	1	0	2	3	

FEBRUARY, 1864.

Diseases.	Remaining.	Admitted.	Total.	Discharged cured.	Died.	Remaining.	Total.	Remarks.
Convulsio et Dysenteria	1	0	1	1	0	0	1	
Herpes ...	1	17	18	9	0	9	18	
Total in Month...	2	17	19	10	0	9	19	

MARCH, 1864.

Herpes ...	9	13	22	12	0	10	22	
Cynanche ...	0	1	1	1	0	0	1	
Diarrhœa ...	0	2	2	2	0	0	2	
Dyspepsia ...	0	1	1	1	0	0	0	
Febris, C. C. ...	0	1	1	1	0	0	0	
Cephalalgia ...	0	1	1	1	0	0	0	
Total in Month...	9	19	28	18	0	10	28	

APRIL, 1864.

Diseases.	Remaining.	Admitted.	Total.	Discharged cured.	Died.	Remaining.	Total.	Remarks.
Herpes ...	10	2	12	10	0	2	12	
Gum-boils ...	0	2	2	2	0	0	2	
Curvature of Spine ...	0	1	1	1	0	0	1	
"	0	1	1	1	0	0	1	
Total in Month ...	10	6	16	14	0	2	16	

MAY, 1864.

Herpes ...	2	0	2	2	0	0	2	
Total in Month...	2	0	2	2	0	0	2	

JUNE, 1864.

No sickness of consequence.

JULY, 1864.

Diseases.	Remaining.	Admitted.	Total.	Discharged cured.	Died.	Remaining.	Total.	Remarks.
Diarrhœa ...	0	1	1	1	0	0	1	
Dysenteria ...	0	3	3	3	0	0	3	
Total in Month...	0	4	4	4	0	0	4	

AUGUST, 1864.

Diarrhœa ...	0	6	6	5	0	1	6	
Total in Month...	0	6	6	5	0	1	6	

SEPTEMBER, 1864.

Diarrhœa ...	1	0	1	1	0	0	1	
Total in Month ...	1	0	1	1	0	0	1	

OCTOBER, 1864.

Tuberculosis Mesenterica	0	1	1	0	0	1	1	
Total in Month ...	0	1	1	0	0	1	1	

NOVEMBER, 1864.

Diseases.	Remaining.	Admitted.	Total.	Discharged cured.	Died.	Remaining.	Total.	Remarks.
Tuberculosis Mesenterica	1	0	1	0	0	1	1	
Total in Month...	1	0	1	0	0	1	1	

DECEMBER, 1864.

Tuberculosis Mesenterica	1	0	1	0	0	1	1	
Total in Month ..	1	0	1	0	0	1	1	

JANUARY, 1865.

Tuberculosis Mesenterica	1	0	1	0	0	1	1	
Herpes ...	0	1	1	0	0	1	1	
Total in Month...	1	1	2	0	0	2	2	

FEBRUARY, 1865.

Diseases.	Remaining.	Admitted.	Total.	Discharged cured.	Died.	Remaining.	Total.	Remarks.
Tuberculosis Mesenterica	1	0	1	0	0	1	1	
Herpes ...	1	3	4	0	0	4	4	
Febris ...	0	2	2	2	0	0	2	
Apthæ ...	0	1	1	1	0	0	1	
Operation on finger ...	0	1	1	0	0	1	1	Fingers congenitally united divided.
Total in Month .	2	7	9	3	0	6	9	

MARCH, 1865.

Tuberculosis Mesenterica	1	0	1	1	0	0	1	
Herpes ...	4	1	5	4	0	1	5	
Operation on finger ...	1	0	1	1	0	0	1	
Catarrh ...	0	1	1	1	0	0	1	
Varioloid ...	0	2	2	2	0	0	2	
Diarrhœa ...	0	1	1	0	0	1	1	
Total in Month...	6	5	11	9	0	2	11	

APRIL, 1865.

Diseases.	Remaining.	Admitted.	Total.	Discharged cured.	Died.	Remaining.	Total.	Remarks.
Herpes ...	1	9	10	9	0	1	10	
Diarrhœa ...	1	0	1	0	0	1	1	
Tooth Extracted ...	0	1	1	1	0	0	1	
Total in Month ...	2	10	12	10	0	2	12	
MAY, 1865.								
Herpes ...	1	1	2	2	0	0	2	
Diarrhœa ...	1	0	1	1	0	0	1	
Febris ...	0	2	2	2	0	0	2	
Total in Month ...	2	3	5	5	0	0	5	
JUNE, 1865.								
Febris ...	0	6	6	0	0	6	6	
Furunculus ..	0	2	2	0	0	2	2	
Stomatitis ...	0	1	1	0	0	1	1	
Total in Month ...	0	9	9	0	0	9	9	

JULY, 1865.

Diseases.	Remaining.	Admitted.	Total.	Discharged cured.	Died.	Remaining.	Total.	Remarks.
Febris ...	6	2	8	8	0	0	8	
Furunculus ...	2	4	6	5	0	1	6	
Stomatitis ...	1	0	1	1	0	0	1	
Total in Month ...	9	6	15	14	0	1	15	
AUGUST, 1865.								
Furunculus ...	1	1	2	2	0	0	2	
Diarrhœa ...	0	7	7	3	0	4	7	
Dysentery ...	0	3	3	2	0	1	3	
Total in Month ...	1	11	12	7	0	5	12	
SEPTEMBER, 1865.								
Diarrhœa ...	4	2	6	6	0	0	6	
Dysenteria ...	1	0	1	1	0	0	1	
Furunculus ...	0	1	1	1	0	0	1	
Stomatitis ...	0	1	1	1	0	0	1	
Conjunctivitis ...	0	1	1	1	0	0	1	
Total in Month ...	5	5	10	10	0	0	10	

OCTOBER, 1865.

Diseases.	Remaining.	Admitted.	Total.	Discharged cured.	Died.	Remaining.	Total.	Remarks.
Conjunctivitis ...	0	1	1	1	0	0	1	
Furunculus ...	0	5	5	5	0	0	5	
Dysenteria ...	0	1	1	0	0	1	1	
Stomatitis ...	0	1	1	1	0	0	1	
Marasmus ...	0	1	1	0	0	1	1	
Total in Month ...	0	9	9	7	0	2	9	

NOVEMBER, 1865.

Dysentery ...	1	0	1	1	0	0	1	
Marasmus ...	1	0	1	0	0	1	1	
Febris ...	0	1	1	1	0	0	1	
Febricula ...	0	1	1	1	0	0	1	
Furunculus ...	0	1	1	1	0	0	1	
Conjunctivitis ...	0	1	1	0	0	0	1	
Herpes ...	0	1	1	1	0	0	1	
Diarrhœa ...	0	2	2	1	0	1	2	
Total in Month ...	2	7	9	6	0	2	9	

DECEMBER, 1865.

Diseases.	Remaining.	Admitted.	Total.	Discharged cured.	Died.	Remaining.	Total.	Remarks.
Marasmus ...	1	0	1	0	1	0	1	
Diarrhœa ...	1	3	4	4	0	0	4	
Fever ...	0	3	3	3	0	0	3	
Total in Month ...	2	6	8	7	1	0	8	

JANUARY, 1866.

No sickness this month.

FEBRUARY, 1866.

Abscess ...	0	1	1	1	0	0	1	
Febris ...	0	1	1	1	0	0	1	
Marasmus ...	0	1	1	0	0	1	1	Left for England.
Total in Month ...	0	3	3	2	0	1	3	

MARCH, 1866.

Diseases.	Remaining.	Admitted.	Total.	Discharged. cured.	Died.	Remaining.	Total.	Remarks.
Diarrhœa ...	0	4	4	4	0	0	4	
Febris ...	0	3	3	3	0	0	3	Simple fever of a few days' duration.
Ulcus ...	0	1	1	0	0	1	1	
Total in Month ...	0	8	8	7	0	1	8	

APRIL, 1866.

Ulcus ...	1	0	1	0	0	1	1	
Diarrhœa ...	0	3	3	3	0	0	3	
Febris ...	0	2	2	1	0	1	2	Simple fever of a few days' duration.
Total in Month ...	1	5	6	4	0	2	6	

MAY, 1866.

Ulcus ...	1	0	1	0	0	1	1	
Febris ...	1	2	3	1	0	2	3	1 Case Typhoid.
Diarrhœa ...	0	1	1	1	0	0	1	
Dysenteria ...	0	1	1	0	0	1	1	
Total in Month ...	2	4	6	2	0	4	6	

JUNE, 1866.

Diseases.	Remaining.	Admitted.	Total.	Discharged cured.	Died.	Remaining.	Total.	Remarks.
Febris Typhoid ...	1	1	2	0	0	2	2	
Febris, c. c. ...	1	0	1	1	0	0	1	
Dysenteria ...	1	0	1	0	0	1	1	
Diarrhœa ...	0	2	2	1	0	1	2	
Total in Month ...	3	3	6	2	0	4	6	

JULY, 1866.

Febris Typhoid ...	2	0	2	1	0	1	2	
Dysenteria ...	1	0	1	1	0	0	1	
Febris, c. c. ...	0	3	3	2	0	1	3	
Diarrhœa ...	1	17	18	18	0	0	18	
Total in Month ...	4	20	24	22	0	2	24	

AUGUST, 1866.

Febris Typhoid ...	1	0	1	1	0	0	1	
Febris, c. c. ...	1	3	4	3	0	1	4	
Diarrhœa ...	0	13	13	11	0	2	13	
Total in Month ...	2	16	18	15	0	3	18	

SEPTEMBER, 1866.

Diseases.	Remaining	Admitted.	Total.	Discharged cured.	Died.	Remaining.	Total.	Remarks.
Febris, c. c. ...	1	2	3	3	0	0	3	
Diarrhœa ...	2	0	2	2	0	0	2	
Total in Month ...	3	2	5	5	0	0	5	

OCTOBER, 1866.

Diarrhœa ...	0	2	2	2	0	0	2
Furunculi ...	0	3	3	3	0	0	3
Febris ...	0	2	2	2	0	0	2
Dysenteria ...	0	1	1	0	0	1	1
Total in Month ...	0	8	8	7	0	1	8

NOVEMBER, 1866.

Dysenteria ...	1	0	1	0	0	1	1
Total in Month ...	1	0	1	0	0	1	1

DECEMBER, 1866.

Diseases.	Remaining.	Admitted.	Total.	Discharged cured.	Died.	Remaining.	Total.	Remarks.
Dysenteria ...	1	0	1	1	0	0	1	
Febris ...	0	1	1	1	0	0	1	
Total in Month ...	1	1	2	2	0	0	2	

JANUARY, 1867.

No sickness this month.

FEBRUARY, 1867.

Febris ...	0	8	8	8	0	0	8
Total in Month ...	0	8	8	8	0	0	8

MARCH, 1867.

Rubeola ...	0	15	15	11	0	4	15	H. D., died 7th March, in Medical College, of Pyæmia, after amputation of thigh.
Total in Month . .	0	15	15	11	0	4	15	

APRIL, 1867.

Diseases.	Remaining.	Admitted.	Total.	Discharged cured.	Died.	Remaining.	Total.	Remarks.
Rubeola ...	4	5	9	8	0	1	9	
Total in Month ...	4	5	9	8	0	1	9	

MAY, 1867.

Rubeola ...	1	0	1	1	0	0	1
Febris ...	0	1	1	1	0	0	1
Furunculi ...	0	3	3	2	0	1	3
Total in Month ...	1	4	5	4	0	1	5

JUNE, 1867.

Furunculi ...	1	3	4	4	0	0	4
Diarrhœa ...	0	4	4	2	0	2	4
Anæmia ...	0	1	1	1	0	0	1
Total in Month ...	1	8	9	7	0	2	9

JULY, 1867.

Diseases.	Remaining.	Admitted.	Total.	Discharged cured.	Died.	Remaining.	Total.	Remarks.
Diarrhœa ...	2	0	2	2	0	0	2	
Febris ...	0	4	4	4	0	0	4	
Furunculi ...	0	2	2	1	0	1	2	
Total in Month...	2	6	8	7	0	1	8	

AUGUST, 1867.

Furunculi ...	1	1	2	1	0	0	2
Debilitas ...	0	1	1	1	0	0	1
Total in Month...	1	2	3	2	0	0	3

SEPTEMBER, 1867.

Scabies ...	0	1	1	0	0	1	1
Total in Month...	0	1	1	0	0	1	1

OCTOBER, 1867.

Diseases.	Remaining.	Admitted.	Total.	Discharged cured.	Died.	Remaining.	Total.	Remarks.
Scabies ...	1	0	1	1	0	0	1	
Subluxatio ..	0	1	1	1	0	0	1	
Diarrhœa ...	0	1	1	1	0	0	1	
Total in Month...	1	2	3	3	0	0	3	
NOVEMBER, 1867.								
Catarrh ..	0	6	6	6	0	0	6	
Dyspepsia ...	0	2	2	2	0	0	2	
Febris ...	0	1	1	1	0	0	1	
Total in Month...	0	9	9	9	0	0	9	
DECEMBER, 1867.								
Scabies ...	0	1	1	0	0	1	1	
Total in Month...	0	1	1	0	0	1	1	

JANUARY, 1868.

Diseases.	Remaining	Admitted.	Total.	Discharged cured.	Died.	Remaining.	Total.	Remarks.
Scabies ...	1	1	2	2	0	0	2	
Febris ...	0	1	1	1	0	0	1	
Cynanche ...	0	2	2	2	0	0	2	
Adenitis ...	0	1	1	0	0	1	1	
Total in Month ...	1	5	6	5	0	1	6	
FEBRUARY, 1868.								
Adenitis ...	1	0	1	1	0	0	1	
Febris ...	0	2	2	2	0	0	2	
Diarrhœa ...	0	1	1	0	0	1	1	
Total in Month ...	1	3	4	3	0	1	4	
MARCH, 1868.								
Diarrhœa ...	1	1	2	2	0	0	2	
Febris ...	0	3	3	3	0	0	3	
Furunculi ..	0	1	1	1	0	0	1	
Catarrh ...	0	1	1	0	0	1	1	
Total in Month ...	1	6	7	6	0	1	7	

APRIL, 1868.

Diseases.	Remaining.	Admitted.	Total.	Discharged cured.	Died.	Remaining.	Total.	Remarks.
Catarrh ...	1	1	2	2	0	0	2	
Total in Month ...	1	1	2	2	0	0	2	

MAY, 1868.

No sickness this month.

JUNE, 1868.

Catarrh ...	0	1	1	1	0	0	1
Ulcus ...	0	1	1	1	0	0	1
Vulnus Capitis ...	0	1	1	0	0	1	1
Debilitas ...	0	1	1	0	0	1	1
Total in Month ...	0	4	4	2	0	2	4

JULY, 1868.

Diseases.	Remaining.	Admitted.	Total.	Discharged cured.	Died.	Remaining.	Total.	Remarks.
Vulnus Capitis ...	1	0	1	1	0	0	1	
Debilitas ...	1	0	1	1	0	0	1	
Febris Typhoid ..	0	1	1	0	1	0	1	
Diarrhœa ...	0	1	1	1	0	0	1	
Furunculus ...	0	1	1	1	0	0	1	
Total in Month ...	2	3	5	4	1	0	5	

AUGUST, 1868.

Febris ...	0	1	1	1	0	0	1
Furunculus ...	0	1	1	1	0	0	1
Ulcus ...	0	1	1	1	0	0	1
Abscess ...	0	1	1	1	0	0	1
Sprained Ankle ...	0	1	1	1	0	0	1
Vulnus Digiti ...	0	1	1	1	0	0	1
Conjunctivitis ...	0	1	1	0	0	1	1
Debilitas ...	0	1	1	0	0	1	1
Diarrhœa ...	0	1	1	0	0	1	1
Total in Month ..	0	9	9	6	0	3	9

SEPTEMBER, 1868.

Diseases.	Remaining.	Admitted.	Total.	Discharged cured.	Died.	Remaining.	Total.	Remarks.
Conjunctivitis ...	1	0	1	1	0	0	1	
Debilitas ...	1	0	1	1	0	0	1	
Diarrhœa ...	1	1	2	2	0	0	2	
Catarrh ...	0	1	1	1	0	0	1	
Œdema ...	0	1	1	1	0	0	1	
Sprained Ankle ...	0	1	1	1	0	0	1	
Febris ...	0	1	1	0	0	1	1	
Total in Month ...	3	5	8	7	0	1	8	

OCTOBER, 1868.

Febris ...	1	0	1	1	0	0	1	
Total in Month ...	1	0	1	1	0	0	1	

NOVEMBER, 1868.

Bronchitis ...	0	1	1	0	1	0	1	
Pneumonia ...	0	1	1	0	0	1	1	
Furunculus ...	0	1	1	1	0	0	1	
Total in Month ...	0	2	2	1	1	1	2	

DECEMBER, 1868.

Diseases.	Remaining.	Admitted.	Total.	Discharged cured.	Died.	Remaining.	Total.	Remarks.
Pneumonia ...	1	0	1	1	0	0	1	
Dysenteria ...	0	1	1	1	0	0	1	
Total in Month ...	1	1	2	2	0	0	2	

ABSTRACT OF SICK FOR THE YEAR 1863.

Months.	Remaining.	Admitted.	Total.	Discharged cured.	Died.	Remaining.	Total.	Remarks. Girls in School.
January ...	1	4	5	3	1	1	5	
February ..	1	8	9	7	0	2	9	
March ...	2	4	6	5	0	1	6	
April ...	1	8	9	8	0	1	9	
May ...	0	18	18	18	0	0	18	
June ...	0	3	3	3	0	0	3	
July ...	0	11	11	11	0	0	11	
August ..	0	5	5	5	0	0	5	
September.	0	12	12	8	0	4	12	
October ...	4	12	16	14	0	2	16	
November..	2	4	6	4	0	2	6	66
December..	2	2	4	4	0	0	4	70
Total ...	13	91	104	90	1	13	104	68 Daily average.

1864.

January ...	0	3	3	1	0	2	3	37
February ...	2	17	19	10	0	9	19	71
March ...	9	19	28	18	0	10	28	73
April ...	10	6	16	14	0	2	16	73
May ...	2	0	2	2	0	0	2	73
June ...	0	0	0	0	0	0	0	73
July ...	0	4	4	4	0	0	4	70
August ...	0	6	6	5	0	1	6	73
September	1	0	1	1	0	0	1	72
October ...	0	1	1	0	0	1	1	73
November	1	0	1	0	0	1	1	74
December..	1	0	1	0	0	1	1	73
Total ...	26	56	82	55	0	27	82	58 Daily average.

1865.

Months.	Remaining.	Admitted.	Total.	Discharged cured.	Died.	Remaining.	Total.	Remarks. Girls in School.
January ...	1	1	2	0	0	2	2	56
February .	2	7	9	3	0	6	9	65
March ...	6	5	11	9	0	2	11	66
April ...	2	10	12	10	0	2	12	66
May ...	2	3	5	5	0	0	5	67
June ...	0	9	9	0	0	9	9	69
July ...	9	6	15	14	0	1	15	70
August ...	1	11	12	7	0	5	12	69
September.	5	5	10	10	0	0	10	69
October ...	0	9	9	7	0	2	9	70
November..	2	7	9	6	0	2	9	70
December..	2	6	8	7	1	0	8	69
Total...	32	78	111	78	1	31	111	67 Daily average.

1866.

January ...	No sickness this month.							
February ..	0	3	3	3	0	0	3	63
March ...	0	8	8	7	0	1	8	63
April ...	1	5	6	4	0	2	6	61
May ...	2	4	6	2	0	3	6	61
June ...	3	3	6	2	0	4	6	63
July ...	4	20	24	22	0	2	24	63
August ..	2	16	18	15	0	3	18	63
September.	3	2	5	5	0	0	5	62
October ...	0	8	8	7	0	1	8	63
November..	1	0	1	0	0	1	1	61
December..	1	1	2	2	0	0	2	61
Total...	17	70	87	69	0	17	87	61 Daily average.

1867.

Months.	Remaining.	Admitted.	Total.	Discharged cured.	Died.	Remaining.	Total.	Remarks. Girls in School.
January ...	No sickness this month.							
February...	0	8	8	8	0	0	8	58
March ...	0	15	15	11	0	4	15	58
April ...	4	5	9	8	0	1	9	57
May ...	1	4	5	4	0	1	5	57
June ...	1	8	9	7	0	2	9	60
July ...	2	6	8	7	0	1	8	60
August ...	1	2	3	3	0	0	3	59
September.	0	1	1	0	0	1	1	59
October ...	1	2	3	3	0	0	3	58
November..	0	9	9	9	0	0	9	58
December...	0	1	1	0	0	1	1	58
Total...	10	61	71	60	0	11	71	59 Daily average.

1868.

January ...	1	5	6	5	0	1	6	55
February...	1	3	4	3	0	1	4	59
March ...	1	6	7	6	0	1	7	59
April ...	1	1	2	2	0	0	2	61
May ...	No sickness this month.							61
June ...	0	4	4	2	0	2	4	61
July ...	2	3	5	4	1	0	5	61
August ...	0	9	9	6	0	3	9	60
September.	3	5	8	7	0	1	8	61
October ...	1	0	1	1	0	0	1	61
November..	0	3	3	1	1	1	3	62
December..	1	1	2	2	0	0	2	63
Total...	11	40	51	39	2	10	51	60 Daily average.

MEMO. BY LADY SUPERINTENDENT.

DIET:

Three regular meals in the day and bread early in the morning.

Breakfast ½ past 9. Bread and milk.

Dinner ½ past 2. Meat every day for Girls above 12, and three times a week for those under. Dhall and rice, &c. Fruit three days in the week.

During last year the meat was plainly cooked instead of curried, and I think the Children have benefited by it.

Supper ½ past 7. Bread and milk. The milk is pure—no water with it.

HABITS:

All through the year the children rise at 5 A. M., bathe in cold water, and then take exercise in the compound.

OCCUPATION:

During the Cold Season, school commences at 7, and in the Hot Weather, at 6 A. M.

Five hours of regular school and one of study (preparing Lessons) through the day.

During the hours of recreation skipping and active play is encouraged, and, as a rule, the children are as active and fond of a good romp as children in England. Indoor exercise consists of cleaning the house which is all done by the girls.

Calisthenic exercises every morning.

The following Table shows the ages at which each of twenty-seven girls commenced to menstruate. These girls are all of pure European lineage, such being a condition of their admission into the Asylum. It appears that seventeen were born in India, two in Ceylon, six in Europe, one in Australia, and one whose birth-place is not known. The earliest age at which the catamenia appeared was at twelve years and two months in a girl born in India; the latest at sixteen years and four months in the case of a delicate strumous girl who died after amputation in the Medical College hospital of pyæmia. She was also born in India.

The next latest was in a girl born in England in whom it commenced at fifteen years and eight months. Of the seventeen girls born in India the catamenia commenced in two between twelve and thirteen; in five between thirteen and fourteen; in eight between fourteen and fifteen; in one between fifteen and sixteen; and in one between sixteen and seventeen.

Of the six born in Europe, the catamenia commenced in one between twelve and thirteen; in one between thirteen and fourteen; in two between fourteen and fifteen; and in two between fifteen and sixteen.

Of the two born in Ceylon, it commenced in both between thirteen and fourteen. One in Australia, between fifteen and sixteen; and the one whose birth-place was unknown between twelve and thirteen.

Thus of the whole number—

Four	commenced	between	twelve	and	thirteen years of age.
Eight	„	„	thirteen	and	fourteen „ „
Nine	„	„	fourteen	and	fifteen „ „
Five	„	„	fifteen	and	sixteen „ „
One	„	„	sixteen	and	seventeen „ „

The column of remarks in the Table shows how the functions were performed subsequently.

This is interesting as showing how far birth, residence, or physical and moral training under the most favorable circumstances affect the European female child born and brought up in India.

I have been acquainted with these girls since they were young children, and the impression I have formed, is, that they are more precocious both in physical and mental development than girls of the same age would be in Europe. They are most carefully educated, and, as the Report shows, their physical as well as moral training is most sedulously guarded from aught that could prejudice or injure either. But the stimulating effects of an almost tropical climate assert their influence; and it is evident that the girl of 16 or 17 is three or four years in advance of a girl of that age in a European climate. It is remarkable how few deviations have occurred from the natural and regular performance in the menstrual functions in these girls. As a rule it occurs regularly and without trouble, and it is most unusual for me to have any complaint made on this score.

In connection, though perhaps remotely with this subject, I would note the occasional occurrence among the girls of a swelling of the lower extremities evidently nearly allied to the elephantoid growth seen in the limbs of the Natives of Bengal—a bucnemia. It is manifestly a steady and pointed enlargement of one leg, mostly about the ankle and leg, but extending slightly up the thigh itself. If there be any change in the condition, it occurs at the menstrual period, when the

limb is somewhat larger than at other times. The swelling is firm, not œdematous and very like elephantiasis, except that it is not attended with either a periodic pain or excitement in the part, but is of very slow and steady growth. One of the ~~first~~ girls, aged 17, now in the school, is affected by it, and the left ankle is more than an inch greater in circumference than the right, and the swelling gradually extends to the thigh, while at the thigh it is somewhat larger than the other. There is no pain and very little inconvenience, except that which comes from the increased size.

I have not as yet succeeded in making any impression on it by medical treatment, and but very slight, only of a temporary nature by bandaging.

These cases, I am happy to say, are exceedingly rare, as during the ~~fourteen~~ years that I have known the school, there have been only two or three: they are very interesting and their pathology requires further investigation.

GANGRENE OF THE INTEGUMENT OF THE LEG FROM A CONTUSION; FATAL TERMINATION DUE TO SPLENIC CACHEXIA AND THE FORMATION OF FIBRINOUS COAGULA IN THE RIGHT SIDE OF THE HEART.

By J. Fayrer, M.D., C.S.I.

A Bengalli student named P. D., aged about 20, was admitted into the Medical College Hospital on the 15th of April, 1870, suffering from the results of a contusion on the right leg. He says that he tripped and fell, eight days before admission, over some bricks, and thus bruised himself, but was not seriously hurt. The part became painful, the leg swelled, and being unable to walk, he came to the hospital. He had been suffering from frequent attacks of malarious fever, and enlargement of the spleen, for the last five months; his appearance confirmed this statement.

The surface of the contused and abraded integument had been weeping a bloody sanies for three days, and for four days he had been unable to rise from his bed. The leg and knee were œdematous. The bruised portion, which was just below the knee-joint, looked as though it were becoming gangrenous; the temperature was low, and sensation diminished, the limb generally painful. He was depressed; pulse small and feeble. No diarrhœa. He was ordered stimulants and quinine. Carbolic oil dressing was applied to the injury.

He remained in this state for two days during which time the injured part became gangrenous to the extent of about two inches. The respiration began to be hurried on the 18th; slight return of fever in the evening, but temperature in axilla not above 99°·4, generally much lower. Ammoniacal stimulants were given both by enema and in the usual way, but there was no improvment: the respiration became more gasping and hurried, no murmurs were heard over the pulmonary artery; the heart's sounds became more feeble, the respiratory sounds

gradually diminished, and in a state of extreme cardiac apnœa, he died at midnight of the 20th.

The post-mortem examination was made on the 21st. The liver was of normal size, but discolored from commencing decomposition. The spleen was much enlarged. The kidneys healthy. The lungs were somewhat congested hypostatically; a portion of the lower lobe of the right lung was consolidated.

On opening the heart a firm fibrinous coagulum was found extending from the right auricle, where it was reddish, into the ventricle, where it was straw-colored; thence, firm and fibrinous into the pulmonary artery and its minute sub-divisions; a similar one was found in the left cavities, extending into the aorta.

The integument was gangrenous for several inches down the leg. The knee-joint was not compromised, and on being laid open its structures were normal.

There was certainly not sufficient in this case, in the mere gangrene of the integument of the leg to account for death in an ordinary individual; but in a person suffering from malarious blood poisoning and enlargement of the spleen, it was more than sufficient. Probably in no condition of disease is the formation of fibrinous coagula more likely to occur, on the least disturbance, than in splenic or malarious cachexia. In a marked case, such as this, where the spleen was four or five times its natural size, it may be said that there is nothing remarkable in the termination of the case, for do we not see it almost daily in the cases of cancrum-oris, sloughing ulceration and necrosis that are unhappily so common in Bengal, and probably in other localities whenever that condition called "Malaria" is rife? The imperfect condition of the blood making organs, and the improverished blood they elaborate, are amply proved and demonstrated in the anæmia, and in the great tendency to disintegration and death of the soft tissues and bones. Whilst the evil results of hyperinosis are seen in the limbs or other parts of the body, gangrenous from embolism when it occurs in the syatemic or arterial circulation, and in the œdematous or gangrenous limbs also, when it occurs in the venous system; or

still worse, in the multiple deaths of portions of the viscera which are so frequently seen in the so-called pyœmic conditions generally met with after wounds and injuries, though by no means unfrequently, idiopathically.

But it is the formation of the fibrinous coagula at the very fountain head, in the cardiac cavities themselves, that I would especially notice, and particularly that very fatal form of it, which occurring in the pulmonary side of the circulation, is so frequently fatal to life. I have frequently called attention to the subject, as one of great importance in a surgical point of view, for it is not only in cases where an enlarged spleen renders almost any operation impossible, and causes almost any wound to be fatal, but in many others whether of wound or injury, where there is no obvious disease of the spleen, and where all seems to be, and to promise well, that it may and often does supervene and rapidly carry off the sufferer. The condition is one most common in exhaustive diseases, and it is, no doubt, often one of the latest pathological phenomena manifested by the moribund; but it is more than this, for as I have frequently said it may set in where there is no appearance of exhaustion, when repair and nutrition are going on satisfactorily; and within 24 or 48 hours carry off the patient, whose body after death presents no solution of the cause of death beyond a firm, white adherent clot in the right auricle, or ventricle, or it may be just at the ostium of the pulmonary artery which is indeed the *fauces vitæ*.

This condition of fibrinous coagulation taking place in the right side of the heart or in the pulmonary artery, is one of the dangers that the subject of a surgical operation, wound or injury has to encounter, and not merely as the last act of a series of pathological processes—the result of exhaustive or prolonged disease—but an original and dangerous consequence of some blood change that has taken place as a result of the operation. What the nature of this change may be I am uncertain; it is an imperfect, or rather a post perfect, condition that may perhaps arise out of the presence of matters retained in

the blood that should have ministered to the nutrition of the part removed, in cases of amputation or ablation of parts of the body; a condition somewhat analogous perhaps, to the retention in the body of a secretion, that should have been eliminated, or in cases where no removal of parts has occurred, to some disturbed condition of innervation, in which the blood itself is imperfectly elaborated, and rendered prone to this fibrinous coagulation. I have a strong suspicion that climatic influences are not without influence in originating this dangerous state. In Bengal, all are more or less under the influence of malaria; it is true, happily, that in a large majority of persons its effects are not generally perceptible, and malarious or splenic cachexia though common, is not universal. Still no doubt all are more or less affected; and as I have on another occasion remarked an attack of ague and fever is perhaps one of the least common ways in which it expresses itself. As we know that in aggravated cases of malarious poisoning, death of tissue and hyperinosis, are common, so it is very possible that a more or less malarious state of the blood may determine its occurrence in many of the cases that occur in this country after wounds or operations. My recollection of the causes of death in Europe after operations and wounds, is not sufficiently accurate to enable me to institute any comparison from personal experience; but from what I have read and noted of what is said on this subject by authorities in Europe, I am inclined to think that either this cause of death is very unfrequent or has been but little noticed there.

I do not wish it to be understood that I regard this as altogether due to a malarious condition of the blood. I know that, although it may not have been noticed as a result of surgical operations, Dr. Richardson long ago pointed out its tendency to occur in exhaustive diseases, under circumstances which, however low and depressing, were not, at all events, suggestive of what we understand by malaria in this country; nor can I help thinking that a pathological state of the blood capable of producing so many important changes as malaria does, may have something to say to this also.

In considering the question of a surgical operation here, one of the first and most important inquiries made is, whether there be any indication of malarious blood poisoning, as evidenced by anæmia, enlarged spleen, or liver. Such conditions being present no operation that is not necessary to preserve life from present and imminent danger, is attempted; and if the urgency of the case should be such as to demand an operation; or if in those doubtful cases where one has to balance between the present inconvenience and the remote dangers of some surgical condition, or the evil chances of a state of health which, though perhaps not absolutely indicative of malarious poisoning, is not free from a suspicion of it, we do operate; we know that either gangrene of the wound, some pyæmic condition, or the sudden, rapid, and fatal fibrinous formations in the right side of the heart may be dreaded.

In the April number of the *Edinburgh Medical Journal* of 1870, I noticed the following remark by one of the most scientific of the rising generation of surgeons—Mr. Annandale—in reference to an amputation at the hip-joint. Page 883.

"The disease in this case was a cancerous tumour affecting the lower third of the femur, and the patient lived until the fifth week, when he was suddenly seized with difficulty of breathing, and died forty hours after. The post-mortem examination of this patient showed a partially decolorized clot in the pulmonary artery.

The surfaces of the flaps were firmly united; there was no abscess in the acetabulum,—there were no morbid traces of pyæmia."

I have no doubt that if Mr. Annandale will remark the cause of death, especially in all cases that occur after great operations where there is a constitutional cachexia, or where a large portion of the body has been removed, he will find that this cause of death is not unfrequent.

If such be the case, we can easily understand how it is that the group of unfavorable conditions making up what Sir J. Simpson calls "hospitalism," with malarious cachexia superadded

may determine the occurrence of these coagula : and an additional reason is furgished for the isolation and segregation of surgical patients who have to undergo, or who have undergone, operation. It points also to the necessity for most watchful care and prophylactic treatment, both before and after the surgical operation.

Professor Longmore C.B.
with Dr. Fayrer's kind regards

Recto vesical fistula, and vesical calculus, Death from Pyœmia, and the formation of fibrinous Coagula in the right side of the heart.

Conductor H., aged 44 years, was admitted into Dr. Fayrer's Wards of the Medical College Hospital, on the 16th December 1868, suffering from the effects of a severe accident which happened to him eight months previously at Darjeeling. He was, notwithstanding all the suffering he had undergone, a stout, healthy-looking man, apparently of steady and temperate habits.

The history of his case, up to a short time before leaving Darjeeling, is so well described in the following statement that I give it in detail, as it came to me.

"Conductor H., aged 43, and 26 years resident in India, of temperate habits, generally enjoyed good health. On the night of 15th May 1868, about 10 o'clock, was returning to his home, at Jellapahar, Darjeeling, but owing to the darkness missed his way and slipped down the hill-side a few feet, alighting on a stake, which pierced the right gluteal region and penetrated the bladder; through fear that if he moved he might fall down a precipice, he remained where he fell for several hours until he could see his way home, and although faint from loss of blood, he managed to crawl home, and arrived at 3 o'clock the following morning.

"Assistant Surgeon M reports, that he visited him at 9 o'clock the same morning and found him in great suffering. There was a large irregular wound in the fold of the nates at right side, about one-and-a-half inch from the anus. Patient stated that he had been to stool and passed some fœces and bloody urine through the

wound, causing much pain. Pulse 100° and small, and he seemed greatly prostrated and despondent. He was at once placed in a warm bath, and the parts affected well fomented and cleansed.

"He was again visited at 1 P. M., and complained of tension and pain in the gluteal and pubic regions. A No. 10 silver catheter was passed, and about 5 ozs. of bloody urine drawn off. He was again placed in a warm bath, and after half an hour an opiate was given; he was put to bed, rest enjoined, and tea diet ordered. At 6 P. M. he expressed himself very much easier; he had passed a quantity of urine through the wound; no pain complained of with the exception of a little tenderness in the hypogastric region. Pulse 88° and soft, skin moist, a hip-bath was ordered, in which he sat for half an hour, after which a spongio-piline epithem was applied between the folds of the nates, and a draught, containing Tr. hyoscianus, ordered at bed time.

"17*th May*.—Passed a very restless night, going frequently to stool, but passing little from the bowels; some urine came through the wound, no pain in abdomen or gluteal region. A catheter was introduced and a small quantity of bloody urine drawn off; the catheter retained in the bladder. His tongue is clean, pulse 88° and soft; says he feels very easy. To take Ext. opii. gr. 1 ter in die.

"*Vespere*.—Had about four hours of refreshing sleep to-day; skin acting freely; no fever, feels no pain.

"18*th May*.—Slept fairly; passed some urine, partly through the urethra and wound containing blood; some tenderness about the edges of the wound. Ordered the hip-bath thrice during the day, and to continue the opium pill.

"*Vespere*.—Passed some bloody urine during the day through the wound; complains of great itching of the meatus; is in no pain; tongue clean; pulse 86°. A large cataplasm of linseed meal applied to wound.—Cont. pil. opii. To drink linseed tea *ad libitum*. Rice and milk diet ordered.

"19*th May*.—Passed a sleepless night; urine passed through wound and urethra.—

"20*th May*.—Slept well last night; is very comfortable; spongio-piline epithem applied.

"21*st May*.—Edges of the wound looking healthy; bowels freely opened yesterday; no faeces passed through the wound, but some trickling of urine. To have opii. gr. 1 at bedtime.

"22*nd May*.—Going on well; the urine passed mostly by the urethra, and is always of a deep red colour; no irritation of the neck of the bladder. Tongue clean, appetite good. He takes rice and custard pudding with tea and toast as his diet.

"25*th May*.—Feels very comfortable; wound looking healthy; the urine now passes mostly by the urethra, is still bloody; bowels regular, is anxious for a little soup, which he is permitted to take to-day.—Omit medicine.

"2*nd June*.—Passed more urine than usual through the wound; he fancies the passage is stopped by clotted blood. A large silver catheter passed and some bloody urine drawn off.—Cont. Spongior piline epithem.

"6*th June*.—Much improvement; wound looking healthy; the urine comes almost entirely through the urethra; appetite indifferent.—Habeat Infus Chirretta ℥ii. Omni Mane.

"1*st July*.—For the past month has been progressing most favourably; there does not as yet, however, seem much chance of the wound healing. His appetite and general health are good.

"11*th July*.—Still passes urine through the wound, and yesterday a great deal of blood came away, and a small piece of membrane covered with salts passed through the urethra, which somewhat alarmed him.

"12*th July*.—A silver catheter passed to-day and retained in the bladder.

"13*th July.*—Assistant Surgeon M made over charge of patient to me about 13th July. He then suffered from great scalding and pain during micturition; the urine was highly acid, and deposited uric acid when allowed to stand; the lining membrane of the urethra was thickened and congested; a catheter of medium size could be passed, but attended with pain, and several minor strictures encountered owing to the inflamed and thickened state of the membrane. Ordered Liq. Potas ♏. xx. ter in die and aq. hordei *ad libitum*; warm hip-baths and a tonic acid and glycerine injection for the urethra.

"10*th August.*—Rather better; his rest is not so much disturbed at night, and the pain during micturation is not so acute, but there is still considerable irritation of the bladder and urethra, and he passes a large quantity of mucus with the urine. The formation of little abscesses in the follicle of the urethra gives him pain and constricts the passage, so that, occasionally, there is difficulty in introducing a No. 5 gum-elastic catheter.

"Leeches were applied to the perineum a few days ago and gave some relief; he takes a hip-bath daily and injects the urethra with an acetate of lead wash. The Liq. Potass was omitted to-day as the acidity of the urine is corrected.

"29*th August.*—No improvement; the irritability of the bladder and urethra continues; a large quantity of mucus, and occasionally blood, accompanies the urine. As these symptoms might indicate stone, a silver catheter was introduced with difficulty, and search made for stone, but without success. Patient suffers very much at night from tenesmus and a desire to micturate.

"*Treatment.*—A gum-elastic catheter passed and through it warm water injected to wash out the bladder and the following injected. R Nit argent gr. ii. acid nitric ♏ iv aqu: callid ʒ iii ♏ for lotion.

"To have Sol. Morphi ♏ xxv. in a draught at bed-time. Ext. Belladonna to be smeared over the perineum, and an opium suppository introduced.

"31*st August.*—The Nit: argent: injection has been repeated, and, under the use of the opiates, more sleep is procured at night. The tenesmus, however, is not completely removed, and he is obliged to get up at about intervals of one hour and-a-half to micturate, some urine still coming away by the fistula. With a view to relieving the inflamed state of the genito-urinary mucus membrane, the following mixture is ordered:

R Copaivæ ʒ½.
Liq. Potass ʒiii.
Spt. Ether Nit ʒii.
Tr. Hyosciam ʒi½.
Aq Camphoræ aa ʒiv.
♏ *F. Mx.*—A table-spoonful thrice a day.

"2*nd December.*—The latter treatment was attended with the best effects; the irritability of the bladder subsided, and the mucus which accompanied the urine disappeared. The Nit: Argent: injection was used every third or fourth day for some weeks and then omitted; but patient still takes the copaiva mixture. When the sores in the urethra healed and he could bear the introduction of a catheter, it was ascertained that he had a permanent stricture at the membranous portion of the urethra; this was treated by gradual dilatation and would appear to be cured, as he can now introduce a No. 9 catheter with ease.

"Owing to the want of a proper speculum, no satisfactory examination of the fistula has been made, but even, if suitable instruments had been obtainable, the irritable state of the bladder, and his impaired health, would have rendered an operation for the cure of the fistula inadmissible.

"The fistula is still patent as urine flows through the anus, when he micturates in the standing posture. The wound at the side of the rectum would appear to be healed, and there is now only the direct opening from the bladder into the rectum behind the

prostate. Patient has probably some enlargement of the middle lobe of the prostate, as the urine passes only by the urethra when he micturates lying on either side; but, as before-mentioned, some drains away by the anus when micturating in the upright position.

"*2nd December.*—Patient's health has improved very much, and for two or three months he has been able to do some duty; he is, however, still subject to occasional attacks of pain about the neck of the bladder and passes now and then small quantities of blood with the urine, indicating a congested state of the membrane at the base of the bladder."

(Sd.) R. B., M. D.,
Staff Assistant Surgeon.

On admission into the College Hospital he was apparently in fair general health, but he complained of an incessant desire to pass water with much pain at the neck of the bladder.

The long and tedious journey had fatigued him and irritated the parts.

He was ordered sedatives, demulcents and a mild aperient, as his bowels were confined.

After rest and quiet for a short time, I passed a full-sized catheter into the bladder and detected the presence of a calculus.

The recto-vesical fistula was still unhealed; there was a prominent thickening at the orifice of the fistula where it opened into the gut; the ischio-rectal wound had quite healed; the cicatrix showed how serious it had been. The urine was highly acid, sp. gr. 1018. A deposit of mucus, occasionally slightly mingled with blood; no other abnormal condition of urine. On the 7th January the lateral operation was performed, and a friable calculus removed which broke down completely under the forceps; the debris weighed about 140 grains. There was very little hæmorrhage and no difficulty in the operation which was performed in the usual way. From this

date until the 15th February, when his friends removed him for change, he was not well; he had frequent feverish attacks and diarrhœa; on the 11th of January especially, he had a sharp attack of ague. This was followed on the 12th by pain in the right testicle and cord. On the 30th of January the right inguinal region was swelled and painful. On the 2nd of February an incision was made into the right inguinal canal and a deep-seated collection of pus evacuated. The lithotomy wound was perfectly healthy, and he was free from pain in the perineum and about the bladder. After the incision he was relieved, and appeared to be doing better, the lithotomy wound was rapidly healing; the urine still flowing by the fistula, as well as by the urethra and lithotomy wound. Feverish symptoms returned, and another deep-seated collection of pus about the cord was evacuated as before. On the 9th he was again better, and apparently slowly convalescing, when he went home for a change of air.

The treatment had been adapted to the symptoms. Quinine, as he had been much exposed to malaria on his journey. Astringents to check diarrhœa; opiates, when necessary, to give rest, and a nourishing diet with a moderate quantity of wine. Alkaline and diuretic remedies, when the urine was more acid and irritating than usual.

He returned to hospital on the 17th February; having become much worse. He had had severe rigors and fever; and when re-admitted was very much prostrated. His voice was low and depressed, pulse feeble and rapid, respiration gasping and hurried. Stimulants and sinapisms were ordered; quinine with hot brandy and water was given frequently.

18th February.—The Hospital record says:

"Axillary Temperature 105°; pulse extremely feeble; hiccup; extremities cold. He has vomited some dark coloured fluid; passed some turbid urine; motions loose and dark coloured."

The breathing became more hurried and gasping; intense cardiac apnœa preceded death, which occurred on the 18th February at $\frac{2}{4}$ A. M.

The body was examined the following day:

Thorax.—Lungs much congested posteriorly, no pyæmic patches, no effusion into pleura, and no lymph on the surface of pleura.

Heart laid open.—Firm declorized clots in right cavities extending far into the ramifications of the pulmonary artery. No other abnormal condition in the thorax.

Abdomen.—Liver considerably enlarged; contained very numerous pyæmic patches of the size of peas, these so-called abscesses were patches of dead liver tissue, around which no suppuration had as yet occurred. They were simply dead tissue with puriform decomposed fluid in their interstices.

Spleen.—Congested and softened.

Kidneys.—Somewhat congested.

Bladder.—Mucous membrane congested and thickened. Lithotomy wound healed. Recto-vesical opening still unhealed, tissues about it thickened, and considerable thickening and adhesion about the parts generally.

This was an exceedingly interesting as well as instructive case from the beginning.

His recovery from so grave an accident, in the first place, was very remarkable; a stake driven through the gluteal region and rectum into the bladder might well have proved rapidly fatal; the result wonderfully illustrates the reparative power inherent in the constitution of a man in the vigor of health. He had so far recovered in about seven months as to be able partly to resume his duty. The formation of the calculus may be accounted for, no doubt, in the condition of the bladder injured by the wound; a nucleus having formed, determined by the roughened and irregular surface of that part of the bladder where the fistula opened, perhaps by the entry of some hard substance from the rectum, the concretion rapidly

gathered round it and formed the calculus detected on his admission into the Medical College Hospital. No part of the stake with which he was injured could be found in the bladder though carefully looked for.

His subsequent condition was not less remarkable. There can be little doubt, I think, that the train of unfavorable events which preceded his death were mainly due to the influence of malarious poisoning to which he was exposed on his way to Calcutta from Darjeeling in December, a month when some parts of the Terai are most dangerous. The fever that supervened after the operation was most probably of malarious origin, and the blood already thus poisoned was more readily affected by the toxic conditions excited by the operation. The fibrinous coagula in the heart, which were the immediate cause of death, were, no doubt, due to the same causes, and, as I have elsewhere pointed out, are probably more prone to occur in cases where, to the ordinary form of blood poisoning resulting under certain circumstances after wounds, is added that of malaria. That the absorption of septic matter in this case took place mainly through the portal circulation is indicated by the state of the liver which was studded with local deaths of tissue; and the enlarged spleen tends to support the theory that malarious poisoning was much concerned in inducing a state of the blood generally, which pre-disposed the patient to yield to pyæmic influences, and finally accelerated the fatal result by determining the formation of fibrinous coagula in the right cavities of the heart.

POST PARTUM HÆMORRHAGE; DEATH FROM SHOCK.

By J. Fayrer, M.D., C.S.I.

On Sunday morning, 23rd May, 1869, I was sent for to see Mrs ——whose expected labour (primipara) had commenced. I found that she had been suffering more or less since the previous evening; the pains were irritating and fatiguing, and had disturbed her rest throughout the night. I made an examination during one of the pains, and found the os uteri high up and pointing towards the sacrum; it was not dilated sufficiently to admit the point of the finger. The bowels were confined, so I ordered a dose of castor oil, and an enema if necessary. I saw her again later and made another examination; the pains were continuing as before, there was no change. The oil had caused sickness; the enema had proved effective; the bladder had also been emptied. Her pulse was natural, her skin cool and moist. The tongue was moist but slightly coated in the centre. I saw her again during the day, little or no progress had been made, by evening, in the dilatation of the os which was rigid, with its margin thin and tense. There was no change in the position of the head which presented, and was as high as ever. She complained much of the fatigue and worry of the incessantly recurring pains, but constitutionally she was unaffected. Her pulse, tongue, and skin were all as they were in the morning. The passages were moist and cool. The fœtal heart was distinctly audible and there was no indication of constitutional disturbance of any kind. During the day she had been sick after the oil, and had vomited some bilious matter. She had taken a sufficient supply of fluid nourishment, and a little wine and water occasionally. To give rest, I ordered, after the bowels had acted, liq. opii, min. xxv. It was repeated at bed time, but she had, on the whole, a restless and disturbed night. I found her on the morning of the 24th looking tired and anxious, but all her symptoms were good, pulse about 86; tongue moist and clean; skin cool and moist. The os uteri was now found to have dilated to about the size of a shilling, and was rigid. I prescribed small doses of antimony, ½ grain to be given every hour with the view of causing relaxation. After taking three or four doses, she

was sick, and it was discontinued; I also put her under the influence of chloroform for a few minutes, on two or three occasions. During the day she took an ample quantity of nourishment; the bowels were relieved, and constitutionally she was as well as ever. Towards evening I became rather uneasy about the non-dilatation of the os uteri, and I expressed my intention to her husband, if, by 9 P. M. more satisfactory progress was not made, to have a consultation. At 9-30, I made another examination, and ascertained that some progress had been made. The os was now about the size of a rupee. She had slept at intervals, and her pulse kept steady; the tongue clean, and the skin was cool and moist. I saw her frequently during the night, as I remained in the house, and was satisfied that progress, though slow, was being made. At 10 A. M. of Tuesday, the 25th, the os had dilated to the size of the rim of a wine glass. As all her symptoms, beyond the delay, were favourable; the pulse under 100, tongue clean and moist, skin and passages moist and cool, fœtal heart vigorous; interference was uncalled for. The pains continued, but, perhaps, with more rapid succession, and by 12-30 the second stage of labour had commenced. The head was now well down, and the character of the pains changed. The expulsive efforts continued at regular intervals, and at 5-40 P. M. when partially under the influence of chloroform, she gave birth, with little difficulty, and without the least laceration of the perineum, to a large male child.

The infant was partially asphyxiated, having the cord twice round its neck; but on releasing the cord, using artificial respiration, and dashing cold water on the face and chest, it soon breathed and cried vigorously. The cord was then tied and divided. The uterus meanwhile had contracted firmly, and in from fifteen to twenty minutes the placenta was spontaneously expelled; up to this time she had not lost an ounce of blood. I should have noted, that the membranes ruptured at about 10 A. M., and that the liquor amnii trickled away with each pain, but there never was any protrusion of a bag of membranes to aid in dilatation. Soon after the placenta had come away, the uterus being firmly contracted, the pad and binder were applied. She was feeling and looking well, and was much delighted at the birth of her child. Her pulse was peculiarly good, under 90, and firm. Indeed, it was remarkable how well she bore the second stage of labour; her strength which had failed slightly towards the close

of the first stage, returned; the restlessness passed away, and her pulse which had quickened, though never over 112, sank to almost the normal standard. I then left the room at about 6-5 P. M., whilst the nurse arranged her bed and dress. In a few minutes I went into the room again to see that all was right before leaving. Whilst I was speaking to her, she said she felt uneasy, and had a violent pain in her back. This was about thirty-five to forty minutes after the birth of the child. I put my finger on her radial artery, and found the pulse had suddenly quickened. I immediately had the binder removed, and found that hæmorrhage had begun. The uterus had relaxed, and was distended with blood. I immediately removed the clots with the right hand, grasping the womb with the left; applied ice, and *douches* of iced water externally, and injected iced water into the uterus. I gave liquor ergot, 3gs, and powdered ergot shortly after, and applied the Magneto electric current, the instrument being brought immediately. The child was also put to the breast. With these measures the uterus contracted firmly, and remained so to the last. The quantity of blood lost could not have exceeded two pounds. She was considerably depressed, but did not at this time lose the red colour of the lips and eyelids; the pulse was rapid and irregular, but her voice was good, and she seemed free from alarm, when in reply to her query she was told that the bleeding had been controlled. She did not faint, neither did she manifest, at this time, the usual symptoms of dangerous hæmorrhage. She was quiet, and spoke calmly and cheerfully about herself. I gave her brandy and water freely, beef-tea, and brandy; mustard poultices over the heart, solar plexus, and on the back. Brandy was also given in the form of enema, and hot bottles were applied to the extremities; but her condition did not improve. The pulse became weaker, and more rapid and irregular; she was restless, and the surface of the body bedewed with a cold sweat. The countenance began to change, and signs of collapse rapidly set in. These symptoms did not make their appearance for fully half an hour after the hæmorrhage had ceased. I had, meanwhile, sent my carriage for assistance, and Dr. Chevers, who was the nearest, came at once. There was no return of hæmorrhage, the womb remaining firmly contracted, and not parting with the smallest quantity of blood. During the application of the magnetic battery, and whilst other measures were being taken to ensure uterine contraction, she was in good spirits,

held the wire with her own hand, and laughed at the nurse who held the other wire. Reaction never properly set in, she seemed to have no power of rallying, and notwithstanding every effort, she gradually sank. The pulse occasionally rose slightly, giving a delusive hope of reaction, and for a few moments she slept; but at last the breathing became hurried, as though pulmonary obstruction was taking place from coagula forming in the right side of the heart. She had become intensely restless; talked for a short time incoherently; and then sank and died, quietly, at about 9-30 P. M., three hours and fifty minutes after the birth of the child, and about three hours and a quarter after the occurrence of hæmorrhage.

There are some points of interest to be considered in a review of this sad and interesting case. The patient was a young English lady, age 23, who had been married about ten months, and been in India four months. She was of a tall and sufficiently vigorous, though rather slight frame; her general health good, nor was there anything, in her appearance suggestive of deficiency in vital force. She was said to have suffered severely from measles shortly before her marriage, and was considered to have been somewhat constitutionally weakened thereby. She had passed through the period of her pregnancy without much inconvenience, and had completed the full time when labour commenced.

The progress of the first stage of labour was unusually slow, for commencing on Saturday evening, it was not until Tuesday at noon, that the fœtal head passed through the cervix, and entered on the second stage of labour.

But as her constitutional powers were not depressed, no interference, beyond small doses of antimony to facilitate dilatation, opiates to give rest, and chloroform occasionally was considered necessary, and the result proved that such was the case, for the second stage of labour was completed within six hours, and she gave birth to a vigorous and healthy child without much difficulty, and with little suffering, as she took chloroform. After the expulsion of the placenta, the womb contracted firmly, and up to this period there had been no loss of blood. The relaxation of the womb that caused the loss of blood was sudden, but it was rapidly arrested; and though, in the first gush of hæmorrhage, a considerable amount, about 2lbs, of blood was lost there was no repetition of it; the uterus,

after being relieved of the clots, contracted firmly, and there was no recurrence of hæmorrhage.

The amount of blood lost was not so great as to give rise to dread of impending death. Much more has been lost in other cases, and yet perfect reaction and recovery have followed. But there are certain constitutions that seem to be endowed with but little power of rallying from a shock, even though slight, and in whom the vital energy, though equal to all the ordinary emergencies of life, is inadequate to the task of recovery, when any serious cause of depression has affected the nerve centres.

In such, no doubt, the great heat of a Calcutta May, and its terribly depressing influence must be an additional source of weakness, and a most important obstacle to recovery, when any such shock to the nervous system has taken place.

That death should occur from syncope, or from great exhaustion in profuse hæmorrage, either when the blood is flowing, or immediately after it has ceased to flow, is, though fortunately uncommon, yet sufficiently intelligible, and needs no explanation in any real or fancied constitutional defect in the sufferer; but that death should follow a comparatively moderate loss of blood, and when all else was apparently free from defect or disease, is more remarkable, and forces one to the conclusion that, in a constitution naturally inert as to vital power, the influence of climate, such as that of Calcutta in the hottest season of the year, must have had a prejudicial effect in preventing the reaction which, in other cases, under ordinary circumstances, might have been hopefully anticipated.

I am satisfied that the labour itself had nothing to say to the unfortunate result. The first stage was certainly very tedious, but it was neither attended with, nor followed by, any failure of constitutional strength. The second stage was accomplished with vigor, and after the birth of the child, the patient was in all respects as well as one could have desired to see her. I have frequently noticed that loss of blood in a surgical operation that would hardly affect one person, proves almost, if not quite, fatal, to another, each being to all appearance equally strong—the difference is due, no doubt, to different degrees of vital energy in the individuals, so, in the case I have described, I can only ascribe death to a similar cause.

ON THE USE OF PETROLEUM OR EARTH-OIL AS AN ANTISEPTIC IN THE TREATMENT OF SURGICAL DISEASES.

By Dr. Fayrer, C.S.I.

I have recently been using petroleum, as an external application, on the antiseptic principle, in the treatment of certain surgical cases, and I subjoin a brief abstract of a few of those so treated, which, I think, so far warrant, the conclusion that it has been applied with benefit, as it possesses some, if not all, of the advantages assigned to carbolic acid for this purpose. The petroleum in question, was kindly supplied to me by Mr. Goodenough of the firm of Messrs. Mackillop, Stewart and Co., and is a dark oily looking fluid, with a peculiar, though not unpleasant, aromatic odour. It struck me that this hydrocarbon might be as efficacious as carbolic acid for surgical purposes; and as it is produced in this country and in Burmah, it might be obtained in large quantities and at a smaller cost than carbolic acid, and I have no doubt, its use might be extended over a wide range of hygienic purposes. The present memorandum has reference merely to its use as a surgical application on the antiseptic principle of purifying the air that obtains access to the affected surface. This petroleum is produced, I am told, in large quantities in Assam; and from this source, no doubt, an ample supply might be obtained, should it prove, after experiment, to be useful for therapeutic and hygienic purposes.

I have used it undiluted, or diluted with equal parts of oil, or glycerine, and whilst it certainly has some deodorising power, it appears also to have that of limiting suppuration, and of restraining the development of septic miasmata in the discharges, whose decomposition it probably retards.

It is also useful as a stimulating and detergent application in sloughing and ulcerating surfaces, and I have remarked, especially in one case of carbuncle, that it proved most efficacious as an external application. It is not irritating, or very slightly so, to raw surfaces, and I have not heard any complaint made beyond that of slight smarting, when it is applied to granulating and ulcerating wounds. The evidence of its virtue is as yet but limited, but it is such as to suggest the advantage of making further trial of what may prove to be a valuable addition to our surgical resources, and is one that has the advantage of being produced in the country.

CASE I.

Judonath, aged 30, had a large ulcer above the right ankle with a sinus leading to the bone. The ulcer had been treated with carbolic acid dressing. Since the 30th April the earth-oil has been applied, and the ulcer is granulating healthily, is much contracted and is cicatrizing rapidly with very little discharge. The dressing causes no pain.

CASE II.

Darai Sirdar had a cystic tumour, size of a walnut, removed from the root of the nose on the 12th April. The earth-oil dressing was applied immediately after the operation. The wound had nearly closed, without any suppuration on the 25th April. The integument being redundant however, a portion was removed on the 4th of May, and this wound dressed with earth-oil. It has healed satisfactorily, and he was discharged about the 18th. A small portion of integument sloughed; but there was almost no suppuration.

CASE III.

Degum, aged 35, admitted on the 10th May, 1869, with a deep cut in the upper and inner side of the right arm. No arteries of importance divided. The wound was dressed with petroleum, and it healed rapidly with very slight suppuration.

CASE IV.

Rajeshwary, a Hindoo woman, aged 65, admitted with an ulcer of considerable size in the right leg. There was a profuse ichorous discharge with considerable pain. It was dressed on the 30th April, with the petroleum. The discharge diminished, and the sore assumed a more healthy aspect. To remove thickening round the ulcer, liquor lyttæ was applied, and after this the ulcer rapidly granulated with very slight discharge.

CASE V.

M. M., an East Indian, admitted 12th May, 1869, aged 49, with sloughing of cellular tissue of the palm of the right hand. Petroleum applied, and the sore assumed very rapidly a healthy action. The wound is now, 8th June, nearly healed.

CASE VI.

Ghurmo, a Hindoo female, admitted 29th March, 1869, with a deep excavated ulcer exposing necrosed bone, near the left olecranum. She was evidently syphilitic. The wound was dressed with the petroleum, whilst internally potas: iod: and cod liver oil were administered. The sore healed rapidly; the diseased bone separated, and she is now nearly well.

CASE VII.

Hurrish Chunder, aged 50, had a scrotal tumour removed on the 16th March, 1869. The wound at first was dressed with the carbolic-oil dressing, under which it was doing well. On the 30th April the petroleum dressing was substituted, and the wound continues to cicatrize most favorably, and without almost any suppuration.

CASE VIII.

Mosum Ally, aged 35, had a moderate sized scrotal tumour removed on the 13th April, 1869. Carbolic-oil dressing was at first used. On the 30th April the petroleum was applied; the wound is granulating healthily, and with very little discharge. He is still in hospital.

CASE IX.

Soorendro, aged 10, admitted on the 14th May, 1869, with iliac abscess. This was opened by making incisions through the abdominal parietes on the same date. The earth-oil was applied as a dressing, and the discharge was very slight. It increased on the 17th, but subsequently diminished, and the boy was discharged convalescent a few days later.

CASE X.

Khosal, aged 35, admitted 10th May, 1869, eight days after receiving a very severe sword wound on the left hand; the metacarpal bones, except that of the thumb, were all divided. The wound was suppurating when he came in. He has done well since. A collection of matter formed in the fore-arm, which was let out. But the wound in the hand has cicatrized; other slighter wounds in the arms were dressed in a similar manner; and they have done well.

CASE XI.

Chummun, admitted 8th May, 1869, for having had his left great toe crushed by a carriage-wheel. Earth-oil was used from the very beginning, and the sloughs separated on 15th March, 1869, and the wound cleaned by the 17th March, 1869; and it is now healing up with little discharge.

CASE XII.

Babu Sheik had his ring finger removed on the 26th April, 1869, with the head of the metacarpal bone, for an injury. The earth-oil was used since the 29th. There was never any great discharge from the wound, which began to suppurate on the 30th. Granulations were so rapidly growing, that by the 6th, most of the iron wire sutures were seen half-imbedded within

them. Sutures removed on 7th, and cicatrization began on the 9th, and he was discharged on the 20th cured. He never complained of much pain from the oil.

CASE XIII.

J., aged 40, admitted on 10th May, 1869, transferred from the medical wards for an ulcer on the left shin. Earth-oil applied. The sore has contracted with hardly any discharge, and completely cicatrized.

CASE XIV.

A., aged 30, admitted 2nd May, 1869, for ulcers in his right leg. Earth-oil used from the beginning, and liquor lyttæ applied on 10th May, 1869; the sores nearly healed, though on admission they were each about two inches square. They are now cicatrizing.

CASE XV.

G. H. M., aged 28, admitted 6th May, 1869, for a cut in the popliteal space dividing the hamstring tendons. Earth-oil used from the beginning, and the wound has not yet suppurated, the flaps are becoming adherent.

CASE XVI.

H., aged 25, admitted 7th May, 1869, from an incised wound below his right breast about 6 inches long. Dressed with earth-oil from the beginning, and it is now very nearly healed. He complained of but slight burning. The wound completely cicatrized.

CASE XVII.

A European had a lacerated cut about 2 inches long on his forehead, which healed in about a week and a half without any discharge.

CASE XVIII.

J. R., aged 39, had two contused wounds on the head on 12th May, 1869, they were dressed with the earth-oil on the next day. The sloughs separated on the 17th with some bleeding; the wounds have since been healing with slight discharge.

CASE XIX.

Acham, a Chinese, aged 34, came for a large carbuncle on his back, of a fortnight's duration: it is full of dark sloughs, and there is much pain. It is dressed with the oil, the discharge has diminished, and the sore looks healthy. He ultimately recovered completely.

CASE XX.

A native, aged about 45, was admitted in June, with a wound in the left iliac region. A bull had struck him with his horn, and opened the abdominal cavity. The intestines protruded, but were returned. He recovered rapidly with petroleum dressing, without a single bad symptom.

Professor Longmore C.B.
with Dr Fayrer's compliments

Urethral Fever—death from fibrinous concretions in the right side of the heart.

W. H., æt. 39, an English sailor, living in Calcutta, a powerful muscular man, and apparently in perfect health previous to the 18th of June 1870. On that day he suffered from retention of urine which he attributed to a slight excess in drinking a day or two before. On the morning of 19th June, he applied for relief at the out-patient department, and said he had suffered from slight stricture for the last five or six years, and that, on several similar occasions, he had had retention of urine. No. 8 catheter was passed without difficulty, and the urine drawn off; he would not remain, though invited to do so, for treatment of the stricture. In every other respect he appeared, and said he was, perfectly well. He was a remarkably fine-looking man, and very intelligent. He had his home and family in Calcutta, and therefore did not wish to remain in hospital.

He returned to hospital at 3 P. M., saying he felt very ill, and was in great but undefined distress about his stomach. He was at once admitted, and the following account was given of his condition since the morning. Soon after the catheter was passed he had a chill (probably a rigor) and then became feverish, very restless, and so delirious that his friends were obliged to bring him to the hospital.

It appears that he had passed some urine tinged with blood after his return home; his bladder was apparently empty on admission. He was feverish and restless, evidently in great distress, complaining of intense thirst and pain across his abdomen or lower part of the chest. There was some tympanitis and the tongue was coated. A cathartic enema and hot fomentations to the abdomen were ordered, and these appeared to give him relief. Two cathartic

pills were ordered at bed time. On the 20th June, the pain seemed to have localized itself in the right hypochondriac region, and there was excessive pain on pressure over the liver; his breathing was hurried, and his countenance anxious; he still seemed in considerable distress.

He had had several loose but scanty motions during the night; no urine had been passed since admission, but he may have passed it at stool. There was now found to be dulness on percussion over the base of right lung, but otherwise it was natural. The breathing was hurried and gasping, but air entered freely into the lungs. Turpentine fomentations, effervescing draughts with stimulants, etherial and ammoniacal, were freely given. Sinapisms, were applied over the heart.

The distress and dyspnœa rapidly increased; the breathing became more hurried and gasping, and he complained not only of this, but that something was choking him; a stimulating emetic was given, it acted slightly. At about 10-30 P. M. he passed water. No improvement however took place, repeated stimulants were administered by the mouth and rectum. The difficulty of breathing increased, and he died, as the House Surgeon's notes have it, "in a sudden fit of gasping," a few minutes before midnight. He was perfectly rational and conscious from the time of admission to the moment of his death, and his struggle for breath was most distressing to witness.

The weather being very wet and damp, the body was examined ten hours after death.

The lungs were hypostatically congested, the right most so, and one portion of the middle lobe was solidified and contained a small patch, the size of a pea, like a pyæmic patch. The lower lobe was also hepatized. There were one or two very small patches of tubercular deposit in the apices of the lungs; with this exception, they were healthy and crepitant throughout.

The pericardium contained a small quantity of straw colored serum. The heart was normal; the cavities contained firm adherent fibrinous clots. That on the left side extended from the auricle into the ventricle and into the aorta for about three inches. That in the right was larger, and extended from the auricle, through the ventricle, into the finer ramification of the pulmonary artery.

The pleuræ were normal.

The liver was rather large, but apparently otherwise normal. There was no sign of inflammation in its substance or on its surface. The spleen was natural. The kidneys were congested, and large; capsules easily separated, and granular degeneration apparently commencing. The other viscera and the peritoneum were perfectly healthy.

The bladder was slightly thickened, and the urethra was slightly strictured, in front of the bulb; there was no wound, it was slightly congested; where it had bled after the catheter, but there was no false passage. The prostate was natural, and the tissues about the neck of the bladder were natural.

This is a very striking and interesting as well as instructive case. A man in the prime of life, in good health, with the exception of a slight stricture, which was only troublesome when irritated into spasm by such irregularities as that of taking a little more beer than usual; a steady intelligent and otherwise temperate person, suffers from retention of urine, due to a slight excess a day or two previously. He applies for relief at the hospital, and is relieved at once by the passage of a No. 8, catheter. He returns home, feels chilly, has rigors, and this rapidly followed by fever and delirium; he passes urine tinged with blood after his return home. The fever is attended with intense restlessness and distress, severe pain in the right hypochroniac region, and pit of the stomach follows. Rapid deep and gasping breathing, with the greatest precordial distress increase, and go on getting worse and worse, until the patient dies in great agony of breathlessness at about midnight, or forty hours after the catheter was passed. His

intellect was perfect to the last; urine was secreted and voided not long before death. It is clear therefore that the symptoms were neither due to uræmic nor cholæmic poisoning nor to any cerebral disorder.

There was nothing to point to cholera or other exhaustive disease as the cause of death. Air entered the chest freely, and his voice was natural to the last; he did not die of asphyxia. The sounds of the heart were normal; heart disease was not present. There was evidence of neither peritonitis nor other acute inflammation. What then was the cause of death?

The post mortem examination revealed a congested state of the base of each lung with consolidation of a small portion and a patch of broken down tissue about the size of a pea. The pleuræ were healthy, and the pericardium contained a small quantity of fluid. Neither of these conditions were sufficient to cause death. The abdominal viscera it is true were not absolutely healthy, for the liver was slightly enlarged, and the kidneys were congested and in an incipient state of degeneration. The bladder prostate, and tissues about its neck were generally healthy. The bladder was somewhat thickened, in consequence of a slight stricture situated just in front of the bulb of the urethra. Through this an instrument had been passed. There was nothing in the abdomen to account for death. The patient's state up to the moment of his death, and the fact that urine had been secreted and voided very shortly before death, prove that neither uræmia nor cerebral mischief were the cause of death. The state of the bowels and secretions equally demonstrated that it was not due to cholera; but on opening the heart, it was evident that the diagnosis was correct, that the formation of fibrinous coagula in the heart had destroyed life. The coagula were firm, declorized and adherent, and on the right side not only obstructed the auricular, ventricular and arterial openings, but extended far into the branches of the pulmonary arteries ramifying like the branches of a tree.

I have repeatedly noticed this condition as a cause of death in surgical cases, but I have never seen one more striking or more uncomplicated than this, and it is another illustration of a pathological law of great interest. I have before expressed my suspicions that malaria has much to say in inducing the condition of blood in which this fibrinous coagulation occurs as a result of some disturbance of the innervation by a surgical operation; in this case the simple one of passing a catheter through a slightly strictured urethra was the exciting cause. The patient cannot be said to have been, strictly speaking, in a healthy condition, tho' he appeared in perfect health and no lesion was discovered that would account for death, although sufficient existed to suggest how, with the addition of the shock of the operation, and the consequent urethral fever, the fatal blood change and consequent cardiac-apnœa were brought about.

Something was said about his recently having suffered from intermittent fever, but there is no precise information on the subject recorded. Be that as it may, he had none of the appearance of a person suffering from malarious cachexia. But no one in Bengal can be said to be exempt, especially at this season of this year, and I am convinced that this malarious influence which affects all, more or less, is in a person of irritable constitution and especially in those suffering from stricture, a predisposing cause of that dangerous condition, urethral fever, in which, under certain conditions, fibrinous coagulation is likely to occur.

It has long been known that death may occur rapidly from this cause in puerperal patients; and that in diptheria, croup, cholera, and other exhaustive diseases, it is not by any means unfrequent; but in such cases, where the blood must necessarily be in an altered condition, and the muscular fibre of the heart weak, although the precise nature of the change may be unknown, it is not difficult to understand why the fatal result should occur. But in cases such as the preceding, and in many others where fatal Cardiac Apnœa has supervened suddenly from fibrous coagulation, obstructing the pulmonary circulation after surgical operations,

when the patient appeared to be doing well; it is more difficult to comprehend, and as I think, and have frequently suggested, is a subject of great surgical importance, though one, that as a cause of death, has not attracted the attention it merits.

I allude especially to that form of Cardiac Apnœa, due to obstructed pulmonary circulation from fibrinous concretion in the right cavities of the heart, occurring in persons in whom there are no obvious indications of cardiac disease. That it should occur in such persons is reason the more why, in a hot and exhausting climate, it should take place in those who are the subject of fatty degeneration of the heart, or about a heart which though not itself adipose, is loaded with fat externally; or where there are either pleuritic or pericarditic effusions, or where the ventricles are dilated and the muscular fibre atrophied. In such persons indeed, the presence of fibrinous concretion may not be needed to bring about the fatal Apnœa. The temperature of a night in May or June, in Calcutta, the shock or after effects of an operation, may be sufficient, and the patient after a short and distressing struggle of breathlessness perish, notwithstanding every effort that can be made to save him. But I would repeat that, when it occurs, as it occasionally does to a person in the prime of life, and in whom there is no reason to suspect any such predisposing cause, it becomes a subject of very important enquiry as to what is the determining cause of this dangerous condition, and it indicates another among the many recognized dangers to be apprehended by the Surgeon.

STRICTURE OF THE URETHRA; DEATH FROM URETHRAL FEVER AND URÆMIA.

By Dr. Fayrer, C.S.I.

Some months ago I was requested by his medical adviser, to see a gentleman who was suffering severely from urethral stricture of several years' duration. The patient was about 35 years of age; a stout, flabby, pallid and unhealthy looking person.

Several years previously I had seen him, and had then passed instruments up to No. 10. He was suffering from an irritable stricture, partly organic, but greatly aggravated by muscular spasm. Again, during the rainy season of 1868, I had seen him when in similar trouble, and was unable to introduce any instrument owing to the extremely irritable state of the stricture. He was exceedingly anxious to be operated on. I advised him to wait until the cold season, unless some urgent symptom should render immediate interference necessary.

I saw him again at 2 p.m. on the 10th day of the month, on the occasion I am about to describe, and found him looking in his usual state of health, but he was very nervous, restless and irritable; the bladder constantly attempting to empty itself, and the stricture consequently causing him extreme distress.

His bowels had responded to an aperient that day.

I immediately, and without any difficulty, passed instrument No. 10 into the bladder; being conscious both of the structural as well as the spasmodic nature of the stricture, which offered some resistance. The operation caused him comparatively little pain. Directly after it, he went into the bath-room, and voided some urine, which, I believe, was not even tinged with blood; whilst passing the urine he had a rigor, and I heard that he had fever during the evening. I did not see him again until the 14th, five days later, when I was requested by his medical adviser to do so, at about 8 p.m. I found him very ill; he was partially unconscious, tossing about in bed in an extreme state of restlessness and jactitation, picking and snatching at the bed clothes; his face was convulsed and distorted; the pupils partially dilated with converging strabismus occurring at intervals; he was continually muttering, or rather moaning, and seemed to be in great suffering; the entire muscular system was in a state of irregular spasm; his

pulse was quick, feeble, and intermittent; he had been very sick during the day, and, had had fever at intervals; but it was only since about 7 p.m., that he had passed into the condition in which I found him, and which was gradually becoming worse; his body was then cool, and his skin moist; and there was a peculiarly offensive ammoniacal odour in his breath and from his person; the abdomen was not distended, and the bladder was apparently empty. The bed and his lower extremities were moistened by a urinous smelling fluid; the bowels were reported to have acted during the day; there was no tenderness on pressure over the pubes, nor was there any swelling or pain in the perineum, nor had he complained of any during the day or previously. I could get no satisfactory evidence as to the quantity of urine that had been voided during the day, nor indeed as to the exact quantity passed during the four days that had elapsed since I passed the instrument. The attendants said that if he had passed it at all, it must have been where he lay, or when the bowels acted; there was very little apparent evidence of any in the clothes. He appeared to be partially conscious, though unable to speak; he attempted to put out his tongue when told to do so, it was dry and red at the edges, but brown in the centre.

It appeared to me that this was a case of uræmic poisoning supervening on urethral fever; the kidneys, probably, originally defective, had succumbed, and rapid blood poisoning supervened in consequence.

His hair had already been cut short, and ice applied to the head; it was now shaved and covered with ice. Hot fomentations were applied, also leeches and dry cupping to the loins; an enema of sulphuric ether with assafœtida, soap and water, also a powder of jalap and colomel was administered. He, however, got rapidly worse; the convulsions became more marked with intervals of comparative quiet, and finally, after a convulsion, he died at 10 p.m.

Until the 14th, when I was asked to see him again, there had been nothing in his condition to cause anxiety. He had feverish attacks occasionally with restlessness, and his urine had been passed until that morning. The treatment, I believe, had been chiefly sedative, with a simple and unstimulating diet. The bowels had been kept open by aperients when necessary.

On the morning of the 14th he was peculiarly restless, and appeared to be dull intellectually. The urine, as far as I can gather from those about him, had been less in quantity; and there had been unusual nausea and vomiting of bilious matter. In the evening he passed rapidly into the state of uræmic convulsions, in which I found him, and after this he rapidly sank. I do not know much of his previous history, but I have reason

to believe, that his life had been somewhat irregular; and he had the puffy bloated aspect of a man, whose habits are irregular and whose general health is not good. I regard this as a case of typhoid uræmia—supervening on urethral fever developed by the passage of a bougie through the strictured urethra of a person of extremely irritable constitution with defective kidneys. The state of the stricture, which was constantly threatening him, and had more than once caused complete retention and endangered his life, rendered interference necessary; and, accordingly, selecting the best season of the year, the winter, the treatment was commenced by the passage of a bougie, which, I was astonished to find, was accomplished so easily. It can only be said in this case, that the faulty state of the general health was the cause of the evil consequences that followed. It indeed shows the danger that impends over any one so affected, and proves that such cases are not only the subject of great anxiety, but that they render the greatest care necessary, not only in the treatment, but in the mode of the patient's life. It was supposed, I believe, that the patient had undergone a formidable cutting operation. The only surgical proceeding was, as I have stated, the passage of a bougie, and this was accomplished with the greatest ease.

The subject of urethral fever in persons of irritable constitution, with imperfect blood making power and defective eliminating organs in the malarious climate of Lower Bengal, is one of considerable interest, and I regard this case as illustrative of it, from its most interesting point of view.

I regret that I never had an opportunity of examining the urine, and that a *post mortem* was not obtained.

EXCISION OF THE SUPERIOR MAXILLARY BONE.

By J. Fayrer, M.D., C.S.I.

Okhoy Chuen Biswas, a Bengalee ryot, aged 25 years, was admitted on the 1st November, 1869, with a tumour of the right superior maxilla, which he stated to be of about a year's duration.

He was a slight rather delicate, but not unhealthy-looking person, and apparently free from malarious poisoning.

The disease commenced in the gum, and growing rapidly, two molar teeth were removed. Inflammation, suppuration, and an abscess in the antrum followed, and a sinus formed in the cheek, which still discharges pus. The tumour seems to have grown rapidly, involving the entire maxilla and part of the malar bone. On examination it presented the appearance of a firm fibrous growth encroaching on the palate of that side, and distending the cheek; the eye was also somewhat pushed upwards, and the nose pressed to the opposite side. The alveolus presented the appearance of a dense fungoid fibrous-looking growth, depression marked where the teeth had formerly been. He could not breathe through the right nostril, and deglutition had become painful and difficult.

I removed the tumour under chloroform on the 3rd November, in the following manner: an incision was made from the commissure of the lips to the zygoma on the affected side, and the cheek was turned back. The hæmorrhage from the facial artery was profuse, but, with that from other smaller branches, was immediately arrested by ligatures. I made no other incision in the face, but having detached the cartilages of that side of the nose, and drawn the flap to one side, I divided the palate and alveolar process with the mouth, having first removed an incisor tooth, with a long narrow saw.

The eyeball being kept out of the way, the orbital process and the malar bone were cut through into the orbit with the bone forceps, and the entire bone, with half of the malar, was removed with the lion forceps. I had previously divided the soft parts of the palate with a scalpel. The hæmorrhage was rather profuse, but pressure and ice soon arrested it; one branch at the posterior part of the palate continued to give trouble, and bled again during the day, but was controlled by Mr. Saunders, the Resident Surgeon, by tannin and pressure. The wound in the cheek was closed with horse hair sutures, and carbolic acid dressing applied. The cavity was stuffed with lint soaked in the carbolic oil dressing. He had no subsequent hæmorrhage; the wound united rapidly, the greater part by immediate union. The sutures were removed on the fourth day; the ligature in the cheek on the fourth day; and the stuffing on the third day. There was slight febrile disturbance for a day or two, and a

good deal of pain, but it soon passed away, and he made rapid progress towards recovery. On the 10th he was nearly well, the wound perfectly healed. The cavity granulating healthily, with very little discharge, and he was able to take his food freely.

On the 13th he is well, though perhaps rather weak; the mouth is washed out with the ordinary carbolic acid lotion twice daily.

There is almost no deformity, the cheek has fallen in so little, and it is difficult to conceive that the orbital plate is gone, for the eye, except for slight ecchymosis, looks quite natural. He has recovered in ten days. The tumour was found to be of the fibro-plastic variety; it involved the entire bone; it had commenced in the alveolar process, gradually invaded the antrum, filled it, and was covered by a thin scale of bone, part of which had to be dissected off the flap of the cheek after the tumour was removed. The weight of the part removed was five and half ounces; under the microscope it was found to consist of fibro-cells, fibres, free nuclei, and a few cells; it was of firm consistence, but could be readily cut with a knife; and on the surface the remains of that bone were found in the form of osseous scales.

CASE OF SLIGHT INJURY OF THE HEAD FOLLOWED BY BLOOD-POISONING, AND DEATH FROM CARDIAC APNŒA, IN AN ENGLISH CHILD AGED 4½ YEARS.

By Dr. Fayrer, C.S.I.

It appears that on the 15th July he fell and cut the back of his head slightly; it bled rather freely, but his mother applied a piece of sticking plaister, and the bleeding ceased. The wound was small, to the left of the mesial line, and just below the upper curved line of the occipital bone. He cried at the time, but soon got over the pain, and was well and cheerful afterwards.

The accident was so trivial that I was not asked to see it, and nothing suggestive of any unfavorable consequence rendered it necessary that I should do so.

Throughout the week following the accident he was considered to be in his usual good health and spirits, but the native nurse says that for the last two days he had sometimes said he was not quite well; but he said nothing to his mother, except on the 21st, that the back of his head "itched". He ate well, slept as usual, but he was naturally a restless child at night.

He went with other children to spend the day next door. Mrs.—— says that she noticed, when playing with the children, that he squinted occasionally, and did not, on one or two occasions, reply to questions; she thought it odd, and mentioned it to her husband. He was quite well in the evening, and went to bed in good spirits. At 3 a.m., his aunt was called to see him and found him restless and feverish; she gave him some fever mixture, and sat by his side till he went to sleep. After this he became more feverish and was sick. When she saw him again in the morning he was very feverish, restless, and light-headed, and there was a peculiar twitching of the muscles generally. He was then taken into his mother's room. He had a calomel powder and an enema given, which acted freely. I did not see him till about eleven A.M. He was then delirious; the muscles were constantly twitching; his skin was hot; his pulse was quick and rather weak; the pupils were dilated; and he had a peculiarly unconscious stare. I immediately examined the head, and found the occipital region boggy and œdematous. It was then that I heard for the first time of the accident. My thoughts were immediately diverted from malaria, tubercular meningitis, &c., to the wound.

I shaved the head and examined it very carefully. A piece of black court plaister was removed from the wound, and a drop or two of healthy pus made its exit. The wound itself was about the size of a split pea, and looked quite healthy, it was deep, the probe passed down nearly, but not quite, to the pericranium; the bone could not be felt.

The scalp all round the wound from the upper occipital curved line to the neck was swollen and œdematous; it was boggy, but *not red*; no erysipelas had as yet supervened. I examined carefully for suppuration in, or under, the scalp; it was thickened and infiltrated, but no positive evidence of the presence of pus existed. I observed that the respiration was much hurried.

The symptoms rapidly became worse; the delirium increased, and he soon began to be violently convulsed. He rejected all that was given him, and passed from a state of incoherent delirium into silence. The respiration became excessively hurried, 80 in a minute; pulse very feeble and irregular; head rather hot.

Air entered the lungs freely, but apparently the pulmonary circulation was greatly embarrassed; it was evident that fibrinous coagula were rapidly forming in the right cavities of the heart. He was quite unconscious; eyes staring; pupils widely dilated; lips at times became quite livid, again, for a moment, becoming red.

I had applied a poultice over the wound and swollen parts, and ordered cold wet cloths to the head; chicken broth to be given frequently, and the enema to be repeated. Stimulants were now freely given by mouth and rectum, with quinine. Quinine had also been given at the first. Not the slightest benefit resulted beyond the occasional slight raising of the pulse. The child rapidly grew worse, and the embarrassed heart ceased to beat at 4 p.m.

The cause of death here was evidently cardiac apnœa, due to the formation of coagula in the right cavities of the heart. The origin of the septic condition that induced this can only be attributed to the mischief which had insidiously supervened in the occipital region. It is very remarkable that it should have manifested itself so long after the accident, and that it should have proved so rapidly fatal. The swelling of the scalp was not noticed until I accidently put my finger on it in examining his head, and there is every reason to believe that it was quite of recent occurrence.

For a moment the question of the trephine was suggested, on the supposition that pus might have formed between the bone and dura mater. But the evidences of constitutional mischief were so marked, and the chance of relief so very faint, that it was at once abandoned.

The body was examined on the 23rd July, about 14 hours after death. The back and other parts of the body were already much discolored by suggillation.

Head.—The scalp was reflected; all round the wound it was thickened and infiltrated with a dark red serous and probably partially purulent fluid. This occupied an area of an inch in each direction; beyond this and down to the neck it was infiltrated with yellow turbid serum. All this part of the scalp was œdematous. The wound itself was healthy, and reached nearly, not quite, to the pericranium, which was unwounded.

The pericranium was detached from the bone for about a square inch, corresponding to the site of the superjacent wound. The bone was bare, but did not appear dead. The bones of the cranium were healthy; the section revealed no suppuration in the cancellated texture.

The longitudinal and other sinuses were distended with blood and contained coagula.

The brain was much congested on the surface; the vessels between the convolutions were engorged; the surface of the base, especially over the wound, was slightly ecchymosed under the arachnoid. There was no indication of arachnitis; nothing suggestive of tuberculosis. The brain substance, when cut, was not congested; the ventricles were normal; the membranes were also healthy.

Thorax.—The lungs were pallid, almost blanched, except just at the back. They contained little or no blood, but some air.

Heart.—Pericardium natural; heart firmly contracted; the right auricle and ventricle contained a peculiarly tough decolorized fibrinous clot, which was firmly wedged in the auriculo-ventricular opening. It did not extend into the pulmonary vessels, but it did worse, by obstructing the pulmonary circulation at the very outset. There was also a small quantity of *post-mortem* clot in the right ventricle, and in the left cavities of the heart. The pleuræ were natural.

Abdomen.—Viscera healthy.

CARDIAC EMBOLISM.

By J. FAYRER, M.D.,

Professor of Surgery, Medical College, Calcutta.

When a patient who has suffered from a serious injury, or who has undergone a severe and protracted surgical operation, succumbs within a few hours after it, we have no difficulty in assigning the cause of death to shock, nervous exhaustion, or prostration from loss of blood, and the concomitant injuries or wounds he has sustained. There is, also, nothing in the post-mortem appearances to indicate that any structural change, beyond the diminished quantity and impoverished quality of the blood, has preceded death; though, no doubt, were we capable of recognizing them, physical changes, commensurate with the exhausted nerve force, would be found. Fortunately this is not a very frequent cause of death in Civil Hospitals, though on the field of battle and in Military Field Hospitals, during action, it is of more frequent occurrence. It happens, however, sufficiently often to have been seen by most Surgeons, and is one of the great sources of anxiety when we are compelled, by the urgency of the cases, to perform capital operations on those who from any cause have been previously much exhausted. I believe that if the records of such cases as have proved fatal after serious wounds or surgical operations, and are recorded under the headings of Shock or Exhaustion, could be thoroughly analysed, and the post mortem examination carefully revised, it would be found that a certain number of them were not due to the immediate effects of shock or nervous exhaustion, but to a pathological condition of quite a different nature, one which has been but little studied as a cause of death after surgical operations and severe injuries.

Pyæmia, shock, gangrene, tetanus, and secondary hæmorrhage are the formidable complications which, even to the layman's mind, render all surgical proceedings replete with dread, and terribly does the first of these interfere with our success. But that a patient may have recovered from the shock and first effects, and subsequently perish from another cause

differing from any of these, and yet directly traceable to the operation, is hardly generally known, and even professionally has received but little consideration. The cases I append, and for the details of which I am indebted to my House Surgeon, Baboo Gopal Chunder Roy, L.M.S., are good examples of what I refer to, and merit consideration.

The chief points of interest for consideration are that, in persons previously in fair health, a condition of the blood may be induced as the result of the effects of a severe injury, wound, or operation which has a tendency to cause the formation of fibrinous coagula in the cavities of the heart, which may, and do, prove fatal. Such being the case, what are the peculiarities in the individual, or his case, that pre-dispose to this fatal alteration in the blood? And what measures can we adopt to prevent, can we in any way predicate the cases in which it may be looked for, and if the symptoms have occurred, can we do anything to arrest, obviate, or lessen the danger?

The condition to which I refer is that of embolism of the right side of the heart, by the formation there of firm, white, fibrinous coagula by which the pulmonary circulation is embarrassed and, finally arrested, when death results from exhaustion and apnœa; that these fibrinous coagula do form in the heart before death, and that they cause death, there can be no doubt. It is well known that in the advanced stages of exhaustive diseases, such as diphtheria, cholera, pyæmia, &c., they do frequently occur and rapidly prove fatal. Here, however, they are regarded as one of the results of the toxæmic condition, and not as the sole cause of death.

But what I wish particularly to point out is that, without the concurrence of any toxæmia, and where in all other respects, saving the effects on the system, of the injury or operation, the patient is considered to have been in fair, if not good health, these fibrinous coagula may form, and slowly but certainly, sometimes suddenly, destroy life, leaving no post-mortem evidence of disease, beyond their presence in the cavities of the heart and pulmonary vessels, with lungs blanched from want of blood, and perhaps shrunken from the gradually diminishing quantity of air supplied to the obstructed pulmonary vessels.

It is to this condition then, as a cause of death independent of other complications, that I refer; and I propose to notice

the symptoms by which it indicates its progress, and the appearances left when it has caused death.

I would repeat that as a condition supervening in the advanced stages of pyæmia, we are familiar with it among Surgical Hospital patients. It frequently indeed in such cases proves rapidly fatal. But that form, uncomplicated with ichorous toxæmia, is fortunately comparatively rare.

In the two following cases there was nothing peculiar in the individuals to suggest the probability of this result. They were, it is true, neither very vigorous nor young persons, but they were quite as young and strong as many who recover without an unfavorable symptom from operations not less severe. The loss of blood, it is to be observed,—and this I think is a point of importance,—was in each case rather more than usual, and was much felt. The operations themselves were also, owing to the hæmorrhage, somewhat unusually protracted.

It will be observed that death did not occur in either case until the 8th or 9th day after the operation, though the symptoms of embolism made their appearance very early.

The symptoms of this form of embolism differ somewhat to that which supervenes in pyæmia or other blood disease.

There is less heat of skin in these cases; the temperature did not at any time arise above 102°. There are wanting all the constitutional symptoms of pyæmia, the rigors, sweats, and peculiar tinge of the skin, with the changes in the urine, and excretions from the lungs and skin. But there is sometimes a peculiar appearance of hebitude or fatuity on the countenance, with incoherence, and even delirium with great restlessness. A feeble and irregular pulse, excited though feeble action of the heart, dyspnœa and hurried respiration; all tell of the struggle nature is making against an enemy that is rapidly sapping and taking possession of the very citadel of life itself. After death, the post-mortem appearances reveal the emboli firmly impacted in auricle, ventricle, and pulmonary vessels, like the branches of a tree, entangled in the cords or moulded in the valves, leaving it a mystery how the circulation was carried on thus far. That such changes should take place in cases of blood disease, where from hyperinosis, lowered vitality, or other causes, a preternatural tendency to clot exists, and where the natural nutritive relation between the tissues, the blood and the innervation must be disturbed, does not, though it may be unexplained, seem strange, and the fibrinous coagula

which intervene and carry off the patient, are regarded as one of the events to be expected in the course of the disease. But when, as I have before said, a person previously healthy so suffers after a surgical operation or severe injury, we cannot avoid the conclusion that the shock of the operation, the relative or absolute loss of blood, and other changes which consequently occur in the tissues, must have much to say in bringing about this dangerous disease. It is also highly suggestive of the necessity for ascertaining the state of our patients' health, and their freedom from the complications of visceral disease, before we submit them to the chances of this danger. I am now alluding to that form of embolism in which the right side of the heart is affected; with that of the left, and the arterial system, I am not at present concerned, though this is a subject equally worthy of attention, and may form the subject of a future communication. Embolism, as it happens in the right side of the heart, may occur partially, to a slight extent, and be recovered from. It may be more extensive, and slowly but surely destroy life; it may be sudden and complete, and may prove fatal suddenly, by withdrawal of blood from the pulmonic circulation, syncope or cardiac apnœa carrying the patient rapidly off. It is rather to the second class of cases I refer in this paper, as they are illustrated by the two cases, but each is of the greatest interest.

In cases such as those now recorded, death is, I fear, generally the result. In the minor cases, death may also occur at a later period, when the coagulum has been disintegrated and washed away as debris, which, as smaller emboli, finally obstruct the capillary pulmonary circulation, and cause local deaths, suppurations, œdema, or hæmorrhage of the lung. Such indeed are the frequent results of this form of embolism as it occurs in pyæmia. I intentionally, in the present paper, avoid any allusion to embolism or thrombosis in other parts of the venous or arterial system, though there is much of interest to be said on that subject, and the history of puerperal patients especially furnish many facts not less interesting than important. The sudden deaths from causes apparently altogether inexplicable, the phlegmasiæ, cellulitis, abscesses, phlebitis, partial or entire paralysis, aphasia, and other forms of disease which we so frequently meet with, or hear of, will, in many instances, receive their best solution by the study of embolism in one or other of its venous or arterial forms.

The earliest symptoms of clotting in the heart should be sought for in all cases of operations on persons who are debilitated at the time; and such remedies as the pathological condition suggests, should at once be administered; though, I fear, but with little prospect of success. Stimulants and such agents as may be, however slightly, expected to aid in producing solution of the coagula, or in resisting their further increase, should be freely and frequently given, the strength being supported by the most nutrient diet, and the hygienic conditions of the patient being made as favorable as possible—brandy, ammonia, ether, eggs, and animal broths, with counter-irritation over the heart and a current of galvanism to increase its failing action; for, no doubt, its diminished movements, with cavities imperfectly emptied of blood, and but partially contracting at each hurried systole, together with a preternatural tendency of the blood to clot, have much to say to the commencement and subsequent growth of the coagula.

According to Dr. Richardson, all the alkalis have this solvent effect to some extent, and he especially recommends the carbonate of ammonia in frequent and full doses, for its double properties as a powerful stimulant of the heart and muscular systems, and a solvent of fibrine. This is a very admirable theory, but it requires confirmation. In those cases where the dangers of complete obstruction of the pulmonary circulation have passed over, and there is yet the debris of the disintegrating coagula to be disposed of, there is still danger of capillary embolism, and the train of dangers it involves, to be provided against. The use of the same class of remedies is again indicated; quinine, iron, and other tonic and invigorating drugs, with such local and constitutional measures as may tend to obviate the evil results, must be freely resorted to.

For the present, as I have before said, I have confined my remarks to the dangers of complete embolism of the right side of the heart in persons who have undergone severe operations or sustained serious injuries, and in whom the tendency to this destructive formation of fibrinous coagula owes it origin apparently to the operation as the prime cause.

CASE I.

Gooray Shaik, aged 50 years, a Mahomedan husbandman, was admitted into the Medical College Hospital, under Dr. Fayrer, on the 26th January, 1866, with elephantiasis of the scrotum, said to have been of 25 years' growth.

Stated that it had been growing rapidly for the last five years, but the fever which occurred formerly once in a month, ceased to recur three or four years ago. The fever was not in this case synchronous with the lunar changes, but with each accession the scrotum inflamed. It was much hypertrophied, and was nodular on the surface, the right side being larger than the left. The penis was embedded in the mass of the tumour. The patient was an elderly looking man, and said that his general health was otherwise good.

He was kept under observation till the 1st February, when, nothing contra-indicating, the operation for the removal of the tumour was undertaken. It was performed by Dr. Fayrer, and was completed within two or three minutes, but the patient lost a good deal of blood during the ligature of the vessels, some of which bled freely. The tumour weighed 4 lbs. About 16 vessels were ligatured. There was no hydrocele on either side.

Ordered.—Tinct : opii ℥ss., brandy 2 oz., and beaf-tea Oj. to be given during the day. Milk and sago diet.

5 *p.m.*—There was much bleeding from the wounded vessels; secured by ten more ligatures; pulse weak. Repeat brandy and beef-tea.

2*nd*.—Pulse 128, very weak ; tongue dry ; vomited three or four times ; no more bleeding.

Ordered.—Brandy 6 oz., beef-tea Oj. to be given during the day constantly.

3*rd*.—Pulse barely perceptible; is very low ; tongue dry; extremities cold.

Ordered.—Brandy ℥ss., ammon : sesq: carb : gr. v., beef-tea ℥j. every hour. Milk and sago diet.

4*th*.—Pulse distinct, 128, but very weak yet; respiration 29; skin of natural temperature ; tongue moist ; took very little food. Continue medicine and diet.

5*th*.—Is rather apathetic; pulse same as before; wound looking healthy. Continue.

6*th*.—Pulse 128 ; respiration 32 ; no cough ; respiration natural ; heart's action weak and irregular ; no murmur with the heart sounds ; pulse more distinct, but soft and intermittent ; appetite bad. Continue medicine ; mustard plaster over heart.

7*th*.—Pulse barely perceptible ; is very restless ; occasional hiccup ; tongue smooth, and inclined to be dry. Continue medicine every half-hour.

8*th*.—Same as before ; complaining of a pain on the right hypochondrium. Continue.

9*th*.—Died at 4 p.m.

On post-mortem examination there were found whitish decolourized clots in the right auricle and right ventricle of heart, extending into the pulmonary artery, and into all its minute ramifications within the lung. These, when removed and spread out, had a beautiful arborescent appearance ; the pulmonary veins were also plugged with similar clots, which extended into their branches and filled the left auricle ; other organs healthy. There was no disease of the viscera ; nothing to indicate the effects of pyæmia.

CASE II.

Jadoo, a Hindoo, aged 45 years (looking more than 50), was admitted into Dr. Fayrer's ward of the Medical College Hospital, on the 24th August, 1866, with a scrotal tumour of two years' duration. It commenced with an attack of fever, when the scrotum inflamed. The fever subsided and the pain in the scrotum passed off, but the swelling remained. Thus with each accession of fever the bulk of the scrotum had increased to the size of an adult head, when he came for relief. Had been having fever twice in a month, which occurred generally, he said, about the period of lunar changes.

The patient was an elderly nervous-looking man, fidgetty and restless in manner. General health pretty good. Urine was examined ; reaction neutral ; sp. gr. 1007 ; no albumen ; no sugar.

Whilst under observation he became impatient to be operated on. The tumour was removed, with Dr. Fayrer's permission, on the 3rd September by the House Surgeon, Baboo Gopaul Chunder Roy. It weighed 3lbs. 1 oz., besides the hydrocele fluid on the left side amounted to about 10 ozs ; 25 ligatures were applied ; lost much blood ; spermatic cords elongated ; testicles healthy ; pulse was weak during and after the operation, and he took chloroform so unsatisfactorily that it had to be intermitted once or twice on account of unfavourable symptoms.

Ordered.—Tr : opii ℥ss. *stat :* brandy 4 oz., beef-tea Oij. during the day.

6 *p. m.*—Slight bleeding from the wound, arrested by the application of three ligatures. Pulse of pretty fair strength ; no fever. Took his food.

4th.—Pulse 104 in the morning, and 136 in the evening, small and weak; tongue dry; no more bleeding. Brandy and beef-tea. Continue milk and sago.

5th.— Pulse 120 in the evening; temp. 101°; tongue pale and moist; occasionally delirious; nervous and incoherent in manners; no sloughing of the wound; no stool.

Ordered.—Ammon: sesq: carb: grs. x., brandy ℥ss., beef-tea ℥ij. every two hours; cathartic enema; sinapism over the heart.

6th.—Frequent attempts to get out of bed; limbs shaky; talks incoherently; no stool; pulse weak as before. Continue medicine and diet.

7th.—Wandering continuing; not boisterous, except at the time of dressing, when he shouts loudly, tries to bite the dressers, and obstinately resists dressing; wound looking pale; pulse weak, 120; temp. 102°; two stools; takes food badly. Continue.

8th.—Pulse 132; temp. 102° at evening; saccharine odour from the body; tongue dryish and furred; delirious occasionally. Continue medicine every 2 hours.

Ordered.—Brandy ℥j; spt: ether sulph: ℥ij; beef-tea ℥xx. Enema every 6 hours. Mustard plaster over the heart, and galvanism frequently.

9th.—Pulse 128; temp. 102°; respiration 38, same as before; no cough, no tenderness over the liver; heart sounds weak; air entering freely into the lungs. Continue.

10th.—Pulse barely perceptible; was very noisy in the night; respiration hurried; speaks with difficulty.

Died at 11 a.m.

Autopsy.

A firm, yellow, decolorized clot in the upper vena cava extending into the right auricle, which was pretty nearly filled with it. The clot extended into the right ventricle through the tricuspid valve, and thence into the pulmonary artery and all its branches.

The pulmonary veins were filled with similar clots, which passed also into their ramifications and filled up the left auricle; Left ventricle empty. There was a clot in the aorta, which was adherent to the sigmoid valves and ended in a free extremity beyond the origin of left subclavian artery, where it was floating loose within the calibre of the vessel. The lungs were blanched and seemed rather shrunken; other organs healthy, except the kidneys, which were pale and flabby.

7

ON PUNCTURE OF THE KNEE-JOINT IN THE TREATMENT OF SYNOVITIS.

By J. Fayrer, M.D., C.S.I.

Wounds communicating with the cavity of the knee-joint have always been regarded as extremely dangerous, as they are so frequently followed by destructive inflammatory changes which result in excision, amputation, or death.

The access of air to the opened synovial membrane is regarded as a great source of danger, as it is almost certain to set up irritation, followed by inflammation, which, passing into the suppurative stage, rapidly induces disorganization of the tissues that enter into the formation of the joint, and gives rise to constitutional disturbance, the precursor of surgical fever, which, if amputation be not performed, either wears out the patient by hectic and exhaustion, or destroys life more rapidly by the toxæmic changes due to osteomyelitis or other sources of pyæmia.

Notwithstanding the danger of opening the knee-joint, it has long been resorted to as a surgical operation for the removal of foreign bodies, such as loose cartilages from its cavity; but the opening has been made in a valvular form, and with every precaution to exclude the air. It has, moreover, been found necessary to prepare the patient for this operation by rest and confinement to the bed or couch, for it has been observed that, when the operations were performed without taking these precautions, dangerous and even fatal inflammation has followed. Some surgeons, to avoid actually exposing the cavity of the joint to the chance of the entrance of air, have effected the removal of the cartilage by a double operation. The first fixing it by a sub-cutaneous incision to the parietes of the joint, the second performed after the first wound had healed, removing it altogether. In the so-called hydrops articuli of the knee, a form of chronic synovitis, the joint has been tapped like a hydrocele, and a solution of one part of tincture of iodine and four parts of water injected, with similar results to those with

which the same method of treatment has been practised in hydrocele, the excitement of a moderate and modified form of inflammation, and the consequent absorption of the fluid.

The chief source of danger, however, appears to be the access of air, or perhaps, according to more recent views, not so much the air itself as the organic germs that pervade the air, and that if this can be avoided, the risk of destructive inflammatory change is much diminished. If such be the case, the use of carbolic acid, on the antiseptic principle, seems likely to be of service, and may render a wound of the knee-joint a less formidable accident than it has hitherto been considered.

That the method of treating effusions into the joints by paracentesis and the injection of iodine is a good one we can understand from the analogy of hydrocele, and it is fortunate that this particular agent, iodine, seems to have comparatively little tendency, even when exciting severe inflammation, to cause suppuration. But still we cannot but feel that it is attended with great risk in the case of an important organ like the knee-joint, and as yet I have not ventured to test its merits. My experience, however, enables me to speak with confidence of simple paracentesis of the joint in the treatment of inflammation, and as I believe it is capable of affording great and rapid relief from pain, as well as of expediting recovery, I have no hesitation in recommending it: but it must be borne in mind that the operation is to be performed with the greatest care, and that every precaution be taken to exclude the air. I append notes of some cases in which I have found it to be of benefit, and in which I believe not only was relief conferred, but recovery expedited.

That the knee-joint may be opened and perfect recovery take place has been amply proved in many cases. Though such accidents, even when caused by sharp, cutting instruments, do in many cases give rise to flagrant inflammation, rapidly terminating in destruction of the joint and often of the patient. A wound of the cavity of the knee-joint must ever be regarded as an accident of the most serious character, and the prognosis of a doubtful character. It is satisfactory to know that, as in the cases here recorded, recovery may occur, and the joint retain its functions. Therefore, with whatever anxiety we regard a wound of the knee-joint, we know that it is our duty

in the first instance to try, by careful management, rest, and the exclusion of air, to procure union of the wound, and obviate destructive inflammation of the articular cavity. It is not less important to keep a watchful eye on the patient's condition, that we may recognize and deal with the earliest symptoms of those inflammatory changes which, beginning insidiously, are apt to extend, and end in destruction of the joint.

CASE I.

Shurno, a Hindoo female, aged 32 years, was admitted on the 24th May, 1868, with sub-acute idiopathic synovitis of the left knee, of one month's duration. Had had gonorrhœa about three years prior to admission. At the time of admission, there was general fulness and swelling of the joint, with a good deal of pain, most troublesome at night. Fluctuation at the upper and outer part of the joint distinct. Patella quite loose, motion of the joint impaired; it was in a semi-flexed position. The limb was put up in a *MacIntyre's* splint. Bowels opened by a dose of castor oil, quinine and iodide of potassium in five grain doses, administered thrice daily, and a blister applied above the upper and outer part of the joint. On the 28th May, the knee was tapped at its upper and outer side with a small trocar and canula, and three ounces of sweet oil-coloured fluid let out, puncture sealed by guttapercha. A day or two after, the knee began to inflame, attended by febrile disturbance. On the morning of the 31st May, the knee having been swollen and painful, the guttapercha was removed, and the joint was again tapped in the same place, and six ounces of thin puriform fluid drawn. The canula was kept in for a time, and the discharge allowed to drain away freely. Since this opening has been made, the joint has gradually improved, the discharge diminished, swelling subsided, and wound had healed by the 22nd of January. In the course of the treatment, the patient had a large abscess at the upper and outer part of the left thigh, and a severe attack of diarrhœa; the former was opened, and the latter was checked by astringent mixture. From the day of tapping, that is, from the 28th May, up to 1st July, 1868, daily record of temperature and pulse were kept, the range of the former varying from 99 to 100° in the morning, to 102° in the evening, and that of the latter from 84 to 116°. Internally quinine and iodide of potassium

were given; subsequently astringents when she had diarrhœa, lastly ferruginous tonics. As regards external applications cold lotions were applied during the existence of inflammatory symptoms after tapping, and subsequently when matter formed in the thigh, carbolic acid injection and dressing. The patient was discharged on the 15th October, 1868, much improved in health, but with the knee partially anchylosed, and some thickening about the joint; embrocations were ordered to be used freely.

CASE II.

Tajmahal Hossein, aged 28 years, policeman, admitted on the 24th July, 1868, for scrotal elephantiasis and double hydrocele, of five years' duration. This was removed by surgical operation on the 29th of July, and he did well after the operation; the wound cicatrizing healthily, until the 16th September, when he began to complain of pain in the left knee. On the following day, both knee-joints were affected, and on the 18th, a collection of fluid had formed in the knee-joints. Purgatives were given and tincture of iodine applied to the joint; iodide of potassium was administered, and under this treatment, the left knee recovered. The right, however, remained distended with fluid, and was painful. The tincture of iodine was again applied, and iodide of potas. administered. On the 30th September, the swelling still remaining, and there being no fever, the right knee-joint was tapped with a small trocar and canula, and nearly four ounces of yellowish and somewhat viscid fluid drawn off. The puncture was made valvular, and the opening having been carefully protected against the ingress of air, was closed by lint soaked in a solution of guttapercha in chloroform. The removal of this fluid gave great relief, and no unpleasant consequences followed.

On the 4th October, it is reported that "both knees are nearly well," neither fever nor inflammatory mischief followed. There was no re-secretions of the fluid, and the swelling did not recur. He continued to take the iodide of potas., and for some days the knee was kept at rest. Some stiffness and weakness of the joint that remained were gradually removed by friction with camphor liniment. He was discharged cured on the 5th January, 1869. The knee had perfectly recovered in November, but he was detained until the complete cicatrization of the operation wound, which was not complete until January, 1869.

CASE III.

Kally Doss Sircar, a Bengalee, aged 32 years, was admitted on the 31st January, 1868, for pain, swelling, and impaired power of motion in the right knee, of four months' duration. For the last four years he had been subject to similar attacks, for which he had undergone a variety of treatment. There was no history of syphilis.

The joint was found to be distended with fluid, and was contracted. The limb was extended under chloroform, and placed on a splint, and the extension gradually maintained. Iodide of potassium was given, and blisters applied in the vicinity of the joints. Strapping of the knee was subsequently tried. He made slight improvement under this method of treatment, but soon fell back again. On the 2nd May, no real improvement having taken place, I tapped the knee-joint, and withdrew ʒviii of fluid of a thin sanguinolent appearance with flakes of lymph floating in it. The opening, as in the first case was made valvular, and immediately closed against the access of air by lint soaked in guttapercha and chloroform. The knee was then placed at rest on a splint, and the iodide of potas. continued. The swelling and pain were much relieved by the operation, and on the 14th he could bear his weight on the limb, which had so long been completely crippled and contracted.

Some swelling still remaining, either from re-accumulation of more fluid, or some of the old not having been removed, I again, on the 26th, drew off about ʒviii more fluid just like the first. The wound was closed, and the same precautions observed as before. He was again relieved; neither pain nor inflammation followed. The knee was subsequently strapped. On the 7th June, he was able to walk, and bend the knee in doing so. On the 27th June the strapping was removed, and camphorated oil rubbed in. On the 15th July, he was discharged; able to walk and much improved in all respects. The joint is still stiff, with some thickening of the surrounding tissues.

CASE IV.

K. C. Mookerjee, aged 30 years, was admitted on the 9th April, 1869, an opium eater, with chronic synovitis of the right

knee. The iodide of potassium with his usual quantity of opium was prescribed. On the 10th the knee was tapped, and about four ounces of viscid puriform fluid drawn off. The wound was closed in the usual way, and the knee placed at rest on a splint. He was much relieved by the operation, and the improvement was permanent. On the 13th the joint was strapped. On the 17th he is reported as much better. On the 25th pain almost entirely gone; joint rather stiff, but much diminished in size. He is now nearly well, and walks without much difficulty.

CASE V.

Aboojan, a Mahomedan girl, aged 26, admitted with synovitis of the left knee, and also in a slighter degree of the left ankle-joint. This came on about two months ago, after an attack of fever, and for which she had been treated with blisters before admission. The knee was much distended with fluid. There was little or no constitutional disturbance. On the 21st March, 1869, the day after admission, the joint was tapped on the outer side, and about eleven ounces of straw-colored fluid drawn off. The wound was closed in the usual way, the limb placed at rest on a splint, and lead lotion applied. There was no fever in the evening, but pain came on for a short time. On the 1st April the pain and swelling had subsided. On the 4th April the knee was strapped, and she has since been gradually recovering, having been somewhat thrown back by an attack of diarrhœa. She can walk fairly with the aid of a stick, and the swelling and pain in the knee are almost gone.

These cases all prove that the knee-joint may be punctured without severe inflammation being a necessary result, and that if a moderate degree of synovitis should happen, it may be subdued by ordinary phlogistic remedies and perfect rest. A certain amount of inflammation, indeed, seems to have the beneficial effect of so far modifying the condition of the synovial membrane as to prevent a re-secretion of the fluid.

It is with this object, as in hydrocele, that tincture of iodine has been recommended, and even used by some surgeons; but I confess I should feel no little anxiety in thus interfering with so delicate and important a cavity as that of the knee-joint. I should note that, in the closing of the puncture made into the joint in these cases, guttapercha dissolved in chloroform

was used by saturating the lint applied over the spot, thus forming a protection through which no air could penetrate. The wound, if it did not immediately close, was subsequently dressed with carbolic acid in the usual way.

The result of these cases has been so far satisfactory as to encourage me to repeat the same treatment in future cases of synovitis.

In chronic effusions, no doubt, it could be resorted to with the greatest impunity; but in acute synovitis it may equally be practiced, and with the greatest relief, although probably with more risk.

A CASE OF APHASIA.

By J. Fayrer, M.D., C.S.I.

The following notes were taken at the time of a very interesting case of aphasia that recently came under my care. The patient was an English officer, holding an important post; he was about 52 years of age, and of about 30 years' Indian service. During late years he had suffered much from chronic diarrhœa and anæmia; a recent visit to Europe had, however, somewhat re-invigorated him. He was of spare, but active figure, and of regular and temperate habits; very intellectual, and much given to study. The duties of his office were of an important and responsible nature, and just before the illness, for which he came under my care, they had been unusually onerous. He had, moreover, suffered much anxiety of mind and domestic affliction, from the illness and death of a very near relative. He had lived alone, and had almost entirely secluded himself from society since his return from Europe some months previously; but lately, his friends had induced him to go out a little, and he had apparently enjoyed the relaxation and change.

It was on June the 8th, (the weather being intensely hot), that I was called in, in passing his house; "he had just had a fit."

His servants, and one or two of his friends who saw him the day before, say he had been perfectly well up to 7-30 or 8 that morning. He had written a note early that morning just before he was taken ill, which was quite correctly worded—a note written to me I imagine, just when he felt the attack coming on, (and of which I append a copy); No 1 was not so correct.

His servants say that he was lying on his couch, when they suddenly saw that he was convulsed in the right side, and that, on going up to him, he was quite unconscious. It was 10-15 a.m. when I saw him; he was lying on his couch with his eyes closed, but opened them directly I spoke, and appeared to recognize me; he then began to talk incoherently. He appeared not only to be unable to collect his ideas, but also to have lost the memory of words; he kept repeating one, which resembled "played." This came in as the second or third word of every sentence he tried to give utterance to, and he spoke very fast. For example, after replying to my question, how are you? he said, "I am better, I have played," (then incoherence)—"I don't know what brought this on,—"I have paid, played, played," and then again he became altogether incoherent. His pulse was 120, and the radial arteries felt rigid. The

cardiac sounds were natural, perhaps rather weak. I had repeatedly examined his chest before the attack, and the urine had also been frequently analysed, and nothing abnormal detected. Having lost a near relative from Bright's disease, he had been curious on this subject, and was constantly directing his attention to the state of his kidneys. The head was cool; the face pallid; no paralysis; no alteration in the tone of his voice; articulation was perfect; his tongue was clean; his bowels had acted freely that morning. His servants say, they thought him very well when he got up, and they were surprized to see the convulsions. They say, he was not hot at the time, and they noticed particularly, that it was the *right* side that was convulsed. Ice had been applied to his head before I arrived. The urine was examined, and found to be free from albumen. It was acid in reaction, and of normal sp. gr.

It occurred to me that the great heat of the weather—thermometer over 90°—had something to say to the attack, which probably indicated degenerate cerebral vessels, perhaps an embolism in one of them; or that there had been some slight hæmorrhage, or congestion, or transient interference with the cerebral circulation, and probably great general exhaustion of the nerve centres.

I ordered chloric ether and acetate of ammonia, and enjoined perfect rest and quiet; ice to be applied to the head if it became hot, beef-tea to be given occasionally, and the bowels to be acted on by a simple enema. I saw him again at 4-30 p.m., and he looked pretty well; he replied in a word or two to every question, but immediately lapsed into a state of incoherence: he did not recur to the same word that haunted him in the morning, but he substituted his words, and seemed totally unable to grasp the one he wanted. He evidently understood all that was said to him, and tried to answer. A friend asked him to go and stay at his house: he thanked him, and was able to say he preferred remaining where he was; but he was quite unable to continue the conversation, and became incoherent. I left instructions that he should be well watched, and that beef-tea and the medicine should be given regularly.

June 9th.—He is in much the same state: pulse about 120; temperature of body somewhat high. He replies to a first question intelligently, but soon lapses into incoherence. I asked him to read; he took the book and pretended to do so, but it was the most incoherent jargon; all the time he looked quite intelligent. He has taken some nourishment, and is said to have slept. But for his shaven head, he looked fairly well. Cold had been applied to the head, and his bowels had been relieved. He was attended by a careful sick-nurse. In the evening I found him much the same; no improvement in his speech. Dr. C.—— had seen him with me in consultation at 1 p.m.

June 11th.—He remains much in the same condition: pulse from 110 to 120; skin cool, perhaps slightly feverish at times; the bowels act regularly. Takes readily all fluid food that is offered, and sleeps well. He is very quiet, tractable, and gentle; does or attempts all that he is asked to do. He walks with a peculiar gait, the body being bent forward; this is merely an exaggeration of his ordinary carriage. His tongue is slightly coated with whitish fur, and there is a peculiar and somewhat offensive odour in his breath. A small blister had been applied to the nape of the neck, which has risen well, but he does not complain of it in the least. He seems quite tranquil, and even happy; appears to recognize his friends, but he cannot tell, or rather, perhaps, he cannot remember, their names, or the words he wishes to say to them. Yesterday I asked him to name one of his friends who came into the room; he smiled and said,—"Oh that's go-up," and then he muttered some unintelligible words. He can reply to a first simple question, such as,—"have you slept or eaten well?" He answers "oh yes, or no," as the case may be; but the next question, however simple, puzzles him completely, and the reply, for he tries to answer, is the most incoherent nonsense—words without connection or meaning. I asked him to read yesterday, and gave him a book; he looked for his spectacles, put them on, then looked long and earnestly at the book, muttered a few words, and put it down. I then asked him to write a note; he sat down at his writing table to do so, put on his spectacles, took pen and ink, adjusted the paper and sat looking at it. Then, after about a quarter of an hour, repeatedly making efforts to begin, and saying,—"I can't write, oh that's just it!" he scrawled three figures of 8. To-day, the 11th, he read a few words correctly, and then became incoherent. He sat down to write at my request, and after about 20 minutes' delay, he produced the note No. 2, and then seemed so exhausted, that he was glad to go and lie down. It is difficult to say how far he knows what he is doing. In the midst of the simplest reply to a question, he puts his hand to his forehead, appearing to try in vain to recall the word or idea he wants. For example,—have you done so and so?" "Oh yes?" "Do you like it?" "Oh yes!" "Why?" "Because I—I—I can't work a bit, because it's a tight height." I have directed that he shall be very closely watched day and night, but he is tractable and gentle in the extreme. Nourishment with a little wine to be given frequently; an aperient when the bowels are confined; perfect quiet; the head to be kept cool; the feet warm, they are sometimes cold.

June 12th.—He seems rather better to-day: pulse 84; skin moist; head cool; bowels freely opened. I tried him with reading and writing; he read a few words correctly, but others he changed altogether. His writing is appended in Nos. 3, 4, 5. He

answers questions pretty well, and looks as if he understands what he wants to say, though he is unable to remember the words he requires. He saw me looking at some numbers of "Good Words" lying on the table, and said there was something in them that was very good, but he could not remember what it was, or who wrote it; but he took one of the numbers up, and opening it at Gladstone's article on "Ecce Homo," then said, "take it with you." All this was said as by one in perfect health, but he lapsed immediately into incoherence. He has eaten and slept well; is in good spirits, and answers cheerfully to any question. The same treatment continued.

June 13th.—He looks better; is sitting up; slept well; and is taking food freely. Had a pint bottle of claret, and a glass or two of sherry yesterday. I asked him if he had read the newspaper, and he replied, "Oh yes; Eyre! Eyre, Chief Justice." He then took up the *Englishman* and read that "the Chief Justice, and all the *Judges* (judges) had done so and so;" he made one or two mistakes, but on the whole had more command of words than he had yesterday. He remembered my name, and mentioned it several times, but he could not manage that of an intimate friend who had just then come in to see him. I asked him to write a note, and he at once cheerfully sat down to do so. The result is appended. (No. 6.) There is also a memo. of what he wished to have for tiffin (No. 7), and dinner, and an order that was to be sent to his wine merchant. (No. 8.) His skin and head were cool; pulse 84; bowels open; much less of the peculiar odour first noticed in his breath. Altogether, he looks much better and stronger; is cheerful; and walks with a less stooping gait. To-day I ordered quinine with tinct. nucis vomicæ.

The blister on the neck is still open. He takes a generous diet, and one pint of claret daily. On the evening of the 18th he was evidently better. He had written an order to his wine merchant, and some other notes. He read several lines with few mistakes; he seems much interested in doing this, but soon gets tired, and then he becomes quite unintelligible.

June 14th.—He is better this morning: pulse 80; has slept well; no heat of head or body; reads very well, miscalling only a few words. Talked quite naturally about many things, and especially about his illness; remembered being taken ill, but could not describe his sensation; remembered people also who came to see him, and the days on which they came, but could not always remember their names; even whilst talking he forgets words, or substitutes others of a similiar sound; at the same time he appears conscious of his defect of memory. He wrote a note (copy appended, No. 9), to a friend; he remembered his name, and appeared much amused that he did so. It had been stormy during the night, and this was evidently in his mind when he wrote; notwithstanding that he spoke so well, the

wording of his written memo. No. 10 shews how far he still was from health. I should note that the handwriting from the beginning has been almost as steady and firm as when in his usual health. Dr. C—— saw him again with me to-day. He read and wrote for us; the reading had few mistakes, those mostly at the end of the sentences; the writing not nearly equal to the reading. He talked quite naturally on many subjects, and his general aspect was that of great improvement.

June 15th.—He seems to be doing well. He read a telegram in the paper, and commented fairly on it, but made several mistakes in his words; read part of a book equally well, and wrote memos. (Nos. 11-12) about his food; his writing falls far short of his reading or conversation. His physical health is good; bowels regular; pulse 80; temperature of body normal; his memory, in some respects, is not so good as it was a day or two ago: he could not to-day remember the names of common objects, such as a bell, a book, (the latter he called "bok"), a paper knife, or his intimate friend's name, but was quite sensible of his defect of memory, and smiled as he alluded to it. He takes his food well, and half a bottle of claret daily.

June 16th.—He is much the same, with memory, if anything, rather clearer. He reads with few mistakes, but his writing (No. 13), was not equal to his reading; he has a fair appetite, slept pretty well last night. It should be noted that during the last ten days rain has fallen, and that the atmosphere has been much cooler, which has been in his favor.

17th.—He is improving; had a good night; tongue clean; pulse 80; blister healed. He read an advertisement in the newspaper quite correctly, and spoke well, with occasional mistakes, of which he was quite conscious. I have cautioned his friends and the nurse against allowing him to sign or write cheques or letters.

18th.—He continues to improve and reads and writes (No. 14), better, forgetting fewer words. His physical health is otherwise good.

19th.—He continues to improve; conversation perfectly natural; reading almost without a mistake; writing (Nos. 15-16), improved, but still not correct. An ordinary observer would now probably not notice any peculiarity in his conversation.

June 21st.—Doing well; speaks almost quite correctly. In reading he occasionally mispronounces a word, but seems aware that he has done so.

June 22nd.—He is doing well; speaks and reads correctly, or nearly so; writing (No. 17-18), improved, but still not perfect. Does not seem to be in quite such good spirits as he has been.

June 27th.—He is quite convalescent; has been out driving. His conversation and reading are now nearly perfect. He occasionally forgets or substitutes one word for another. He has a tolerably distinct recollection of all that has happened, and

remembers being taken ill, but has no recollection of the fit. He is to leave India for Europe by an early steamer.

July 3rd.—He has left by the steamer, in all respects much better, but still he occasionally forgets a word.

He arrived at home safely, and for some time was much better for the change. Subsequently I heard, but without details, that he had some recurrence of the symptoms; the results of this attack I have not heard, but I believe he is at present (September, 1869), alive and well.

The following are specimens of his notes and memoranda written at my request during his illness. The writing generally was as good and firm as though he had been quite well. There are peculiarities which cannot be represented in print; often the initial letter of a word is obliterated and re-written, as though he had hesitated as to what letter he should use, and many marks and letters that are of necessity unintelligible, are left out, as they could not be imitated.

A gradual improvement in each note may be observed, but the composition was always inferior to his manner of expressing himself; and when he wrote the last of these notes, his conversation was almost without a mistake. Most of these memoranda were signed in his usual bold and firm hand-writing; his signature, indeed, alone would not have betrayed any defect. But the notes themselves shew that as Dr. Bastian would say, the condition of agraphia continued after that of aphasia had well nigh passed away.

No. 1. June 8th.
Please come wall and see me. Y.
8th August.

No. 2. June 11th, 1868.
I am so bad to-day, abad, all abad. Yesterday all ab—abeledu—all bide—blessed, blesse tut.

Js. Js. Js.
P. P. P. P. P. P.
Bless, bless.
Bless: 11, bless 11, blesse.

P. B. B. B.
P. P.

No. 3. June 12th, 8 a.m.
Wednesday.
I should niably a wark of blacking a boik of book if I ask.

No. 4. June 12th, 4 p.m.
Have any one a dundred any brere wone.
By belief was very ill. A dweling; so derely a darêf; a waif all along light. At about a enayty brefest a baturfent about after a dayfect about first day.

No. 5. 12th June also.
I am better, he is better, but ill a ill my bill a better ill i bill my better is a bouller ill I——

No. 6. June 13th.
It was bloying all the well, it was barring in bottle, it was sainty. It has been raining all the night; I have been very.

No. 7. June 13th.
Bacon. Begs. Begels. Spiripe Scink. Soups. Spitch Cock. Spineiple.

This was what he wanted for tiffin.

No. 8. June 13th.
Beshonath Law.
Claret wine as usual. Some for my tervan.

No. 9. June 14th.
You we have had an awnully lot of both, during last night it was training during last night, the train was for-fully getting it.

No. 10. June 14th.
Swit Bread. Dinner. Soup. Spick lock. Brodline.

No. 11. June 14th.
I heems to have been pretty well and am as just as you are all. I am better than I was, but I hope in a few days I shall be able to do so as I well can.

No. 12. June 15th.
Something about two o'clock a bed of mutton to read. Then at night, I will have something to read at nice I will have some wine for me.

No. 13. June 16th.
It has been wet than it used to be. There is very little to be done for all the Englishmen to be said.

No. 14. June 18th.
I have been seeding the paper, and have been reading about all the news.
Kidneys for breakfast.
Spitch Cock. Soup. Roast mutton.
Wine. Bordeaux.

No. 15. June 19th.
Morning. Eggs and Bacon.
Tiffin. Mutton chop. Soup. Mutton or Beef.
Bordeaux.

No. 16. June 20th.
We have ordered fish and omelet.
There is nothing ordered for tiffin, as nothing is yet settleded.
Soup. Beef or Button.

No. 17. June 21st.
I am very much better than I have been for the last few times. I have ordered some breakfast, but nothing yet for tiffin and dinner.

No. 18. June 22nd.
I am quite well, and I have nothing to bother me about my head at all. I have not heard what we are to have in tiffin or T. Tinner. The T breakfast we are to have fish and omelet.

I have recorded this case in detail, as it illustrates some points in the pathology of the disease that have been much discussed by recent observers. The symptoms were exactly those described by Trousseau and others; the loss of memory of words, even whilst the intelligence was comparatively good, was remarkably shewn during his recovery. The incapacity to write correctly whilst he was able to express himself almost clearly, was very illustrative of that phase of cerebral disease which has been termed "agraphia" by Dr. Bastian.

The convulsion on the right side, at the commencement of the disease, so far supports the views of Dr. M. Dax and others who localize the cause of the disease in the left cerebral hemisphere. Happily, the opportunity did not occur of ascertaining whether in this case the views subsequently promulgated by Drs. G. Dax and Broca, as to the precise localization of the lesion in the anterior and outer portion of the middle lobe of that hemisphere, near the island of Reil, and consequently close to the posterior portion of the frontal lobe, were correct. His recovery without paralysis, and the almost perfect restoration of the power of speech and writing seems, I think, to point to functional disturbance rather than structural change. Though the prematurely aged appearance, the rigid arteries, and other general indications of adipose and atheromatous degeneration, suggest the possibility of disturbed cerebral circulation, and point, perhaps, to the middle cerebral artery as the seat of some transient interruption of circulation, or the temporary presence of a thrombus or embolon, whose origin is traceable to degenerate vessels. It is possible that congestion, or slight hæmorrhage, may have occurred from similar causes; and as the central ganglia were probably only slightly compressed, the symptoms, after the convulsion had passed, were confined to what was due to changes of a transient nature that had occurred in the left anterior cerebral lobe.

It is possible that this may have been one of the protean forms assumed by cerebral exhaustion, the result of long residence in a tropical climate, exhaustive disease, and an overwrought brain; and that structural disease, in the conventional acceptation of the term, may have been absent, the pathological explanation being sought for rather in dynamical than material changes. In any case, it is impossible not to regard the future

of one so affected with anxiety; and the chief practical lesson to be derived from such a case is, the avoidance of a too protracted residence in a climate where we were not intended to live, the early acceptance of those warnings which usually precede the breaking down of the vigor and force of the nerve centres generally, and the timely relaxation from oppressive mental work, as well as absence from the exhausting effects of a hot, damp, and malarious Indian climate.

Very little has been said about treatment; as far as the administration of drugs went, very little was needed. Rest, proper nourishment, and the absence of all excitement were the conditions necessary to enable Nature to repair the mischief, and restore the diminished power. Due attention was paid to the state of the bowels, and the head was kept cool, if ever the least increase in temperature suggested excitement of the circulation. A certain amount of wine was allowed with the food, for although a very temperate man, he had been accustomed to take a certain quantity of stimulants, and this certainly was not the occasion on which to withdraw the accustomed supply. A blister was applied to his neck, but I doubt if it was of any service, and I believe now he would have done just as well without it. I have strongly urged that he should never return to this country, and that his brain should not be overtaxed with work of any description.

FATAL CASE OF IDIOPATHIC TETANUS IN A EUROPEAN.

By J. Fayrer, M.D., C.S.I.

On the 27th of March, 1870, I was requested to see Mr. D—— S——, a Greek gentleman, aged 36 years, of stout frame, lymphatic temperament, though with dark hair and anæmic complexion. He had returned to India about fifteen months ago, after a visit of three years to Europe, having previously resided for six years in Calcutta, during which time his health had been moderately good. During his last visit to Europe he suffered from some severe abdominal disorder, probably enteritis, but he had regained his health when he returned to Calcutta. I found him suffering from a slight feverish attack, for which I ordered a simple diaphoretic, and enjoined quiet and rest at home for the day. He complained also of a pain in the right pectoral region, which was apparently muscular, as the stethoscope did not indicate any thoracic mischief. For this I recommended a sinapism and some simple embrocation.

The weather had during the previous day or two become very hot, and a dry south-westerly wind was blowing.

On the 28th, he was better, but not well enough to go to his office; he was advised to remain at home. I observed that his room was very close and warm, as the windows had all been kept carefully closed; and recommended more ventilation. He said that the pain in the chest was almost gone. I again made a most careful examination, and could detect no sign of either hepatic or pulmonic disorder. I recommended a better diet and some wine.

On the 29th, when I went to see him, his servants said he was better, and had gone to his office.

On the 30th, he called on me at about 11 a.m., and said he was not feeling well; he had a sensation of stiffness in his neck, which he attributed to a chill, the result of going out into the open air from his warm room, when he was perspiring freely; otherwise he was better, had no fever, and his bowels were open, but he had had a restless night, and he looked anxious and uneasy. I ordered an anodyne liniment, and recommended him to avoid exposure to currents of air.

In the evening I received a note saying that he was not better, and requesting me to go and see him. I did so, and found him alarmed and anxious about his condition. He was restless and uneasy, complaining of stiffness in the neck and jaws, and difficulty of swallowing, but, withal, no pain. He looked dark under the eyes; his skin was moist, with cold sweat;

and his pulse about 90°. He could open his mouth, but imperfectly, and there seemed to be general rigidity of all the muscles of mastication and deglutition. I ordered hot fomentations, an anodyne embrocation, and sedatives. I saw him again at 7-30 p.m. and remained some time watching him anxiously. I prescribed Cannabis indica and chloroform internally, with hot stupes to the neck and jaws, which gave some relief. He was thirsty, and drank iced-water pretty freely, but with some spasm; he tried to take soup but very little was swallowed. The rigidity of the neck and occasional spasms of the masseters was increasing; the head was drawn backwards and carried in a peculiarly stiff and erect position. My suspicions were now confirmed, and as I could find no history of any traumatic origin, it was evident that idiopathic tetanus was rapidly setting in. I expressed my fears for the result to his friend, and suggested further advice. Meanwhile, the fomentations and medicines were continued, and beef-tea administered frequently. The attempt to swallow it was always attended by spasm. The effort to expectorate viscid mucus had the same effect.

Drs. C. Palmer and Partridge saw him, and it was decided that the medicines should be continued. Belladonna liniment applied to the neck, and nourishment given frequently. The bowels to be again acted on by enemata, and if the difficulty of swallowing became greater, the medicines to be given by enema.

Nutrient enemata were also ordered, and the administration of chloroform at intervals prescribed. Notwithstanding treatment, the tetanic spasms rapidly increased with renewed intensity. He was much exhausted after each, and his body bathed with cold sweat. The countenance became livid and distorted, as the respiratory and laryngeal muscles were involved, and during the paroxysms opisthotonos was severe. The pulse became rapid and feeble, at times very irregular and intermittent, pausing for a time, as though the heart itself shared in the general muscular spasm. His consciousness remained, he occasionally tried to speak, and asked the nurse to open a window. The least touch brought on the spasm, which rapidly involved the abdominal and thoracic muscles, and left him quite exhausted. The last and fatal paroxysm occurred at about 11-30, and at ½ to 12 he died, completely exhausted by its violence. The pulse had ceased, it returned again for a moment, and then ceased altogether.

Idiopathic tetanus in the adult European is a rare form of the disease, and comparatively seldom witnessed. This was one of the most severe and rapid cases I have seen. The only cause that could be assigned was the sudden exposure to a relatively cold atmosphere, when the body was relaxed by the heat of a warm room, and when the constitution was somewhat depressed after a slight febrile attack. The atmospheric influence at the time was no doubt evil, and

favorable to the development and rapid course of acute disease. The setting in of the extreme heat is always most trying to the European constitution, and at such times disease has a tendency to be rapid as well as acute. Idiopathic tetanus is not uncommon among the natives of India. I have observed that it has a greater tendency to occur at the changes of the seasons, when there are great and sudden alternations in temperature. It is not, as a general rule, so fatal as the traumatic form of the disease, and recoveries are not uncommon; although, as in the present case, it is frequently very severe and rapidly fatal.

HEPATIC ABSCESS.

By J. Fayrer, M.D., C.S.I.

An English officer, aged 29, of tall, slight figure, and apparently of delicate constitution, came under my care on the 4th September, 1869. He had just arrived from a station in Oude, where he had suffered from the disease for which he was leaving the country. He had been in India about three years, and had had good health previous to the present attack, which commenced in July last. The following are his own brief notes of his case before he reached Calcutta:—

13th July, 1869.—"Severe headache in the morning and during the night, was exposed to the sun all afternoon; staid in the house next day, and took aperient medicine. 15th to 22nd July.—At duty, but not feeling well. 21st.—Whilst riding home in the morning, got what appeared to be a stitch in the side. 22nd.—Under medical treatment; kept at home and took aperient medicine. 24th.—Pain much increased; eight leeches were applied to the side; took aperient medicine; during the evening had a shivering fit. 27th.—No better; twelve more leeches to the side. Between the 3rd and 15th August had three blisters over the liver; pain inside continued much the same. About the 18th August the original pain gave place to a diffused pain throughout the right side; counter-irritants were applied. 25th.—Observed a slight swelling about four inches from the spine and just below the ribs. 28th.—It was pronounced to be an abscess, and I was sent to Calcutta to appear before medical board. During this time the bowels never moved without medicine. 1st September.—Started for Calcutta, bore the journey very well."

He arrived in Calcutta on the 4th September, and I saw him that morning. He looked weak, anæmic and emaciated, with a sallow tinge of the skin, and the general aspect of a man suffering from liver abscess. On examination I found that the liver was enlarged downwards, posteriorly, and that just below the last rib in the right lumbar region, about four inches from the spine, there was a prominent fluctuating swelling, which was evidently a liver abscess pointing posteriorly, and rather low down. He had no fever; pulse 100; skin cool and moist; no great pain; little sense of fulness and uneasiness in the right side; breathing slightly embarrassed. He was taking no medicine; bowels had been confined for two or three days, but he felt no inconvenience from it and his tongue was clean, moist, and the papillæ natural. His appetite was by no means bad. It was evident that he was not now suffering constitutionally from the presence of pus.

On the 5th, after rest and a good night, I opened the abscess at the most prominent point, having made an incision through the integument, and then inserted a large trocar and canula. I drew off about 18 ounces of thick pus, which had the peculiar appearance and odour of that of a liver abscess.

I immediately syringed out the cavity with a solution of carbolic acid, 3i in a pint of water. Left the canula in, and plugged it with lint soaked in carbolic acid one part, glycerine four parts; a bandage and tapes secured the canula in situ. I ordered him also a solution of quinine and sulphuric acid in calumba. Diet of soup, bread and milk, a little wine; the latter he did not like at first.

In the evening I again emptied the cavity of about eight ounces of pus, and washed it out as in the morning. He had no fever during the day. His pulse has come down since yesterday, but is quicker than it was in the morning. He feels well; much relieved by the removal of the pus; an enema was given to-day, but it did not relieve him; ordered two aperient pills.

September 6th.—Drew off about eight ounces of pus this morning, and about four more in the evening; removed the canula, as it was irritating him; kept the wound distended with lint soaked in carbolic glycerine. The cavity is washed out on each occasion that the pus is removed with the carbolic acid lotion. Bowels have acted freely; the pills were aided in the morning by a sulphate of magnesia draught. He has taken his food fairly, and now takes beer instead of wine; slept well; looks and feels better; pulse 88 in the morning, has quickened a few beats in the evening, but there is no apparent increase in temperature.

8th.—He has been doing well; the quantity of pus diminishing daily, this morning about six ounces, in the evening not more than two. He takes food well; sleeps well, and is in good spirits.

9th.—He improves daily. This morning about two ounces of pus were removed, and this evening less than half an ounce. He takes his food and beer, and sleeps well; went out for a drive this evening. Is to take an aperient draught to-morrow morning, as the bowels are confined. Has had no fever; pulse 78 to 84.

10th.—Barely half an ounce of pus this morning, and about a quarter of an ounce in the evening; the cavity of the abscess is contracting rapidly; pulse 74 this morning, up to 80 in the evening. He is looking much stronger.

11th.—He was slightly fatigued by the preparation for sailing to-morrow. About three-quarters of an ounce of pus, which was thinner this morning; pulse slightly quicker, but he feels and looks well. In the evening less than a drachm of pus. He is well in all respects, and seems to be rapidly convalescing. He sails to-morrow morning for England.

This is a good example of simple abscess of the liver resulting from the effects of a hot climate. There is no history of previous diarrhœa or dysentery, and it apparently commenced by congestion terminating rather insidiously, as so frequently happens in inflammation and suppuration, the pus probably having commenced to form when the rigor occurred on the 24th, about 12 days after the first symptoms of congestion made their appearance. About this period, as inflammation involved the surface, the pain increased and continued, the perihepatitis, of which it was an evidence, proving so far salutary in causing adhesion of the lower portion of the right lobe to the parietics, and thus preventing extravasation into the peritoneal cavity.

There is every reason to hope that the abscess is a single one; the history of the case renders it probable, as there is no reason to believe that it was due to septic absorption from previous dysentery or ulceration of the intestines.

The prognosis is also hopeful, as latterly he had been free from any constitutional fever such as would be caused by extension of the suppuration, and the rapid contraction of the cavity, after evacuation of the pus, evinced the tendency to repair by cicatrization. The injection of the cavity with carbolic acid solution was attended with the best results, as I think that the antiseptic was beneficial in aiding the rapid contraction of the cavity.

I believe that his chances of complete recovery are enhanced by the change to sea, as whatever the capacity for repair might be, I feel convinced that it must be increased by the change of climate, and is more likely to proceed to perfect recovery at sea than in the damp and exhausting heat of September in Calcutta.

Note.—A report from Galle says he is nearly well, and that he was able to go on shore for exercise with other passengers.—J. F.

COMPOUND FRACTURE OF THE LEG: DEATH FROM DISTURBED INNERVATION INDUCING JAUNDICE AND ISCHURIA.

By J. Fayrer, M.D., C.S.I.

Mr. S——, a Swiss gentleman, aged 27, of stout frame and rather pallid and anæmic complexion, who had been only a few years in Bengal, during which time he had enjoyed fair health, met with a serious accident on the 9th of October, 1869, at about 8 a.m.

He was driving in a buggy with a friend, when, observing that one of the reins had become detached from the bit, he jumped out, without putting his foot on the step, to stop the horse, which was starting off at speed. He fell as he alighted, and was immediately afterwards picked up with a severe compound fracture of both bones of the leg a few inches above the ankle joint. There was a lacerated wound about two inches above the internal malleolus through which the tibia protruded. The protruding bone was stripped of its periosteum for about two inches. The fibula was also fractured, but did not protrude.

On examining the wound it was found that the lower fragment of the tibia was comminuted, and the joint opened. There was considerable hæmorrhage, but no large arterial branch appeared to be wounded. The anterior tibial artery could be felt on the dorsum of the foot, but the posterior tibial did not pulsate. The saphena vein had been torn across and was hanging out of the wound. He was much depressed by the shock; his pulse was small, feeble, and rapid.

I was unable to reduce the protruding bone, and as it was much injured and denuded of the periosteum, I removed the most seriously injured portion, about 1½ inch in length, and then increasing the opening by a small vertical incision, I returned the bone, dressed the wound, and placed the limb in a splint applied on the fibular side. There was no further hæmorrhage.

Stimulants were given to rouse him, warmth applied, and chloroform administered during the operation.

Vespere.—He is still depressed, but is free from pain; he looks tolerably well, but his pulse is feeble and rapid, showing that the shock still continues; stimulants and warmth and beef-tea had been administered during the day. Very careful examination had been made, but no injury of any other part of his body could be detected. He was perfectly conscious, and said he knew there was no other injury, and described the accident as having been caused by his ankle twisting just as his feet

touched the ground. A sedative draught was ordered at bed-time.

10th, 8 a.m.—He slept at intervals; there has been no hæmorrhage; there is no pain of any consequence; iced water has been applied frequently to prevent bleeding. His pulse is still feeble; the surface of his body cold; there is no proper re-action. He looks fairly; says he feels weak and depressed, but talks readily. Bowels to be relieved by a simple enema; stimulants to be given, and warmth applied.

Vespere.—He has been restless during the day and vomiting frequently, but he is free from pain, and is rational and collected. There is some tympanitis, and jaundice is setting in; the conjunctivæ are already tinged with yellow; pulse still depressed and rapid.

11th October.—A restless night; perfectly conscious; jaundice well marked; the whole body, but especially the upper part, is discolored; pulse rapid, but somewhat fuller. There is an attempt at re-action.

The wound looks as it did when first dressed; there is no change in it. Ordered an aperient, as the bowels have not acted; ordered stimulants to be continued in moderation. He is restless; abdomen tympanitic, and the breathing is rapid. I expressed my fears that he would not live long, to his friends.

5 p.m.—Much worse; nearly quite collapsed; breathing very rapid; skin cold, and clammy; deeply jaundiced; foot and leg of a deadly cold; great toe apparently on the point of becoming gangrenous. Stimulants, hot bottles, sinapisms over the heart.

The jaundice rapidly deepened, and the condition of collapse became more complete. He retained his consciousness almost to the last moment, and died at 8 p.m., that is, in 48 hours after the accident.

No *post-mortem* examination was made, but the cause of death was evidently the shock, which was most intense, and acting on the nerve centres, caused such suspension of innervation in the ganglionic system as to induce jaundice and ischuria, (I should have noted that no urine was voided or secreted after the accident), and apparently the formation of coagula in the right cardiac cavities.

The rapid supervention of jaundice is a somewhat unusual result of shock to the nerve centres in accidents of this nature, and I am not aware that it has been much alluded to by surgical authorities; but I have seen it before, and also after capital operations, and regard it as a most fatal symptom. The rapidity and intensity with which it comes on shew that it is not due to congestion of the liver or to obstruction of the ducts, but point to disordered innervation by which the natural metamorphic processes, that should go on in the blood, are seriously compromised, if not suspended. The condition of the patient in such cases as this is clearly one in which the nervous system

is seriously injured, and those portions of it which govern the hepatic functions seem most of all to suffer.

It is more than probable that had this fatal shock not supervened, amputation would have been ultimately necessary. As it was, his condition was never such as to admit of the operation. He was seen in consultation by my friends and colleagues, Professors Partridge and Ewart.

12

THE Inspector-General has recently issued the following Circular to all Deputy Inspectors-General of Hospitals. Dated Fort William, the 22nd November, 1869.

(Extract) :—The Inspector-General of Hospitals is desirous that the observations on snake-poison, which Dr. Fayrer has hitherto been engaged in, should be extended throughout the Presidency, and he now asks Medical Officers to render any assistance in their power for the fulfilment of the object. The Inspector-General believes that very useful and practical results will accrue from the scientific investigations which Dr. Fayrer is still prosecuting; researches which may lead to a complete knowledge of the subject, and which must prove of service to the population of the country.

2. The Inspector-General therefore requests you will be so good as to supply each medical officer in your circle, of whatever grade, with a copy of this memorandum, and to enlist their exertions on the subject.

3. Medical officers are requested to submit to you, as soon as practicable after the 1st January, 1870, a return of all authenticated cases of snake-bite that occurred among the civil and military population under their cognizance, during the year 1869; (from the 1st January 1870 to the end of the year, cases, as they occur, are to be recorded monthly.)

6. Particular attention should be paid to the detail of symptoms after a bite, the duration of life, and the pathological symptoms after death; noting particularly the absence or presence of the rigor mortis, the state of the blood, microscopically if practicable, and its fluidity or coagulability; the treatment pursued, and any remarks to elucidate the recorded conditions.

7. The bodies of persons who have died from snake-bites are frequently sent by the Police, or Judicial authorities, to the civil medical officer for examination. It is particularly requested that careful accounts of all such autopsies may be sent in with the printed form; and that in making the examination, medical officers will be kind enough to note *particularly* the conditions to be attended to in paragraph 6, as well as any other pathological condition that may be observed. The local effects of the bite, the position of the fang punctures, and the state of the parts in the vicinity of the bite, as well as remote from it, should be accurately recorded.

8. Particular attention is also requested to any difference in symptoms and pathological states in the cases of bites of the Viperidæ, *i.e.*, the Russells Viper, or Daboia, and the Trimeresurus, as distinguished from those of the poisonous colubrine snakes, such as the Naja Tripudians, or Cobra, Ophiophagus

Elaps, or Sunkerchoor, and all of the less poisonous Bungarus family, as B. Cæruleus or Krait, and B. Fasciatus or Sankni.

NOTE.—A list of the poisonous snakes of Hindoostan is appended.

SNAKES MOST COMMONLY MET WITH HAVE ** PREFIXED: THOSE LESS SO*; THE REMAINDER ARE COMPARATIVELY RARE.

SUB-ORDER, POISONOUS COLUBRINE SNAKES.

Family——————*Elapidæ.*

GENUS ** 1. NAJA: *N. Tripudians*, or Cobra: several varieties. Native names, Keautiah, Gokurrah, &c., &c., &c., &c.

„ * 2. OPHIOPHAGUS: *O. Elaps. Hamadryas*, one species. From Assam to west bank of Hooghly. Native name, Sunkerchoor.

„ ** 3. BUNGARUS: *B. Caruleus*, or *Krait*. From Calcutta to Delhi.

** *B. Fasciatus*, or *Sankni* (marked with black and yellow bands. Bengal generally.)

„ 4. XENURELAPS: *X. Bungaroides*, found about Cherrapoonjee.

„ 5. CALLOPHIS: *C. Intestinalis.*

C. Macclellandii, found in Central India.

C. Nigrescens, found in the Neilgherries.

C. Annularis, India generally.

Family of Hydrophidæ or Sea Snakes.

1. PLATURUS: *P. Scutatus*, found on the Coast from Chittagong to Madras.

P. Fischeri, found on the Coast from Chittagong to Madras.

* 2. HYDROPHIS: Several varieties found on the Coast.

H. Cyanocincta, Hidgelli.

* 3. ENHYDRINA: *E. Bengalensis, Hidgelli*, Botanic Garden, Dhappa Canal. *H. Robasta, Hidgelli.*

4. PELAMIS: *P. Bicolor. H. Coronata, Hidgelli.*

H. Stricticollis, Ditto.

H. Chloris, Sandheads.

H. Gracilis, found at Dhappa, Calcutta.

SUB-ORDER, VIPERINE SNAKES.

Family of pit Vipers or Crotalidæ.

1. TRIMERESURUS: * *T. Gramineus*, found in Bengal, has been found at Dhappa Canal.

* *T. Erythrurus*, found in Bengal.

T. Carinatus Ditto.

T. Anamalleusis Ditto.

T. Monticola Ditto.

T. Strigatus Ditto.

T. Macrosquamatus, Ditto, Assam.

2. PELTOPELOR: *P. Macrolepis*, found in the Annamallay Mountains.

3. HALYS: *H. Himalayanus.*

4. HYPNALE: *H. Nipa*, or *Carawala*, found in Southern India.

Family of Vipers or Viperidæ.

1. DABOIA: ** *D. Russellii*, Native name, *Bora*, found all over Bengal, from Southern India to the Himalaya as high as 3,500 feet above the Sea.

2. ECHIS: *E. Carinata*, found in the Annamallay Mountains, Carnatic and other parts of India.

J. FAYRER, M.D.

Clinical
Observations in Surgery
N° XXXI. — Lithotomy.

CLINICAL

OBSERVATIONS IN SURGERY.

NO. XXXI.—LITHOTOMY.

BY J. FAYRER, M. D., F.R.S.E., & F.R.C.S.E.

The following tabular statement of lithotomy operations in the Medical College Hospital seems to prove, that vesical calculus is neither of very frequent occurrence in Lower Bengal, nor are the results of the operation very successful. Out of 35 cases, 23 only recovered, giving a mortality of 34·28 per cent., or about one in three,—a result which must be regarded as very unfavourable, and differing widely from the success which attends the operation in the Upper Provinces, where it averages a mortality of only 1 in 8 or 10.

The operations here recorded were chiefly lateral, though a few were by the median section.

It is necessary to analyse the fatal cases to get at the cause of so high a rate of mortality in an operation generally so successful in other parts of India. The thirty-five cases here recorded have occurred in my wards during the past six years, and represent about half of the whole number admitted during that period, the other half having been under the care of my colleague. The total number is a small one for any large hospital, and, as I have said, the mortality is very high. It is to be remarked that many of the cases we receive, come at a time when it is almost too late to hope for success, and when the operation offers perhaps, at the best, but relief from suffering and a faint chance of life. It is a chance, however, which should not be withheld.

The disease being, comparatively, an uncommon one here, and in the Mofussil, the subjects of it, when it does occur, are less prepared to submit to treatment. They know nothing of the success of the operation when performed at the proper time, and only make up their minds to seek relief at the

hospital, when the mischief has advanced so far that the chance of recovery is reduced to a minimum.

On one occasion I remember seeing a poor, emaciated creature carried into my ward; he had, after years of suffering, made up his mind to come to Calcutta for relief. He reached the hospital in a dying state, and sank from exhaustion within ten minutes after entering the ward. The *post mortem* examination revealed a large vesical calculus, extensive disease of the bladder, ureters and kidneys.

In the North-West Provinces where the disease is common, its nature and prospective dangers are thoroughly appreciated by the sufferers, they seek relief early, and numbers find it, attended with rare success, in the dispensaries of the civil stations, where, in a dry and healthy climate, they rapidly recover under the care of skilful operators. In the Medical College Hospital there neither, is nor can be any selection of cases. The object is to confer the greatest amount of relief, and in many cases, as I have said, the operation affords, at the best, little hope of more than temporary amelioration of suffering, and promoting "euthanasia." But as the spread of medical knowledge increases, it may be hoped that with a more intelligent comprehension of the danger, more speedy, and, therefore, more effectual aid will be sought, and that as the sufferers learn to make more timely application, so they will receive a larger measure of relief.

The first fatal case recorded is that of a man aged 40, from whose bladder 86 small calculi, two of them of the mulberry form, were removed by the median section. Death, in this case, was caused by the blood poisoning and exhaustion, depending on the formation of pus in the prostate, and between the bladder and rectum.

On examination after death, which occurred on the 29th day, it was found that there was much induration and a large collection of pus between the bladder and rectum, and that the prostate gland was riddled with abscesses, and its ducts dilated into pouches filled with small calculi (96 in number), varying in size from a grain of rice to that of a pea. The bladder also was thickened, and its rugæ of a deep red colour. The kidneys were healthy. The weight of the calculi removed by the operation was 162 grains.

The second death occurred in the case of a man aged 24—a calculus coated with phosphates, and weighing 1,271 grains, was removed by the lateral operation. He was in a wretchedly exhausted and emaciated condition, and suffering so severely, that he gladly accepted whatever hope of relief the operation afforded. The stone was large, heavy, and roughened by the deposit of triple phosphate in the form of lancet-shaped crystals set edgeways. He died of pyæmia, and after death pus was found in the right pleural cavity; calculi were found in the pelves of both kidneys. The left kidney was shrunken, softened, and infiltrated with pus. The bladder much thickened and ulcerated, the ulceration having opened into the rectum. The left iliac fossa contained a large collection, 5 ounces of pus, extending behind the pelvic fascia as high as the diaphragm.

The third death was that of an old man named Haneef, who died of acute dysentery on the 10th day after the operation. The disease was in no way connected with the calculus, or the operation, from which he was recovering.

The fourth death was that of a man aged 35, who died the day after the operation, which was performed by the median section. Right kidney hypertrophied; ureter dilated, left kidney atrophied, bladder thickened, inflamed patches in the vesical mucous membrane, a gangrenous spot near the opening of right ureter into the bladder, cellular tissue around the neck of bladder ecchymosed.

The fifth death occurred in the case of a man aged 23. The calculus was encysted in the upper fundus of the bladder, and was extracted with great difficulty. It was found after death, which occurred on the fourth day, that there was suppuration about the neck of the bladder and in the sub-peritoneal cellular tissue. The prostate was bruised, and suppuration had taken place in the kidneys, in the iliac fossa and scrotum. Death in this case was due partly to shock, partly to the pyæmic condition which so rapidly supervened.

In the sixth case, death occurred on the sixth day, with symptoms of peritonitis, after removal, by the lateral section, of a phosphatic calculus weighing 230 grains.

In the seventh case, death occurred after the removal of a small calculus, 37 grains in weight, from pyæmia and embolism.

The right side of the heart and the pulmonary arteries contained firm fibrinous clots. The liver was fatty, the spleen and kidneys healthy. The right knee-joint was full of pus. There was a large collection of pus in the left psoas muscle.' The right lobe of the prostate contained an abscess, and the calf of the right leg was infiltrated with pus under the gastrocnemius. The lungs were congested, but contained no pyæmic patches.

In the eighth case, the abdominal cavity was covered with a layer of greenish aplastic lymph. The lower portion of the descending colon was displaced, it lay on the anterior surface of the bladder, and was adherent to it. The perineal wound had a sloughy aspect. The cellular tissue between the bladder and rectum was sloughing.

The liver and kidneys were healthy. Both the lungs were studded with patches, probably of pyæmic origin. Death in this case was due to a low pyæmic form of peritonitis and cellulitis.

The ninth case terminated fatally on the 18th day after removal of a uric acid calculus, weighing 360 grains,—from pyæmia. The right pleural cavity was filled with sero-purulent fluid. The right lung contained in its posterior, and especially lower aspect, numerous gangrenous patches, from the size of a sixpence to that of a shilling. There was nothing morbid about the prostate, bladder, or kidneys.

The cause of death in the tenth case was exhaustion. The patient was a very old, feeble man, much emaciated, with cataract in both eyes and arcus senilis. The urine was albuminous and purulent. The stone was large, and he lost a considerable quantity of blood. Death occurred three hours after the operation, which was performed in the hope of relieving his great suffering.

In the eleventh case, death occurred, after removal of a small calculus by lateral section, on the day following the operation, from uræmia; no urine was secreted after the operation, after which there was considerable hæmorrhage. The kidneys were found to be extensively diseased, the right one had a cyst at the upper part of the size of an orange; the left, contained many small cysts. The kidneys were shrunken and fatty, the bladder was thickened and ulcerated. No infiltration of urine. The other organs were all healthy.

In the twelfth case, death occurred after removal, by lateral section, of a uric acid calculus, 180 grains in weight, from a man aged 40 years The perineum in this case was very narrow, and the operation followed by a good deal of hæmorrhage. Death resulted on the 16th day from erysipelas of the scrotum, which rapidly spread to the neighbouring tissues.

The *post mortem* examination revealed kidneys containing cysts. Bladder thickened, but otherwise healthy, heart adherent to the pericardium at the apex of the left ventricle, the cardiac wall being thinned at a point corresponding. There were decolorized fibrinous clots in the right ventricle, and atheromatous patches in the aorta.

It will be observed, that the deaths were, with one or two exceptions, due to toxæmic causes,—all pointing to an unhealthy condition of the patients, or to the unfavourable hygienic conditions in which they were placed. Tendency to pyæmia is remarkable in the hospital itself, but the unfavourable results cannot be attributed altogether to local influences. The nature of the deaths, however, makes it evident that the combination of unfavourable circumstances is a most potent cause of mortality. It is to be borne in mind, that the subjects of the operation themselves are frequently most unfavourable. Thirty-five cases of lithotomy are here recorded —four of which were by the median section. The calculi were for the most part uric acid or uric acid coated with phosphates, with an occasional specimen of the oxalate of lime. The weight of the calculi varied from 21 grains-the smallest, to 1,271 grains-the largest. For the most part the patients had suffered from the disease for a considerable period before applying for relief, and had been proportionately damaged in constitution.

The number of deaths out of these 35 cases was 12—being two of the median, and ten of the lateral operations. The causes of death were:—

Pyæmic conditions ...	4	Erysipelas	1
Peritonitis	2	Uræmia	1
Cellulitis	1	Shock	1
Dysentery	1	Kidney disease ...	1

The age of the patients varied from 2½ years to 60 years.

The mortality was confined entirely to patients above adult age, and was as follows:—

1 death at 40	Pyæmia.	1 death at 45	Pyæmia.
„ 24	„	„ 30	Peritonitis.
„ 65	Dysentery.	„ 42	Pyæmia.
„ 35	Kidney disease.	„ *60	Shock. Exhaustion.
„ 32	Cellulitis.		
„ 50	Peritonitis.	„ 60	Uræmia.

1 death at 40 Erysipelas.

Of the 35 cases there were Hindoos ... 21—died 6
„ „ Mahomedan ... 14 „ 6

and they were all, with one exception (a Lucknow man), from Lower Bengal.

Below the age of puberty there were:—

3 of 12 years old	2 of 2 years old.
1 of 9 „ „	1 of 3 „ „

1 of 11 years old.

These eight boys all recovered.

As I have already said, the percentage of deaths among adults is very high, and almost entirely due to toxæmic causes.

To any one accustomed, as I have been, to lithotomy in the North-West, it is very disheartning, and the operation is necessarily, here, regarded with apprehension as to the result. I unfortunately lost my records of lithotomy at Lucknow during the mutiny, and I do not remember the proportion of recoveries to deaths, but it was much more favourable than my results here, and compared well with the statistics of the North-West and Central Provinces, where the highest measure of success is obtained.

From information I collected some time ago from the records of the Medical Department, it appears that in six months of 1863,—554 cases of lithotomy occurred in the Punjab, North-West, and Central Provinces; and that of this number, 56 died, or nearly one in ten. Mr. Coulson deduced from 1,743 cases of lateral lithotomy, that the average mortality is 1 in 6·93 cases. In France, it is 1, in 5·7, and for Europe generally 1 in 5·14.

* Called himself 60, but looked 70 or more.

Mr. H. Thomson's more recent statistics of lateral lithotomy give, out of 1,827 cases, 229 deaths, or as nearly as possible 1 in 8.

The contrast of this death-rate with that in my record is therefore striking, and the latter is certainly very unfavourable, being nearly 1 in 3. I do not shrink from making this known, as I think that it is right that the facts should be appreciated, and because I believe that the more thoroughly the many obstacles to more satisfactory results under which we labour are known, the more likely they are to be ultimately removed.

I have said that the operations were of the lateral and and median kinds. I believe that it is unnecessary to detail the steps of an operation so thoroughly understood in both forms by every surgeon in this country. But I may just remark that in the case of the lateral operation, I use the simple laterally grooved staff, the common lithotomy scalpel and the ordinary forceps.

I usually commence my incision at an inch and a quarter in front of the anus, and I make an opening sufficiently large both in the perineal tissues and prostate, to permit of extraction of the calculus with as little violence to the tissues through which it passes as possible. I seldom introduce a tube into the bladder after the operation.

In the median operation, (adapted only for small calculi,) I use a staff grooved on the back, a common scalpel, a long probe, as a guide, and a pair of ordinary lithotomy forceps.

I make the perineal incision either by puncture with the back of the scalpel towards the rectum, half an inch anterior to it, piercing directly into the membranous portion of the urethra, and then cutting forwards and outwards until an aperture large enough, after dilatation with the finger, is formed for removal of the calculus, or I cut down from without, on the staff, opening the membranous portion of the urethra. Then introducing a probe, as a guide to the finger, which is insinuated along it into the bladder, I gradually dilate the prostate until the forceps can be introduced, and the calculus withdrawn.

I do not, as a general rule, introduce a tube after the operation, unless there be hæmorrhage; it is unnecessary, as

the urine flows through the wound, without danger of infiltration, if it only be made free and in the right direction.

In addition to these 35 cases, I would supplement the record with three others which have occurred, out of the hospital, and which slightly modify the death figure.

A. B. a strong healthy English gentleman, about 45 years of age—uric acid calculus, size of a marble, removed by median section, on the 2nd January,—recovered rapidly.

C. D. a stout healthy gentleman aged 48 years, calculus, phosphatic formed on a portion of a gutta-percha bougie which had been broken into his bladder by accident some months previously. He died on the 24th January, 1865, 8 days after the operation, of a most violent and sudden invasion of pyæmia. The left knee-joint was filled with pus, and the pericardium and pleura with fluid.

E. F. an English child, aged one year, and seven months, —a uric acid calculus weighing 154 grains was removed by the lateral operation on 24th June, he recovered perfectly.

The record, therefore, with this addition, stands thus:—

	Operations.	*Deaths.*
Hospital cases	35	12
Private „	3	1
Total	38	13

Or 34·21 per cent.

No.	Date of Admission.	Operation.	Age.	Occupation.	Sex.	Composition of Stone.	Weight.	Operated.	Date of Result.	Result.
1	1859 11th Nov.	Lateral operation ...	60	Servant ...	H	Uric Acid	2 Ounces, one 150 grs, other 94 grs.	12th Nov. ...	16th Dec. ...	Cured.
2	1860 30th April	Ditto	36	Farmer ...	H	Do. coated with Phosphates ...	360 grs. ...	6th May ...	17th June ...	Ditto.
3	21st November	Ditto	12	None ...	M	Uric Acid	9·9 grs. ...	24th Nov. ...	17th Dec. ...	Ditto
4	1861 15th May	Ditto	50	Farmer ...	M	Ditto	880 grs. ...	18th May ...	16th June ...	Ditto.
5	25th May ...	Ditto	27	Groom ...	H	Phosphate of lime	211 grs. ...	27th May ...	3rd July ...	Ditto.
6	1862 10th February	Median operation ...	40	Farmer ...	M	Uric Acid	162 grs. ...	10th Febr. ...	7th March ...	Died of Pos-terior Abscess.
7	9th April ...	Lateral operation ...	32	Ditto ...	H	Ditto	109 grs. ...	10th April ...	27th April ...	Cured.
8	12th May ...	Ditto	12	None ...	M	Ditto	150 grs. ...	12th May ...	17th June ...	Ditto
9	16th July ...	Ditto	24	Ditto ...	M	Phosphate of lime...	1,271 grs. ...	16th July ...	16th Aug. ...	Died of Pyæmia.
10	21st July ...	Ditto	65	Labourer ...	M	Ditto	Weight not received ...	22nd July ...	31st July ...	Died of Dysen-tery.
11	26th Dec. ...	Median operation ...	35	Trader ...	M	Ditto	60 grs. ...	28th Dec. ...	27th Dec. ...	Died of Kidney Disease.

House Surgeon, 1st Surgeon's Ward.

LITHOTOMY OPERATIONS.

No.	Date of Admission.	Operation.	Age.	Occupation.	Race.	Composition of Stone.	Weight.	Operation.	Dates of Result.	Result.
1	1849 11th Nov.	Lateral operation ...	60	Servant ...	H	Uric Acid	2 Calculi, one 100 grs, other 94 grs. ...	12th Nov. ...	10th Dec. ...	Cured.
2	1850 30th April	Ditto	36	Farmer ...	H	Do. coated with Phosphates ...	360 grs. ...	5th May ...	17th June ...	Ditto.
3	21st November	Ditto	12	None ...	M	Uric Acid	9.9 grs. ...	24th Nov. ...	17th Dec. ...	Ditto
4	1851 15th May	Ditto	50	Farmer ...	M	Ditto	800 grs. ...	18th May ...	16th June ...	Ditto.
5	23th May ...	Ditto	27	Groom ...	H	Phosphate of lime	211 grs. ...	27th May ...	3rd July ...	Ditto.
6	1862 10th February	Median operation ...	40	Farmer ...	M	Uric Acid	162 grs. ...	10th Feby. ...	7th March ...	Died of Prostatic Abscess.
7	9th April ...	Lateral operation ...	32	Ditto ...	H	Ditto	100 grs. ...	10th April ...	20th April ...	Cured.
8	12th May ...	Ditto	12	None ...	M	Ditto	150 grs. ...	12th May ...	17th June ...	Ditto
9	18th July ...	Ditto	24	Ditto ...	M	Phosphate of lime...	1,271 grs. ...	19th July ...	16th Aug. ...	Died of Pyæmia.
10	21st July ...	Ditto	65	Labourer ...	M	Ditto	Weight not received ...	22nd July ...	31st July ...	Died of Dysentery.
11	26th Dec. ...	Median operation ...	35	Trader ...	M	Ditto	60 grs. ...	26th Dec. ...	27th Dec. ...	Died of Kidney disease.
12	1863 25th February	Lateral Operation ...	65	Farmer ...	M	Uric Acid	225 grs. ...	27th Feby. ...	23rd March...	Cured.
13	2nd March ...	Ditto	32	Servant ...	H	Ditto	576 grs. ...	2nd March ...	6th March ...	Died of Pyæmia.
14	28th May ...	Median Section ...	9	Child ...	H	Urates	21 grs.	28th May ...	10th June ..	Cured.
15	6th July ...	Ditto		Ditto ...	H	A small stone, Oxalate of lime ...	Stone	6th July ...	18th July ...	Ditto.
16	8th July ...	Ditto	3	Ditto ...	H	Ditto... ...	Weight not received ...	8th July ...	8th Aug. ...	Ditto.
17	5th August ...	Lateral Operation ...	11	School boy ...	H	Uric Acid, coated with Phosphates...	120 grs. ...	6th Aug. ..	19th Aug. ...	Ditto.
18	12th October	Ditto	25	Priest ...	H	Ditto... ...	1,620 grs. ...	12th Oct. ...	29th Nov. ...	Ditto.
19	27th October	Ditto	50	Farmer ...	H	Ditto... ...	418 grs. ...	28th Oct. ...	2nd Dec. ...	Ditto.
20	4th Nov. ...	Ditto	52	Ditto ...	H	Phosphate	230 grs. ...	4th Nov. ...	9th Nov. ...	Died of Peritonitis.
21	11th Nov. ...	Ditto	45	Labourer ...	M	Ditto	37 grs	14th Nov. ...	21st Nov. ..	Died of Pyæmia.
22	1864 11th January	Ditto	12	School boy ...	H	Oxalate of lime ...	Weight not received ...	18th Jany. ...	18th Feb. ...	Cured.
23	17th April ...	Ditto	30	Farmer ...	M	Ditto	52 grs.	17th April ...	24th April ...	Died of Peritonitis.
24	29th August...	Ditto	42	Ditto ...	H	Uric Acid	360 grs. ...	3rd Sept. ...	20th Sept. ...	Died of Pyæmia.
25	10th Sept. ...	Ditto	32	Servant ...	M	Ditto	480 grs. ...	11th Sept. ...	9th Oct. ...	Cured.
26	2nd Nov. ...	Ditto	60	Bearer ...	H	Ditto	Very large weight not received...	7th Nov. ...	7th Nov. ...	Died of Exhaustion.
27	1865 6th January...	Ditto	38	Farmer ...	M	Ditto	282 grs. ...	8th Jany. ...	11th Feb. .	Cured.
28	23rd July ...	Ditto	41	Broker ...	H	Ditto	235 grs. ...	27th Jany. ...	4th March ...	Ditto.
29	30th April ...	Ditto	48	Servant ...	H	Uric Acid	930 grs. ...	3rd May ...	11th June ...	Ditto.
30	22nd May ...	Ditto	32	Farmer ...	M	Ditto coated with Phosphates ...	360 grs. ...	31st May ...	14th July ...	Ditto.
31	7th June ...	Ditto	22	Child ...	H	Ditto	120 grs. ...	10th June ...	25th June ..	Ditto.
32	19th July ...	Ditto	60	Barber ...	H	Ditto	252 grs. ...	20th July ...	21st July ...	Died of Uræmia.
33	13th Sept. ...	Ditto	50	Farmer ...	M	Uric Acid	240 grs. ...	18th Sept ...	5th Oct. ...	Cured.
34	6th Nov. ...	Ditto	40	Labourer ...	H	Ditto	180 grs. ...	9th Nov. ...	24th Nov. ..	Died of Erysipelas.
35	1866 2nd March	Ditto	35	Farmer ...	M	Ditto	210 grs ...	6th March ...	20th April ..	Cured.

GOPAUL CHUNDER ROY, L. M. S.,
L. M. S.
House Surgeon, 1st Surgeon's Ward.

ABSTRACT.

Total Number of Cases.	Number of Deaths.	Per cent. of Death.	CAUSES OF DEATH.							
			Pyæmia.	Peritonitis.	Dysentery.	Uræmia.	Erysipelas.	Exhaustion.	Renal disease.	Cellulitis.
Hospital.										
35	12	34·28	4	2	1	1	1	1	1	1
Private cases.										
3	1		1							
38	13	34·21	5	2	1	1	1	1	1	1

(Sd.) J. FAYRER, M. D.

CALCUTTA,
14th May, 1866.

LITHOTOMY.

11

CLINICAL

OBSERVATIONS IN SURGERY.

NO. XXXII:—INGUINAL HERNIA.

In former numbers of the "Annals", I have described, in detail, the method by which I have succeeded in a fair proportion of cases, in effecting a radical cure of Inguinal Hernia, by the introduction of a wooden plug, which is secured by ligature, into the inguinal canal. I have recently had an opportunity of examining the body of a man who died in the hospital from an accident, on whom, some months previously, the operation had been successfully performed.

Death was caused, about 4 months after the operation by a fall from a house. I ascertained that after leaving the hospital, he had laid aside his truss, and exposed himself freely to every possible cause by which the hernia might have recurred, but that there had been no return of the protrusion.

After death, I ascertained that the success depended, not on the invagination, for of that no trace remained, nor on any exudation into the canal, for beyond some matting of the parts by cicatrix tissue, where the needle and ligature had perforated the abdominal wall, there was none. The true cause of occlusion was a most perfect closure of the internal ring, by adhesion of the remains of the peritoneal process which had formerly been the hernial sac, to the margins of the ring. The ring was so completely closed, that it was impossible for the gut to have forced its way through the aperture, which had become obliterated by adhesions between it and the peritoneal process I have mentioned. This is the only opportunity, so far as I know, that has occurred of examining the true nature of the changes by which the radical cure is effected, and nothing could be more satisfactory, for it was most complete. The case is one of great interest and importance, the subject of it was a French sailor, about 20 years of age, a person of remarkable physical strength and muscular development.

Death was caused by a fall, when intoxicated, from the roof of a house, by which he sustained a dislocation of the hip, and injuries about the head, which proved fatal. I have recently had another case, which is also so very interesting, that I give it in detail. The patient was a Mahomedan, who having recovered from the operation for strangulated hernia, underwent that for the radical cure, which proved equally successful, and has now, there is every reason to believe, perfectly recovered from a condition which not only seriously interfered with his comfort, but had also placed his life in the greatest danger.

I feel satisfied both from the *post mortem* appearances I have described as having been found in the French sailor, as well as from the results of many other successful and unsuccessful cases, that the most important element of success in the operation, is the thorough introduction of the plug, and the consequent perforation of the abdominal wall as near as possible to the internal ring, for it is on the closure of that aperture that perfect success depends. The retention of the invagination within the canal is, I believe, of comparatively little importance, and the success of the operation need not in any way be endangered by its descent, if the changes I have described take place in the internal ring.

CASE.

Nazir, a Mahomedan, aged 35 years, was admitted into the Medical College Hospital, on the 20th April, 1866, with symptoms of strangulated inguinal hernia of the right side. He has had hernia for seven years. It has been wont to protrude, but was always easily returned. He appears not to have worn a truss. On one occasion the hernia was incarcerated: on the 19th, it protruded when he was walking, and he was unable to return it as before. The pain increased, nausea and vomiting supervened, the symptoms of strangulation rapidly set in and became confirmed.

He was brought to the hospital on the morning of the 20th, about 18 hours after the hernia protruded.

The usual measures for reducing the hernia were tried. Injections, taxis under chloroform, but without avail. I repeated these efforts, but failed, and the operation for dividing the stricture was performed at 9 A. M. of the 20th April. The

stricture was at the external ring, and the inter-columnar fascia, which was well developed, was tightly stretched over the neck of the hernia. On dividing the stricture with a probe pointed bistoury, the hernia was easily reduced, the sac was not opened. Some wire sutures, with a pad and bandage, were applied.

The wound healed rapidly, and on the 5th May, a small spot only remained uncicatrized. On the 10th May, I operated for the radical-cure in the usual way, with the plug and ligatures. On the 13th May, free suppuration having been established, the plug was removed. The invagination was firmly retained in the canal, and a considerable amount of thickening had taken place about the cord. He had no fever, and in all respects the symptoms were favourable.

On the 24th May, he was reported cured; the wounds have healed; the hernia is firmly retained within the abdomen, no exertions make it protrude.

He was admitted with	
Strangulated hernia	April 20th
Operated on	„ 20th
Cured	May 5th
Plug for radical-cure introduced... ...	„ 10th
Plug removed	„ 13th
Cured	„ 24th
Thus, from the date of his admission with	
Strangulated hernia, ...	April 20th
To his being radically cured	May 24th
It was	35 Days

The points of interest in this case are the rapid recovery from the operation for strangulated hernia, and the successful operation for the radical cure which followed so quickly.

TREATMENT OF STRICTURE OF THE URETHRA
BY

IMMEDIATE DILATATION.

NO.—XXXIII.

I HAVE treated several cases of urethral stricture in the manner recommended by Mr. B. Holt, and give the following examples as good illustrations of the result.

I confess that I had an unfavourable impression of this operation before trial, and only felt justified in performing it on the confident recommendation it received from the distinguished Surgeon with whom it originated. I do not think it is adapted for all strictures, nor can it replace the operation, of perineal section, in many. But I believe that in a very large number of cases which would otherwise be treated by the slower method of simple dilatation, it is likely to be not only useful, but desirable, as a more expeditious, if not a more perfect way of conferring relief.

I have not, contrary to my expectation, found that it was attended either with very great pain in the application, or with great constitutional disturbance afterwards; indeed, not more of either than I have frequently seen to accompany or follow the passage of a simple instrument through an irritable stricture. My impression of the mode of treatment is, that it is a valuable addition to our previous knowledge, and though my experience is still too limited to enable me to speak with authority, yet I am satisfied that it is one likely to meet with favour the more it is tried. I select the following cases as good examples of the treatment of ordinary, though aggravated, stricture by this method. It has been successful, and if it had no other merit, it certainly has that of expedition, for recovery was more rapid than it would have been by simple dilatation.

The instrument is now so well known, that a description of it is almost unnecessary, the principle on which it acts is

that of a wedge, and its action is either forcibly to stretch, or to split, the contracted part of the urethra.

The instrument with which I have operated, consists of a director slightly curved, with two blades which are forcibly opened by the passage down the centre, on a central directing rod, of a silver tube, of which there are various sizes, the largest, forms, with the expanded blades, an instrument equal in circumference to a full-sized bougie. The only real difficulty is in the case of a tight or irritable stricture to pass the director, that effected, there is no difficulty in passing down the dilator with a firm and steady pressure, care being taken not to injure the bladder by pressing the director with the dilator against the walls of the bladder.

The stricture being opened out, I withdraw the instrument, and pass a full-sized bougie, if there be no constitutional disturbance consequent in the operation, I continue to pass the bougie daily, until all irritability ceases, and the stream flows in a full size, and at proper intervals. This is not always effected by one operation. I had, in the third, case here related, to pass it a second time, for either the rupture had united, or the dilatation had contracted; at any rate, the stream diminished, and another passage of the dilator was needed. Even after this, for some time, either that some irregularity or loss of power existed, though a full-sized No. 12 bougie would pass easily, the stream of urine remained small and somewhat scattered. This, however, gradually gave way before the regular passage of the bougie, and the improvement in general health and spirits was remarkable, and concurrent with the restoration of the natural calibre of the urethra. Therefore, without speaking dogmatically of a proceeding of which as yet I have had only a limited experience, I feel that I am justified in recommending others to do what I have done, and test its value by their own experience. With reference to the permanency of the cure, I am at present unable to form any opinion from my own experience, my cases have all been in hospital, and it is seldom that we have the opportunity of seeing a patient again when he has been discharged. Europeans, generally sailors, leave the place too, or if cured, or even relieved, do not often return.

Case I.—J. C., aged 27, an Englishman, admitted into the Medical College Hospital, at Calcutta, September 2nd, 1864. Contracted gonorrhœa two years ago, followed by a gleet, which continued without intermission up to seven months prior to admission. He then began to notice symptoms of stricture, the stream of urine becoming gradually smaller. On admission he was in great distress and passed his water only in drops, and with great straining. Instruments up to Nos. 6 and 8—beginning with the smallest—were introduced. Sometime the irritability was so great, that no instrument would pass, and the passage of the larger sizes was always attended by great hæmorrhage, and that broken-down condition so peculiar to the constitutional disturbance following the passage of instruments in some men. He did not have fever, but great pain in the loins, wrists and elbows (acute Rheumatism?), and swellings of the fingers. The dilatation of the stricture proceeded very slowly, and its perineal section was proposed. On the 30th of September, however, I determined to try the effect of Holt's dilator. A full-sized instrument was passed into the bladder. It gave little pain, caused no bleeding, and was followed by no greater amount of fever than had resulted from the use of other instruments. The stricture remained dilated, and readily admitted the daily passage of a No. 10 bougie, which caused no disturbance, and the stream of urine was good.

On the 6th of October he was doing well, had no fever, and less pain, and passed urine in a full stream. No. 10 entered the bladder easily. So far the case was satisfactory; the stricture, which had been very intractable had yielded, and no constitutional mischief had followed its dilatation and rupture.

On the 13th, there was a slight return of contraction, but Nos. 6, 8, 9 were passed. He had rheumatic pains and swellings in the hands, fingers and feet, for which he was ordered nitrate of potash and nitric æther.

On the 17th, No. 10 was passed with ease, and the rheumatic pains and swellings had diminished.

On the 28th, he was still suffering from rheumatism, but the stricture was cured.

From the 1st to the 14th of November, the pains gradually diminished, there was no return of contraction; and on the latter date, a full-sized instrument passing with ease, he was discharged, cured.

Case II.—J. M., aged 49, a sailor, admitted 25th of October, 1864, with stricture in front of both the bulb and the scrotum. He had, also, constitutional syphilis in the form of cutaneous eruptions, and gleety discharge from the urethra, for which he was treated with iodide of potassium, vapour baths, and injections of acetate of lead. He remained in hospital up to 15th of January, 1865; repeated attempts being made to treat the stricture by ordinary dilatation, but always with the effect of causing rigors and fever; so that little progress was made, although his general health improved and the eruptions disappeared.

On the 15th of January, Holt's dilator of the second size was passed at 8-30 A.M., and at 11 A.M., he had rigors followed by fever. On the next day, he had fever still, but no perineal pain, and his urine passed freely. On the 17th, No. 7 catheter was easily introduced, No. 3 having been with difficulty passed before the splitting of the stricture. During the next few days, he had pains in the back, and appeared much depressed and weakened; and on the 23rd symptoms of mischief appeared in the eye. The globe inflamed and suppurated, and exit was given to the matter by an incision into the anterior chamber. The eye then gradually shrank and cicatrized. In April, he was discharged, much improved in general health. No further attempt was made to pass instruments, but as he passed his urine freely, it would apppear that the urethra remained patulous.

It is worthy of notice that neither after catheterism, nor the operation with the dilator, was there any local pain. Holt's operation was attended by little pain, and scarcely any bleeding.

Case III.—T. S. aged 52. A. Swede, admitted on the 4th May, 1866, for stricture of the urethra.

Five years ago he went into hospital at Mauritius for stricture of the urethra. The stream had been gradually diminishing for five years previous to this, and he used to pass his urine in drops when he sought relief. No. 1

catheter, up to No. 7, were passed when he left the hospital. He then passed a middling-sized stream. It soon commenced to diminish; and 18 months ago it almost completely stopped. Was in hospital at Rangoon for 5 days, when No. 1 was passed with great difficulty. Since then he passes urine in a very fine stream, and occasionally in drops, frequently, about twelve times a day, and a little at a time.

He had an attack of gonorrhœa about 25 years ago. Had two other attacks subsequently. On the 5th no instrument could be passed. He was ordered a dose of castor oil, and a warm water enema.

On the 6th No. 4 catheter was passed with much difficulty. The stricture was seated just in front of the triangular ligament. There are some false passages in the course of the urethra.

Tr. Opii M. XXV.

Quinine gr. V.—Statim.

During the night he had fever, no instrument was passed the next day. On the 8th the stricture was split with a full-sized Holt's dilator. No. 10 catheter passed directly afterwards, and kept in for about 10 minutes. There was very little hæmorrhage.

He had a rigor during the night, followed by heat of skin; no sweating. Passed water in a better stream. No. 10 catheter passed easily the next morning. Pulse 64.

On the 10th, No. 8 catheter was passed with some difficulty. There was a little hæmorrhage. Pulse 64. Still passes his water in a very thin stream. No more rigors.

11th—No. 8 catheter passed with difficulty. There was some hæmorrhage. Not much improvement in the size of the stream. Pulse 60. No instrument was passed the next day.

On the 13th, the stricture was very irritable, and bled on the slightest touch. Attempts were made to pass a catheter and Holt's director, but without success.

On the 14th, No. 8 catheter was passed. Holt's Instrument was then introduced, and the stricture again dilated with the

largest size tube. No. 10 catheter passed directly afterwards, and kept in for some time. There was a little bleeding.

He had fever, preceded by shivering, during the day. His pulse rose to 104. He sweated a good deal during the night. The next morning his pulse was 80. Quinine gr. v. ter die.

On the 16th, No. 8 catheter passed easily, no hæmorrhage. Passes water in a better stream, and less frequently.

On the 24th May, a full-sized instrument passes easily, he is in fair health, passes urine freely, and is in all respects doing well.

27th May.—A full-sized instrument passes easily. He is in good health and spirits; says he feels well. The stream which has been scattered and irregular, is now nearly of natural size, and the calls to micturition are much less frequent. He is convalescent.

There are some errors on the details of a number of the cases which may be corrected on a future page.

C.

POINTS OF INTEREST IN THE MEDICAL HISTORY OF H. M.'S 58TH REGIMENT DURING THE LAST FIVE YEARS, WITH SPECIAL REFERENCE TO THE ADVISABILITY OF LOCATING ALL, OR NEARLY ALL, OUR EUROPEAN TROOPS IN INDIA ON THE MOUNTAIN RANGES.

(Re-published from Indian Medical Gazette.)

BY J. D. AMBROSE, B.A., M.D.,

Assistant Surgeon, 58th Regiment.

THE 58th Regiment arrived in England from New Zealand in 1859. The corps having spent fifteen years in that prosperous Colony, many associations were formed by the men which with the prospect of bettering their fortunes, induced so many to remain behind, that the regiment on landing at home numbered little over 150 in its ranks. During the five years 1859-64, about half of which period was spent in England, the remainder in Ireland, the 58th may be said to have been almost completely renewed, as regards men. One consequence of this was, that when in 1864 the regiment was sent to India, *viâ* the Cape, it landed at Calcutta composed of very young material. It was at that time exceptional to notice any one in the ranks possessed of maturely formed whiskers or beard. About half the number of men had been recruited in, as a rule, the manufacturing districts of England, the other half in Ireland.

In 1865, while quartered at Benares, two companies being detached to Azimgurh, the regiment suffered a great deal from sickness. The ordinary hospital accommodation proved in-

sufficient, and had to be supplemented by barracks and private houses. Towards the end of May some bungalows that had been occupied formerly by the officers of the native cavalry regiment stationed at Sultanpore, 14 miles from Benares, were pressed into the service, and afforded shelter for about 100 of the sick and weakly men of the 58th, during the subsequent five or six months. Cholera made its appearance at Benares in January, and again in April; the deaths in the 58th, from either out-break being three and six respectively. At the close of the year 1865, it was found that the regiment in its first year of Indian service had lost 43 men by death, and 41* by invaliding, out of an average strength of 772; or, from both causes taken together, at the rate of 108·80 per thousand. It would be difficult to exaggerate the enfeebled condition presented by the regiment on parade towards the end of the year. The total number of admissions to hospital had been 1,945, including 786 cases of fever (of which four-fifths were malarial) 202 cases of diarrhœa, 50 of dysentery, 46 of inflammation of the liver, and 58 of rheumatism. It is not, therefore, a matter to be wondered at that a body of young Europeans who had gone through such an amount of sickness, were in about as low a state of health as possible.

Fortunately for the sufferers, their sad condition attracted the attention of the Commander-in-Chief; the result being that on the 1st of December, rather more than half the regiment started from Benares *enroute* to Senchal, a Himalayan station 8,600 feet above the level of the sea, and 5 miles distant from Darjeeling. The men belonging to the band, drums, and five companies were taken exactly as they stood previous to the receipt of the order to march, *and no "selection" of any kind on medical grounds was made.* Organic disease or not, secondary

* Of these, 11 have hitherto been shown in the returns as invalided in 1866, for they were not sent away from the regiment until that year; but their disabilities were all contracted at Benares in 1865.

syphilis or not; all anæmic, many scorbutic, some actually on the sick list with fever, bowel, hepatic and rheumatic affections—all were indiscriminately despatched, so as to arrive at their destination in the midst of winter on the hills. Whether this was a judicious step or not it is no part of my task to inquire. But of one thing there can be no doubt; a bolder or more crucial test could not have been applied to the statements of the advocates of "careful selection" previous to sending Europeans to the hills. If those authorities who inveigh so loudly against the sending of debilitated regiments to the hills are correct in their views, this feeble *non*-selected wing of the 58th should have fared badly indeed—it is scarcely too much to say they should have found themselves in a position of imminent peril. In two days they marched up out of the hot, damp climate of Lower Bengal on to the top of a mountain which, during the month of their arrival, was for days at a time covered with snow lying a foot deep, or with cold, raw, dense fogs, or with snow and fog together. Let us now see how they actually did fare.

Leaving Benares by rail, crossing the Ganges in boats to Caragola Ghat, and marching from thence to Senchal, occupied one month. In the beginning of January the wing arrived at Senchal, where the barracks provided for its accommodation were composed of mud and wattle walls, roofed with sheet iron; there was no extra issue of bedding, the men were simply provided with that which is allowed by regulation on the plains; the fires in the barrack rooms had to be extinguished at 9 p.m.; and the thermometer in the open air at night marked 22° Fahr. When the march commenced the sick list numbered 23 men; at its termination the number amounted up to 41.

The following table exhibits the state of health enjoyed by the wing during its first year's residence at Senchal:—

Month.	Strength.	Remaining in hospital on last day of month.	Died.	Invalided.
January ...	421	37	Nil.	Nil.
February ...	421	38	„	„
March ...	430	24	1 Dysentery.	„
April ...	439	23	Nil.	„
May ...	443	21	1 Asthenia.	„
June ...	446	18	Nil.	„
July ...	443	13	„	„
August ...	455	14	„	„
September ...	454	15	„	„
October ...	454	8	„	13*
November ...	430	9	„	Nil.
December ...	430	7	„	„

This table speaks so clearly for itself that the only comment I shall make on it is to observe, that, as might be expected under the circumstances, catarrhal complaints of a trivial nature swelled the sick list for the first few months.

It may be urged, that because a body of men, who had spent only twelve months on the plains, did not suffer in the least, when suddenly sent up to the hills, this is no reason why another body who had resided for, say, five or ten years on the plains, would be equally fortunate. We would be told perhaps that the cachexia brought about by a prolonged residence on the plains is quite a different thing from that induced by only a year's residence, although that one year may, as we have seen, suffice to engender a very anæmic, scorbutic condition; and the way in which regiments, debilitated by long service on the plains, suffered when sent up to Kussowlie, Dugshai, Subathoo, and elsewhere, will be cited as cases in point. Now this may, or may not, be the case; but in the absence of positive or scientific proof that it is so, I think it is only fair to look beyond the men themselves, and try

* Of the 13 invalids, 3 were for asthenia, 2 phthisis, 2 hepatitis, 2 deafness, 2 lameness, 1 blindness, 1 diseased bone.

to discover some more tangible cause for the difference in the health of what I may call old Indian regiments, as compared with those more recently arrived in the country, such as the wing of the 58th, when sent up to a hill climate. We have not far to look.

The sanitary arrangements at Senchal were good. I cannot call to mind a single defect capable of producing serious disease in such a climate.

Can as much be said for the other hill stations I have named? No, but there is convincing proof that their sanitary condition was so very bad, that it was impossible for troops to live in them, without suffering from zymotic disease. "The authorities seemed to think that, because the "climate was cold, the men might be crowded together, "and all sanitary arrangements neglected with impunity."* Again, "Hills alone, without pure air, and pure water, will not suffice for health. This was perhaps not sufficiently attended to at first."† Before, therefore, arriving at a positive conclusion as to the impropriety of sending regiments, enfeebled by long residence on the plains, to the hills, it would be only fair to ascertain two points, which, in my opinion, are very important ones: 1.—Is the sanitary condition of the hill station, good? 2.—Is it situated *at least* 6,000 feet above the level of the sea?

Another point on which great stress is often laid by some writers, is, that cases of organic visceral disease must on no account be sent to the hills. As I have seen some such cases not only sent up to Senchal and elsewhere, but also have known them to recover, I would like to be told what it is in

* Vide Report of Commissioners appointed to inquire into the sanitary state of the Army in India, page 111. For further and more detailed information on this subject, see "Papers relative to sanitary establishments," Military Department Press, April 1860.

† Vide memorandum on measures adopted for sanitary improvements in India up to the end of 1867. Eyre and Spottiswood, London, 1868.

the fine climate of the hills that is supposed to be so peculiarly inimical to the recovery of this class of cases. I would also be glad of information as to that climate, in any part of the world, in which the treatment of organic disease is not, as a rule, peculiarly discouraging. Finally, I should like to see a careful comparison of the result of the treatment of a certain number of cases of organic disease in the hills, with the result of the treatment of a similar number of like cases treated (say) on board a ship going home, or at Netley. We might then be able to arrive at some thing like a reliable opinion. I do not assert that the present opinion, as to the unsuitability of hill climates for such cases, is incorrect; but I certainly think it requires confirmation.* The adverse opinion at present appears to be based on a kind of *general impression*, derived, possibly, from the fact that, in the comparative absence of epidemic and zymotic complaints, a large proportion of deaths in the hills are observed to occur from organic disease. I suspect that it is a general rule, applicable to any part of the world, that the mortality from organic disease, as compared with that from other causes, is larger in a direct proportion to the salubrity of the climate.

Adverting to epidemics reminds me that we have been recently informed that "hill stations, as a rule, are by no means exempt from outbreaks of epidemics." This on the authority of amongst others a writer in a London Medical Journal. Cholera being *the* epidemic of this country; the losses inflicted on our troops by all other epidemic agencies being

* Since writing the above, I have been furnished with some very elaborate statistical observations relative to the cases of phthisis pulmonalis, liver affections, and secondary syphilis, treated last year at the Convalescent Depôt, Landour, by Staff Surgeon Kellett. Many of the cases appear to have been both severe and complicated. Nevertheless, the results achieved in their treatment would seem to be confirmatory of my remarks as to the probability that the alleged unsuitableness of high Himalayan stations for patients suffering from organic disease, has been much overrated.

trifling in comparison, I avail myself of the very valuable statistics just published by Dr. Bryden, which appear to demonstrate that the cholera poison, if it can succeed in reaching an altitude of about 6,000 feet, does not become propagated to any extent—very much the same as we find to be the case with malarial poison.

I take the seven of our Himalayan stations, which have been occupied by troops for more than ten years past, the aggregate annual strength of Europeans troops at which, for the period 1859-68, has been 3,700. The altitude of each station, with its number of deaths from cholera, in the ten years are as follows:—

Subathoo ...	... 4,000 feet,	*19	Cholera deaths.
Dugshai ...	... 6,000 „	0	„ „
Nynee Tal	... 6,000 „	0	„ „
Kussowlie	... 6,650 „	† 3	„ „
Landour ...	... 7,000 „	0	„ „
Darjeeling	... 7,000 „	0	„ „
Murree ...	... 7,800 „	* 3	„ „

Such being the cholera history of our Himalayan stations in the last ten years, I think it is a pity to endeavour to decry them by advancing statements which have so little foundation in reality. To show what a boon, comparative immunity from this one disease alone, is, to our Army in India, I will mention that while the deaths, which took place from cholera at the seven hill stations I have named, represent an annual death-rate of only ·8 per 1,000 of strength, the mortality amongst our European troops at Dinapore, Benares, Allahabad, and Cawnpore, from the same disease and in the same period, reached 14·5 per 1,000 per annum. In other words, at these four Gangetic stations we have, during the last ten years, lost annually by cholera, a company of 60 men, out of a force of

* All occurred in 1867.
† Two in 1865; 1 in 1867.

about 4,200. At four stations on the plains, in ten years a regiment 600 strong has been "wiped out" by one disease alone. Exclude Subathoo, which is situated too low down, and the hill stations, in an average annual strength of close on 3,000, lost about 1 man in every two years! In years of great epidemic intensity high hill stations have been known to suffer severely from cholera, as happened at Kussowlie in 1845. But precisely the same thing has occurred, and I believe with greater frequency, in some of the finest climates in Europe.

The right wing of the 58th remained for two years longer at Senchal. Its medical history during that time is easily related, as beyond the facts that 3 men died and the average daily sick was 10 in a strength of over 400, there is literally nothing to relate. In short, during its three years' stay at Senchal, from the beginning of 1866 to the end of 1868, this wing, notwithstanding its miserable condition on arrival in the hills, maintained a state of health efficiency, which, I venture to say, has rarely been surpassed by troops in any part of the world. And this, although they were located in a damp climate, the rain-fall of which averages about 150 inches yearly, and although, as the London Journal, already alluded to, tells us, "it is to be feared that exaggerated views prevail in regard to the salubrity of hill stations themselves!" One further point relative to the wing at Senchal remains to be noticed; and it is a very important one. At the beginning of each year a draft of about 30 men joined the Senchal wing. This draft was chiefly made up of the convalescents of the left wing, which remained behind at Benares. Instead of, as is the usual practice, sending these invalids from the left wing to one of the convalescent depôts in the hills, they were sent up to join the wing at Senchal, and were not removed to Benares at the end of the year, but were retained permanently at Senchal, and incorporated with the wing there, room being provided for them by the despatch of a similar number of men of the right wing to Benares. Thus the left wing at Benares was, from year to year, "weeded" of

its weak and sickly men, and reinforced by healthy men from the hills. Another accession of strength to the right wing, was in the shape of the annual draft from the depôt in England, numbering about 30 every year, which, on arrival in the country, was very properly sent up to the hills.

The left wing, as I have said, remained at Benares for the three years the right wing was at Senchal. The barracks occupied by them at Benares were good "temporary" ones, affording each inmate nearly double the amount of superficial area and cubic space authorized by regulation. The drainage was about as good as I believe we are ever likely to see our barracks in the plains provided with—that is, superficial, open drains existed for the carrying off of rain water. The conservancy arrangements (dry-earth system) were good. The water supply was excellent and abundant. The rations supplied to the men were better than any I have seen elsewhere in India. The clothing was admirably adapted to the different seasons. A Lock Hospital was in good working order. The care bestowed on the health of the men was unintermitting on the part of the regimental and other authorities. There was only one fault to find with the sanitary condition of the wing, and this was the proximity of the barracks occupied by it to a large native population; but the same objection can be urged, with greater or lesser force, against nearly every one of our cantonments on the plains, and I am by no means sanguine that this generation, at any rate, will see the evil completely remedied. I think I am, therefore, correct in assuming that so long as we keep our troops on the plains, they are never likely to be placed in much more favourable circumstances than the left wing of the 58th was in the three years, 1866 to 1868. I may also take it for granted, that the climate of Benares is as good, or as bad, as is the climate of our stations generally in the plains. Lastly, all our "sanitary improvements," likely to be productive of material good, were, as a matter of course, in full operation at so recent a period as the one under review.

In July, 1866, an outbreak of cholera occurred at Benares, in which four men of the 58th died, and on account of which the wing had to go out of the station for a brief time. Putting aside this one occurrence, the three years passed over, so far as the medical history of the left wing was concerned, in very much the usual routine fashion. The hospital contained an average daily number of sick amounting to 22, in an average strength of 318; the total number of deaths and invalids to England in the three years were, respectively, 26 and 42. It can hardly be necessary to specify the different causes of sickness, mortality and invaliding, further than to say that, as is generally the case on the plains, the large majority of each was composed of fevers, bowel and liver complaints.

We are now in a position to compare the vital statistics of the two wings during the three years of separation.

Three years.				Proportion per *thousand* per *annum*.	
	Strength.	Deaths.	Invalids.	Deaths.	Invalids.
Right wing (Darjeeling) ...	435	5	29	3·8	22·2
Left (Benares)	318	26	42	27·2	44·0

This then is an exemplification of the effects of climate on two precisely similar bodies of men. Although both wings were subject to good sanitary conditions, seven times as many deaths, in proportion to strength, took place in one, as in the other, and nearly twice as many men were invalided to England from the Benares wing as from that at Darjeeling. Neither would the invaliding from the latter have been so high, had it not been necessary to send some of the convalescents, who yearly came up from Benares, subsequently to England. The Army Medical Departmental Report for 1867, page 188, shows the mortality and invaliding from all stations in India, healthy and unhealthy,

to have been, for the series of years 1860-66, respectively, at the rates of 27·48 and 37·4 per thousand, per annum. This proves that there was nothing exceptionally high in the casualty rates of the left wing at Benares. From the same source I find that the troops stationed in the United Kingdom, lost annually by death 9·33 per 1,000 of strength in the same seven years, or more than double as many as the wing of the 58th lost annually during its three years at Senchal. This is flattering testimony to the efficacy of our hill climates. At the same time it is only right to point out that causes of sickness and mortality are in operation amongst the troops at home, which did not exist to any thing like the same extent at Senchal; for example, diseases arising from alcoholic excess and promiscuous sexual intercourse, are much more easily kept in check amongst men quartered on an isolated mountain, than amongst their comrades subjected to so many temptations at home. Again, the number of men sent home as invalids from unhealthy foreign stations, with constitutions more or less injured by disease, must help to swell the mortality lists in the United Kingdom.

In 1868 the regiment was ordered to re-unite at Allahabad, and to occupy the new cantonments. Accordingly towards the end of December, the right wing from Senchal arrived at Allahabad, 390 strong, and in as splendid physical condition as it was possible for men to be. On the 12th of January, 1869, the left wing from Benares came in, 243 strong, looking very well, considering that the great majority of the men had spent four consecutive years on the plains. On the same day, a draft of 96 joined from England, nearly all of them very young men, of from 20 to 22 years of age. Such was the composition of the corps at the beginning of the year 1869.

As the new cantonments were not completed, the Clydesdale and Mansfield barracks had to be occupied; seven companies in the former, one company and the married people in the latter. Two companies at the Fort, two miles distant, completed the disposition of the regiment.

"It may be said of Allahabad and its vicinity that the drainage is indifferent, the conservancy defective, and the reputation of the place in regard to health bad; while against these serious defects can only be placed the one satisfatory fact that the water-supply is good."* Thus was our new station described, a few months after our arrival in it, by a committee, which included amongst its members the Sanitary Commissioner of the North West Provinces. I have only to add that the particular portion of this ineligible site on which the Clydesdale and Mansfield barracks stood, was closely hemmed in by densely populated, and extremely filthy bazars, and that the barracks themselves were old and badly constructed.

After a long spell of dry weather, a thunder-storm and a heavy shower of rain occurred on the 21st of March, the prevalent wind at the time being from the east.† On the following day two cases of cholera were admitted from No. 8 barrack, Clydesdale lines. These two men slept in opposite beds. Next day the same barrack furnished four more cases, the beds of all, save one, being particularly close to that which had been occupied by the first man who was seized on the 22nd. The only other case admitted on the 23rd was from No. 11 barrack, which was immediately opposite, and to leeward of, No. 8. All these cases

* Vide Report of the committee appointed to enquire into the sanitary condition of Allahabad and its immediate neighbourhood.—Allahabad Government Press, 1869, page 8.

† I regret that I am unable to supply a full and reliable meteorological table for the time the cholera epidemic lasted. The observations taken in the regimental hospital, defective at the best of times for want of good instruments, were, as a matter of course, not improved by the various moves made into camp. In fact, they are on all points deficient and untrustworthy. The reporter on meteorology, N. W. Provinces, has courteously furnished me with aid; but, as he remarks, "the registers from Allahabad for last year were very incomplete." I will therefore note only the more important phenomena, in order of occurrence. As these are taken from memoranda made by myself, or by other observers, for whose accuracy I can vouch, I think they can be depended on.

proved fatal. A rigid search instituted into the sanitary condition of No. 8 barrack, and its surroundings, failed to elicit any satisfactory explanation as to the cause of its inmates being so markedly singled out for attack at the outset of the epidemic. So far as could be ascertained, not one of the men attacked had been recently visiting the neighbouring city, where 18 cases of cholera had been registered during the months of February and March. The men themselves were well known to have been peculiarly sober, steady soldiers. And here I may remark that a most careful examination made by persons competent to form an opinon, of the list of the 104 men attacked during the whole epidemic, does not confirm the impression that those addicted to the abuse of alcoholic liquor are more liable to an attack of cholera than those not so addicted. The result of the inquiry so instituted shows that the large majority of the 104 attacked were men of sober habits, and that not more than twelve out of the entire number were known to be addicted to excess.* I make this statement because I think it is right that every well observed fact in connection with the etiology of this as yet mysterious disease should be recorded, no matter whether the fact agrees, or the contrary, with pre-conceived opinions or theories on the subject. But I make it also with a certain amount of reluctance, for fear it should in any way give rise to the idea that a resort to a free or unaccustomed consumption of stimulants during an epidemic would, in the slightest degree, aid to confer immunity from an attack of cholera. As confirmatory, to a certain extent, of the correctness of my statement, that drink did not act as a predisposing agent during the 58th epidemic, I insert the subjoined figures to show how wonderfully impartial the disease

* Of the 12 intemperate men attacked 8 died, being at the rate of 66·6 deaths in 100 attacks. The disease was rather more fatal among the 92 sober men, the mortality amongst whom was at the rate of 70·6 per cent. of attacks.

was in its attacks on persons of different ages and sexes. It is improbable that alcoholic excess acted as a predisposing cause amongst the children. For the rest, the children were subject to very much the same sanitary conditions as the men and women.

	Strength.	Attacked.	Died.	Proportion per cent. to strength.	
				Attacked.	Died.
Men ...	729	104	73	14·26	10·01
Women ...	68	9	5	13·23	7·35
Children ...	142	20	13	14·08	9·15

This is a curious uniformity: but then, on the other hand, there are equally curious exceptions to the law of uniformity, such as: 1—In an epidemic, lasting for five months, not one of the officers was assailed.* 2—None of the 26 women who came from the hills were at any time attacked. 3—In the first fortnight of the epidemic the men belonging to the Senchal wing were attacked in a very much greater ratio, than were those of the wing from Benares; although the remaining four months and a half showed an equality in the proportion of attacks in the two wings. This latter point I will discuss more fully further on.

On the 23rd of March, three companies were sent to Chatam lines, about one mile distant from Clydesdale. No. 8 barrack of the latter was shut up; the men were spread out more, in the two other barracks vacated by the companies which went to Chatam lines, and the Clydesdale barracks were fumi-

* The usual explanation of this exemption is, that "the officers were better housed [scarcely applicable to camp,] more cleanly in their persons, and better fed than the men." But to accept these as *sufficient* reasons, for the total immunity of the officers, would be to ignore the history of many previous epidemics.

gated with sulphurous acid. But cholera had established itself in the regiment. It went with the men to Chatam lines, and it remained with those left behind at Clydesdale.

I now propose to narrate as briefly as I can the history of an epidemic, which was perhaps as protracted and severe in its effects, as any other that has ever occurred in a regiment, even in this country. This history not only contains points of interest and importance, (especially those bearing on the movements of troops into camp) but it will also serve to show that the position of the 58th during the epidemic was in many respects similar to that in which a regiment would find itself when on active service in this country. Under these circumstances, a comparison of the state of health of the two wings possesses even greater interest than it would, if the men had been left in undisturbed possession of their barracks throughout the year. One of the strongest arguments against our locating our troops to a large extent on the hills is that, in the event of their being required to quell a disturbance on the plains, they would suffer terribly from exposure if sent down at unfavourable seasons. The experience of the regiments brought down from the hills to Delhi at the outbreak of the mutiny is said to prove that troops fresh from the hills would so suffer. Apart from the circumstance that there appears to be a difference of opinion as to the very fact of these regiments having suffered severely at all,* (except from cholera, which was raging as an epidemic in the district through which they had to pass, on their way to Delhi), I strongly suspect that during the first year of the mutiny, a scarcely sufficient amount of attention was bestowed on the preparation of "returns" to enable us to arrive at a reliable opinion on the point. The Army Medical Departmental Reports do not enable us to

* See a paper on Hill Stations by Deputy Inspector-General Dr. C. A. Gordon, C. B., in the *Medical Times and Gazette* of July 3rd, 1869.

compare the sickness and mortality which prevailed in the different regiments serving in India, previous to 1860.

Cholera persisting amongst the detachment which had been sent to Chatam lines, on the 29th of March the party was despatched to camp at Papa Mhow, about 2 miles distant, in a northerly direction. Here four more cases occurred; three of them fatal. On the 5th of April (having been joined by a company from Clydesdale) a move was made across the river Ganges to a camp, four miles distant from, and north of, Papa Mhow. No further case occurred, and the four companies were, on the 17th of April, sent into the new cantonments. At this time these men were in excellent health, there being only four on the sick list in a strength of 208, and the diseases were very trifling—one of ague, one hurt hand, two abscess. I may here mention that on this, as on every other occasion, when a move was made into camp, the men were provided with cots.

Meanwhile, the remainder of the regiment at Clydesdale and Mansfield lines, had 12 individuals attacked between the evening of the 23rd, and the morning of the 30th of March, when they were moved by rail to Camp Begum-ke-Serai, 6 miles from Allahabad in the Cawnpore direction (west.) Up to the 2nd of April, six seizures here took place (five fatal), rendering it advisable to take up fresh ground, which was done, a mile further on towards the west. On this ground four more cases occurred between the 2nd and 10th April, but three of these recovered. After the 10th the disease disappeared, and on the 21st the party arrived at Chatam lines, 366 strong, with a sick list amounting to 30, and composed as follows:—Continued fever four cases, small-pox one, ague one, rheumatism one, disease of heart one, dyspepsia two, diarrhœa two, dysentery one, hæmorrhoids one, venereal sixteen. It was originally intended that this party too should have gone into the new cantonments on quitting camp; but their destination had to be altered; as only the evening before the day on which they were to have gone in, the detachment of four companies, which had

occupied the new barracks since the 17th, were obliged again to shift quarters, cholera having re-appeared among them. This latter body had not been forty-eight hours occupants of these barracks—which, though new, were situated on ground that had not been cleansed of the impurities deposited thereon by the native artisans and coolies engaged in their construction—before the pest again broke out, four of the men being attacked, three fatally. Hence this party was compelled to go once more into camp. The move was made on the 20th April. This time the locality chosen was about four miles to the east of the new barracks and across the river Ganges. During the eight days they remained here they were unassailed, with one exception, an old European female camp follower, who was attacked on the 27th April, and died on the following day. The weather being excessively hot, the thermometer marking 116° at mid-day, in a tent placed under a tree, the four companies once more wended their way by easy stages to the new cantonments, where they arrived on the 1st of May. The sick list of this party, though still small, had slightly increased since going a second time into camp. I find the returns show that on the 30th of April one man was suffering from continued fever, one from remittent, one from diarrhœa, one from hepatitis, two bubo, one dislocation, total 7, the strength being 204.

On the 7th of May the other portion of the regiment (which went from camp into Chatam lines on the 21st of April) arrived at the new barracks, as cholera had broken out amongst them at Chatam lines on the 5th, two men having been attacked and died. The entire regiment (except the two companies in the fort) was thus once more re-united. Since the evacuation of the new cantonments on the 20th April most strenuous efforts to improve their sanitary condition had been made by the authorities. Not only was the filth removed, but latrines were erected for the use of the native workmen; and police patrols were put on with a view of

preventing any further defilement. Still cholera did not leave us. All through the month of May, at the new barracks, dropping cases were of frequent occurrence, in all amounting to sixteen cases and nine deaths. The disease manifesting itself rather more severely in the married quarters than elsewhere, thirteen families were moved across the Ganges to Jhoosie rest-house on the 10th of May. This move was successful in freeing these families of cholera, and towards the end of May they returned to the new barracks.

The heat during May in the new barracks was terrific, and the discomfort to which all were subjected, on account of the numerous recent moves, was very great. Both causes combined began to make themselves felt in the shape of an increased sick and mortality list. Bad as the "new standard plan" of barrack was found to be, as a protection from heat, it was considered that sending the regiment under canvas might not be a change for the better. Cholera continuing, *something* however had to be done. It was, therefore, determined to give the old barracks another trial. Indifferent though they were, the men themselves preferred them because they thought them cooler than the new ones. Accordingly a re-distribution of the corps was made amongst the Clydesdale, Mansfield and Chatam lines, and one company was sent to Jhoosie rest-house. The married people remained in the new barracks.

This re-distribution did not effect much good. With the exception of the company at Jhoosie, cholera clung to the various parties. Twelve cases, with five deaths, occurred amongst the occupants of the old barracks between the 1st and 11th of June, on which latter date two companies, which suffered rather more severely than the rest, were despatched to camp about six miles distant on the Cawnpore road. Here they joined the married people, who were, at the same time, obliged to abandon the new barracks. From the commencement of the epidemic down to this time the weather had been

excessively hot and dry, with wind frequently changing from east to west. On the night of the 8th of June a heavy shower of rain occurred; on the following day a woman at the new barracks was seized with cholera and died in a few hours. The day after, eleven, out of a total strength of about 200 men, women and children, resident in the new barracks, were attacked; nine out of the eleven cases proving fatal. It is a very noteworthy fact that this outbreak, as well as the original one, at No. 8 barrack, Clydesdale lines—the two most virulent which occurred during the epidemic—should have followed so quickly after heavy showers of rain, which in turn succeeded prolonged droughts. Upon leaving barracks the married people at once shook off the disease, and no further case occurred either among them or the two companies with which they were encamped on the Cawnpore road. Both parties were therefore allowed to return to cantonments on the 21st of June; the married people to the new, the single men to the old, barracks. These two parties of about 150 men had only 7 cases, by no means severe, on the sick list, when they came into barracks. Their health in camp was good, although they were out in June, when the rains had not yet set in and the heat was intense.

From the 11th of June to the 23rd of July the 58th was totally exempt from cholera, and the epidemic was supposed to have worn itself out. But it was merely a respite. Why the respite should have occurred at all at this particular time and under the circumstances is simply unaccountable, but nevertheless well worthy of notice. Here was a regiment, in which cholera had been, I may say, endemic for 81 days, ending the 11th of June scattered all over the Peninsula on which Allahabad is situated—Clydesdale, the Mansfield, the Chatam, and the New barracks, and also at the Fort. During the 40 days interrening between the 11th of June and the 22nd of July, the regiment drank water precisely the same as that which had been used while the disease prevailed in the corps.

The wells had not been cleaned out, and the water was not subjected to any purifying process, other than that of the ordinary barrack filter of sand and charcoal. The air was just as dry for the first half of the period of exemption, as it was moist during the second half: the regular monsoon having set in on the morning of the 30th of June. The mortuary returns of the municipality (which I will show subsequently) prove that the native population suffered more severely during June and July than in any of the other months, and the European non-military population were not exempt. Cholera-producing "animalcules," and emanations from cholera excreta should, therefore, have abounded. It is very strange why they should have left the 58th intact for 40 days, notwithstanding the fact of the regiment being, so to speak, *intimately mixed up* with the suffering native population. It is not rational to suppose that the condition of the sub-soil under these five differently situated barracks should have differed from the sub-soil around and between the barracks, on which the number of deaths was greater during the exemption of the 58th than at any other time. Situated as it was, I venture to assert that, if any or all of the chief existing theories relative to the cause and spread of cholera be well founded, the escape of the 58th during this period of 40 days can be regarded only in the light of a miracle.

On the 22nd of July the scourge again cropped up in the regiment, on this occasion making its first appearance at Chatam lines. Two fatal cases having occurred, two companies were, on the 25th, sent into camp at Muddapore, rather under 2 miles distant in a northerly direction. The two remaining companies, stationed at Chatam barracks, having also had two fatal cases, followed on the 29th to Papa Mhow, about 2 miles off and also towards the north.

From the date of leaving barracks until the 14th of August, 19 clear days, the detachment at Muddapore remained free from cholera. On the latter date three men were attacked, and

two died. Five days previous to this outbreak, the Artillery, who were also suffering from cholera, were moved out of their barracks to a camp within about 500 yards from the spot occupied by the 58th detachment at Muddapore. On the 13th an Artilleryman who died of cholera was buried within a hundred yards of the trench used by the 58th detachment for the purposes of nature. The near approach of the affected Artillery and the fresh outbreak amongst the 58th appear to stand to each other in the relation of cause and effect. But before pronouncing positively on the point, it should be remembered, that not only might the occurrence of each of the many other outbreaks in the regiments have been due to importation, through the agency of camp-followers and others, but also that cholera was at this time very prevalent in Allahabad, on the outskirts of which Muddapore is situated.

The two companies in camp at Papa Mhow, about one mile from Muddapore, had one case on the 4th of August, one on the 6th, and two on the 7th, three out of the four proving fatal.

At Clydesdale lines, the head-quarters and three companies escaped until the 30th of July, when they had one case, followed by another on the 3rd of August, one on the 4th, four on the 5th, four on the 6th, and three on the 7th. Of these fourteen cases, nine were fatal.

It was at length determined to move the regiment, at all risks of exposure to heat, wet and malaria, to a long distance from the obviously infected station of Allahabad. Accordingly, sites for camps were selected, and on the 7th of August the portion of the regiment quartered in Clydesdale barracks was despatched by rail down the Jubbulpore line, and placed under canvas at Oonchadeek, about 50 miles from Allahabad. The surviving cholera patients, and 19 men sick with other diseases, were left behind at Clydesdale hospital. The 19 men furnished two fatal cases of cholera on the 8th. The party at Oonchadeek had one case on the 9th, and two on the 10th of August, all fatal. As no case occurred at Oonchadeek sub-

sequent to the 10th, the probability is very great that these three men conveyed the disease with them from Allahabad.

Prior to the departure of the Oonchadeek party from Clydesdale lines, one of the men, the regimental watch-maker, was permitted to go and live in the new barracks, about 2 miles distant from Clydesdale, as he feared that exposure to wet in camp would injure his valuables. The married people were quartered in the new barracks, since their return from cholera camp on the Cawnpore road, on the 21st of June; from which time they had been perfectly free from cholera. The watch-maker arrived at the new barracks on the 5th, was seized with cholera on the same day, and died in a few hours. On the 7th, a drummer-boy living with his parents was attacked, and died. A married soldier was attacked on the 9th, and a girl on the 13th; both recovered; and so far as the occupants of the new barracks were concerned, were the last cases of cholera in the 58th during the epidemic. This case of probable importation by human intercourse, coupled with that which took place at Muddapore, points to the necessity which exists for maintaining even a limited quarantine during cholera epidemics. I say limited, because, under existing arrangements, I do not see how an absolute interruption of intercourse could be carried out between, say, a body of men which has shaken off the disease in cholera camp or in partially isolated barracks (such as the new ones at Allahabad) and the yet infected station. Commissariat and other necessary supplies must be sent into camp. But beyond the communication absolutely necessary for the supply of such requirements, none other whatever should be allowed. The rigorous carrying out of such a measure would, no doubt, entail a certain amount of trouble and inconvenience; but it would prevent the narrative of a future epidemic containing a statement to the effect, that it is by no means certain the lives of three people were not sacrificed, because these restrictive measures were not enforced.

On the 9th of August the detachment from Papa Mhow was moved down the Jubbulpore railway, a distance of 40 miles, to camp Burgurh. Here two fatal cases occurred on the 10th, being the last which took place in this party.

The detachment from Muddapore followed on the 17th of August to camp Debourah, 45 miles from Allahabad. This body—unlike the two preceding ones—took no latent case of the disease with it, or, at any rate if it did, such case was not subsequently developed; as once out of the vicinity of Allahabad the party suffered no more from cholera.

Although I have hitherto not referred to the detachment at the Fort, as suffering from cholera, it nevertheless did not escape during the epidemic. On the 6th of April the first man was attacked, and up to the 12th, two more cases occurred, only one of these cases proving fatal. From the 12th April to the 22nd of July, the detachment at the Fort was free. From the latter date to the 8th of August, seven cases and four deaths occurred. About 50 men were placed under canvas on the glacis from the 25th to the 30th of July. This was the only move made into camp by the detachment at the Fort.

Up to this I have confined my remarks to cholera as it existed in the 58th. It will now be well to devote a few words to show how the other portions of the community of Allahabad were affected by the epidemic of 1869. As to the origin of the epidemic, there appears to be two modes of accounting for it: one being that the first case of cholera in the present year was an importation by rail; the second, and I think much the more probable, that cholera is simply endemic in Allahabad. But however its origin may be accounted for, I have it on the authority of the Civil Surgeon that, "in February* three cases of cholera were registered in the city, and from the 1st to the 21st

* In the same month I attended a severe, though not fatal, sporadic case in the person of a private of the 107th Regiment, who was attached to the detachment of the 58th, then garrisoning the Fort.

of March there have been fifteen. This is probably far short of the mark. On the 15th ten of these deaths occurred, and ever since the number of these deaths have been increasing. The disease at present is chiefly confined to places in the city on the banks of the Jumna." The City is about half a mile to the south of Clydesdale barracks. The cantonment bazars to the north of, and very close to, Clydesdale are reported to have furnished one death by cholera on each of the following days, *viz.*, 3rd and 6th of February, and 12th of March. Subjoined is a table which will help to give some idea as to the prevalence of cholera in the municipality during the epidemic. The first row of figures purports to exhibit the total number of deaths by cholera. The Civil Surgeon, however, remarks, "these numbers are very far short of the truth." The second column contains a statement of the mortality among the European non-military residents; "this return is believed to be correct."

March	179	0
April	40	1
May	40	4
June	280	2
July	260	4
August	81	10
September	5	1

The Royal Artillery, two batteries, 203 strong, quartered in Wellington barracks, which are situated about the centre of a spit of land running into the Ganges and well removed from the City and large filthy bazars—about a mile from the latter and two and a half from the former—escaped altogether until July. They then had twelve cases and nine deaths.

The 11th Bengal Lancers, located at Papa Mhow, on the same promontory as the Artillery, but about a mile further, removed from the City and bazars, had one man attacked in the year, and he recovered. This immunity occurred in the face of the fact that, as we have seen, more than one

of the 58th cholera camps were pitched at Papa Mhow within half a mile of the Native Cavalry Lines.

The 4th Native Infantry, 744 strong, located to the north of the new barracks (which at the beginning of the year were in a very filthy state), and only about a mile and a half removed from the City, had their first case on the 17th April. From time to time after 15 cases occurred, making a total of 16, of which number 7 only proved fatal. It is important to observe how these different corps were attacked in about an inverse ratio to the distance of their barracks from the centre of infection—the City.

The 58th remained in camp on the Jubbulpore Line, until the 23rd of September, when it returned to the new Cantonments. Having at length succeeded in shaking off cholera; fevers, bowel and liver complaints began to assail the regiment with great frequency. The camp grounds, on the Jubbulpore Line, were judiciously selected as regards slope of ground, water-supply, and absence of jungle to any large extent; but the prolonged exposure to heat, wet and malaria, to which the men were subjected under canvas at all seasons of a particularly trying, hot, unhealthy year, was too much for them. Immediately after arrival in the new barracks the sick list stood as follows:—

Strength.	Ague.	Remittent Fever.	Diarrhœa.	Dysentery.	Hepatitis.	Venereal.	Other Diseases.	Total.
520	34	2	10	8	7	10	17	88

The men not in hospital were in a very little better state of health than those who were. Had not the duties been almost nominal, the sick list would have been very much larger than it was, as, speaking of the men who came in from camp, it is no exaggeration to say that they were completely

and utterly exhausted—anæmic, fever-stricken, scorbutic, jaded, and worn out.

Nor did the change into the new barracks effect much good. Though by no means water-tight,* these barracks had now become comparatively cool, and afforded very ample space for a regiment so diminished in numbers. Quinine in three grain doses was given daily to every man, and had been so given since the 25th of August. Lime-juice and all procurable vegetables were served out with the rations. The duties were reduced to a minimum. After the first week in October the weather became, for the time of year, particularly cool, dry and pleasant. Notwithstanding all, the health of the regiment continued very bad, as an extract from the morning state of the 25th of November will show. This is a fair average specimen of what the sick list was every day at that time:—

Strength.	Remittent Fever.	Ague.	Diarrhœa.	Dysentery.	Hepatitis.	Abscess of Liver.	Venereal.	Other Diseases.	Total.
558	6	26	10	9	5	4	14	22	96

In addition to this sick list there were about 50 men attending hospital as convalescents. The mortality, as will be seen by a table showing the number of deaths for each month in the year, which I will give presently, was very high. The men who went through the form of going to parade were just able to accomplish so much and no more.

* At this time, whenever heavy rain occurred, the men often got wet in their beds in the barrack rooms. I have myself experienced a drenching while sleeping on the ground floor of a double-storeyed officers' quarter of the "new standard pattern." Officers have been compelled to go into the verandah in September, to secure sleep while it rained. One officer swung a portion of his tent over the punkah bar in his room, and while sleeping dry underneath, deprived himself of the luxury of a punkah!

That all this exceptional amount of sickness was due to *very prolonged exposure* to heat, wet and malaria—especially to the two latter influences—cannot, I think, admit of doubt. For we have the fact that the men who were exposed to the great heat of April, May, and even June, preserved good health, as evidenced by the small sick lists of each of the parties on return from camp during those months. But a much stronger argument is to be found in the following comparison instituted between two companies, one of which spent the longest, the other the shortest time, of all the other companies of the regiment, in camp. These companies have not been picked out, but have been taken simply for the reason stated, viz., the relative amount of time spent by each in camp. H. Company was in and out of camp during the whole or portions of March, April, June, July, August and September. I. Company was only in camp from the 30th of March to the 21st of April, and was quartered in the Fort, by no means a salubrious locality, from the 5th of May to the end of September. The following table represents the sickness and mortality in the two companies for the period between the 1st of August and the 25th of November:—

	Fever.		Diarrhœa.		Dysentery.		Hepatitis.		Other Diseases.		Total.		Proportion per thousand per diem of		Strength.	Number of days in Camp.
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admissions.	Deaths.		
H. Company ...	38	...	7	1	4	2	3	3	16	...	68	6	141·66	12·52	48	102
I Company ...	21	1	8	...	5	...	3	...	14	...	51	1	82·25	1·61	62	23

Both of these companies belonged to the right or Senchal

wing. For fear this, or any other circumstance, should vitiate the conclusion that *prolonged* exposure in camp, especially in the monsoon season, increases largely the amount of sickness and mortality from causes other than cholera; and as the subject of the result of exposure in cholera camp, on the health of the men is one of great practical importance, I take two other companies which, next to H. and I., underwent the longest and least amount of exposure. E. Company belonged to the right wing, and was not, as a whole, in camp, except for 23 days in March and April. But about 20 men of the company were, on the 16th of August, sent to camp Burgurh, where they remained until the end of September. The increase of sickness thus caused amongst these 20 men, accounts for the difference in the numbers of admissions from I. and E. Companies. A. Company belonged to the left wing, and was in camp during the whole or part of the following months:—March, April, July, August, and September,—in all 79 days.

		Admns.	Deaths.
A Co.—Strength 71.—Admd. 94.—Died 3.	Reduction to strength per cent. of	132·39	4·22
E „ „ 71.— „ 78.— „ 0.		109·85	0

This comparison, like the former, excludes cholera, and embraces the period from 1st of August to 25th of November.

Cholera has made its appearance among the European troops at Allahabad every year in the decade, 1859-68; the average annual number of deaths from that one cause alone being about 17 per 1,000 of strength. It is therefore fair to assume that the troops must have undergone some exposure in cholera camps during these ten years. But that in any of these years the exposure undergone was as great as that to which the 58th was subjected in 1869, is doubtful; and I believe I am justified in stating positively, that, at any rate, since 1864, the troops at Allahabad were not exposed to anything like the extent the 58th was last year. The following table, from which I exclude admissions and deaths by cholera, is, therefore, I submit, the most tangible method of arriving at an approximation as to the amount of mortality and sickness attributable to the *prolonged* exposure of the regiment in 1869:—

	Proportion per 1,000 of strength.*	
	Admitted, (annually.)	Died (annually.)
All European Troops† at Allahabad, 1859-68	1880·03	28·78
58th Regiment, from 12th January to 31st December, 1869 ...	2602·10	75·64

Suppose the 58th to have been 1,000, instead of 631 strong, the admissions and deaths *(exclusive of those for cholera)* would then have been respectively, 722·07 and 46·86 in excess of the average annual number of admissions and deaths from a similar strength in the ten previous years. Is there anything in the antecedents of the men of the 58th to assist in accounting for this marked difference? I think not: I have already shown the left wing at Benares for three years, 1866-68, maintained about as good a standard of health as that of the European troops in India generally about the same time, and I will hereafter prove that the right wing from Senchal went through the year 1869 quite as well as the wing from Benares did. Neither is there any reason to suppose that the habits of the 58th differed in any material degree from the habits of the other infantry corps by whom they were preceded

* All these calculations are based on the *average annual* strength.

† I regret that I cannot ascertain what the average amount of invaliding to England has been from Allahabad in former years; but I very much doubt if it has been as great as that from the 58th in 1869, *viz.* 81, or at the rate of 122·5 per 1,000.

at Allahabad. In fine, there is no rational way of accounting for all this extra sickness and mortality, save the one prolonged exposure. It is true that 1869 has been a hot, unhealthy year through Bengal generally. The 58th might therefore perhaps, even if they had been allowed to remain in their barracks undisturbed by cholera, have suffered more severely from disease than the European troops at Allahabad did suffer on the average of the ten preceding years. This, however, is merely a matter of speculation, in support of which not a vestige of evidence can be brought forward, and in contravention of which, we have the very decisive argument that four companies suffered in a direct proportion to the amount of exposure undergone by each in camp.

Of the curative treatment of cholera there is little, either novel or encouraging, to say. In the more severe types of the disease, although every thing which held out any reasonable hope of success was tried in turn, treatment of any kind was inefficacious. Milder cases were most safely assisted on their way towards recovery, by good nursing, the application of heat and frictions to the surface of the body, the careful administration of diffusible stimulants (ether and ammonia), with chloroform in large, frequently-repeated doses. On the approach of collapse, an avoidance of powerful drugs, and above all a most guarded recourse to the use of alcohol in any form, appeared to be highly desirable. Incipient cases may be prevented by being early placed under treatment. But this is by no means a general rule; very much appears to depend on the severity of the type of the disease. I have seen several patients within half an hour of the time at which, as they expressed themselves, they felt as well as ever they did in their lives. No time was lost in administering remedies, which, very little observation sufficed to satisfy one, were powerless to check the progress of the disease in the slightest degree. On the other hand, I have noticed cases in which well-developed choleraic dejecta were present, and in which I have every reason to

believe recovery was attributable to treatment. A marked illustration of this occurred in March, at the outbreak of the epidemic, when the attacks were both frequent and fatal. Two men were at the same time in a ward by themselves, both suffering from undoubted choleraic diarrhœa, watery stools, containing some flocculent matter, and nearly altogether devoid of bilious or other coloring substance. In the exact proportion in which remedies, containing opium or morphia, were exhibited, in such proportion did the flux abate. When, for fear of ulterior bad effects from a too free use of the narcotic, the medicine was discontinued for a short time, the purging returned. One of the cases continued thus, improving and retrograding for two, and the other for three days. Both were finally cured before collapse came on. The treatment adopted was half a drachm of chlorodyne with one ounce of brandy; or half a drachm of tincture of opium with the same quantity of dilute sulphuric acid in combination with an ounce of brandy, every hour for three or four hours together. I must have seen those cases ten or twelve times in the course of each 24 hours, and I have reason to feel convinced that, if they had not been plied with narcotics and stimulants, they would have eventually gone on to collapse. With these well observed cases vividly impressed on my mind, I confess that it would require more persuasive power than even the advocates of the "elimination" theory are endowed with, to induce me to take a dose of castor oil in the event of being myself seized with premonitary symptoms of cholera. On the whole, I place more confidence in the efficacy of chlorodyne than any other preparation with which I am acquainted; but the number of instances in which this drug too failed to ward off collapse and probable death, makes one only too anxious to avail himself of any means of escaping an attack of this fearful pest. As regards troops, removal from the affected locality appears to be the only known method of effecting this end.

A perusal of the narrative of the experiences of this regiment will, I think, satisfy any one that the disease, if not stopped

at once, receives a certain check, and disappears in a short time, after the party attacked has been got far enough away from the centre of infection. As I have already gone sufficiently into detail to enable the reader to form an opinion for himself on this head, I will confine myself to summarizing the principal practical points deducible from the extended experience of the 58th in "moving out" during last year.

In all, thirteen different moves out of Allahabad were accomplished.

Ten of the moves were for distances *exceeding* three miles. In six of these ten instances the parties sent out were at once freed of cholera. The four remaining moves gave results as follows:—In one (to Begum-ke-Serai, 6 miles, followed up by a short move of a mile farther on) the disease lasted for twelve days after going out, ten seizures and six deaths having taken place before cholera finally disappeared. One move to Jhoosie, 4 miles, was followed by one case only—and that case I consider to have been a sporadic one—on the seventh day after going out. Another move (to Oonchadeek, 50 miles) was followed by three cases, all fatal, within three days of leaving Allahabad. Lastly the party which went to Burgurh on the 9th, had two fatal cases on the following day. As I have before remarked, it is extremely probable that the men attacked subsequent to the two latter moves had their systems powerfully impregnated before the parties to which they belonged, left Allahabad. If I am correct in this assumption, the fact is an interesting one, as showing the length of time cholera is capable of remaining dormant in the system.

The three moves for distances *under* three miles were all unsuccessful. When the distance was increased to six or more miles from Allahabad the disease was, in two instances, at once shaken off, and in the third got rid of the day following that on which the second move was made.

The river Ganges was crossed four times, on every occasion with complete success; unless the party which went to Jhoosie,

and had one sporadic case on the 7th day after crossing the river, be looked upon as an exception. The Jumna was crossed by three different parties in railway trains. One party remained free after crossing; the second had no more than two cases (fatal) on the day after crossing; the third escaped after losing three men in three days from the date on which it crossed the Jumna. Thus large rivers were crossed on seven different occasions by as many parties, the total number of individuals composing which, amounted to about 1,180: of these 1,180 individuals only six were attacked with cholera when once they had got over the rivers; and it is a remarkable fact that of the six so attacked all proved rapidly fatal.

Ten of the thirteen parties after having shaken off the disease returned to Allahabad before the station was free from cholera, and were, sooner or later, invariably re-attacked. The three detachments which came in from camp at the end of September, when Allahabad was pronounced free from cholera, were not re-attacked.

I venture to think that the foregoing experience points forcibly to the necessity for the adoption *in every case* of some such rules as the following, *viz.*:—

1.—The first move out should not be for a shorter distance than four miles, and should be followed, after an interval of twenty four hours, by another move of an equal length.

2.—A large river should be crossed whenever practicable.

3.—Quarantine of the strictest kind, compatible with the due provision of absolutely necessary supplies, should be maintained, not only between the camp or other place of refuge, and the evacuated station, but also between the camp and any considerable native community in its vicinity.

4.—On no account should the men, so long as they remain tolerably healthy in camp, be allowed to return to cantonments, until the latter and neighbourhood be ascertained, on *thoroughly reliable evidence*, to have been, for a period of at least ten days, free from cholera.

All of these measures (number 2 of course being subject to certain obvious exceptions) are perfectly capable of being carried out in almost every conceivable instance, and most, if not all of them, have from time to time been officially ordered to be enforced. It appears to be highly desirable that no departure from some such rules should henceforth occur, unless the most absolute necessity should exist to render such a departure advisable.

Next comes the important and perplexing question—What is to be done in the event of cholera clinging for a long time to the station, and when, in consequence of prolonged exposure in camp, more particularly in the rainy season, the health of the men is beginning to evince unequivocal symptoms of deterioration? If we bring the troops into barracks before the termination of the epidemic, we subject them to the risk of a new attack—I might almost say to the certainty of a fresh attack, seeing that the ten consecutive parties of the 58th, returning to Allahabad before cholera had passed away from the station, were invariably re-assailed. On the other hand, if we leave the men for a long time exposed to the inclemency of the weather—great heat and moisture—we can only do so with the conviction before us that in all probability the mortality and suffering from diseases incidental to such exposure will be very great. Under existing circumstances, all that can be done is to watch carefully the progress of events, both in the station and in the camp, and then to choose the lesser of two great evils, by bringing the men back to their barracks, or leaving them to fight it out in camp, according to whichever course may appear to the authorities on the spot to be the least dangerous! I have heard it suggested that barracks should be erected at certain distances from stations, to be used as a special resort on the advent of cholera. This scheme would, no doubt, be a good one, but as such large sums have already been invested in the erection of military buildings, I apprehend that our soldiers will be long minus suburban residences.

And even apart from the pecuniary obstacle, there would be a formidable sanitary consideration to be weighed, as to whether it would be advisable to continue sending men into buildings which must as well as the ground around, be more or less polluted by the excreta, &c., of former occupants who had suffered from cholera. There is one, and only one, method of escape from the unfortunate dilemma which a prolonged epidemic of cholera exposes a European regiment to on the plains, and that method of escape is the location, on the mountain ranges, of all our European troops, except the few who may be absolutely required for the protection of our arsenals and other strongholds on the plains. The few men so retained on the plains to be relieved annually by others carefully selected from the mases on the hills. The sooner this step is taken, the sooner are we likely to be spared the repetition of a casualty roll like that of the 58th regiment for last year. The following table is intended to show the number of admissions, deaths, and amount of invaliding to England, which have taken place from month to month in the regiment at Allahabad from the 12th January to the 31st December, 1869. The diseases from which a regiment is most likely to suffer in the plains are particularized. To avoid subsequent repetition I make this table serve to show not only the monthly casualties of the corps as a whole, but also to exhibit the proportion in which each of its chief constitutent parts suffered. "Right" represents the wing which arrived from Senchal, "Left" that from Benares, and "Draft" the body of recruits which arrived direct from England in January 1869.

Months.		Cholera.			Insolatio.			Fevers.			Diarrhœa.			Dysentery.			Hepatitis.			Rheumatism.			Venereal.			Other Diseases.			Total.		
		Admitted.	* Died.	(Debility after) Invalided.	Admitted.	Died.	Invalided.	Admitted.	Died.	Invalided.	Admitted.	Died.	Invalided.	Admitted.	Died.	Invalided.	Admitted.	Died.	Invalided.	Admitted.	Died.	Invalided.	Admitted.	Died.	Invalided.	Admitted.	Died.	Invalided.	Admitted.	Died.	Invalided.
January	Right	...	...	...	...	...	...	8	...	...	1	...	...	...	...	...	...	...	...	1	...	...	12	...	...	13	...	...	35	...	...
	Left	...	...	...	...	...	...	4	...	...	3	...	...	2	...	...	4	...	...	6	...	...	16	...	...	16	...	...	51	...	...
	Draft	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	2	...	...	3	...	...	7	...	...
February	Right	...	...	...	...	...	...	10	...	...	4	...	...	...	...	...	1	...	...	1	...	...	16	...	1	16	...	...	48	...	1
	Left	...	...	...	...	...	...	6	...	2	3	...	...	1	...	...	1	...	...	2	...	...	9	...	...	13	1	1	35	1	3
	Draft	...	...	...	...	...	...	1	...	...	2	...	...	...	...	...	...	...	...	...	...	...	3	...	...	4	...	...	10	...	...
March	Right	17	12	...	...	...	...	5	...	...	3	...	...	1	...	...	...	...	...	1	...	...	17	...	...	21	1	...	65	13	...
	Left	2	1	...	...	...	...	3	...	...	2	...	...	5	...	...	2	...	...	4	...	...	5	...	...	19	...	...	42	1	...
	Draft	5	...	...	...	...	...	6	...	...	2	...	...	...	...	...	...	...	...	...	...	...	7	...	...	7	...	...	27	...	...
April	Right	6	5	...	...	...	...	9	...	...	13	...	...	5	...	...	1	...	...	2	...	...	5	...	...	21	1	...	62	6	...
	Left	1	1	...	1	...	...	6	...	...	2	...	...	1	...	...	2	...	...	...	...	...	2	...	...	10	...	...	25	1	...
	Draft	2	5	...	1	1	...	4	1	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	5	...	...	14	7	...
May	Right	8	6	...	4	3	...	27	2	...	8	1	...	1	...	...	2	...	...	2	...	...	5	...	...	21	...	...	78	12	...
	Left	7	3	...	1	1	...	10	...	...	10	1	...	2	...	...	3	2	...	1	...	...	1	...	...	15	1	...	50	8	...
	Draft	1	...	...	1	1	...	11	...	...	2	...	...	...	...	...	...	...	...	1	...	...	3	...	...	4	...	...	23	1	...
June	Right	9	3	...	2	1	...	45	...	...	7	...	...	...	...	...	...	...	...	3	...	...	7	...	...	16	1	...	89	5	...
	Left	4	3	...	...	...	...	14	...	...	1	1	...	...	...	...	2	...	...	...	...	...	1	...	...	7	...	...	29	4	...
	Draft	2	2	...	...	...	...	14	...	...	4	...	...	...	...	...	1	...	...	...	...	...	4	...	...	6	...	...	31	2	...
July	Right	7	5	...	...	...	...	17	...	...	13	...	...	2	...	...	3	...	...	2	...	...	17	...	...	19	...	...	80	5	...
	Left	2	1	...	...	...	...	5	...	...	6	...	...	3	...	...	3	...	...	...	...	...	2	...	...	12	...	...	32	1	...
	Draft	...	...	...	...	...	...	8	...	...	7	...	...	1	...	...	1	...	...	1	...	...	3	...	...	11	...	...	32	...	...
August	Right	15	15	...	1	...	...	20	1	...	42	1	...	20	2	...	2	...	...	...	...	...	11	...	...	20	...	...	131	19	...
	Left	12	7	...	...	...	...	10	...	...	19	1	...	1	...	...	2	...	...	...	...	...	3	...	...	6	...	...	53	8	...
	Draft	4	4	...	...	...	...	4	1	...	6	...	...	5	...	...	1	...	...	...	...	...	4	...	...	1	...	...	25	5	...
September	Right	...	...	3	...	...	...	40	2	...	12	...	2	13	1	...	8	...	3	1	...	...	11	...	...	19	...	6	104	3	14
	Left	...	...	1	...	...	...	48	1	1	6	...	...	10	1	1	8	1	2	...	...	1	3	...	2	19	...	6	92	3	14
	Draft	...	...	...	2	...	...	17	2	...	1	...	...	9	1	3	...	...	...	...	...	...	4	...	...	9	...	...	42	3	3
October	Right	...	...	...	...	...	...	63	...	...	6	...	...	3	...	...	4	1	...	...	...	...	13	...	...	19	...	...	108	1	...
	Left	...	...	...	...	...	...	39	1	...	3	1	...	1	2	...	1	...	...	...	...	...	3	...	...	9	1	...	56	5	...
	Draft	...	...	...	...	...	...	25	...	...	...	...	...	2	...	...	1	1	...	...	...	...	2	...	...	5	...	...	35	1	...
November	Right	...	...	...	...	...	...	53	...	...	7	...	...	8	...	...	10	4	...	...	...	...	20	...	...	16	...	...	114	4	...
	Left	...	...	...	...	...	...	35	...	...	5	...	...	2	...	...	4	...	...	1	...	...	2	...	...	13	1	...	61	1	...
	Draft	...	...	...	...	...	...	13	...	...	5	...	...	2	...	...	...	...	...	...	...	...	1	...	...	3	...	...	24	...	...
December	Right	...	...	...	...	...	...	20	...	7	3	1	1	...	...	8	2	1	8	2	...	...	16	...	...	19	...	3	62	2	27
	Left	...	...	...	1	...	...	14	...	5	1	...	1	2	...	2	...	1	1	1	...	...	6	...	...	4	...	...	28	1	10
	Draft	...	...	...	...	...	...	4	...	2	1	...	1	...	...	2	..	...	2	...	...	...	4	...	...	4	...	2	13	...	9
Total	Right wing	62	46	3	7	4	...	317	5	7	119	3	3	53	3	8	33	6	11	15	...	..	150	...	1	220	3	9	976	70	42
	Left wing	28	16	2	2	1	...	192	2	8	61	4	1	29	3	3	32	4	3	15	...	1	53	...	2	143	4	7	555	34	27
	Draft	14	11	...	4	2	...	107	4	2	33	...	1	19	1	5	4	1	2	2	...	...	38	...	...	62	...	2	283	19	12
Grand Total	.....	104	73	5	13	7	...	616	11	17	213	7	5	101	7	16	69	11	16	32	...	1	241	...	3	425	7	18	1,814	123	81

* Shown opposite the month in which the death actually occurred.

Remarking on this table, I would invite attention to the fact —allowing for the numerous deaths which took place in the early part of the year—that every man in the regiment has, on an average, been nearly three times admitted into hospital in less than twelve months. The total number of deaths which occurred amongst 729 men, has been 123, of which 73 were from cholera, and 50 from all other causes; or at the rates of 168·7, 100·1, and 68·5 per thousand, respectively. The invaliding to England amounted to 81 men, or at the rate of 111·1 per thousand. The total losses from both mortality and invaliding combined, has been 204 in 729, or 279·8 in a thousand. Taking the Royal Sanitary Commissioner's* estimate, that it costs £100 to replace a European soldier in India, here is a loss of £20,400 to the State for the casualties (by death and invaliding†) which occurred in less than a year among 729 men. Add to this the cost of the extra hospital establishment necessitated by the large amount of sickness; the large expense entailed by the numerous moves in and out of camp; the damage done to camp equipage; and last, though by no means least, the damage done to the constitutions of many of the survivors who are still with the regiment, and we get a very practical though rough idea of the loss that the climate of the plains of India is capable of accomplishing.

To arrive at a true estimate of the state of health maintained during the year by the men of the right wing, as compared

* Report, octavo vol., page 125.

† I believe the cost of invaliding a soldier from India must be as great as that of replacing a man who has died out here by another who has to be trained before being sent out from England. Because the expense of sending an invalid home has to be incurred while an invalid, his services are simply worthless to the State, and moreover his weakly condition necessitates more care and consequent expenditure; after all of which he may die, or more costly still, have to be discharged with a pension. For these reasons I think that the invalids who have recovered and come back to their regiments in India will represent quite as much (if not more) money outlay as does the recruiting, training, and sending the same number of men to India to fill up the gaps caused by mortality.

with those of the left, it will be necessary in the first instance to state that, excluding the admissions and deaths of both wings by cholera which occurred during the *first fortnight* of the *five months'* epidemic, and also excluding the admissions of both wings on account of venereal disease for the year, the admissions, deaths, and invaliding of the two wings, stand as follows, *viz.* :—

	Strength on arrival at Allahabad.	Average age.	Proportion to strength per cent. of		
			Admissions.	Deaths.	Invalids.
Right (hills) ...	390	27	205·8	13·5	10·7
Left (plains) ...	243	28	205·3	13·1	11·1

These three different methods (admissions, mortality, and invaliding) of estimating the health of the wings, bear one another out with remarkable accuracy, and I think demonstrate beyond all doubt, either that those who assert that troops sent down from the hills to the plains would suffer more severely than "seasoned" men, are wrong, or that what has happened in the 58th last year was exceptional or accidental. If the latter be the correct interpretation of the figures in the above table, all that I can say is that the table would form a very interesting contribution to a chapter of accidents. For my own part, I look upon it simply as a proof that 390 men fresh from the hills, passed through a very trying year on the plains, and suffered precisely the same in doing so as the 243 so-called seasoned men suffered.

I have excluded the admissions for venereal disease for the following cogent reason. If I had put them in, the proportion of admissions of the right wing would have been to some extent increased, and to that extent would it appear that sickness had been more prevalent in the right wing than the left. The men of both wings were subject to the same sources of temptation and infection, in an equal degree. A reference to the table,

which shows the admissions for each month, indicates that the proportion of admissions to strength for the first couple of months at Allahabad on account of venereal was greater in the *left* than in the *right* wing. After the first couple of months, and more especially towards the end of the year, the admissions from the right were in excess of those from the left wing. Now I ask who is the more likely to incur the risk of contracting venereal disease—a man in a weak state of health, or the reverse? Is it not a peculiar feature connected with this disease that, *caeteris paribus*, a robust unmarried soldier is more apt to lay himself open to infection than his more weakly comrade? I think there can be very little difference of opinion on this point. Instead, therefore, of swelling the admissions of the right wing by the insertion of venereal, I think it much safer to leave it out altogether. I would even go a step further, and regard the excess of venereal disease in the right wing, as, to a certain extent symptomatic of the existence of a greater amount of vigour towards the end of the year amongst the men from the hills than amongst their brethren from Benares.

I have also excluded from the comparison the admissions and deaths from cholera, which occurred in the first fortnight of the epidemic. I would not have done this had there been any positive proof, or for the matter of that, proof of any kind, that the wing from the hills had in the first fortnight 23 men attacked, *because* they came from the hills, or that the men of the wing from Benares had only three attacked *because* they had remained in the plains. On the contrary, there is very strong negative evidence that the fact of the former body having come from the hills had nothing whatever to do with the prevalence of cholera amongst it at the outbreak of the epidemic. If cholera be supposed to manifest a greater tendency to attack people because they have come fresh from the hills, why did the 26 women who came from Senchal, go through a five months' epidemic without having had one of their number attacked, although the 35

women from Benares furnished five cases, and two deaths by cholera? Why were the children of the Senchal wing attacked less frequently than the children of the Benares wing, in the proportion of 11 to 14? Why did the officers, half of whom came from the hills, altogether escape? Why of the 23 attacks and 17 deaths in the right wing in the first fortnight, did nine of the attacks, and eight of the deaths, occur amongst the men of B. Company, which was quartered in No. 8 barrack, Clydesdale lines, at the outbreak? Lastly, why during the last four and a half months of the epidemic, were the men of the wing from Benares attacked in the proportion of 10·28 in every 100 of strength, while those of the Senchal wing had a shade less, or exactly 10 per cent., attacked? If we could explain all those anomalies, in other words, if we knew a great deal more about the laws of epidemiology than we now do, we *might* then be able to show that the men from Senchal suffered a great deal at first, because they came fresh from the hills. As the case now stands, I fancy we can no more accept a residence in the hills as a cause of excessive mortality by cholera to the right wing, than we could imagine such residence to be the cause of a large proportion of deaths by bullet in a general action. I cannot, therefore, be far wrong in concluding that the prevalence of cholera in the right wing at first, as, according to our present knowledge, was purely accidental.

I fear that I shall be compelled to introduce one more table. But the subject of this is an important one, from two points of view: (1) It will be shown how the men of the two wings comparatively suffered from the diseases which of all others (except cholera) inflict the greatest amount of sickness, mortality, and invaliding on our European troops on the plains; and (2), it will be shown that the uniformity, as regards the total admissions, deaths and invaliding of the two wings, exhibited in the last table, has not been arrived at by a promiscuous jumbling together of the whole of the diseases. To enable the results to be seen at a glance, the necessary reduction for

strength has been made; the actual number of admissions, &c., will be seen by referring to the large table which shows the casualties for each month.

	Fevers.			Bowel Complaints.			Liver Complaints.			Total.		
	Admissions.	Deaths.	Invalided.	Admissions.	Deaths.	Invalided.	Admissions.	Deaths.	Invalided.	Admissions.	Deaths.	Invalided.
Right ...	81·28	1·28	1·79	44·10	1·53	2·82	8·46	1·53	2·82	173·6	4·34	7·43
Left ...	79·01	·82	3·29	37·03	2·88	1·64	13·16	1·64	1·23	129·20	5·34	6·16

The total number of admissions are a little over 4 per cent. in favor of the left wing; the deaths in the ~~right~~ exceed those of the ~~left~~ by very nearly the same amount as the invaliding in the right exceeds that of the left wing. Under fevers and bowel complaints, the relative amount of deaths and invaliding counterbalance each other almost precisely; that the same marked similarity did not occur in the case of hepatic affections I attribute rather to the comparative smallness of the number of this disease operated on, than to any other cause. But taking the table as a whole, and bearing in mind that it deals with three classes of disease, the admissions on account of which amounted to 836, out of 1,531 (the total number of admissions of both wings) I think it may be very safely assumed that, so far as the admissions, deaths and invaliding of two bodies of soldiers furnish an index of their state of health, the health of both wings has been, to all intents and purposes, the same. The admissions and deaths by insolatio are greater in the right wing; but the total number of admissions (9) for this disease is much too small to admit of a reliable comparison. On the other hand, the number of admissions, deaths and invaliding, under "other diseases"

and rheumatism, are all relatively smaller in the right than they are in the left wing.

In a former part of this paper I have said that an interchange of men took place between the wings, while stationed at Senchal and Benares—the wing at the latter station yearly sending its weakly men to Senchal, and getting healthy men from the hills in exchange. I at first considered that this "weeding out" of one wing, at the expense of the other, would have caused a corresponding diminution of sickness in the wing so weeded. I therefore prepared lists of the two wings, carefully excluding the interchanged men and also the various drafts from England. On tabulating the results, I found that the men who had been for four consecutive years in Benares, and those who had been three years at Senchal, stood to one another in the same ratio as regards sickness, mortality and invaliding, as the wings taken as a whole stood. That is to say, excluding the cholera of the first fortnight and the venereal admissions for the year, the casualties of both bodies bore the same relative proportion to each other, as I have already shown existed between the casualties in the wings from which no men, except the draft which arrived from England in January, 1869, had been excluded. This, I confess somewhat unexpected result, appears to me to admit of only one explanation. The weakly men, about 70 in all, sent from Benares to Senchal, all recovered their health at the latter station, except a few of the worst cases amongst them, who had to be invalided home from Senchal.

The women and children who accompanied the wings from Senchal and Benares were not sufficiently numerous to afford a safe comparison; but so far as the numbers go, they may be said to confirm in a general way the results arrived at in the case of the men. The women of the right wing were 26 in number, and gave 34 admissions and 2 deaths, against 37 admissions and 4 deaths in the other wing, which contained 35 women. The children of the right wing, 61 strong, had

69 admissions and 16 deaths; those of the left mustered 75, of whom 78 were admitted and 11 died. In dealing with small numbers like these a few cases one way or the other makes so material a difference, that it cannot be useful to remark further on them than to say, that the admissions both amongst the women and children of the right wing were to a small extent in excess of those of the left. Again, the mortality amongst the women from Benares was a little greater than amongst those from the hills, while the reverse happened in the case of the children, those of the right wing having died in a very considerably larger ratio than those of the left. Neither did cholera produce this difference of mortality amongst the children, as the deaths from that cause were in both cases 8 per cent. Were the admissions amongst the children of the right wing in any thing like the same ratio in excess of those of the left, as the deaths have been, I should be inclined to think that the climate of the plains exercised a more unfavourable effect on the constitutions of children from the hills than it does on the constitutions of those who have been born, or have lived for some time, on the plains; but the fact that the proportion of sickness, as expressed by the number of admissions, would have been equalized had 5 fewer admissions occurred amongst the right wing children, appears to be almost a direct negative to such an hypothesis.

A consideration of the health of the draft of the 96 young soldiers, whose average age did not exceed 21 years, need not detain us long. Although the strength of this draft is rather limited, still the *uniformity* of the excess in it of admissions, deaths and invalidings, as compared with those of the two wings taken together, leaves little room for doubt that the recruits suffered more severely than their more mature comrades. The admissions from all causes amongst the 96 recruits were at the rate of 294·7, deaths at 19·7, and invaliding at 12·5, per cent. The corresponding casualties amongst the 633 men from Benares and Senchal, whose average age was between 27 and 28

years, amounted to 241·8 admissions, 16·4 deaths, and 10·9 invalids, per cent. These figures show that the young soldiers of the 58th in every 100 sent in one year, 52·9 more cases to hospital, lost 3·3 more men by death and invalided, 1·6 more than the older men did. There is every reason to suppose that this excess is not far off the truth, as a study of the table in which the nine principal classes of disease are specified, shows that the excess is pretty evenly distributed over the nine classes, the only exceptions being liver complaints and rheumatism, and in these two classes the figures to be dealt with are suspiciously small.

Multiply the excess of the casualties of the young over the old soldiers by ten, and we find that a difference of about 6 years of age represents a difference of 529 admissions, 33 deaths and 16 invalids amongst a thousand men in one year. Looked at from this point of view the subject is a very important one, as indicating that soldiers should not be sent while too young to India; or if this method of avoiding the difficulty be impossible or impracticable, that on arrival in the country the recruit drafts should at once be sent to the hills, and detained there until they have attained the age of, say, 25 years.

Should a reconsideration of the subject of placing all, or nearly all, our European troops on the mountain ranges show that the alleged financial and strategical obstacles in the way do not rest on a firmer foundation than the experience of the 58th would seem to prove that the alleged sanitary obstacles have been based, we should then have reason to hope that before long we shall see our troops in a great measure withdrawn from the pernicious climate of the plains.

CHLORIDE OF AMMONIUM

A

SPECIFIC THERAPEUTIC AGENT

IN THE

TREATMENT OF HEPATITIS AND ABSCESS OF THE LIVER,

WITH ILLUSTRATIVE CASES

BY

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RANGOON

PRINTED AT THE BRITISH BURMA PRESS

1870.

PREFACE.

The pages which follow have been drawn, to some extent, from a paper, "On the use of Chloride of Ammonium in the Treatment of Suppurative Hepatitis, and chronic affections of the liver," contributed to the Lancet in the latter part of December 1869, and which was published in that Journal of May 7th, 1870.

At that time, I cherished the belief, that a more extended experience in the use of "the remedy" would not fail to furnish fresh proof of its efficacy, in certain hepatic diseases—and so far, I am glad to say, my most sanguine expectations have been fulfilled. It now remains to be seen whether it will prove equally efficacious in a variety of climates, and in other hands, and whether I am justified in now conferring on it, for the first time, the title of "a specific" in the cure of Hepatic affections. Time will decide both points; meanwhile I have received favorable accounts, concerning its use, from Tonghoo a place which is said to be somewhat similar to Hyderabad Deccan in climate, where Hepatitis is so prevalent and fatal.

The season of the rains in India, is rapidly approaching, in which, and in the succeeding cold season, many fall victims to the hepatitis which then prevails. I am induced therefore to lay the following pages (hastily put together and sensible of their faults) before my professional brethren in this country, believing that they will be serviceable in the alleviation of suffering, the saving of life, and, in however slight a degree, the advancement of the healing art.

If, however, we desire to attain success, we must deserve it; and if, in the course of a severe and protracted illness, the means recommended in these pages, be faithfully and carefully carried out, in most cases, success may be confidently expected; but on the contrary should, a desultory practice be followed, and the medicine be not regularly and perseveringly administered, and attention to the diet and nursing be not strictly enforced, nothing but disappointment need be looked for.

W. STEWART M. D.
Surgeon 2-21st *Fusiliers.*

Rangoon,
3rd June 1870.

CHLORIDE OF AMMONIUM

A SPECIFIC IN

HEPATITIS AND HEPATIC ABSCESS.

Hepatitis is a disease, which is the cause of much sickness, invaliding, and mortality, among the European forces in India, and its tendency to eventuate in hepatic abscess, renders it one of the most formidable with which the practitioner in this country, has to contend. The treatment of suppurative inflammation of the liver is acknowledged on all hands to be very unsatisfactory; mercury is not only useless, but pernicious, and we search in vain among the numerous text books, for a therapeutic agent of sufficient efficacy to combat the disease.

Such being the case, I am induced to bring to the notice of the profession, a remedy which has proved of signal value in my hands, in the numerous cases in which it has been employed by me, and I may add, also, by others who have witnessed its remarkable success, and have in consequence been induced to give it a trial.

Chloride of Ammonium has been for a long time used by the Germans in frequently repeated small doses in hepatitis, and both the Germans and French, esteem it a valuable remedy in many

diseases, in which we either employ mercury, or other alterative deobstruents. Morhead in his researches, in a foot note states, that he has no experience of the remedy, but says the Indian practitioner will do well to try it. Dr. Clement Williams now of Mandalay, formerly in the 68th Light Infantry and first Political Agent at Mandalay, informed me that, when in his regiment, he was in the habit of using the Chloride of Ammonium in hepatic affections with marked success.*

Should a more extended trial in other hands, and in other parts of India, under a variety of climates and circumstances, contribute on the whole to like favorable results, the much dreaded suppurative hepatitis may be as effectually controlled and cured, as its twin associate dysentery, by the reintroduction of the Ipecacuanha treatment in large doses—thanks to the labors of a few Army Medical Officers.

Before proceeding to the cases which I am about to give, it will be necessary to make some brief remarks on the disease and its general treatment, for the better explaining the action of the Chloride of Ammonium, the stage of the disease in which it is applicable, and the points to be observed in its administration.

When hepatitis occurs in an individual of good diathesis, and is seen early and met by judicious treatment, the symptoms, local and general, will

* Most systematic writers on the practice of Medicine, in treating of hepatitis, make no mention of Chloride of Ammonium in its treatment; a few, allude to it cursorily, among the medicines which have been recommended in Chronic hepatitis (cirrhosis) (*Watson, Tanner*), or as an eliminant when suppuration has taken place *Morehead*), or merely as a mild tonic in Hepatic abscess. (Copland).

for the most part gradually disappear, and the patient be restored to health. It is found however in actual practice, that in consequence of bad diathesis, advanced stage, or other cause, recovery by resolution does not take place, suppuration occurs, and hepatic abscess is formed. It is of importance to detect this event promptly and without hesitation, and to mark its progress, because it calls for a line of treatment different from that suitable to the antecedent stages.* In the earlier stages, the antiphlogistic regimen and treatment are indicated according to the acuteness and severity of the symptoms, local and general, and the constitution of the patient. Should there be no accompanying dysentery, a mild purgative may be administered at the commencement, with a view of clearing out the primæ viaæ and relieving congestion of the portal circulation; afterwards saline diaphoretics and diuretics, in frequently repeated small doses, should be administered; till their action is well established, after which, they may be given in larger doses, and at longer intervals. I have found a mixture containing Liquor Ammoniæ acet: drs. ii. with Tinct: Hyoscyami m. v. in each dose, administered every half hour or hour, to give most relief, allaying the feverish symptoms and calming the nervous system: while the administration of from Dr. ss. to Dr. 1. of the latter (Tinct: Hyoscyami) at bed time, after the repeated small doses during the day, will often have the effect of inducing a a little refreshing sleep, a point of great importance in this disease. The local application of ice, for a considerable period, watching well its effects, or fomentations, or bran poultices to the seat of pain in the right hypochondrium, will also act as

* See Morehead's Researches.

powerful auxiliaries and give much relief. In some few cases, the application of six or eight leeches, when there is much pain and tenderness and the patient is not reduced, may be necessitated, but in general even this amount of local depletion is not required.

The diet should consist of arrowroot, sago, milk and water ; barley water may be taken freely as a drink, and afterwards beef tea may be allowed.

By a careful adhesion to the above system of treatment in a considerable number of cases, in which the inflammation has not gone beyond the stage of vascular turgescence or commencing exudation, resolution may be effected ; and here it must be borne in mind that complete restoration of the inflamed portion or portions of the liver, (for it is rarely that general inflammation exists,) is not coincident with the cessation of febrile symptoms and local sense of pain, and symptoms referable to the affected part; in fact, recovery must be considered incomplete till several days have elapsed from the cessation from pain and febrile disturbance.*

During this time, the patient must be confined to bed, with strict attention to diet, carefully watched, and any derangement of secretions corrected by gentle means. But the symptoms instead of being removed may be only moderated by the above treatment; exudation of plastic lymph may have taken place, degenerating into pus and terminating in abscess, the deranged state of the capillary circulation in its immediate neighbourhood preventing its removal by absorption.

* See Morehead's researches.

On the other hand it frequently happens, especially in Military practice, that the disease does not come under treatment in the early stages, and not till the peculiar symptoms pointing to abscess either impending or already formed, are manifested. In either case, the treatment above described as suitable in primary acute hepatitis is no longer indicated, the treatment must now be tonic and restorative,—the diet should consist of milk, light puddings, broths or animal jellies,—and wine or other stimulants may be cautiously administered, if these do not excite the pulse, or produce irritation of the gastro-intestinal surfaces.*

At this period of the disease, when the acute symptoms have been allayed, and suppuration is either threatened or already established,—or, in the event of the patient having come under observation in the primary acute stage, as soon as the symptoms, local and general, shall have been abated, and diaphoresis freely established, by the means described at page 3, the Chloride of Ammonium should be administered in doses of grs. xx. morning and evening, noting carefully its effects, which are striking and remarkably regular in the order of their occurrence.

As a general rule, about fifteen minutes after taking the medicine, the patient experiences a sensation of warmth in the epigastrium, which, by and by extends, pervading the abdomen, and gradually becomes diffused over the entire cutaneous

* Chloride of Ammonium, being itself, a general stimulant, does away with the necessity for the employment of alcoholic stimulants, in the considerable quantities otherwise required; and unlike them, exercises, I believe, a specific therapeutic action on the liver, instead of tending to increase the diseased condition, which it is our object to remedy.

surface. The nervous system is at the same time exhilirated sympathetically, and probably also through the circulation, for the patient now feels "light headed," (as he generally expresses it), and at times drowsy. The acute pain previously experienced, in the right hypochondrium and along the margins of the lower right ribs, extending, as the case may be, forwards across the epigastrium, or backwards to the lumbar region, is either entirely removed, or in its stead, pain is sometimes referred to a point higher up, and towards the base of the axillary region, where before, none was complained of. At this stage of the operation of the remedy, patient often falls asleep relieved of all his distressing symptoms.

After the lapse of another quarter of an hour, a free and equable perspiration takes place over the entire surface, which lasts for a period varying from one to two hours: in the mean time, the pain which had shifted from the lower margins of the inferior ribs of right side, will again manifest itself, at or near its original position, or may be referred to one totally different, as the lumbar region, or even the right hip. With the evening dose, similar effects will be observed to take place, with like regularity and certainty; and with each succeeding one, the interval of relief from pyrexia and pain referred to the part affected, as well as sympathetic pains of shoulder, arm etc. (which latter are at times distressing), will gradually become longer, till at length, in favorable cases, the relief becomes complete and constant. After several doses of the medicine, the urine is much increased in quantity, (particularly in the cold season), is limpid, and passed without uneasiness. The increase is chiefly at night, causing the patient to awake

suddenly, perhaps three or four times, for the purpose of micturition. *

After a few days the appetite is much improved, and patient craves for more food, which may be given provided it be light, nutritive and easily digested; but solid food should on no account be permitted, as its ingestion would in all probability provoke a recurrence of all the acute symptoms.

During the use of the medicine, care must be taken that patient does not catch cold when perspiring; and when perspiration has ceased, the surface should be dried with warm towels, otherwise chills may be experienced.

In no standard work on Therapeutics which I have consulted, do I find the slightest allusion to the above remarkable train of effects following on the exhibition of Chloride of Ammonium. In

* The effects on the pulse, taken in conjunction with the above, may be interesting. The observations were made in the case of a patient suffering from Hepatitis, and may be taken as an illustration of the effects generally.

Before taking medicine.—Pulse 78, full and regular. Skin cool and dry. Complains of pain in right hypochondrium, and along the margins of the right lower ribs.

8 Minutes after taking Medicine.—Feeling of gentle heat in epigastrium which gradually pervaded the whole body. Pain shifted to axillary space.

30 Minutes after taking Medicine.—Pulse 82. Soft and compressible. Surface bathed in perspiration and a little above the normal temperature.

1 hour after taking Medicine.—Pulse 68, skin below normal temperature, Perspiration gradually ceasing. Patient feels comfortable.

2 hours after taking Medicine.—Pulse 76, skin covered with perspiration. Temperature normal, pain returned to a point midway between the margins of ribs and axilla.

one work it is described as a general stimulant, in another as a diaphoretic, while in a third it is merely noted as a laxative. In one only is it said to be useful combined with taraxacum in cirrhosis. The remarkable effects so constantly following its use in hepatitis are nowhere mentioned.

The silence of authors on the above points, coupled with the fact that in some cases in which I have used it, either as an experiment in health, or as a remedy in diseases, other than hepatitis, it has either been without appreciable effects, or, if any, these have been but slight, and not characteristic, seems to point to the inference that the medicine is not only a specific in certain hepatic affections, but that its peculiar action, being manifested in any given obscure case, may be considered as diagnostic of hepatic disease. The above observations however are thrown out as only probable, and suggestive of further enquiry.

A remedy which is at once found to possess the several properties of a stimulant of the capillary circulation, general and special, which is at the same time a powerful diuretic and diaphoretic, and withal anodyne, cannot but exercise a remarkable influence on the processes of nutrition and absorption, secretion and excretion.

The secretions of the skin, kidneys, and liver, abound in salts ; one of these organs may therefore become vicarious of another in removing those matters from the system. The researches of Dr. Beale also render it probable "that in disease, cer- "tain saline substances are accumulated, in large "quantity, at the seat of disease, at the expense "of some secretion of which they form a normal "constituent."

By its marked diuretic effects, solely, Chloride of Ammonium is capable of exercising a powerful influence in relieving the portal circulation, and bringing about a healthy state of the capillary circulation of the liver, thereby causing absorption and elimination of diseased products. In veterinary practice, says Dr. Joy *(Library of Medicine)* diuretics are used with excellent effects in combatting pulmonary, and other internal inflammations, as well as for getting the animal speedily into condition, and improving the state of his hide, and it is probable they are capable of more extensive application than is commonly supposed.

The cases which follow will serve to illustrate the treatment pursued in many others, and, I may add, with equal success. The first, is a case of well marked acute hepatitis, the second, third, and fourth, are cases of hepatic abscess, and the fifth, which serves to illustrate the efficacy of the remedy in chronic hepatitis, is by Dr. W. Alexander, Staff Assistant Surgeon (formerly doing duty with the 2nd Battalion 21st R. N. B. Fusiliers) and is given verbatim.

Case I. Pte. A. McK.—Upwards of six years in India. (had an attack of hepatitis in 1865.) Admitted on the 18th September 1869, complaining of acute pain, of right side, extending from the epigastrium round the margins of lower right ribs to spine—aggravated on the slightest pressure; severe pains of right shoulder, extending down outer side of right upper arm ; unable to lie on left side on account of dragging pain in right hypochondrium when in that position. Complains also of severe pain at intervals of some minutes shooting through temples ; burning pain in eyeballs; skin hot; tongue furred (white); pulse frequent. The above symptoms, in a minor degree, had been present for some time previous to admission—evening chills with cold clammy sweats and general pyrexia—towards early part of night. Was ordered a tepid bath with cold applications to head—bran poultice to side and to have Mist Diaphoret. oz. i. with Tinct. Hyosc. m. v. every two hours.

20*th.*—Febrile symptoms have subsided; pain of side and shoulder much abated. To have Chloride of ammon. grs. xx in oz. ii. Cinnam:water, morning and evening; Beef Tea diet and lemonade as drink.

25*th.*—Is much better, Continue medicine.

28*th.*—Since the 26th complete freedom from pain of side and shoulder; cutaneous and renal secretions much increased; appetite improves can take deep breath and lie on left side without pain or uneasiness.

2*nd.* Oct.—Discharged convalescent. *

Case 2 Dr. D. B.—Nearly two years in India, admitted on the evening of the 5th Oct. 1869. Complained of purging frequently during the day and previous night, also of acute pain over entire surface of abdomen. There was great tenderness over right hypochondrium and abdomen generally, and the slightest pressure of the finger caused great increase of pain—Countenance expressive of suppurative hepatitis—anxious, pale and bathed with cold perspiration, tongue coated; skin dry but of natural heat; pulse frequent.

Owing to the great severity of the pain, six leeches were applied to the side and the patient had a tepid bath with much relief to the symptoms, local and general. Had Ammon: Chlor: grs. xx.—and in case the purging continued, was ordered, Pil:—Hydrarg: gr. viii; Pulv: Ipecac: Comp. gr. xii. m. divide in pil: iv:—one to be taken every two hours.

6*th.*—After consultation this morning it was agreed that the case was one of undoubted abscess of the liver, of a severe nature, and in which the prognosis was anything but favourable. Surface was now cold; face and hands bedewed with cold sweat; pulse 92, small and weak; was not purged during the night. To have brandy flip and three pints beef tea as nourishment. 1½ P. M. surface still cold, pulse 92,—another brandy flip, continue bran poultice, and to have Ammon: Chlor: grs xx. 4 P. M. surface warm, pulse 92, *perspiring freely; passed a large quantity of high coloured urine during the day. To repeat Chlor: Ammon:—

7*th.*—Bowels moved five times during night, motions feculent; passed urine six times during the night; perspired a

* *Note.*—After attending hospital for a short time this man returned to his duty and up to date 29th Decr. 1869 has had no recurrence of pain or other symptoms and his general health is better than it had been for a long times previously.

good deal. Repeat pills ordered on the 5th, to take one every two hours. Beef tea diet, four ounces port wine.

8*th.*—Pulse 84, feels better, bowels quiet.

11*th.*—Pain of side much relieved, looks better, bowels regular. Had some sleep during the night; pulse 80. Complains of short dry cough which commenced yesterday about noon and continues to be troublesome. Tea diet, two pints beef tea, two pints milk, six ounces port wine, and barley water for drink. Continue medicine.

17*th.*—Since last report has continued pretty much the same with slight accessions of pain in side and febrile symptoms from time to time; last night pain was very severe, easier this morning. Continue medicine; apply ice to side. *Vespere*—Feels the ice agreeable, pain easier—pulse 76.

18*th.*—Much relieved, slept well last night, appetite good. Continue Chlor: ammon:—

27*th.*—Since last report has continued gradually to improve; appears cheerful this morning, feels and looks much better; Can lie on either side with perfect ease; on taking a deep inspiration feels a slight catch in breathing. Continue Chlor: ammon:—

20*th Novr.*—Since last report his health and spirits have improved daily; is now able to move about the ward without pain or uneasiness; fulness of side, which was observed from an early period of the disease, has disappeared and patient can bear considerable pressure over hepatic region without pain.

Note.—Up to date, (20 Decr. 1869) Patient has continued in hospital convalescent and is now taking Chloride of Ammonium in grs. xv. doses twice a day; his appetite is good and he is gradually gaining strength.

Case 3.—Drummer J. S. 2-21st Fusiliers, 5 years in India, admitted into Hospital on the 21st December 1869, complaining of acute pain and tenderness over the entire abdomen, towards evening pain of right hypochondrium was also complained of, Decubitus dorsal, unable to turn on either side, or take a deep inspiration. Countenance sallow and anxious, skin hot; pulse frequent, tongue furred, white; six leeches were at once applied to affected side, after which he had a tepid bath, and bran poultice to right hypochondrium. Was ordered Liquor: Amon: acet. Drs. ii, with Tinct. Hyoscyami m. v, every half hour. Barley water to drink.

22*nd*.—Abdominal pain relieved. Pain of right side and along inferior margins of lower right ribs continues, the slightest pressure being intolerable. Skin cool and moist, pulse frequent; to have Chloride of ammonium grs. xx, twice daily. Beef tea two pints; barley water four pints.

23*rd*.—*(Vespere)*.—Was seized with sickness of stomach, and vomited a quantity of green bilious fluid, when he says he "felt something tear" in his right side.

December 24th.—The medicine yesterday had the effect of relieving local pain and tenderness, and induced free action of the skin and kidneys, Pulse 102, irritable; skin bathed in cold perspiration, Tongue cleaning;— pain of side relieved: feels weak. Ordered beef tea four pints, (to be boiled down to two). Six ounces of Port wine; barley water for his thirst.

Vespere:—During the day patient became alarmingly ill, and was, for a short time, semi-collapsed, requiring the exhibition of stimulants, etc., with the effect of restoring the pulse and heat of surface. Well marked hectic fever; surface bathed in cold clammy perspiration; countenance sunken, anxious and murky; pulse 124, small and irritable. Continue medicine; diet as before.

25*th*.—Expresses himself as better this morning. Slept some during the night. Pain of side relieved, but from time to time returns slightly. Each dose of the medicine brings the usual two hours or more of relief—Pulse 108; surface bathed in perspiration. Cont: med: Diet as before with two pints of milk.

26*th*.—Slept during the night—looks more cheerful, skin cool, tongue clean; pulse 98. Pain of side is now but slight. Expresses a wish to have the medicine more frequently,—owing to the relief from pain experienced after its ingestion; repeat the medicine, thrice daily.

27*th*.—Is better,—pulse 96—Cont: Med:

29*th*.—Since last report, hectic fever, with evening exacerbations and profuse sweating, has been present. There is considerable fulness of right hypochondrium and toward margins of right inferior ribs; but there is little pain of those parts except on pressure or lying on left side. Cont: Med: etc.

January 2nd 1870.—Since last report has steadily improved; Countenance bright and cheerful—Appetite improving. Cont. med, twice-daily.

4*th*.—Still some fever, increasing towards evening. Is however on the whole improving and looks hopeful and cheery. Pulse 92, soft and pretty full. Cont: Med:

8*th*.—Progressing favorably—Pulse 88, appetite good. Fulness of right side gone, and moderate pressure over hepatitic region causes no pain. Febrile symptoms are now but slight.

11*th*.—Since last report fever has returned with evening exacerbations. Skin hot, pulse 104, irritable. Cont: Med: thrice daily.

12*th*.—Felt much better yesterday evening after midday dose, slept well during the night. Pulse, 90, skin cool and moist.

19*th*.—Since last reports has been almost free from fever; pulse 88, skin cool, appetite good.

23*rd*.—Is daily gaining health and strength; pulse 86, fuller and stronger.

27*th*.—Permitted to sit up a little during the day. Low pudding diet and two eggs.

February 9th.—Since last report has steadily improved in health and has been able to take exercise on foot in the hospital enclosure. Has taken no medicine for several days. Discharged to proceed to England with the invalids of the season, for change of air.

Case 4. *7th May* 1870.—Private R. T. $11\frac{3}{12}$ years in India, was admitted into Hospital yesterday from off guard, doubled up with acute pain of right hypochondrium, extending round to loins and upwards to top of right shoulder, was unable to stand erect. Surface bedewed with cold perspiration. Had a bran poultice to his side, and an anodyne draught. For the past nine months has suffered pain from time to time in right hypochondrium, with accompanying chills at night, pyrexia, and cold sweating. The liver is enlarged and acute pain is felt at a point between the 5th and 6th ribs, midway from their extremities, aggravated on the slightest pressure. Decubitus dorsal—unable to lie on either side; tongue slightly furred, moist, broad and flabby, presenting at the sides, indentations of the teeth; skin perspirable; pulse of good volume, 84; urine high colored. Or-

dered Liquor ammon : acet. drs. ii, with Tinct, Hyoscyami, m. v, in barley water every hour. Six leeches over the seat of pain in right hypochondrium, and at 5 p. m. to have grs. xx, Chloride of Ammonium.

8th May.—The usual characteristic effects followed the exhibition of the medicine yesterday evening, but, (as in the case of Pte. F———, another case of hepatic abscess at present under treatment), patient felt a chill and a sensation of cold for some time before the sensation of heat commenced. (This phenomenon was however, a purely subjective symptom as was evidenced afterwards by thermometric observation, and may depend on difference of climate, the rains having just commenced). Patient felt drowsy, and fell asleep in about half an hour after the dose, and awoke, in an hour or so, as he expressed it, "light and refreshed, and able to bear the weight of his own body" which before distressed him. This morning he feels no pain in the recumbent position, and can move slightly in bed without pain; pulse 98. Tongue slightly furred. Continue Chloride of ammonium grs. xx, twice daily.

9th May.—Is much easier; no pain of side except on a deep inspiration; pulse 100; marked hectic symptoms have been present since yesterday, pointing unmistakably to the existence of Abscess of the Liver.

10th May.—Yesterday it was hot and oppressive and patient was bathed in perspiration, his pulse was weak and frequent and he was ordered four ounces of port wine. This morning he is much better; pulse 79, pretty full; countenance cheerful. Perspires much less. Continue medicine.

13th May.—Progressing favorably since last report; but there is slight pyrexia especially towards evening, evidenced in increased heat of hands and arms—and forehead and face feels hot at times. Pulse this morning 64, full and regular. To have a dose of simple diaphoretic mixture at 11 A. M, and again at 2 P. M.

15th.—Is much better; Diaphoretic mixture relieved the feverish symptoms; skin now cool and perspirable, tongue clean; pulse 62, appetite returning. Continue Chloride of Ammonium morning and evening; Liquor: Ammon: Acet: Dr. i. with Tinct: Hyoscyami: M. V. in the interval, as before.

18th May.—Doing well—pulse 56, full, slow and regular; port wine, four ounces.

26th May.—Since last report, has continued steadily to improve; tongue clean, smaller, not so flabby as formerly and indentations caused by teeth disappearing. Hepatic dullness commences over sixth rib of right side, and extends about half an inch below margin of right lower ribs in a gently curved line upwards towards epigastrium. Pari passu with the improvement of the symptoms, local and general, the action of the medicine has been less and less manifested, so that its effects are now not so marked.

30th May.—Since last report, patient has been allowed to sit up, from time to time, daily; he is now convalescent, and beyond feeling side a little stiff is free from pain or other uneasiness. The edge of the Liver can no longer be traced under the margins of lower ribs, and firm pressure causes no pain over the hepatic region.

Case 5. Chronic Hepatitis.—Pte. D. M. 2-21st Fusiliers. A stout muscular man of intemperate habits; with ten years service, six of which has been spent in India, was admitted into the detachment hospital at Port Blair on August 1st 1869, having a tumour which is described by the Medical Officer in charge, as follows:—

"A swelling the size of an orange was discovered in the epigastric region, exactly in the mesial line, perfectly circumscribed and immovable when grasped by the hand or when the body is turned on either side. He states that he strained himself a few days before admission and never saw the swelling until then."

He remained under treatment till the middle of September when he was forwarded to the Regimental Hospital at Rangoon, with the history of the case from which the above is taken. On presenting himself at Hospital he was carefully examined by both Dr. Stewart and myself: but we failed to detect any tumour or swelling of any kind. He was admitted however and kept under observation and in a few days the case was diagnosed as one of Chronic Hepatitis; the chief symptoms being a constant pain in epigastrium and hepatic region, a furred tongue, feeling of nausea after food and constipation. Leeches were applied followed by poultices, and Nitro-Muriatic acid, was administered with considerable benefit and relief; but it was not till I commenced to give Muriate of Ammonia in 20 grain-doses that he got rid of these symptoms: first the pain became less annoying and gradually ceased, the tongue cleaned, at the

same time the secretions (especially the urine) increased in quantity.

The effects of the medicine are described by the patient as producing a glow of heat and a feeling of warmth and comfort, followed by copious perspiration and an increase in the quantity of urine. Ten days after commencement of the treatment he was discharged well.

It will be seen that purgatives, commonly recommended at the onset of the disease, have been carefully avoided, and for this reason, that, I believe in many instances, the exhibition of such irritants, lays the foundation of the dysentery so often an accompaniment. A mild purgative may be prescribed at the outset, if indicated; but, with the use of Chloride of Ammonium, its repetition will seldom be required.

Counter-irritants, too, with the exception of sinapisms, in a few instances, have not been employed: blisters are contra-indicated, owing to their irritant action on the kidneys, which would prevent the due elimination of diseased products by those emunctories.

There is a risk also "that the cutaneous and "sub-cutaneous fulness, caused by serous effusion, "consequent on the irritation of a blister, may, "if present at, and below the margin of the right "ribs, be mistaken for the sign of liver enlarge-"ment, and an erroneous inference, in regard to "the progress of the disease, be therefore enter-"tained." *(Morehead.)*

It would be superfluous to give any more cases in detail—Many interesting ones, however, are on record in the Hospital books. Since the first of September 1869, from which time the systematic treatment of Hepatitis by Chloride of Ammoni-

um first commenced, (a period of 9 months) 31 cases of the disease, have been treated, either by myself, or the Assistant Surgeons of the Battalion; and of these, 6 were undoubted cases of Abscess of the liver, presenting the physical signs, the general symptoms, and the well marked hectic fever, diagnostic of the disease under such circumstances. In four of the cases, the hectic fever was severe; in one especially so, and accompanied with excessive wasting of the tissues, and extreme prostration of the vital powers, patient exhaling the cadaveric odor, at times observed in low and exhausting disease with typhoid symptoms.

Hepatitis is a disease of this Station, and has been the occasion of much mortality here, as elsewhere. From a statement, kindly furnished by Dr. Shelton, Principal Medical Officer, British Medical Service, I find, that in the Head Quarters 2-24th Regiment, Rangoon, and Detachment Port Blair, out of a total strength of 795, there were, during the year 1868, 32 admissions and 5 deaths from Hepatitis. "The P. M. in each instance shows the cause of death to have been hepatic abscess."

During the same period (1868) in the 2-21st, Fusiliers at Secunderabad, out of an average stength of 868, there were 86 admissions, and six deaths, from the same cause. The disease was treated on the usual expectant plan, and with a result not very satisfactory. Compare these figures with those which follow, and see how different the result obtained under the treatment by Chloride of Ammonium.

Since September 1st, 1869 to May 31st 1870 (a period of 9 months) there have been 31 ad-

missions from Hepatitis, at this station, out of an average strength of 608. Of these, 6 were undoubted cases of abscess of the liver, and in several, abscess was strongly suspected. All of the above were successfully treated, without a single death. It is also remarkable, that, since the arrival of the Battalion at this station at the end of December 1868, up to 31st May 1870, embracing a period of 17 months, there have been 58 admissions from Hepatitis and but one death. The fatal termination, in this instance furnishing negative proof, corroborative of the testimony already adduced, of the very great success of the Chloride of Ammonium treatment; for it is to be observed that the patient died at a period, antecedent to the introduction of that practice, that dysentery of a very severe type supervened, uncontrolled by any of the remedies employed, and that the autopsy revealed the existence of abscess, which occupied almost the entire liver, the structure of which, was reduced to a mere shell,—the large intestine was ulcerated throughout its entire extent, and in places gangrenous.

In not one of the cases treated by Chloride of Ammonium, was there the slightest tendency to Dysentery observed.

According to the Army Medical Department, Report for 1867, out of a total strength of 56,896 European Troops in India, there were, during the year, 3078 admissions from Hepatitis, and 157 deaths. During the same period 368 were invalided on account of the disease, and 96 were discharged the service at Netley.

I confidently look forward to a gradual and great reduction of this vast expenditure of life

and health, in time to come, if the means pointed out in these pages, be faithfully and earnestly carried out, recollecting that it is by attention to small, and seemingly unimportant matters, as regards regimen, diet and nursing, as much as by the prescribing of medicine, that success will be attained. The medical man must think nothing beneath his care and attention, particularly where untrained orderlies and soldier attendants, possessing no knowledge of nursing, are placed over cases of serious illness. The words of the poet are particularly applicable to affairs medical:

> "Think nought a trifle, though it small appear;
> Small sands the mountain, moments make the year."

At the risk of being considered tedious, and unnecessarily prolix, I cannot refrain from making the following quotation from a leading article in the Lancet of 30th October 1869, wherein the writer speaking of the difficulties which the Doctor encounters in civil life, in obtaining aid in the management of the sick room, goes on to say:—

"In all matters about which he (the Doctor) "may omit to give explicit directions, the most "fatal errors are frequently made. For example, "it is very common for patients to be killed, after "enfeebling illness, and when with proper care, "they would recover, by being suddenly raised "from the recumbent to the semi-erect posture for "the purpose of taking nourishment. No practi-"tioner who neglects to lay down very strict rules "on this point will fail, to have many unexpected "and sudden deaths amongst exhausted patients; "deaths for which he may not always be able to "account, but which may be shown, on enquiry, "to be traceable to the cause we have indicated."

Whether the patient be very low or not, the

condition of an inflamed liver, is not unlike that of an inflamed joint, demanding strict quiescence in the recumbent posture; and therefore a steady and intelligent attendant should constantly wait on the patient in all severe cases, and the bed pan, and urinal, should, at all times be at hand, so that the patient may not have the least occasion to quit his bed.*

In the foregoing pages my remarks have been chiefly confined to the therapeutic uses of Chloride of Ammonium in the primary acute stage of Hepatitis, and in Hepatic Abscess; in Chronic Hepatitis, however, it is equally efficacious, as is well illustrated in case 5. In short, I have found it valuable in hepatic affections of whatever form, whether depending on organic disease, or functional derangement. I have also found chronic dysentery, associated with chronic disease of the liver, yield to a few xx. grs. doses of the Chloride of Ammonium, after Ipecacuanha, and other remedies had failed; and I have before me, notes of the case of a young Officer, similarly affected, whose dysentery was checked after a few doses of 8 grs. each. † In such cases from v. to xx. grs.

* Whilst writing, an instance has presented itself, which shows forcibly, how easily a recrudescence of inflammatory action, may be brought about by a cause, which, at least, in this instance, was entirely under the patients control. A man in Hospital, suffering from a severe attack of acute Hepatitis, was suddenly seized with a recurrence of the acute symptoms, local and general, (after these had been allayed for a considerable period, by the previous treatment). The reason was easily discovered; on enquiry, I found, that the patient, having become tired of lying on his back, turned on his side for a short time, and in this simple manner caused the mischief.

† In passive congestion of the liver, I have found a few doses (grs. xx) of the medicine effect a remarkable reduction of the enlarged viscus, and afford great relief to all the symptoms.—In fact, the specific action on the liver, is manifested in almost all the diseases to which that organ is liable.

may be given, dissolved in ounces ii. of infusion of cascarilla, twice or thrice daily, according to circumstances: and to cover the saltish taste of the medicine, a little Ext; Glycyrrhizæ (say grs. v.) may be added to each dose.

It may be interesting to note the number of grains of the medicine administered, in the treatment of the 31 cases of Hepatitis, in the Hospital 2-21st Fusiliers, from 1st September 1869, to 31st May 1870, taken from a record kept by Passed Hospital Apprentice M. Devanboo, attached to the Battalion.

Total number of grains	21,926.
Average No. of grs. administered to each patient	707.27
Maximum do do in any one case *(abscess of liver)*	2,490.
Minimum do do do *(Hepatitis)*...	120.
Average do exhibited to each patient in 6 cases abscess of liver	1,428.
do do do do do in 25 cases Simple Hepatitis*	569.

*Several of these were strongly suspected to be cases of latent, and deep seated abscess.

It will be seen from the above figures that the Medicine is used pretty freely, and that in some cases very large quantities have been required; in fact its use should be persevered in, till its sensible effects be no longer manifested, or only in a slight degree; and it is well to continue it for sometime afterwards in smaller and more frequently repeated doses, in the event of liver enlarge-

ment, with feeling of stiffness, weight, or other uneasiness continuing. *

Since going to press, I have received the following letter with case from F. Maynard Esqr., Surgeon, Health Officer, Port of Rangoon, which, with his permission, I gladly publish.

The case is an interesting one, faithfully recorded, and well illustrates the therapeutic use of the remedy, and the chief points to be observed in its administration.

RANGOON, June 6th 1870.

MY DEAR STEWART,

I have much pleasure in sending you the notes of a case of Acute Hepatic Abscess under my care and which you kindly saw with me on two occasions.

Having had the advantage of reading your paper on the treatment of Hepatitis with Ammon : Chlor:, I have taken some care in noting its therapeutic effects throughout the treatment, and in the report have taken down the exact effects of the medicine, as described by the patient himself; and which seem to agree in a marked manner with the notes of those cases treated by yourself.

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*It may be worthy of note, that in India, Chloride of Ammonium is obtainable at a cheap rate in the bazaar, under the Hindustani name ——— *(Nousādar)* ——— *(Duk)* ——— *(Nousāgar)*. † I have obtained the salt sufficiently pure for medicinal purposes, in the Rangoon Bazaar for Rs. 1/12 per viss (equal to 3½ lbs. avoirdupois). I mention these facts, because, on one ocassion, while I had several serious cases under treatment, I ran out of the salt completely, and none was obtainable in the medical Stores, a circumstance likely to happen in Indian Mofussil Stations as hitherto the drug has been but little in demand, having been used chiefly in the prepartion of Cold and other lotions.

†The Burmese name, is, *Zavasa*.
In Tamil, it is called, *Navŏch-chĕram*.
In Ceylon, it is known under one of its Tamil names *Navŏchchĕram*.

I would remark that instead of using the hot fomentations as usually adopted by you in Hospital practice, I find that in "private practice" it is better to use hot applications in a dry form, as from want of proper attention, or through neglect, or from the greater trouble in using hot fomentations, I seldom find my instructions carried out, and even if they are, the patient generally complains of great discomfort, and sometimes chilliness, from having his clothes, bed linen, and bed saturated, which often tends to produce evil results.

The plan I adopt, and which is easily carried out, is,—to place two bricks on a burning charcoal chatty, on the top of these I place 2 bags of the size required, and only half filled, with 1 part salt and 2 parts bran. I do not fill the bags, as they would not then become so readily conformable to the shape of part required.

The heat is retained longer then with hot fomentations and is much pleasanter to the patient, and I believe has an equally beneficial, if not better effect. One bag is always kept hot during the application of the other.

Although this is the first case of Hepatitis that I have treated with the Hydrochlorate of Ammonia, I shall (from the decided therapeutic effects I have seen produced in the treatment of my own recorded case, and from the experience I have gleaned from having had the opportunity of seeing the same treatment adopted with such success in your own Hospital) undoubtedly carry out a similar plan in all cases that may hereafter come under my care, and I trust and believe with like beneficial results. I sincerely hope that the perusal of your pamphlet may lead more medical men to give this treatment a trial, and I feel sure that if the rules laid down are properly carried out, they will meet with similar success to cases recorded, and will look upon the Ammon : Chlor : as an almost specific therapeutic agent in the treatment of Hepatitis. If you think my report of any interest I leave you to make what use you please of it.

I remain

Yours sincerely,

F. MAYNARD.

Case of Acute Hepatic Abscess under the care of

F. MAYNARD *Surgeon.*

Health Officer, Port of Rangoon.

May 4th 1870.—10. 30. A. M. Mr. W———ætat 35, "Eurasian," born in Burmah (of highly nervous temperament, accustomed regularly to take his 3 glasses grog daily, besides exceeding when in company) visited me, and complained of acute pain in the right hypochondrium, extending over nearly the whole of right side of abdomen, and more especially severe in the iliac region, was unable to stand upright, or take an ordinary deep inspiration, and constantly cried out with pain. On examination found slight fulness below margin of right ribs, and great tenderness on the slightest pressure, over whole of right side of abdomen. Skin hot, pulse 126, an anxious expression of countenance, sallow complexion, tongue furred. Stated he had suffered from pain in hypochondrium for 6 days, that 3 days ago he had a distinct rigor, followed with fever, and that the pain had been increasing up to date. I advised his return home immediately, and ordered perfect rest, hot application to the side, and Pulv: Doveri grs. 8 immediately, and to repeat in 4 hours. At 2-30 was visited by Dr. Stewart and myself; found him lying on his back, with legs drawn up, and unable to move owing to the acute pain. His skin was slightly moist, and pulse reduced to 116 (excessive action of heart on first examination, probably attributable to the exertion of walking to see me under existing circumstances). Was unable to bear percussion, or the slightest pressure on any part of right side of abdomen. Ordered 8 leeches to side and Liquor. Ammon: Acet: Drs. 2 Tinct: Hyoscyami M. V. in barley water every hour, and at bed time Tinct: Hyoscyami Drs. i. Hot applications with salt and bran bags to be constantly applied after removal of leeches.

May 5th.—Passed a bad feverish night; had no sleep, pain more or less removed from iliac region and centered over the hepatic region, and especially just below the margin of right inferior ribs, where it was very severe; unable to bear the slightest pressure, or turn on either side. Bowels open once during the night, dark coloured and very offensive. Skin slightly moist, and pulse 102. At 9-15 A. M. administered Ammon: Hydrochlor: grs. XX. in cinnamon water, at 9-35—20 minutes after, he described that he had a sensation of warmth in the stomach, which gradually extended over the whole surface of body. General perspiration gradually followed, and the pain

in hypochondrium was sensibly relieved; and he began to think he was "getting all right again." (His own words). He felt drowsy, and inclined to doze off to sleep, but shortly a kind of twisting pain came on in his right groin, and gradually extended up, returned to its former seat below margin of right inferior ribs. Visited at 2 P. M. found abdomen much distended with flatus, of which he was constantly passing large quantities. Had made urine twice, high coloured and scalding; Pulse full, 102. Tongue dry and furred, complaining of great thirst; ordered milk and water and barley water, and to continue hot applications. Visited him at 6 P. M. Had made water once since 2 P. M., had slept ¾ hour, and on the whole pain greatly reduced. Abdomen less distended, and feeling altogether more comfortable. Pulse 100.—Tongue dry and furred and constant thirst. In addition to his barley water and milk, an egg to be beaten up with milk. Repeated Ammon: Hydroch: haustus at 5 P. M. Same symptoms as described after first dose, ensued; at 5-30, pain removed towards centre of abdomen, 3 inches below umbilicus.

May 6th.—Visited at 10-15 A. M. After last evening's draught, the pain was relieved for some time, but gradually returned to old spot; he had passed a bad night, no sleep. First thing in morning, vomited eggs and milk, and stated that afterwards pain had shifted over to left side. At 8 A. M., took Ammon: Chlor: haustus, and 13 minutes after; had a great deal of pain in stomach, which only lasted 5 minutes, and at 8-30 sensation of heat of the whole cutaneous surface set in, followed by perspiration.

9. A. M. Had a moderate, soft, dark and offensive motion; after this he dozed off, and I found him asleep when I called.

Visited at 1-30 p. m. Had taken a cup of chicken broth with relish, made water more abundantly. Pulse 108, smaller. Skin moist; pain in hepatic region less. Unable to turn on either side.

Visited again at 6-15 p. m. passed one motion since 1-30 p. m. light colored and watery. Took chicken broth at 3 p. m., took Ammon: Hydroc: haustus at 5. p. m.; on this occasion, no peculiar sensation about epigastrium observed, but ½ an hour after, general sensation of warmth, perspiration and drowsiness gradually ensued. No pain in hepatic region, excepting when moving, and can now allow slight pressure below margin of right lower ribs, where there is a distinct prominence. Makes water much more abundantly. Thirst still great.

May 6*th*.—Pulse 102. Skin moist, tongue furred, the bran and salt bags have been kept constantly applied, and from these he states he experiences great comfort and relief.

May 7*th*.—Visited at 10-30. Had slept a little last night, bowels opened 8 times since 11 o'clock last evening, dark brown, watery and offensive, accompanied with a large amount of flatus. Has an anxious expression of countenance, with sallow complexion, and conjunctivæ slightly injected ; is very hysterical, and low, but though feeling very weak, he describes himself as better, as he can turn over on to the left side without pain, and has only slight pain at margin of lower ribs on right side, when he tries to raise himself up; pulse 96. Tongue cleaner, thirst still excessive; to continue former diet with addition of beef tea. The morning draught only caused sensation of warmth and perspiration over head and extremities. Visited at 8 p. m. had no perspiration after evening draught, but feels inclined to sleep ; complains of pain again in the old spot occasionally. Pulse 102.

May 8*th*.—Visited 8-45 a. m. slept well, but had four motions during night. Pulse 90. Tongue less furred. Ordered Pil : Hyd : Gr : i. Pulv : Doveri Grs : iii, every second hour during day. Diet and treatment as before.

Visited at 7 p. m. Pulse 90. Skin cool and moist, makes large quantities of water, pain less.

May 9*th*.—Visited 9 A. M. States that the Ammon : Hyd : Haustus has not now the same effects as formerly, only producing drowsiness and slight perspiration. Seems very low and desponding. Ordered port wine and jelly in addition to former diet.

2 P. M. Visited by Dr. Stewart and self; case considered by Dr. Stewart to be progressing favourably. Can bear slight pressure over hepatic region; but as no good can result from these examinations, I forbear making them. Enlargement of side decidedly decreased. To omit Pil : Hydr : Pul : Doveri.

May 10*th*.—No pain referred now to hepatic region; but a dragging sensation described, can breathe freely, and turn over on both sides. Pulse 90. To continue same diet and treatment.

May 11*th*.—Visited 10-30 A M. Slept well last night, has no pains on turning or getting up; only experiences the dragging sensation as described yesterday when he gets up or takes a deep breath. Tongue clean and moist. Pulse 84. Perspired profusely last night about the head and face; bed

hot; bowels once open, of better consistence. Ammon : Hyd : taken night and morning, no perceptible effect produced but that of drowsiness. Slept off and on greater part of day.

May 12*th*.—Had profuse perspiration all last night, and towards morning, his head, hands and feet were burning hot ; this passed off, and at 10 a. m. he stated that he felt quite well, only weak. Pulse 84.

May 13*th*.—Last night experienced same profuse perspiration, and heat of hands, &c. as described yesterday, and lasting 3 or 4 hours. This morning for 1st time felt pain in right shoulder which lasted about 2 hours; at 10 a. m. had a distinct throbbing sensation under margin of lower right ribs, which lasted a few hours, and apparently relieved by the constant application of salt and bran bags. Pulse 90.

May 14*th*.—Visited 11-45 a. m. Pulse 90. Skin generally dry; hands hot and dry. Slept from 7 o'clock to 12 last night, and after that, very restless; profuse perspiration of head and face, and great heat of surface of body and extremities ; this passed away towards morning. Tongue furred and parched. Incessant thirst. No pain except in right shoulder.

May 15*th*.—Visited at 3 p. m. Went to sleep at 8 o'clock last evening, and awoke at 10 with sensation of great heat in head and extremities, and especially in palms of hands ; this lasted about 20 minutes, and then profuse perspiration ensued. Slept for 4 hours, and awoke feeling well. Pulse 92. Bowels opened 3 times, passing much wind. The Ammon : Hyd : Haustus to be omitted in morning, and a Diaphoretic Mist : ordered during day.

May 16*th*.—Visited 12-30. Had no return of fever last night. Bowels relaxed. Pulse 86, skin soft and moist. Treatment as yesterday.

May 17*th*.—Visited 11-30 a. m. Pulse 75. Skin soft and moist, Tongue cleaner, slept pretty well. Bowels open once today; has occasional throbbing pain in hepatic region.

May 18*th*.—Altogether better, pulse 76. No pain; slept well. Has no thirst; continue Diaphoretic mixture, and Ammon : Hyd : only at bed time.

May 20*th*.—Same as yesterday, &c.

May 21*st*.—Pulse 80. Had a hard costive motion. To discontinue Diaphoretic mixt : and continue Ammon : Hyd ; bis in die.

May 25*th*.—Has been gradually improving; can get up by himself, turn round, and walk without pain, and can bear firm

pressure over whole hepatic surface. *Allowed* to sit up. Ammon: Hydrochl: reduced to grs x, bis in die c. Decoct: Cinchon: nocte maneque; ordered mutton chop and 3 glasses port wine daily.

May 30th.—Has a good appetite, tongue clean, bowels regular. On examination I find great enlargement of liver which, on standing up, extends to 3½ inches below margins of inferior right ribs, and is hard, firm, and the size of a flattened orange. No pain experienced on firm pressure or percussion over this. Patient describes himself as feeling perfectly well, free from any pain, and gaining strength daily, can take moderate morning and evening exercise, and is gradually commencing his ordinary diet. Considered convalescent.

This case will be carefully watched, and notes of interest recorded.

APHASIA AND DEATH RESULTING FROM SOFTENING IN LEFT ANTERIOR CEREBRAL LOBE AND CEREBELLUM, DUE TO ATHEROMATOUS DEGENERATION AND EMBOLISM OF THE CEREBRAL ARTERIES.

By J. FAYRER, M.D.,

Professor of Surgery, Medical College, Calcutta.

The following very interesting case appears to corroborate the views recently advanced by certain pathologists as to the cause of loss of power of speech, or of the memory of words; it is also very remarkable as an example of cerebral softening, at a comparatively early age, from atheromatous degeneration of the vessels of the brain, with embolism of the basilar artery. I therefore give the notes I made of it, before and after death, in detail.

I have known Mr. —— for several years, and until three years ago his general health was good; he is about 42 years of age, of a nervous, excitable temperament, and of energetic and active habits of mind and body. About three and a half years ago he consulted me concerning one or two sores on the leg, which were of a suspicious character, and which he seemed to consider might owe their peculiarity, if not their origin, to a constitutional taint; if so, the disease must have been contracted in early youth, for he denies the possibility of any infection for many years. His habits and mode of life have been temperate and active, his occupation necessarily exposing him to frequent change of station, with much of his time spent in the open air. I did not attach so much importance to the sores as he did; they readily healed with rest and simple applications. But I prescribed Iodide of potassium, with reference to the possible specific origin. In September, 1863, I was

informed that he had been attacked, suddenly, with hemiplegia of the right side, and have since seen the following note :—

"*January 7th*, 1866.

"My Dear Sir,—Mr.——had a stroke of paralysis in September, 1863, for which I gave him a certificate home. He returned to India in June last very much improved in health, so much so, that I was particularly struck with his strong healthy appearance.

"About a couple of months after his return he suffered for some days with a severe headache, which fixed itself in the back of his head, and though I could get no definite description from him of the nature of the pain, yet I could see from his restlessness, both during night and day, that he suffered a good deal. A few days' rest and quietude within doors and some mild treatment restored him to health to a certain extent, but not to the state he was in when he returned to this country. He went out on a long tour of inspection, and I dare say was not as careful of himself as he should have been ; but a few days after his return, he had a return of the headache; he had great nervous tremor of the hands. His memory (of which there was previously some failing) had now fallen off in a very sudden and marked way ; he used to remain in a half-dreamy, half-drowsy state all the day, sit to meals in this state, and talk as if he had not quite awaked from sleep. He partially recovered from this state, in fact quite enough to set him thinking about his duties, and he, strongly against my advice, left this on a tour in the Orissa country ; he has not yet returned, but his Baboos tell me he will be back about the middle of the month.

"I have now quite made up my mind that he is not fit for further service, but I shall, in the first instance, and that will be so soon as he returns to the station, give him a medical certificate home; any steps that are necessary for his retiring from the service may very well be left for future consideration.

"Yours, &c., &c., &c.,

"*Civil Surgeon.*"

He had, apparently, no warning ; the attack occurred during the day, when he was talking to some one. He appears for a time to have lost all power in the right side, though he retained consciousness, but this paralysis was not of very long duration. He recovered partially, and subsequently regained power in his limbs ; his speech improved, though some thickness, slight difficulty of articulating certain words, and a quick and excited mode of speaking remained. He was most judiciously treated ; no depletion was had recourse to, and his powers were husbanded as much as possible.

In 1864 he went home to England, round the Cape, and on the voyage he appears to have been subjected to much anxiety and excitement from the danger to which the ship was exposed in a gale of wind, which required that she should be taken into port in the Mauritius and there detained for some weeks. It does not appear, however, that he suffered from this exposure ; on the contrary, his health and strength improved with the change, and the improvement was further confirmed during his residence of fifteen months in England. He returned to India in June, 1865, and I saw him soon after his arrival ; he looked well, and all traces of hemiplegia, so far as the limbs were concerned, had passed away. His voice, however, was still slightly affected ; there was an indistinctness in the articulation of certain words ; there was also an unnatural rapidity of utterance. His intellect seemed perfect, and he resumed his appointment. As the hot weather came on, he appears to have begun to fail ; his memory became defective, his manner excited, and his speech more rapid and uncertain. There was a tendency to forget, or to substitute words, and his intellectual powers, naturally great and much developed by scientific and literary study, to show signs of failing.

On one occasion I was asked to see him when he was in Calcutta, and I found his manner excited, his speech quick and somewhat indistinct. His memory was evidently on the strain, and though I could see no absolute indication of the original disease returning, it was evident that some permanent defect remained, which, under the excitement of heat and duty,

was becoming more marked, and indicated that cerebral change (whether dynamical or structural was uncertain) was at work.

23*rd March*.—A few weeks ago I heard an unfavorable report of him; there were no details beyond the fact that his memory was altogether gone. On the 8th of April I was asked to see him here; he had been sent in from ——— on his way home. The accompanying statement of his case was subsequently forwarded by the medical officer who had seen him during his last attack; and it clearly explains what happened shortly before he came to Calcutta.

Dr. ———'s Statement.

"Mr. ——, aged 42 years, has been in India fourteen years.

"On the 23rd March last I was called to attend Mr. ——. On my arrival I found him insensible, with a small pulse, pupils dilated, breathing easy, at times muttering to himself the most absurd nonsense; his breath was extremely fœtid. No paralysis, but slight convulsive movements of the right side of the body. His servants informed me that Mr. —— had been accustomed to fits of drowsiness, and on one occasion, I am told, he slept for three days. I was further informed that his bowels were not moved for three or four days.

"The Sub-Assistant Surgeon, who was called in before my arrival, had cut off his hair and applied cold. We then gave Mr. —— an injection of ol. ricini and turpentine, which acted once; he was further given a couple of calomel and colocynth pills with croton oil, and mustard plasters applied to the nape of the neck. Next morning he had a strong dose of senna mixture; this produced one very copious evacuation.

"During the day I found him better, *i. e.*, he was able to walk; he could not recognise people at once, but did so after an effort. On questioning him he gave a reply, but it was all nonsense; he improved a little, and on the 5th April I sent him to Calcutta.

"I treated him principally with purgatives; every blister failed, partly from his obstinacy, partly from their uncertainty of action. I also gave him small doses of mercury, partly as a

purgative and partly to affect his system; this last did not occur. I made him pass his urine daily in my presence, to satisfy myself as to the state of his bladder; the urine was thick and very ammoniacal in smell. All this time I kept him up with light nourishing food. When he left me he was able to walk; he had an appetite, could recognise people, and could answer questions very rationally; but if he attempted to carry on conversation he was lost; it was quite apparent his memory was affected.

"Of his previous history I know nothing. I am told he suffered from an attack of apoplexy and subsequent paralysis. There are marks near his joint as if he had been bled. I am fully convinced and am of opinion that Mr.——'s brain is most seriously affected, and I am further of opinion that this present attack is a continuation and result of his previous attack of apoplexy or paralysis. Under these circumstances, I now beg to recommend him for leave of absence for eighteen months, to go to England."

I found him looking remarkably well, as to physical health, stouter and stronger than I have ever seen him. The right hand grasped as powerfully as the left; the legs were equally strong. The tongue was protruded perhaps a little to the right side, but the cheeks, lips, and eyelids were all perfectly natural. The voice not thicker than before; the words articulate, but the speech altogether incoherent. The expression of countenance and the pupils natural; no look of fatuity, insanity, or imbecility; he at once knew and seemed pleased to see me. He was accompanied by a nurse, who says that he eats and sleeps well, and that he is perfectly quiet, tranquil, and easily managed. Indeed, but for his shaven head and incoherent speech, it would be difficult at first sight to believe that he is so ill as he really is. His condition is indeed one of great urgency, and there is reason to fear that some structural change, degeneration, or softening in the cerebral lobes is taking place. The prominent symptom at present is loss of memory of words—"Aphasia" as it has been designated by

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Trousseau and other pathologists. It is difficult to say how far the intellect is affected; but certainly the main difficulty manifested is the utter inability to give utterance to more than the first few words of a sentence. He seems perfectly to comprehend any question that may be put to him, and makes an attempt to reply; but the first three or four words have barely found utterance before he lapses into the most incoherent and purposeless jargon, which appears to indicate that the memory of words is not only lost, but that ideas in the wildest and most incoherent jumble supervene on the forgotten sounds.

During the recent very hot weather he has shown some restlessness and impatience of control, wanting to go out and refusing to remain in his room. But he is easily persuaded, and with me he is cheerful and gentle in the extreme; indeed, were one only to see him, and hear only his reply to such a question as "How have you slept?" or "How do you feel to-day?" it would be difficult to believe that anything was the matter.

He takes a walk or a drive with a friend every evening.

His attempts at writing are as incoherent as his speech; and a note I received the other day was barely legible or intelligible.

His appetite is good and his secretions are tolerably natural. A tendency to constipation is obviated by a croton pill, and cold to the head seems to be grateful and soothing. His pulse is natural and his digestive organs in tolerable order. The tongue has a tendency to be coated, and the breath to be offensive, but the aperient removes or, at all events, improves these conditions.

The nurse says that he occasionally wets his bed, and once or twice he appears to have forgotten where he was emptying his bowels; but there is neither incontinence of urine nor fæces. A cold bath, the douche or shower-bath is given every morning, and this, with cold to the head, quiet, the removal of any cause of excitement, (mental or physical), and a regulated diet is all the treatment that has been adopted since he came here. There can be no doubt that the heat aggravates his condition; he is more incoherent and more restless under its influence, and less patient of control. I cannot help fearing, though I do not feel certain, that this is more than mere functional disorder, and that

such changes as have been described by M. Bouillaud, Trousseau, Dax, Hughlings Jackson, Saunders, and others, are taking place in the anterior cerebral lobes, and that these changes are the continuation and results of the cerebral disorder that was manifested three years ago in a transient attack of hemiplegia. Without in any way insisting on the connection between the conditions, in the relation of cause and effect, it is right to bear in mind the possible connection that the suspicious patches of ulceration formerly alluded to may have with the pathological condition of which the symptoms described are the manifestations. It is possible that the symptoms may be the result of merely functional disorder, but the previous history is opposed to the theory.

April 30*th*.—He has been doing well, much as I have reported, until last night. The nurse reports that at midnight he was sick; that he became more peculiar in his manner; passed urine in bed; was more incoherent and seemed to have more restless or irregular movements of the limbs; was quite conscious, and answered all questions as usual. I find him in the morning with a peculiar expression of countenance, the eyes partially closed, his body and limbs partially curled up in bed. His head was cool, pulse quick, tongue clean, bowels confined. Ordered an enema. He had had a pill at bed-time. I observed that the right arm was more rigid than the left, and that he used the left most; he could grasp firmly with the right, but he could not control the movements, and when he wanted to move it, he had to drag or lift it with the other hand. He was cheerful as usual, laughing and trying to joke, but unable to remember his words. I ordered ice to the head, rest, quiet, and a purgative.

Vespere.—The same condition; the nurse thought perhaps a little better; but I observed that rigidity and loss of control, not of power, was greater. He was quite conscious; said he felt the right arm was not right; but in a moment was more incoherent than ever, not remembering the whole of a word. The leg is not affected, the pupils are natural, and the pulse is slow and regular. Voice is natural, that is to say, no signs of paralysis, so far as it is concerned.

Ordered—A croton pill, blister to the scalp, and plain but nourishing diet.

May 1st.—He is no better; the bowels were moved freely, and the enema acted. He has had a restless night; has passed urine in the bed, and when he speaks is quite incoherent. I find him looking much the same. Right arm and fore-arm more rigid, but the wrist flexible; he cannot use it freely, aiding its motion with the other hand. The right leg is also feeble, and towards the afternoon it became more so. He understands all that is said, and answers in a peculiar half-sleepy and incoherent tone. He keeps his eyes half-closed, and the eyebrows contracted; the pupils are natural. His face looks less intelligent, heavy, dull, and oppressed. The blister on the scalp has risen. Pulse varies from 60 to 65; it rises with any exertion. Temperature of body natural. I directed nourishment—beef tea—to be given frequently; and the enema and pill if the bowels do not act again. Cold to the head; blister to be kept open.

His brother said that about noon he appeared to become more conscious, and became much affected, saying it would soon be all over. I expressed my fears to-day that he could not last much longer.

2nd.—No improvement; the arm and leg are still rigid. He quite understands what is said and tries to give an answer. Bowels have been freely moved; has taken nourishment. Keep the blister open; cold to the head. Repeat the enema in the evening, and give another pill if the bowels are not freely moved. Eyes closed, but opens them when told. He replies in a few incoherent half-formed words to what is said, but it is difficult to make out how far he is conscious. The head is cool; pulse 60; skin natural in feeling and temperature.

3rd.—This morning I find him changed, and the change appears to have commenced about 9 p.m. yesterday. He is lying in the most profound sleep, snoring occasionally. The limbs are certainly more relaxed than they were, and the rigidity in the right arm is diminished. His mouth is closed, and he has taken no food. The enema operated freely. Pulse 60;

skin cool; thermometer 98° in axilla; pupils natural—if anything, slightly contracted; but they respond freely to light. He is quite quiet, and has not spoken. He opens his eyes partially; makes a feeble effort to protrude the tongue when spoken to, which shows that he is still partially conscious.

Ordered—Beef tea enemata; food by mouth, if he can open it. Keep the blister open; ice also to head.

Vespere.—I find no change; he is as he was in the morning. The urine is passed in bed.

4th.—He is no better; much in the same condition; more comatose, if anything, but still appears to recognise the voice, for he opens his eyes when told to do so, though he makes no other sign. Enema and nutrient enemata return as given. No food has been given by mouth, for he cannot swallow. Face congested. Pulse 112, feeble.

5th.—He is much the same, if anything, weaker. Pulse 112; urine passed freely; bowels have not acted.

Ordered—Calomel .. .. gr. x
Elaterium .. .. „ ¼
in butter.

There is rather less stertor; pupils act freely; opens his eyes when asked to do so; draws up the legs when they are pinched.

6th.—Bowels have acted; blister risen; he is much in the same condition; coma perhaps less profound; pupils act freely; he opens his eyes when spoken to. It is very difficult to get his mouth open, and any attempt at swallowing seems to cause spasm.

Repeat calomel and elaterium; nourishment as before by enemata. Beef tea and Brandy; food by mouth when possible.

7th.—Much in the same state; skin hot in afternoon; pulse quicker; less stertor; has taken some broth with great difficulty; does not seem so conscious as he was; hardly opens his eyes when told to do so. Let him have iodid: potass: gr. v. every three hours; nourishment as usual. His pupils are perfectly sentient.

8th.—Much the same ; pulse 120, rapid and feeble ; pupils still quite sentient ; involuntary discharge from bowels.

9th.—Weaker ; symptoms the same ; a sort of catch in inspiration ; pulse 140 to 160 ; involuntary discharges. Death at 5-30 p.m.

Post Mortem Examination (13 hours after death.)

The body was well nourished. The head, which was remarkably well formed, had been shaven, and marks of vesication existed on the scalp.

Head.—On opening the cranium, a small quantity of opaque fluid was seen lying under the dura mater ; underneath the situation of the blister, the vessels of the dura mater and corresponding bone were somewhat congested. On removing the brain from its attachments, opaque, but not inflammatory, exudation was observed in excess about the fissures of sylvius and generally in the subarachnoid space. When the dura mater was completely removed, and the brain turned with its inferior surface upwards, the whole of the inferior surface of the left anterior lobe of the organ appeared shrunken and smaller than that of the opposite hemisphere. There was also noticed matting together of the convolutions on each margin of the fissure of sylvius on the left side. Just on the antero-lateral aspect of the left corpus striatum in the nerve matter, intervening between that ganglion and the convolutions, there was a portion of yellowish and softened brain, from which, when cut into, a small quantity of opaque serous fluid escaped. The size of the cavity remaining after the fluid flowed away was about that of a pea ; and this, in all probability, represented the centre of the mischief which produced the hemiplegia, and interference with the faculty of speech three years ago. But now there was observed somewhat extensive white softening all round this spot, affecting the convolutions on the one hand, and the anterior portion of the corpus striatum on the other. The softened brain here contained granules, broken down nerve tubules, and nerve vesicles, but it was mainly composed of fat globules of variable size.

On the left and inferior aspect of the pons varolii, a portion of white softening, as large as a hazel nut, existed. The nerve structures were so altered in consistency that on pouring water on the part, the softened material was washed away, exposing a breach which penetrated the transverse or commissural fibres, the upward fibres from the corpus pyramidal, and the vesicular continuation of the olivary ganglion. But the whole structure of the pons—the medulla oblongata and crura cerebelli—was softer than natural.

The disorganized nerve substance of the pons was found to be constituted of a great quantity of granular matter, a few stray tubes and vesicles undergoing disintegration, and abundance of fat globules of different sizes. Neither in this nor in the softened part of the left anterior lobe could a single exudation corpuscle be seen.

The arterial circulation was examined with care. The vertebrals and basilar were thickened, rigid, and of a yellowish opaque colour from atheromatous or fatty degeneration. At the commencement of the basilar, the thickening of the vessel was so remarkable as to narrow its calibre most materially. It felt hard, like a piece of cord to the touch ; on laying it open here, its internal lining was opaque and roughened, having lost its brilliancy and smoothness. Immediately on the distal aspect of the atheroma, a dark-coloured clot of recent standing was seen completely blocking up the artery, and thus cutting off the normal supply of blood to the cerebellum, pons, and the posterior lobes of the brain on both sides, until a supplemental supply could be furnished by the internal carotid arteries, through the anastamotic system of the circle of Willis.

The whole of the primary and secondary arteries of the cerebrum and cerebellum were more or less spotted with a yellowish coloured atheromatous material. It was most characteristically developed, however, in the vessels on the left side of the brain.

The heart was flabby, aortic valves healthy ; but the ascending aorta, the curtains of the mitral valves, the innominata,

left subclavian, and carotid all contain atheromatous material.

For the above description of the post-mortem appearances I am indebted to Dr. Joseph Ewart, Professor of Physiology, and Pathologist to the Medical College. He and Professor Partridge, who saw the case with me, were good enough to assist me in conducting the examination.

REMARKS.

This case is one of great interest and importance. I have not been able to ascertain that there was any hereditary tendency to disease, either of the vascular or nervous systems; and the history of the patient, previous to the attack of hemiplegia, three years ago, tells only of a sound mind in a sound body. His mental and physical vigor were both remarkable, and although he was always of an excitable and vivacious disposition, there was nothing in the least suggestive of any organic or structural disease.

On hearing of the attack of hemiplegia three years ago, and learning that it was not in any way connected with recent exposure to the sun or to great heat, I was at a loss to account for it, and my thoughts reverted to the ulceration of doubtful origin as suggestive of a constitutional cause. I also thought of embolism, but not having the least idea that he was the subject of any vascular unsoundness, was equally unable to account for it on those grounds. I happened to know that the cardiac sounds were natural, and that he was free from any indications of valvular or other form of heart disease.

That a small vessel had given way, and temporary hemiplegia resulted from the pressure of a small clot in or near the left corpus striatum, was the last conclusion at which I arrived, and the subsequent history, up to his return to duty, appeared to support that conjecture.

The post-mortem examination proved that it was even more than that. The universally diseased condition of the arterial system, and the extent to which it had proceeded in the cerebral vessels, fully account for all, not only the past, but the recent symptoms.

The arteries of the brain—especially of the left side, and more especially those of the posterior part of the encephalon—the vertebrals and the basilar were diseased to a degree that I have never before seen. The vessels of the left side were unusually thickened and irregular from atheromatous deposit, and the basilar itself was completely plugged with a colored but firm clot. This, no doubt, was of very recent origin, and dated about the period when he passed into a state of almost perfect insensibility some days before his death.

The gradually progressive disease of the vessels had, no doubt, so far interfered with the circulation generally, through the left side of the brain, as to induce the gradually increasing symptoms of cerebral softening to which his history points as having been present, and the probability is that other and smaller embolisms have, like that of the last attack, formed from time to time, and compromised the nutrition of the brain, though not occurring in the vicinity of, or where they immediately affected, the cerebral ganglia. The effects were not so striking as in the first case, where either a hæmorrhage or an embolism directly affected the left corpus striatum.

The cause of embolism, no doubt, lay in the roughened coats of the diseased arteries. As the atheromatous degeneration gradually increased, disorganizing the smooth epithelial lining of the tube, the blood could hardly flow over it without leaving fibrous deposits or coagula, which in their turn, being washed away by the current, were carried into smaller channels which they plugged, and thus the blood itself became the source of the mischief. The recent large embolism in the basilar artery—the result of contact with the roughened and diseased vertebrals—is only an example, on a larger scale, of what probably occurred years ago in a smaller vessel of the anterior lobe, and no doubt often, more recently, in the cerebral circulation generally, until finally the starvation of the medulla oblongata precipitated the fatal event. It is interesting, in reference to the observations of the distinguished pathologists whose names I have already mentioned, to note that the lesion in the first place seemed to fall on the left anterior lobe, and that

certainly a marked feature in his case throughout, was affection of the speech; for even after the first attack, though perfectly recovered in all other respects, there remained some peculiarity in his speech—a rapidity of utterance, and a tendency to forget or to substitute words that was quite unnatural. As the wasting of the brain substance proceeded, this condition of *aphasia* also tended to increase, until just before the occurrence of the last fatal embolism of the basilar artery it had become the most marked feature of his condition, and pointed to what we had feared must prove to be irreparable mischief in the brain.

The arterial disease must, no doubt, therefore be regarded as the cause of mischief; it is remarkable that it should have gone to such an extent at the comparatively early age of 42.

The aorta was literally one mass of atheroma. There was more diseased than sound tissue, and it is probable that the same condition existed throughout the body, although no local gangrenes had occurred to give evidence that it was so. In all other respects he was in remarkably good health, being fatter and more muscular than I had ever seen him, within a fortnight of his death. His organs generally were sound; lungs, liver, spleen, and kidneys performed their functions naturally; the heart's action was normal in rythm and sound; and his pulse was steady and regular. The atheromatous degeneration of the arterial system appears to have been a constitutional peculiarity, and to it must be assigned the disturbance in the circulation which resulted in the pathological conditions I have described.

E. DEAN, CALCUTTA CENTRAL PRESS COMPANY, LIMITED,
5, COUNCIL HOUSE STREET.

CLINICAL OBSERVATIONS IN SURGERY.

BY
JOSEPH FAYRER, M.D., F.R.S.E., &c., &c.,
PROFESSOR OF SURGERY IN THE MEDICAL COLLEGE OF BENGAL, AND SURGEON TO THE COLLEGE HOSPITAL.

No. XXXIX.—ON THE SURGICAL USES OF CARBOLIC ACID.

We are indebted to Professor Lister of Glasgow for the introduction of this agent into the practice of British Surgery. Doubtless the antiseptic uses of Carbolic Acid and other kindred substances were well known before Mr. Lister published his views, and to Dr. Lemaire, a French physician, I believe, is due the credit of having first made known its merits as a local antiseptic in the treatment of surgical disease. But the practical application of the antiseptic principle as affecting the air, which gains access to the wound, is due to the Glasgow Professor. It is with the object of contributing something to the already large amount of evidence in its favour, that I record the following notes :—

Mr. Lister has pointed out the mode in which Carbolic Acid and other antiseptics act in preventing decomposition of the blood or exudation, and consequent excessive suppuration and toxæmia. It is necessary, therefore, to distinguish between their mere local action on the wound or suppurating

surface, and their effect as purifiers of the air, which, gaining access in its unpurified condition, excites mischief. It has long been supposed that the contact of the air itself is pernicious, and that its presence conduces to excessive suppuration or changes of even more unfavourable nature. But it would appear that such is not really the case, and that evil, when it does arise, is due solely to the organic germs which pervade the atmosphere, and that if uncontaminated air alone gain access to the sore or wound, no ill-effect need be dreaded. Mr. Lister has illustrated this in the instance of the broken rib, causing emphysema of the thoracic parietes from an internal wound. Here is a case of compound fracture, in which air, no doubt, comes in contact with the injured surface and the blood, but it does so strained and purified by passage through the pulmonary air-cells, and consequently the results of such injuries are seldom like those witnessed in compound fractures, exposed to the action of the contaminated atmosphere. M. Pasteur demonstrated the existence of such organic germs in the atmosphere, and it appears that they especially prevail in that of hospitals or crowded places. It is the entrance of these germs into the blood, or exudation from wounded or raw surfaces, that gives rise to decomposition, and the consequent generation of irritating or septic matters which may not only excite excessive suppuration, but become fertile sources of blood-poisoning. Other antiseptic agents probably have similar power to Carbolic Acid of destroying these germs, but none have been so highly commended, though others, such as sulphurous acid, have been tried, and as local stimulating and detergent applications to the surface of the wound, sore, or abscess, as well as purifiers of the air surrounding it, Carbolic Acid and kindred substances are exceedingly valuable.

It is in the latter capacity that their great value lies, and we should be careful in speaking of the action of Carbolic Acid to make the distinction. It is for its property of preventing mischief in wounds and injuries by purifying the air that necessarily gains access to them, rather than for its power of arresting gangrene or ulceration, or of causing any form of direct local action on the tissues themselves, that we use it; but whilst appreciating its great value in the former, we may not disregard its importance in the latter capacity.

It is not pretended that Carbolic Acid or any other antiseptic can altogether arrest mischief already set in, or prevent poisoned blood, or exhausted nerve centres from inducing their usual effects; but it seems pretty well established that they can, if judiciously applied, preserve the seat of lesion from the evil influences of the contaminated atmosphere, and thus allow the *vis medicatrix naturæ* to proceed uninterrupted.

As to the mode of application, we apply it in this hospital either in the pure form or diluted with five parts of oil or Glycerine, or as a lotion of the strength of from one to four drachms to a pint of water. In the concentrated form we apply it to the surface of wounds or ulcers, either to coagulate albuminous fluids, contract and close vascular openings, or to destroy and deodorize decomposing fluids and tissues. By this action hæmorrhage is arrested, septic absorption obviated, and the spread of death of tissue by the contact of the dead with living structures is prevented.

In the Glycerate or oleaginous form we apply it on lint or cloth as a simple dressing, which either prevents the access of the air, or allows it to enter freed from its organic impurities.

As a lotion we use it for a similar purpose, and also as a cleanly and stimulating wash.

The concentrated acid doubtless causes some pain, but it passes away speedily, and as it is generally applied under the influence of chloroform, this need hardly be considered an objection. The Glycerine and oily solutions are not irritating, and pain is not caused by their application. The lotion is not more pungent than ordinary stimulating washes. It would appear that the whitish substance formed on the surface is capable of being absorbed, and does not seem to interfere with the healing of a wound.

The chief value of this antiseptic mode of treatment appears to me to be found in its application to open fractures, and here our experience, as far as it goes in this hospital, is certainly favourable, for we have had unusual success in the treatment of severe cases of compound fracture, since we began to use the carbolic acid. If it have the power of obviating in some small degree, the tendency to osteo-myelitis, one of the great causes of pyæmia, or excessive suppuration, mortality would be abated, and the advantage obtained be undeniable. That such is the case, I think, is almost certain, and though my experience is still limited, I feel satisfied that it has been sufficient to justify the conviction. I know that my colleague, Professor Partridge, is of the same opinion, and as we have now been watching the effects of carbolic acid thus applied for some months, we feel satisfied that it has contributed to an amount of success in the treatment of compound fracture, that has hitherto been unknown in this hospital. We have observed that some compound fractures have recovered, which, we believe,

would have otherwise terminated in amputation or death, and we have satisfied ourselves that wounds, accidental or surgical, have suppurated less, and healed more rapidly than usual; that abscesses, sloughing, and unhealthy sores have more readily assumed and maintained, (when aided of course by proper constitutional treatment), a healthy reparative action, and that the sanitary condition of the hospital generally has been benefited. Unfortunately, from the limited supply of the drug our experience has not been so conclusive or satisfactory as we could desire. The great and almost sudden demand for an article, hitherto comparatively little used, has been more than the resources of the medical stores could comply with, but we trust that if the value of the mode of treatment become established, the supply will be equal to the demand, and that it may be freely used, not only in the metropolitan, but in all other hospitals and places where men are crowded together.

Case 1.—C. R., Female, East Indian, ætat: 50, admitted 28th August, 1867. Deep-seated abscess of left thigh. Disease had existed for about a month before coming under treatment; sloughs had separated and granulation commenced, when suppuration with burrowing of matter again set in. Carbolic Acid was used with the effect of delaying the fatal result, but the patient's constitution was so much broken down, that a favourable issue was impossible. She died exhausted and pyæmic, after being under treatment with the acid for one month and two days.

Case 2.—Kader Nath Banerjea, Male, Hindoo, ætat: 23, admitted 28th August. Treated for 32 days with Carbolic Acid applications after removal of an ulcerated scrotal tumour of two years' growth. The wound was healing, when he was discharged at his own request. The suppuration attendant on granulation and contraction of the wound, and the concomitant wasting of the patient were much less than usual.

CASE 3.—Ramkisto Mullick, Male, Hindoo, ætat: 14, admitted 1st September, with compound fracture of tibia and fibula, with protrusion of the bones requiring adjustment. Treated with Carbolic Acid from the first. Little or no suppuration occurred. Discharged cured in two and a half months.

CASE 4.—Goluck Nath Roy, Male, Hindoo, ætat: 32, admitted 4th September, with necrosis of right tarsus. Carbolic Acid was used throughout the treatment, which extended over 14 days, but the existing suppuration and sloughing were unchecked. After amputation by Syme's method fetid suppuration continued, and pyæmia supervening caused death.

CASE 5.—Judoo Putty Holdar, Male, Hindoo, ætt: 25, admitted 11th September, with gangrene of penis. Treated for 29 days with Carbolic Acid. A line of demarcation formed, and the slough separated, a slight amount of healthy discharge occurred until cicatrization took place.

CASE 6.—Mohesh Chunder Mistree, Male, Hindoo, ætat: 33, admitted 2nd September, with an old ulcer of left forearm, and general anæmia. Under the use of the acid the appearance of the ulcer, which was indolent and exsanguine, began to improve, but diarrhœa, cough, and general symptoms of pyæmia set in and caused death, nine days after admission. *Post mortem* appearances indicated an entirely broken down state of constitution, in which local antiseptics could be of no avail.

CASE 7.—Gopaul Chunder Dass, Male, Hindoo, ætat: 22, admitted 4th October, with lacerated wound of the scalp, the periosteum uninjured. The healing process was nearly complete on the 14th day when tetanus set in and caused death.

CASE 8.—Saboorun, Female, Hindoo, ætat: 35, admitted 14th October, with incised wounds on both legs from broken glass. After 12 days' treatment with the acid, she died from tetanus. The wounds were healing without suppuration when tetanus set in.

CASE 9.—Sapna, a Mussulmani, ætat: 20, admitted 18th October, with a vascular tumour of the hand. After the removal of the growth the acid mixed with oil was applied, and the wound healed completely in 17 days.

CASE 10.—Moonshee, Male, Mussulman, ætat: 25, admitted 13th September, with a lacerated wound of the palm of left hand. Tetanus supervened 17 days after admission and the median nerve was divided for its relief. Under the use of Carbolic Acid dressing the wounds healed and cicatrized in 17 days. He recovered, but with imperfect use of the hand.

CASE 11.—Soubhan Khan, Male, Mussulman, ætat: 50, admitted 19th September, for removal of scrotal tumour of 3 lbs. 5 oz. weight. After operation, the patient became anæmic, and the wound pale and unhealthy. Under the use of Carbolic Acid, the discharge became healthy, and the wound cicatrized with very little suppuration.

CASE 12.—Noffur, Male, Mussulman, ætat: 36, admitted 19th September, for removal of an epithelioma growing on a burn cicatrix on the right arm. The wound sloughed after operation. Carbolic Acid was applied with the effect of changing the action to healthy granulation and cicatrization. On the application being changed for water-dressing, the ulcer again began to extend; improvement at once commenced on reverting to the use of Carbolic Acid.

CASE 13.—Nobul Khalasee, Male, Mussulman, ætat: 20, admitted 22nd October, with compound comminuted fracture of tibia and fibula. After amputation the stump was dressed with Carbolic Acid and oil. Suppuration commenced on 23rd, but on the 30th the wound was looking well, and discharging very little and healthily. He ultimately recovered, and although he had fever four or five times, the discharge was never either unhealthy or profuse.

CASE 14.—Kader Nath Dass, Male, Hindoo, ætat: 40, admitted 23rd October, for disease of the elbow-joint. After

discharge was moderate, and at date of last report the wound was healing.

There is nothing very remarkable in these brief abstracts of some of the cases that have been treated in the hospital, but it was very apparent that in them all, there were circumstances and appearances differing from those we generally see in such cases. In nearly all, suppuration was lessened and destructive action abated. In the cases that proved fatal, there was little to be hoped for from any form of treatment, and the most that we can say is, that destructive action was retarded, and death delayed. But in recent comminuted and compound fracture, where the applications were made from the first, there was no difficulty in recognizing the beneficial effects of the antiseptic. The application chiefly used in these cases was the solution of one part of Carbolic Acid in five parts of oil. A lotion of 3i. or 3ii. to the pint of water was also in most cases used at the time of dressing as a wash, and to prevent evaporation, plantain leaf or guttapercha tissue laid over a thin piece of cloth was applied over all. This mode of treatment we constantly follow, when we can procure a supply of the acid; and I hope on some future occasion to be able to submit a further report of its properties. I may add that many other cases have been treated by the aid of Carbolic Acid; among others two cases of abscess of the liver, in which the pus was evacuated by puncture. These have, up to the present time, progressed favourably under Carbolic Acid applied to the puncture, or injected as a wash into the cavity of the abscess.

ON MEDICAL REFORM.

18 Corporations, 792 Teachers and Examiners, 930 annual Students—51 degrees. At nearly all the Colleges the Fellowship and Vote obtained by money, and 19-20ths of the Members of the Profession have no voice in the various Corporations to which they belong. The Members of the Medical Council are most of them Lecturers, Teachers, and Examiners, and have a direct interest in supporting the Corporations, and in glutting the diploma market.

Now discord reigns in Britain's favor'd clime,
Three monstrous heads guard Medicine's sacred shrine,
More monstrous far than Cerberus of old,
For twenty limbs an ugly body fold,
And stop its progress, for when one would go
In the right path, another holds it low,
And Fashion, curse of science, Folly's tool,
Measures all parchment by a golden rule.—*The Author.*

A LETTER

To the General Council of Medical Education, on the Adjudication of the Carmichael Prize, (£200.) May 4th, 1868, on Medical Reform and on Medical Education, to Dr. Mapother, one of the Council of the Irish College of Surgeons (who should have been an Adjudicator), by his three colleagues, and their erroneous report on the Prize Essay, including a verbatim summary of the Author's unsuccessful Essay for the same Prize.

BY
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Printed for the Author for general distribution.
MARCH 1870.

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of Englishmen! 46.

PREFACE.

My motive for printing this pamphlet at the present juncture is the belief that its extensive circulation will tend to forward the advent of a Representative Faculty of Medicine, or Representative Council, in each of the three Kingdoms, which I have advocated for the last thirty-three years. I have deferred the publication, because I think that it is more likely to be of service at the present time, when a new Medical Bill is about to engage the attention of the House of Commons.

Dr. Mapother in his preface states "that he has introduced some topics for the purpose of rendering his essay more intelligible to legislators to whom copies are to be sent." My aim will be in this preface, and in commenting upon some of Dr. Mapother's erroneous statements, to furnish information to legislators, to the press, and to other influential persons who take an interest in the vital question of Medical Reform, a subject infinitely more important to the public than any that has occupied the attention of Parliament during the present Session.

The reader, I trust, will give me credit for pursuing this course solely on public grounds. I had never heard of Dr. Mapother until the Prize was awarded, and I am entirely unacquainted with his three colleagues, the adjudicators. *If Dr. Mapother's Essay, with all its misstatements and grammatical errors, had contained any practical and consistent plan of Medical Reform, I should not have taken the course I have done.*

Another motive for this publication is the intimation recently given by the Government to the Medical Council to the effect that this nearly self-elected body, the Committee of Corporations, must set its house in order, and that no scheme of reform will be acceptable to the legislature that is not comprehensive and uniform. The day is gone by for making grades and distinctions in the chambers of death, and for mapping out science to suit the pockets of a few favoured individuals. The time is passed when the Medical Attendant of the Prime Minister shall have more influence than the united voices of the profession!

What should we think if Government appointed a Committee of Railway Directors to manage the railways of the United

Kingdom, and to look after their own interests; yet such is absolutely the present condition of our Medical Government—a nearly self-elected corporate clique of examiners and teachers whose interest it has been to keep up grades and distinctions, to glut the diploma market with fifty-one diplomas and degrees, the number that can now be obtained in the United Kingdom. And during the last Meeting of the Council, (July, 1869,) a great deal of time was wasted in discussing the propriety of registering another degree, that of Doctor of State Medicine—this was carried by thirteen to nine. What next? If this Council were much longer in existence we should have a new degree every year! In France, Austria, Prussia, Belgium, and in all civilized countries there is uniformity of examinations and curricula and one medico-chirurgical diploma.

What can be more condemnatory of our whole system of Medical Government than the fact, that whilst all English and American Students who can afford it go to Paris, Berlin, or Vienna, such a *rara avis* as a Foreign Student but seldom visits our shores—that all our chemists, and they are "few and far between," have obtained the foundation of their knowledge in foreign countries?

In the analysis I have made of the qualifications of the Members of the Profession, to shew its chaotic state, I have been obliged to speak of gentlemen with one degree, but it must not be inferred that a man with one qualification is necessarily inferior to another with half-a-dozen. If he has well practised dissection of the body, what Dr. Mapother (p. 145) calls "the third great element in Medical and Surgical education," the nature of his diploma is of minor importance. Examinations will not teach him his profession; he has to learn this afterwards, and he is often too glad to forget much of the theoretical teaching of the Schools. All should lay aside petty jealousies and invidious comparisons, and endeavour to obtain uniformity of curricula, uniformity of examinations, and uniformity of fees, in each of the three Kingdoms. It must be remembered also that I only speak of men in their corporate capacities. For the purpose of shewing the part I have taken in the important question of Medical Reform, and at the risk of being charged with egotism and vanity, let me quote the following. In 1837 I was one of the first Members of the British Medical Association, which numbered among its Associates Drs. Marshall Hall, Grant, Granville, Copeland, James Johnson, G. Webster, A. J. Thompson, and Messrs. Liston, Grainger, Pilcher, Farr, Brady, Wakley, &c.

The subjoined abstract of my speech at the first meeting of this Association I quote from the "Lancet," 1837, January 21, p. 606. "The argument used by Dr. Thompson has been this—That the public are not sufficiently enlightened to distinguish men of talent. If they are ignorant, it is our duty to enlighten them, and I hope that the plan we propose will effect that end. According to the present state of Medical affairs, the public have no opportunity of drawing the distinction. (Applause.) Every man who puts a coloured bottle in a shop-window is called a 'Doctor,' and Chemists and Surgeons have that appellation commonly assigned to them. But if there be a Faculty of Medicine, and if all be *compelled to undergo one description of examination*, and our public institutions and hospitals be thrown open, then will the public be better able to appreciate the man of talent. (Applause.) Dr. Thompson's arguments therefore fall to the ground; certainly his assertions ought not to stand uncontradicted." (Applause.)

In 1850 I started the "London Medical Examiner, and One Faculty Journal," where, in the first volume, page 30, I suggested the following plan of Medical Reform:—

"The reader must recollect that the unjust and exclusive corporations of England have driven men to Scotland and to the Continent to procure degrees.

Now let us suggest a remedy for this monstrous evil, which we venture to assert no man unconnected with the corporations dares *openly* defend.

1. That a Faculty of Medicine shall be formed in England, Ireland and Scotland, and that each Faculty shall be composed of all the legally qualified practitioners who belong to the Universities, Colleges or Halls of the respective countries.

2. That all who enter the medical profession shall, *after five years*, undergo a preliminary examination in mathematics and the English, Greek and Latin languages. The Examiners to be appointed by Government, and not to be members of the medical profession.

3. That the Medical Senate, or Examining Board, shall be at once formed of eighteen members, who shall be elected in the following manner. The six Examiners in the practice of Medicine, Pathology, and Medical Jurisprudence, by the fellows, members, licentiates, and extra licentiates of the College of Physicians, and all the graduates of British Universities who *practise as physicians*. The Examiners in Anatomy, Physiology and Surgery, by the members of the College of Surgeons of London, and the graduates of the University of London. Six Examiners in Chemistry, Materia Medica, Botany, Midwifery and Diseases of Women and Children, by the graduates of the University of London, the members of the Apothecaries' Company, and by all in practice before 1815, who register as general practitioners, excepting those who keep shops and openly trade in drugs.

4. That the Examiners shall not be teachers, and shall receive a fixed salary.

5. That every candidate for the diploma of the Faculty shall undergo four examinations, and that there shall be an interval of six months between each. The first examination in Anatomy and Physiology; 2nd. Chemistry, Materia Medica, Midwifery, Diseases of Women and Children, and Botany; 3rd. Practice of Medicine, Pathology, and Medical Jurisprudence; 4th. Surgery.

6. That no candidate shall be allowed to present himself for the first of these examinations until he is twenty years of age, and has undergone such preliminary examination and course of study, as the said Faculty shall direct.

7. That the verbal examinations shall be open to every legally qualified practitioner.

8. That all persons examined and admitted members of the said Faculty, shall receive the title of Doctor of Medicine and Surgery.

9. That the six Examiners appointed by Government for the preliminary examination, and the eighteen last mentioned Examiners, shall constitute the Senate of the London Faculty of Medicine.

10. That the Faculties of Ireland and Scotland shall be elected as before mentioned, and that all members of these Faculties shall be privileged to practice in any part of Her Majesty's dominions.

11. That the said medical Senate shall regulate all matters relating to the price of the diploma, the charge for attendance upon lectures and hospital practice, subject, however, to the control of Government.

12. That the Senate shall be empowered by law to enforce a general registration of all legally qualified practitioners, and to prosecute all those who practise illegally.

The above is only an outline of the plan which we believe could be easily carried out. Many modifications and improvements may be effected, but let the *representative system* be once established, and the matters of detail are of little importance. Some would prefer the election of a General Council who should choose the Examiners; but this we think would make the matter more complicated and expensive, and also might give rise to favoritism."

Last year (1869) I forwarded the above to each of the Members of the Council of Medical Education with the following query:—"May I, in conclusion, beg of you to turn from this death drama to my plan of Medical Reform, 1850, and ask yourself what a stimulus might have been given to medical science—what an amount of misery might have been averted—what a salvation of human life might have been gained, if the plan I suggested eighteen years since had been carried out?"

At the same time I placed before the Medical Council a letter "On the increase of half-qualified Practitioners since the passing of the Medical Act, 1858," shewing that in this respect the Act had been positively injurious; that from the year 1859 to 1867 751 persons had been registered with one qualification only.

My letter was ordered to be entered on the minutes and to be referred to the Committee on "The Licensing Bodies and Registration of Students." The report of the Committee ("Dublin Medical Press," July 15th, page 67) was to the following effect, viz.:—"That it may be desirable to have an official analysis under the care of the Registrar of the Medical Council, such as that made by Dr. Crisp. That the Council has no power under the Medical Act to interfere with the number and kind of qualifications that practitioners choose, and that the consideration of Dr. Crisp's representative Faculty of Medicine does not come within the scope of duty of this Committee."

It must at once occur to the reader, that the Council has the power of recommending a change of laws, and of pointing out to the Government the present chaotic state of the profession; it will also appear strange to him that this Council could have been ten years in existence without being furnished with the analysis above alluded to. But the most remarkable point connected with the answer of the Council is that within a few months of the date of this letter, the same Council, although the consideration of a National Faculty of Medicine "does not come within their scope," in answer to the Lord President's letter, February 2, 1870 (*necessitas non habet legem*) recommend a joint Examining Board, "the rights and privileges of the Universities and Corporations being left in all other respects the same as at present."

On the 16th of April, 1850, at the Branch meeting of the Provincial Association at Brighton, in opposition to a resolution moved by Mr. Trustram, of Tunbridge Wells, and seconded by Dr. Davis, of Sleaford, "That the Colleges of Surgeons and Physicians might be so modified as to meet the wants of the general body of medical practitioners."

Amendment moved by Dr. Crisp, of London, and seconded by C. Barrows, Esq., of Brighton, "That looking to the past and present history of the Colleges of Physicians and Surgeons, this meeting is of opinion that these bodies should not be entrusted with the sole examination of the general practitioners of England." This amendment was carried.

Moved by Dr. Crisp, and seconded by Dr. Mackness, of Hastings, "That this meeting begs to express its disapprobation of the present constitution of the London Examining Boards, and of the unjust and unmerited exclusion of the provincial practitioners, many of whom, as regards practical knowledge and scientific attainments, are quite equal to those of their metropolitan brethren." Carried unanimously.

Neither of these resolutions suited the views of the magnates of the Worcester Council, and they reported in the Journal, May 1, page 238, 1850, "That the first resolution by Mr. Trustram was carried." When I wrote to the Editor to correct the mistake, he refused to insert my letter. Besides this falsification the second resolution, *a very important one to provincial practitioners*, was omitted altogether. This Association has been always governed by a few men, whose views have been adverse to those of the great majority of the members. The Birmingham practitioners have done what this Association should have done long since.

I beg the reader's attention, especially to the first resolution, because there is a corporate plan now on the *tapis* among the London Colleges of Surgeons and Physicians, and the Apothecaries' Company, to form a joint Examining Board, but this

hitch is about the spoil. Let all these bodies be representative, and let Examiners also be elected by the graduates of the English Universities, and then an efficient and satisfactory Board may be constituted. But a State Examination, in many respects objectionable, would be far preferable to this corporate scheme. It is on this account that I shall enter very briefly into the history of these three bodies. The Apothecaries' Company may be dismissed in a few words; the members have no more voice in the proceedings of the Corporation than the inhabitants of China, and no museum or library is open to them; the name spoils it; the title of Pharmaceutical Chemist is far preferable.

I found (as shewn in the "Medical Examiner," vol. ii. p. 104), that from 1841 to 1850 £22,068. had been received by the Examiners of this Company, and as a Licentiate I wrote to ask how the money had been expended, how much on dinners, &c.? Mr. Upton, the Clerk, informed me "that they would give the information if called upon by competent authority!" The London College of Surgeons, April 23, 1850, in their Memorial told Sir G. Grey that there were some, but the Council believed that they were not numerous, who had the degree of this Company only; I showed, at this very time, that more than 1,000 had this single degree! In this Memorial the Council also told Sir G. Grey that the general practitioners had been immemorially designated Apothecaries. Most of them had the *same* degree as those who penned the insult, and a medical diploma in addition.

It has been the interest of the higher grade (so-called) to patronize respectable Apothecaries; they have fattened on lower grades. A lower grade, and in a matter of life or death, too! science repudiates the term. How truly did the physicians, quoted in a future page, speak of the sacrifice of life due to these "time-honoured institutions."

"Time-honoured institutions" men do cry,
Men, who in other things, would scorn to lie.
"Death-dealing," surely is a better word,
Their acts to shew, their doings to record!
If honor's due to men who vilely made,
A noble science merge into a trade,
Of parchment traffickers whose only aim
Was self-aggrandisement, and worldly gain.
Then cheer them all—harness triumphant car,
But let the cypress, and the yew appear;
Lift high the golden cup, my motto tells,
And crown grave science with a cap and bells.

Tell us not what a field *has* produced, but rather what it *might* have produced under proper culture!

I add an extract from my "Carmichael Essay, 1859," for the purpose of shewing how fully my predictions respecting the Medical Council have been verified.

"There will be no peace in the profession until this, the representative system, is conceded; and if the General Council wish the turmoil and strife that have so long, and injuriously agitated their brethren to cease; the first recommendation that they will make to the Privy Council, will be, *that every Graduate of Medicine, and every Member of a College or Hall*, (provided he is not a supporter of empiricism in any shape nor engaged in the sale of drugs and chemicals) *shall have a voice in the election of the governing body;* so that he may take some interest in the affairs of the University or College to which he belongs, and not be treated as an alien, and as a stranger.

"Whether like the frogs in the fable, Her Majesty's Government has sent them a king in the shape of a Medical Council, who like the stork, will turn its rule to its own profit, I am unable to say; but the swallowing of two or five pounds, in the shape of a registration fee, is more palatable to the House of Commons than to the bulk of the profession. It is the duty of a good Government to provide efficient Medical attendance for the people; and after taxing medical men with a diploma stamp, it is too much to compel them to carry out these enactments with their own money. To be consistent, the Government should oblige every quack whose money it takes, and to whom it gives its patronage, to register, and pay a registration fee!!

Now, vilest compounds "are reputed cures,
For ev'ry evil that the flesh endures;"
And our wise rulers give a helping hand
To secret nostrums, that disgrace the land;
Lift science with the right, then give a blow
With other palm, that quickly lays it low;
So that our Gallic neighbours, laughing say—
"The Paradise of Quacks" is o'er the way.—*The Author.*

Dr. Burrows, recently the President of this Council, in his evidence before the Parliamentary Committee, 1847 (Q. 402), "objected entirely to a single Faculty of Medicine—it would change the education of medical men—science would make but slow progress." To shew the progress it makes at present, let me quote the words of Mr. Simon, the Medical Officer of the Privy Council, January, 1867—"The art of teaching is less organized among us than in many places of far inferior resources; that, indeed, as compared with what is done in even the minor schools of Germany, our annual harvest of scientific result is often so small as to be almost insignificant."

Dr. Burrows said (Q. 442)—"That the distinction between Medicine and Surgery was as clear as between night and day." (Q. 449)—"Objected to a general registration—would register in separate lists."

Dr. F. Hawkins, the Registrar, before the same Committee, said—"The registration now proposed, I consider to be so injurious to the profession altogether, that *we should be far better without it*" (the italics are mine). He, like the President, would register in classes (Q. 1106). The Bill would throw all orders of the profession into one class (Q. 1146); would register in grades (Q. 1148). "If all are to be classed together, nothing would remove my objection, &c."

Yet, notwithstanding this evidence, we have Dr. F. Hawkins, the Registrar of the Medical Council (elected without advertise-

ment), and the President, objecting to the present *mode of registration*, under which they hold office, and receive pay.

I will now tell the reader something about the monetary matters of this Council, taken from their Annual Reports. They started in 1859 with £34,511.—£32162. for £2. fees; £2,045. for £5. fees; and £304. for 5s. additions. Since this period, beginning from December, 1858, to January 5, 1860, to the year 1869, the receipts have been—1860, £5,306. 17s. 11d.; 1861, £3,613. 1s.; 1862, £3,320. 8s. 11d.; 1863, £3,761 15s. 5d.; 1864, £4,851. 4s. 7d.; 1865, £3,845. 7s.; 1866, £5,080. 15s. 6½d.; 1867, £3,775. 2s. 9d.; 1868, £5,170. 13s. 3d.; 1869, £4,723. 8s. During these ten years, the total amount is £43,448. 14s. 4½d, making, in addition to the before-named sum of £34,511., £77,959. 14s. 4½d. In the last accounts reported (1869) there is a deficiency of £765. 15s. 5d. So that this nearly self-elected body has received up to 1869 this large sum from the members of the profession, a memorial from 9,724 of whom, many of the Councillors refused to enter on their minutes! But there are some curious items in these accounts. A gratuity of £100. to Dr. F. Hawkins, the Registrar, who gets £500. a year, and who said, as stated above, "that nothing would remove his objection to this mode of registration." 1860—Pharmacopœia Committee £500; 1861—Pharmacopœia, £500.; 1863—Pharmacopœia Committee, £600.; Travelling Expenses on behalf of the Council, 1860—£700. 7s.; 1862—£270. 18s. Refreshments, 1867—£36. 12s. 4d.; 1862—£17. Hotel Expenses, 1860—£225. 15s.

It will scarcely be believed, that when a memorial signed by 9,724 members of the profession, was presented, praying for a more stringent and uniform system of education and examination, and for the representative system in the Council, that several of the members objected to its being placed on the minutes! ("Lancet," March 5th, 1870.) Professor Syme, of Edinburgh (formerly on the Council) says ("Lancet," March 12th, 1870)—"this body has so conducted itself as to be altogether unfit to represent the profession."

But the place of meeting of this Council, the dark chambers of the London College of Physicians, gives a tolerable indication of the politics of the Councillors. I could fill a large volume were I to record the tyrannical and arbitrary acts of this body. To quote from Professor Grant's "Oration on Medical Reform," 1841: "If this College has never been respected by the respectable members of our profession, it is because it has never sought

by a single generous or virtuous act to merit the respect of honest men." Up to a recent period, it has annually advertised in the Medical Directory, that the President and Court of the College have the power of committing to Newgate, individuals contemning their authority; and that any Fellow or Licentiate consulting with a Physician in London, or within seven miles thereof, who is not a member of this College, will be fined £5. But there was no penalty if he consulted with a Homœopath, or with the proprietor of a quack medicine! In the Library of the Medical Society of London, is a well authenticated manuscript of extracts from the Register of the Royal College of Physicians in London, from 1682 to 1749, two volumes, by Dr. John Lewis Petit; it was produced before the Parliamentary Committee on Mr. Warburton's Bill. Let me strongly recommend those who have access to these curious documents to read them; they afford a fund of amusement. They will shew him that no Eastern despot ever exercised more arbitary power. Sairy Gamps and Betsy Harris's were committed to Newgate for maltreatment, as was Dr. Grœnvelt, a licentiate, for giving cantharides, a medicine now often prescribed; lists were taken of "Catholics or criminals," and although there was not one legally qualified practitioner to 100,000 inhabitants, this College did all it could to keep this death-dealing monopoly in its own hands. Harvey, and Drs. Bonham, Wells, Burgess, Wright, Stanger, and others, were badly treated by this college. Sydenham was denied the fellowship. Drs. Armstrong and Mason Good were rejected, and Jenner was refused its licence. The Dukes of Richmond and Montague were made Fellows at their own houses, the Fellows going in procession in their gowns! Jenner told them that at his time of life, to set about brushing up Greek and Latin, would be irksome in the extreme; but, said he, "I wish you would frame a bye-law for admitting men among you who would communicate new discoveries for the improvement of the practice of physic. On this score (not alluding to vaccination) I could face your inquisition with some degree of firmness.—"Baron's Life of Jenner."

In 1832, Mr. Hume presented a petition, numerously signed by British physicians, which ends in these words: "It would greatly distress your Honourable House, to add to this statement the probable amount of lives prematurely destroyed, and the mass of affliction which during these 300 years have proceeded from the culpable inactivity and carelessness of this College."

In 1833, a petition was presented by fifty-eight Licentiates practising in London, complaining "that bye-laws had been framed which were directly opposed to, and in violation of, the letter and meaning of the Charter which spoke of the College as a Faculty or Commonalty."

The "Daily News," in commenting upon the histories of the Colleges of Physicians and Surgeons of England says, "The sooner they are blotted from the Statute Book the better."

Professor Syme, of Edinburgh, in his letter to the Lord Advocate, 1850, says, in speaking of the Swiney Cup adjudication to the President of the College, Dr. Paris, "That a College which supported their President in, and identified themselves with, the perpetration of such an outrage, could not safely be trusted with any power of controlling the members of a liberal profession."

In the "London Medical Examiner," (vol. i. page 20,) (the only Medical journal that has not contained anonymous writing,) in reviewing Dr. Badeley's Harveian Latin Oration 1849, delivered before this College, I finished as follows:—

"And now, Dr. Badeley, in taking our leave, let us assure you that we have been influenced by no vindictive feeling. If we had not seen the Oration, we probably should never have heard of your existence. At this *important crisis* in Medical politics, we have thought it our duty to expose the apparent liberality which seems to pervade your discourse. Like the language in which it is written, it is often capable of various interpretations, *specie virtutibus similes*.

We can quite understand why you decry political agitation. If some of the old pollard oaks in your neighbourhood, whose stunted trunks and withered foliage have so long encumbered the earth, and stopped the growth of vegetation, could speak, they would preach the same sermon. They would tell of the slugs they had housed, the moths they had shaded, the jackdaws and magpies they had sheltered, and of the vested rights they possessed. But the axe is already at their roots, and they are doomed to fall. So it will be, Dr. Badeley, with your College, unless you speedily make your peace with the living; the dead, luckily for you, tell no tales, and the squires, yeomen, and peasants, whose bodily ailments, according to your edicts, require a less amount of skill for their relief than those of their metropolitan brethren, will not rise up against you. But there is a spirit abroad that you cannot subdue; a voice of reason that you cannot stifle, and a wide-spreading opinion, that prefers the aristocracy of talent, to that of birth or place, that you cannot crush. May you and the learned President live long and happy; may you quaff many a pleasant draught from the Swiney cup; the liquor the Calernian or Falernian wine of your friend Horace, or, if you prefer it, your favourite antipodagric beverage, the '*Cerevisia tenuis Londinensis*,' but let the toast be, 'Short life to nepotism and corruption, and success to a Faculty of Medicine, and election by concours.'

"'Without the stamp of merit let none presume,
To wear an undeserved dignity—
O that estates, degrees, and offices,
Were not deriv'd corruptly, and that clear honour
Were purchased by the merit of the wearer;
How many then should cover that stand bare!
How many be commanded that command?'"—*Merchant of Venice.*

How has my prediction been verified? This College, belying all the evidence given by its Fellows before the Parliamentary

Committees 1834, 1847 and 1848, not only has taken to its arms all British Doctors of Medicine, who would pay for the cold embrace, and made them Physicians by the talismanic touch of Ten Guineas, fitting them in a trice for Hospitals and Dispensaries, but it goes in also for the retail trade in diplomas; attempts to rival the College of Surgeons, and the Apothecaries' Company in its cheap medico-chirurgical undergrade wares.

I shall speak of the London College of Surgeons hereafter, and I now pass on to describe the doings of another College in the sister Kingdom, and in commenting upon Dr. Mapother's errors, I shall endeavour to throw light upon other matters that are of especial interest at the present time.

29, *Beaufort Street, Chelsea,*
March, 1870.

EXPLANATION.

That the reader may properly understand the Carmichael Prize adjudication, and its bearing upon Medical Reform, it will be necessary to give a brief history of Mr. Carmichael's testamentary injunctions. Mr. Carmichael, who was accidently drowned in 1849, was an ardent and enthusiastic Medical reformer—a warm advocate for a Faculty of Medicine in each of the three Kingdoms—and to shew his opinion of Medical and Surgical Corporations, and the damaging influence they have had on the progress of science, and the good of suffering humanity, let me quote two or three extracts from his speech at the Medical Reform Congress, held in Dublin in 1840. The testimony is especially valuable, as he had been three times President of the Irish College of Surgeons, which institution was included in his sweeping censure. In speaking of Mr. Warburton's Bill, he said: "But if it does not lay the axe to the root of the evil, and deprive the several corporate bodies of the licensing power, who thus, in abandonment of all principle, shamefully sell their honors to the highest bidders for money, and lowest in point of competence, they may as well allow the present system of misrule and abuse to remain unmolested." "The eighteen licensing corporations will, no doubt make some show of opposition, but they are rotten and

hollow at the very core." "We may therefore infer what the result must be, when eighteen licensing bodies thus contend, as at a Dutch auction, to sell their honors to the lowest bidders." "These eighteen corporations exercise a miserable rivalry only in the accumulation of money." "That men, incompetent to the duty of examination, who call themselves Physicians and Surgeons, are everywhere met with," &c.

Little did Mr. Carmichael think when these words were uttered, that at the present time (more than twenty years after his death) the men whose unjust and exclusive acts he had condemned, would be our rulers and governors, and that the great bulk of the profession would be entirely unrepresented.

Mr. Carmichael, by his will, dated February, 1849, left £3,000. to the Royal College of Surgeons of Ireland, the Interest of which shall be given every fourth year for two Prizes on Medical Reform and Education; one of £200., and the other of £100., to be adjudged by the Council of the College. The Council of the College, if they agree to act on this proposal, &c., shall pronounce judgment on the 1st of May. The name and address of each author, with a device in a sealed letter, in the manner usually adopted. Should the Council not deem any of the Essays (1856) worthy of a reward, they are at liberty and authorized to *postpone* the grant until the termination of the next four years, (1860), and at this period the interest of the capital will be doubled. 700 of the Prize Essays to be published, and to be sent to all Cabinet Ministers, Privy Councillors in both countries, and to all Councillors and Governing Members of all Medical Colleges and Corporations. Should the Council neglect to comply with the above provisions, the interest thus accumulated to be handed over to the Medical Fund of Ireland, &c. (See copy of Will, "Dublin Journal," 1850, p. 493.) The periods at which these Prizes might have been awarded were May, 1856, 1860, 1864, and 1868; but no award was made until the last-named year, when the first Prize was given to Dr. Mapother, one of the Council, who, according to Mr. Carmichael's Will, should have been an adjudicator. *"To be awarded by the Council"—"The Council shall pronounce judgment,"—"Should the Council not deem the Essays worthy, &c.," are Mr. Carmichael's words.*

It must be remembered that at the Irish College of Surgeons, as at nearly all our corporate institutions, the affairs are managed in the dark, and the Medical Press is excluded.

A LETTER TO THE GENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION.

GENTLEMEN,—In bringing before you a third time* the subject of the Carmichael Prizes, I have now to direct your attention *to a question of an entirely different kind, connected with the late award, and it is one I think that can scarcely escape your attention and deliberation.* If, as on the last occasion when I addressed you, that old, enthusiastic, and consistent reformer, Dr. Alexander Wood, should suggest "amidst your merriment," ("Dublin Medical Press," July 8th, p. 43,) "that my letter should be referred to the Lunacy Committee," I trust that Dr. Alexander Wood, and yourselves, will do me the justice to allow me to appear before that tribunal, and that you will publish my defence, as an indication of the state of my mind. This is a measure of justice scarcely denied to the meanest criminal in the land, although I shall shew hereafter, the practice is unobserved by yourselves.

I have already brought the substance of this complaint before the Council of the Irish College. I wrote to *each member* asking for a Committee of Enquiry, on the grounds *of culpable misdirection on the part of Mr. Hargrave (one of your Council), and of Dr. Mapother's other two colleagues, Drs. Macnamara and Barker.* I have furnished the Council with full and positive evidence of this, (chapter, page, and word,) pointing (as in the present letter) to the disclosure of the name, to more *than* 300 *errors of grammar* and composition; besides numerous and inexcusable mis-statements, to use a *very* mild term; but the Council refused to entertain the matter. The Councillors moreover have kept Dr. Mapother's original printed slips in *the dark.* I asked to be allowed to inspect one of the three copies in their Library in Dublin; this too they have refused. If the original Essay, without emendations, has shared the fate of the Hunterian manuscripts, what a loss to science! judging from the choice *morceaux* that it will be my duty to place before you. This letter must necessarily be a long one, as in commenting upon Dr. Mapother's errors I shall endeavour to enlighten you upon some matters about which you are probably ignorant

In pursuing this course, I am fully aware that, as on former occasions, I lay myself open to the charge of being influenced

"Lancet and Medical Circular," 1860.

* See my letters, "Lancet," June 17, 1868. "Dublin Med. Press," July 2, 1868.

by personal spite and disappointment; and I know also, that a grumbler and complainer seldom gets the sympathy of any man. I must remind you that there are circumstances connected with these prizes that are peculiar, and that have an important bearing upon the welfare of the profession, and upon the advancement of science; for copies of them are to be sent to the Members of the Privy Council in England and Ireland, these numbering about 300, English and Irish, including the Ministers; and as I have shewn in my "Carmichael Essay," (p. 61,) there are 249 Examiners and 548 Teachers, to most of whom the book should be sent, the circulation is therefore select and extensive.

First, gentlemen, let me ask, how you can consistently expel a member of the profession for trading in foreign degrees, and refuse to enquire into the conduct of your own colleague, *who has neglected a sacred trust*, and one especially connected with *Medical education*, and the advancement of science. According to your own statements, as expressed in your report, "Dublin Medical Press," July 1st, 1868, (p.14,) before you expelled Dr. W. Macdonald, an M.D. of Edinburgh, for trading in foreign degrees, &c., by the casting vote of your President, Dr. Burrows, you, to use the words of the report, "deemed yourselves essentially a Court of Justice," and, according to the 29th section of the Act, if any registered Medical Practitioner shall be convicted in England or Ireland of any felony or misdemeanor, or in Scotland of any crime or offence, or shall after due enquiry be judged by the General Council to have been guilty of infamous conduct, in any professional respect, the General Council may, if they see fit, direct the registrar to erase the name of such Medical Practitioner from the Register. Without waiting to enquire into the strict meaning of the words "*misdemeanor*" or "*offence*," you will, I trust, pardon me, before I touch upon the subject of my present complaint, for bringing to your notice some matters which I think cannot be considered irrelevant to the present enquiry, and that cannot fail to interest the profession at large.

The London College of Physicians has encouraged the sale of these foreign degrees, by admitting men to their examinations who had bought them of wine-merchants and others. At nearly all our Corporations the majority of votes are obtained only by money, a system as inimical to the progress of science as water is to fire; but in connexion with the expulsion of men from the Register, let me quote the Laws of the Edinburgh College of Surgeons, represented by Dr. Andrew Wood. "A

Fellow, who used to pay £250. *without examination*," must not practise any secret remedy nor advertise; no Fellow shall deceive or be immoral, &c., (clause 14.) But the Members appear to have a *carte blanche*, "Medical Directory" (p. 716.) It is said in the report of Dr. Macdonald's expulsion, by the casting vote of your President, that "some plain speaking followed, and that for two hours the changes merrily rung on both sides." You will pardon me, I trust, for suggesting, gentlemen, that the name of no Doctor of Medicine of Edinburgh, nor of any other University, should be taken from the Register without his defence being made public by your Council. The College, in whose Halls you meet, advertises that it has the power of committing to Newgate!

Now, gentlemen, I come to the sum and substance of my charge against Mr. Hargrave, one of your Council, and the Representative of the Irish College of Surgeons. If you turn to the written report "Dublin Medical Press," May 6th, 1868, (p.410), you will find that Mr. Hargrave and the two other adjudicators stated, "*that they had most carefully read, studied, and examined the five Essays, and from the care and reflection which its author* (sic) *seems to have bestowed upon its composition, the generally correct views which it* (sic) *has enunciated, the useful suggestions he* (sic) *has given, and the apparent practicability in many instances of their being carried into account, &c., &c*," is the Essay we are most justified in recommending to the Council "for the honour of having awarded to it the First Prize."

"As regards the unsuccessful Essays, they are reported to be 'not written in accordance with the *enlightened spirit of the Testator's bequest*, nor even up to the present advanced position and *requirements of the profession.*'" The italics are mine.

Dr. Mapother, one of the Council, the gainer of the First Prize, evidently troubled with "qualms of conscience," offered to publish the Essays of any of the unsuccessful candidates. I at once accepted his offer, as did Dr. Dale of Plymouth, an M.D. of the University of London, whose printed Essay (verbatim) is now before me; it contains only eight errors, and Dr. Dale has kept much nearer to Mr. Carmichael's instructions than Dr. Mapother. But Dr. Mapother fights with unequal weapons; he puts it out of the reader's power to make a comparison, by destroying or keeping in the dark the three printed slips he sent to his three colleagues. Dr. Dale can, however, well afford to give him this advantage, but the question for you to consider is whether *Mr. Hargrave has neglected his trust, and whether he and his two colleagues have given a correct report?*

Dr. Mapother says in the preface, "*that he studiously endeavoured to keep the authorship unknown*," but in the story of the "Widow's Son" (p. 77), he has blazoned it forth as plainly as if he had written it in full. It is better known in Dublin than the contents of Mr. Carmichael's Will. Besides this, he constantly tells his colleagues, the Adjudicators, "that he lives in Dublin, 155, that of this city; our country; 42, extended to us; from these parts of the United Kingdom; 198, the University in this country; 9, a leader in Dublin; 175, Dublin students are not full readers; 42, the great Dr. Graves confesses; 123, while it must be allowed with Dr. Stokes; 215, we would insist, with Professor Stokes; 148, Sir D. Corrigan has said; 196, advocated by Sir D. Corrigan (an Irishman, by the way); this land of emigration; 9 the profession in Dublin; the faithful chronicle of its proceedings; the "Medical Press" (Dublin); 17, College of Surgeons; 17, Royal College of Surgeons; 52, earliest in Dublin; 109, in Ireland, however; 175, Dublin students; 80, the Dublin apothecary; 80, Dublin general practitioners; 85, in Dublin; 100, in Dublin, a fellow; 101, near Dublin; 105, in Ireland; 105, maxim of Dublin city; 111, the surgical society; 125, in Dublin; 126, the Dublin and continental hour; 127, in Dublin; 128, the poor of Dublin; 148, neglected in Dublin; 155, than Dublin; 162, the Royal College of Surgeons; 163, established in Dublin; 175, Dublin students; 195, no place in Dublin; 195, in Ireland; 196, the College of Surgeons; medical class in Dublin; 155, than Dublin; 148, neglected in Dublin; 149, in the College of Surgeons; 150, at the College of Surgeons; 48, Dublin coroners; 44, in Ireland; 159 public antipathy in Dublin; 162, the Royal College of Surgeons; 163, if established in Dublin; 163, in Trinity College; 195, degree in Ireland; 195, no place in Dublin; 201, the Surgical Society of Ireland; 205, so disorganized in Ireland; 217, as a physician and surgeon in Dublin; 47, only four scalds among Ireland's six and-a-half millions; 55, the Royal College of Surgeons in Ireland; 91, fashionably patronised in Dublin; 85, in Dublin; 80, the Dublin apothecary; 159, no school in connexion with the College of Surgeons; 45, Dublin people; 46, in Dublin; 52, death rates in Dublin, Fitzwilliam-square, Townsend-street; 163, through the streets of Dublin; 199, in Ireland, however; 111, Surgical Society; 131, in Dublin, hospitals have been blamed, &c.; 127, that in Dublin similar frauds exist, &c; 134, prostitution is marked by great effrontery in Dublin; 145, from the poor houses in Dublin; 153, the most popular of which issues from the "Dublin Press"; 150, that of the College of Surgeons; 160 analogous bodies in Dublin; 162, under the visitation of the Royal College of Surgeons; 178, the Royal College of Surgeons, Ireland; examiner's adopted."

The College of Surgeons frequently, as if the Dublin College were the only College of Surgeons; but hear this *placebo* to his own College, and to his three colleagues and adjudicators, page 199. "To avoid repetition it *seemed* most suitable that any remarks on the management of corporate bodies should be made specially of *one*, and that which it was most natural to select *was* the Irish College of Surgeons. Many of its rules, which could only be talked of in terms of praise, are not commented upon, and some others are censured (I fail to find the

censure), but it must not be interpreted from such criticisms that disrespect is intended."

In speaking of the importance of anatomy, Dr. Mapother says, "It is a common thing for those who get into practice by the touting and toadying plan to decry the demonstrator or teacher of anatomy. The examples of the Hunters, Baillie, Cooper, Brodie, Colles, Crampton, Cusack, Adams, Hargrave, Power, Mayne, and many others, might be readily adduced to abash such detractors." Of this list of Irishmen, whose names were never heard of out of Dublin as anatomists, three of them, Messrs. Adams, Colles, and Hargrave, were Dr. Mapother's colleagues on the Council, and one of them, Mr. Hargrave, was an adjudicator!

Gentlemen, I will bring this strange chapter to a climax by asking you a question. Dr. Mapother, page 64, in speaking of the Irish Poor Law Service, says, "The selection by the Committees is too often made on party and sectarian considerations, not on qualifications, and there have been lately instances of such electioneering tactics as increase and decrease of the numbers of the Committees just before the poll." Again, at page 138, on the selection of officers to Hospitals, Dr. Mapother says, "And as it is human to err, how can it be insured that favor or other interested motives will not influence electors to the exclusion of actual merit?" Under the head of prizes (p. 169) we read—"If it, the examination, was (*sic*) conducted altogether above suspicion, and if no extraneous circumstance, as the timidity of a candidate were (*sic*) allowed to interfere, would never occur (*sic*)."

But hear Dr. Mapother's abhorrence of any like unfairness on the part of his own College, and of his own colleagues, including of course himself, page 204. "*The objection that teachers, if examiners, favor their own pupils has little weight, as it presupposes want of conscience and want of respect for oaths or declarations, which never could be attributed to these gentlemen.*" Does the past history of this College warrant this assumption of purity? I refer you, gentlemen, to Mr. Carmichael's opinion, page 13, and to the "Lancet" from 1823 to 1840, and especially to the clever and cutting letters of "Erinensis." In a leading article in this journal, 1835, page 295, it is said of the Council, "The Pretorian bandits of Rome, the Janissaries of Constantinople never ruled subjects with more despotic sway."

My time will not be ill-spent in reminding you, a Council of Medical Education, of another adjudication, at the London College of Surgeons, the Triennial Prize, 1861, of Fifty

Guineas, to Dr. Harley, on what the Council called "Supra-renal Bodies," and Dr. Harley, in his greater ignorance, "Supra-renal Capsules." I showed, in my Essay, that these bodies, in the great majority of animals, are neither capsular nor supra-renal. I placed this matter before you in 1862, ("Lancet,") but it did not come within your province to administer even a gentle hint to your corporate colleagues, that those who administer justice, to quote your own words, who are essentially a "Court of Justice," should themselves observe the law. A few sentences will give the "pith and marrow" of this fit accompaniment to the Carmichael Prize award; but these adjudicators neither took money for adjudication nor for non-adjudication. The usual rules were to be observed: "A motto and sealed envelope; original facts, the chief points of excellence, and all recited cases, to be placed in an Appendix." Notwithstanding this, Dr. G. Harley, recommended by a friend, sat down, at the last moment, and copied all his former writings, published years before; "I'll try," being his supposed motto. On thirteen different occasions, he tells Mr. Quain, his colleague and adjudicator, that he is the author of the Essay. Of the 208 pages, 1 to 116, the part strictly confined to the subject of the Prize, only about twelve are new, about ninety are copied verbatim, and about fourteen nearly verbatim. From pages 117 to 190, the forty-four cases are in the body of the work, and not in the Appendix, as directed. All published before, as had been the eleven conclusions; and not a single experiment, as far as can be gathered from the Essay, nor conclusion drawn, since 1858. Addison's Disease (a disease as well established as that of Bright) repudiated, and a rat, in spirits, without renal bodies, which had been hawked about at various Societies, and which was killed at the age of three years "because it was blind and dying of old age!" The rat lives to the age of twelve or fifteen years. I asked the Council to grant me a Committee of Inquiry. I presented my Essay, and preparations containing several specimens of valves in the renal veins, never seen or described before, for the benefit of the Members, and for those, to use my own words, who might hereafter investigate this mysterious subject. These, too, they refused; and so anxious were they to get rid of them, that they sent them in a cab to my house. If Dr. Harley's Essay had been worthy of the Prize, I would have excused all law breaking and breaches of faith.

GRAMMAR AND COMPOSITION.

Dr. Mapother's three colleagues, as I have said, report ("Dublin Med. Press") that one motive for giving the prize to the essay bearing his motto, "*was the care and reflection which the author seems to have bestowed upon its composition.*" You must bear in mind that Dr. Mapother sent the printed essay in the form of slips to each of his three colleagues—a most unfair method of proceeding, as I believe, and that I quote from the corrected work published three months after the adjudication of the prize. The subject of grammar and composition is a dangerous one to touch upon, as but few books, especially those written by members of the medical profession, will bear very rigid analysis; and if this remark applies to printed books, what may be said of manuscript prize essays, many of which I have read, and which, like my own (copied by a child), are rarely fit for publication? No adjudicator could fairly object to a few orthographical and grammatical errors, especially when they were evidently the fault of a non-professional copyist. But, gentlemen, as a Council of Medical Education, you will surely agree with me, that the adjudicators should take care that solecisms and barbarisms—obscure composition—gross inaccuracies—and numerous grammatical errors, do not disgrace the library in which the Prize Essay is deposited, the adjudicators by whose decision it is placed there, and, I may add, the profession to which the subject relates. I beg of you to remember also, that this book has been sent broadcast among our aristocratic rulers. I knew a man in my own county (Suffolk) who was said to have swallowed Johnson's Dictionary, for he had such an abundance of words, but they unfortunately came out in the wrong place. I have said in Dr. Dale's book that there are about eight errors. In Dr. Mapother's, about 4,000 words are stripped of their capitals, that have them in the Directory, and in the students' number of the Journals—a matter of no great consequence—but Doctor, University, Bachelor of Medicine, State, Chancellor, Director-General, Surgeon-Major, Faculty, Inspector-General, and a great many others that should have capitals, are shorn of them. In the published book, three errors are corrected—"senior, for junior—for 5,000, 50,000—and to insert old, after centuries."

I have, for the sake of brevity, curtailed many of the sentences. The author, however, will gain nothing by a reference to the book. I have made the analysis myself, but a rigid grammarian could greatly multiply the examples of bad grammar and faulty composition.

First, let me point out the errors of spelling and accentuation. *The book, I presume has been sent to all of you, and you can readily follow me in these*, as in all other quotations, as the pages are given in succession. 4, acme; 8, honoris causa; 19, res augustæ; 25, 29, Pharmacopeia; 172, hæmoptysis; 29, Pharmacopeia; 57, axtra; 66, Ferguson; 81, huxters; 88, æsophageal; 92, ar; 179, sate; 92, leucorrhœa; 96, sanitoriums; 101, efectual; 102, Balliere; 124, Sysiphus; 131, hospital were; 137, physiciancies; 114, viva voce; 169, viva voce; 179, viva voce; 181, viva voce: 183, viva voce; 191, distil; 192, viva voce; 195, bona fide; 203, viva voce; 209, testimoniums; 212, criterium; 147, post mortems; 124, do; 192, licientiate; 120, Hotel Dieu, precis, precis; 48, alongside, alongside; 221, bedel, bedel; 173, unpractical; 94, homœoquacks; 46, medicins, in medicina and in chirurgia; 56, preventible; 56, preventible; scrivenery. Besides these, latinize, organize, commercialize, legalize, realize, characterize, recognize, and many others that our best writers spell with "z," are spelt wich "s" by Dr. Mapother.

I will now, gentlemen, ask your attention to the correctness of the report as to "careful composition." Page 109. However, far above all, importance is the knowledge of our own language, its grammar *and* composition *and* literature, and the art of composition, including *precis* writing (no accent,) the italics are mine; 109, for many a doctor (*sic*) fails in writing a grammatical letter to the Poor Law Guardians, for example; 106 moreover, the study in the proper spirit of the perfection of creative power, &c.; 109, the French and German languages are of infinite service to the educated Physician, for besides their scholarly value, the brilliant successes of the one nation, and the laborious investigation of the other with them become his own; 173, text-books should be remarkable for accuracy—yet conciseness—rather aphoristic than diffuse, so that the facts of each science may be expressed in as few words as possible, and the thoughts packed closely for the reflection of the student, and the explanatory efforts of the teacher will make them more full and explicit; 174, reading should not be merely receptive of the author's ideas, but reflecting and discriminating, and such kind of study is fortunately less tiresome than the mere stuffing of the memory; 113, the forcing on the student of several subjects represses the mental development of youths, &c.; 110, it would be well if the subject of logic was insisted on as a subject of preliminary, not as it was for a short time by the army service, during professional education; 108, Mr. Lowe's address was, indeed, remarkable, abounding in accurate logic (*sic*) caustic wit, and most apposite illustrations, which were not the less valuable, because they brought reflected light from different trains of thought; 199, the unfettered and unaided competition which it is the object of the "Wealth of Nations" to uphold, &c.; 7, at present in Dublin there are twenty-nine resident Fellows of the College of Physicians, ninety-six Fellows of the College of Surgeons, and fifty-four Apothecaries keeping open shops; 75, the Apothecaries' Act appointed Searchers of Shops, who might destroy improper medicines, and twelve Examiners to license Apothecaries; 133, the *latter* body (four named) recommended a registration of prostitutes for the use of the authorities, but not to be in any way accessible to the public."

The pages are now placed in succession, so that you can more readily follow me, and finish the sentences that are curtailed. Preface: "Three-fourths of the Essay was written; the Essay was lodged. The writer of this

Essay submits three printed proofs, having found that the scrivinery (*sic*) of as many copies would be nearly as expensive, and would produce the matter in a bulky and not very readily legible form for adjudication. Being aware that the adjudication would be made by three members of the Council only, I did not feel myself disqualified for the competition by the fact that I had the honour of a seat at that board; 2, that it (the human body) is more difficult than any other branch of knowledge; 3, some of whom became diverted to more favoured callings; 3, a large proportion, &c., have; 3, such a discovery, &c., which give; 3, small-minded rivals will be found to condemn such studies, or praise him who pursues them exclusively, for them, alleging that he does not care for practice; patients will be thus diminished; 3, every great one among them, &c. It may be that to these pursuits they sacrificed, &c.; 4, for while large fortunes are amassed by a few of the more eminent of the profession, the benevolence of all produces indifference to pecuniary considerations; 4, that they lived for their fellow-creatures; not themselves; 5, afflicted Irishmen with typhus upon them; 5, a huge focus of contagion to serve in which was certain infection, &c.; 5, six had previously the disease, and the remaining three now contracted it; 91, the principles of Surgery, &c., there are no quacks assuming this branch of the profession, &c.; 5, when the Reform Bill passes; 6, if additional evidence was needed; 7, the number have; 7, the boasting presumer is many a time, &c.; 8, in both upper and lower houses: 8, the main objections—is; 25, Licentiates of five years' standing might share the franchise with Fellows of the Colleges; 26, a hotel; 178, for letters testimonials; 9, in the United States; on the Continent likewise; 9, at night and for but a short period; 10, how different was the course, &c. 1841 exhibits 10 Acts of Parliament-making has; 10, by the public as well as 20,000 members; 153, mayhap a rival practitioner; 10, this argument if it have any weight applies; 11, while there is no instance of a member of the profession having been elevated to the Peerage for service in that calling; 11, and the works of those most wonderful writers of ancient times, Hippocrates, Galen, and Celsus, treat of all diseases and accidents alike; 14, and diseases, whether internal or external (or so called medical or surgical) depend on similar local or much more frequently constitutional causes; 14, by decrees of the Pope and resolution of the University, &c., as licensing bodies grew up through a reverence for the antiquated; 154, in serving the criminal department of the state justice, &c., 40, the late most wise regulation; 16, this latter body, (three named); 17, there was established as the result of the congress two great instruments of reform; 18, believing that such remedies were impracticable; 43, but must pour it (knowledge) into pupils; 18, so disorganised was the profession just now; 20, put forward recently by Mr. Carmichael, (1840); 143, capability at a kind of concursus; 20, not only to the professional but also the general press; 25, the publication of all practitioners; 25, an index by localities; 25, those who qualify subsequent to 1st January, 1859; 26, If this clause was compulsory instead of permissive; 26, the right of anybody to grant qualifications if their Examinations; 26, by the lordly and hon. (*sic*) friends of the quacks; 26, if anybody erase a name from their lists; 27, that in olden days; 27, the London College of Physicians have; 167, there are the school, &c.; 28, the possessor of an inferior title to assume any of the superior; 29, and to suppose that by dint of repetitions any one without talent or training would become skilled; 30, it is now being remembered; 30, a high place in the

Medical and Surgical professions; 31, race of life—that one can reach the summit; 152, the respiratory and circulating organs; 153, having so many subjects compressed into three years; 32, but higher still is the motive of exercising benevolence and charity towards fellow creatures; 33, many codes of what is termed Medical ethics; 34, the faculty of memory and judgment; 35, many a time; 35, men notoriously drunken in olden times; 35, Sir A. Cooper—hundreds of times; 35, any patient to leave without having satisfied them on the nature and proper treatment of their case; 36, should not expect as high a rate of payment in receiving fees as frequently as their seniors; 36, his only prospects then consist in the retirement of the senior, &c.; 36, fee of the consultant, remembering that charity urges them—he should; 36, the practice of a yearly sum; 36, or Medical or Surgical appliances and from intent to do harm; 38, the successful candidates then study, &c., most exhaustively—he is allowed; 38, great numbers of officers; 39, the rate of promotions; 39, till he had served over twenty years and has become; 40, that it will be found improved since the Crimean campaign; 41, candidates—he; 40, in the army and India examinations; 41, a fair recompense is given also by many of the lines of vessels; 43, we now proceed to discuss these important functions of Medical men; 43, salaries range—to *nil* in many; 43, although comprehensive are arranged at random; 43, infectious disease—their suppression; 44, or where the death returns appear excessive and the annual blue-book is invaluable; 43, Medical Officers—his duties; 44, the admittedly imperfect returns; 45, thirteen cases of cholera which had died; 45, a person whom—and who; 45, the certificate of death has for such reasons no weight, and neither the Chancellor nor the Bank of England will receive it; 45, should be sent direct to the Registrar; 46, supervisors just now to be proposed; 7, the proportions to the population, &c., was—in Paris it was; 46, the English Registrar-General sends some most valuable instructions for the registration of deaths and noting of cases to Medical Practitioners gratuitously; 47, with ten years intervals; 48, such difficult and capitally important investigations; 49, to see everybody which has met with sudden death; 49, no certainty of just conclusion is provided; 49, strive to break down their Medical brethren; 49, the counsel thus coached up; 50, Medical supervisors just now to be proposed; 50, should try the justice of the action; 52, duties, act as registrars. In case the cause of death was not natural he; Medical Officer, as witnesses, burial inspectors, certifying Surgeons; He. He, &c.; 52, Medical Officer of health, the functions of which; 53, a million and a half was; 53, in Ireland many graveyards are within towns, not decently arranged or protected and overcrowded; 53, deformities specific to this kind of labour; 54, neither injure the Company or the insurer; 55, so many have failed, &c., and so much of the money was spent; 153, made applicable to the aid, &c.; 56, two guineas for *post mortem*; 56, preventible (*sic*) disease and the cost of their interment is calculated; 57, through the fear of the established practitioner and the hopes of the new comers, such contracts are accepted; 58, one of those self important personages who feel that the honour of their presence; 61, salaries—it now averages; 61, average population to each district; 62, or to give aid to persons who meet with sudden illness, or accidental injuries, or who are drowned; 64, in the Army and Navy Medical department, the age is fixed at, &c.; 64, the officers—and that he; 65, appointment—relative to them; 65, medical men urge against these infirmaries; 66, 800 cubic feet was; 66, his duty—more time to them; 67, the

government have—that they; 67, the number of inmates range; 67, keep and care at home; 70, unless he possesses; 72, as a record of business and memorandum book; 74, must pass examinations, &c., as well as giving; 76, the apothecaries have been proved to advertise; 78, twelve pounds of arsenic was; 78, any person who alleges as their purpose; 80, the public has come to like; 82, many apothecaries would elect to become practitioners; 83, because they ambition medical practice; 189, care should be taken that they would not peach to others; 83, the rank of hospital surgeons; 86, members to coach up; 88, over £9,000. has; 89, the amount of good his intentions have wraught; 90, have stuck to their chest the paper upon which the prescription was written, or swallowed it; 91, by explicit reasonings and persuasion; 91, constantly afflicted these lands; 91, such a client (quackery); 91, the medical profession has—that they; 93, remedies merely addressed to symptoms; 93, this latter agent (three named); 93, which appear to ordinary mortals somewhat dissimilar, as well as most of the moral turpitude which disgraces humanity; 93, if every being—they would not; 94, or for those whom mechanical studies have muddled; 94, for homœquacks; 94, allopathic method—ignore them; 96, some of the sanitoriums; 97, one class of them have; 100, there is no set of impostors more to be feared than those; 100, can we boast of improvement this day; 100, the late epidemic cholera; 103, quackery—their subterfuges; 103, some of the smarter of the charlatans; 105, fit mode of caring them; 107, first to improve—and second; 112, the principles of drawing its merest rudiments; 112, an arts course and subsequent graduation at a University is; 180, many of our ranks; 115, the forcing on the student of several subjects represses the mental development of youths; 114, student is left desolate, &c., truly sheep without a shepherd; 115, should be most absolutely enforced by punishment, and perhaps rewards; 116, may be called on to his take place; 116, the loud travesty of the fashions which a few students affect; 116, an admirable adjunct, &c., if were added; 117, In Bartholomew's there is a competitive trial of athletic skill held annually and prizes awarded; 118, a period quite too short; 118, apprenticeship, &c., is not necessary since 1828; 118, a want of supervision which as before-stated, is very faulty; 68, at least two or three scales, according to circumstances of the district or town; 121, of all lectures the clinical can less afford to be read, or prosy—but is valueless if a superficial gossiping sketch; 121, study in hospital—in those institutions; 122, lectures are made to replace instead of aiding the observation of living patients; 122, shall be given, &c., and that schools should be; 122, more efficiently taught by the side of a patient than by any didactic address; 123, the Dublin Hospitals have been blamed as too small; 123, in large London and Continental Hospitals, with crowds of pupils such as Bartholomew's or Hotel Dieu; 123, attendants caught the contagion; 124, the antipathy to post mortems, &c., should be reasoned away; 117, considerable profit would result, and there would be no better way in which it should be employed; 126, the most ancient Bartholomew's; 126, the Dublin and Continental hour of nine; 130, in the proportion of 29 and 212; 130, and we may hear of unsuccessful cases with no great certainty; 131, and by watchful efforts to insure a free supply of air through the building, the destroyer of puerperal fever; 131, but those able to pay for attendance at home should be excluded, especially if it proved, &c.; 131, where the women are cared; 152, and during the parturient period the psychical state is morbidly impressionable; 175, their mental powers cannot fail to become cramped and

atrophied; 153, having so many subjects compressed into three years; 132, and for it is exposed in Smollett's novels; 132, should prescribe gratis for the poor; 133, if she be suffering from venereal; 133, the main difficulty, &c., is the want of hospital accommodation, and the expense of providing it, which have hitherto; 133, Lock Hospitals, such an institution; 136, such authorities as the President of the Colleges of Surgeons and Physicians; 136, the election to Medical Officerships; 137, the Governments in France and Austria; 137, the latter (three named); 137, this great institution, as well as all the educational establishments of Austria are; 137, when the offices were made permanent by an Act; 138, each candidate, &c., they are also; 138, to render then this method more unexceptionable; 139, the more so if good literary education is insisted on; 139, the relative value, &c., have; 140, by critically examining the authorities of his subject and contemporary literature; 143, scarcely one in a hundred of those fully informed who have; 143, candidates—means he possesses; 144, such examinations and conversation; 144, the practice of Medicine and Surgery require; 145, bodies on which inquests are held; 146, every bone and their important points; 147, specimens of abnormal and developmental varieties; 147, will not be recognised in post-mortems; 148, the means of preserving health and consequent happiness; 149, it was formerly the habit to perform many vivisections of even the higher animals; 149, in instances where benefit to science or mankind was likely to accrue; 149, ignorant homœopaths have perpetuated the error; 149, John Hunter found surgery little more than a mechanical art, from ignorance of the laws of the vital functions in health and disease; 150, the College of Physicians have; 152, Chemistry—a knowledge which the Student should master; 152, in order that the components shall combine and not mutually decompose, becoming detrimental or inert; 153, the crowd of subjects which force themselves; 158, a resumé of the business conducted by private teachers and to hospital practice; 157, (seventeen towns and cities with Medical Schools named) which no disinterested observer could deny was injurious to the cause of Medical Education; 157, demonstrators should be always appointed and removeable; 158, the schools of Trinity College and the College of Physicians, of the College of Surgeons, &c., must needs remain distinct; 160, the sum of £1. being lodged for each half; 160, where there are chronic men; 164, in 1850 it was exposed that; 163, at alternating hours; 164, each stating in their prospectus; 165, a Dean or Register, &c., with parents to whom they; 166, Museums or Libraries, without which Medical Schools are ludicrous; 166, the profits, &c., was; 166, the fees, &c., averages; 167, Professorships, &c., which the Students must attend; 168, Apothecaries, Hall—their laboratory; 170, but men are apt, as in other instances, to confound the abuse with the use, and then justly depreciate its exclusive adoption; 170, to relieve the maladies of the living patient; 170, a sound habit of thought, which other methods perform; 172, should be appointed to the proportion of three or four; 173, written in so diffuse and unpractical a manner; 174, to value the important and the unimportant; 174, the additions of questions, &c., affords. 175, although similar ones have crowded the journals before, and though they do not even increase medical statistics; 175, the silence and brightness of which helps study; 177, every subject—his attention to them; 178, this practical plan of examining the Royal College of Surgeons Irelands examiners adopted, &c., since 1858; 181, by the aids of sight, taste, and smell; 181, and might for some two years, or in special cases be passed at

the same time as the first; 184, that officer—the Poor Law Surgeon—they receive; 187, the University of Oxford was founded A.D., 872, grants the degrees of B.M. and D.M.; 188, *in Medicina* and *in Chirurgia;* 188, other branches of knowledge meet more encouragement; 188, Lord Longdale and Barrow; 188, five gentlemen received the M.B.; 188, it has no medical or other schools, nor museums, nor library; 188, Society of Apothecaries was—they obtained, they have deserted; it has no museum or library; 190, the combined University grants; 191, on the establishment of the University and King's Colleges, in London; 192, it confers the ranks of Fellow and Licentiate; 192, its library is rich in the older authors; 192, the Apothecaries' Hall was—the Company engage—it has; 192, the examination is most searching and demonstrative; 192, persons obtained—he learns; 192 (the fee having been said by high authority to average £150), the governing body is the Provost and Seven Senior Fellows, with a Senate which; 193, in the forty lectures of a summer professorship; 194, six places on the Senate according as they become vacant; 194, into two periods, each issuing in an examination; 194, fifteen persons were dubbed M.D.'s; 196, earnestly hope that Mr. Monsell's proposal shall be adopted; 197, all the force and caustic wit which that extraordinary man possesses; 198, it is a great error in the Queen's and Dublin Universities; 199, there is nothing dwarfing or repressive in the Catholic faith; 200, Irish College of Surgeons. If constituted—they were—this Council appoints—and thirteen professors, &c., as vacancies occurred; 201, a school of all branches of the medical science; 201, within the College walls there meets the "Surgical Society of Ireland"; 202, ordinances of Council, &c., subdivides; 203, all the subjects on which lectures, must be paid for, should be examined, or else they will be neglected; 203, the Examiners, in conducting the viva voce (*sic*) part, should speak aloud, and require candidates to do likewise; 203, half-a-guinea, being fee for each candidate; 203, he will either be too easy, or, what is more frequent, puts questions—have; 204, make the examination less solemn and unexceptionable; 204, it was the practice of professors at Dublin and Edinburgh examining candidates at their own houses; 205, a somewhat similar co-option of 300 fellows. The above, from page 199 to 208, applies to our College, that as I have shewn at page 18, it seemed according to Dr. Mapother, specially desirable to speak of, but no "disrespect" is intended! 208, by a third instead of the whole Council; 209, the United States is; 209, neither students or colleges; 209, midwifery testimoniums; 212, the public have no criterium; 213, any body not fulfilling their requirements; 214, such a course is pursued, &c., since 1685; 215, before those (examinations) in the present licensing bodies; 215, the titles of Q.C. or LL.D; 216, in old time; 218, the only bodies, &c., are the University of London; 220, was examined as to his having obtained the Oxford degree in 1827, before the Parliamentary Committee, 1834, as follows; 221, one of the most erudite and noble gentlemen who have; 222, a Royal Commission to investigate the Medical profession."

Notwithstanding, gentlemen, the statement of your colleague, Mr. Hargrave, and of Dr. Mapother's brother Councillors, I have pointed out, besides numerous errors of composition, more than 300 grammatical errors; and if I were disposed to be hypercritical, I could greatly extend the number.

I must, however, bring this chapter to a conclusion, by quoting a part of Dr. Mapother's "leave taking" of his colleagues:—"Whatever may be the result of the competition, he fervently trusts that the wise and benevolent intentions of the founder, may be realized by the diffusion and enforcement of these guiding principles. The world will not only have profited by the deeds of Carmichael while living, but will be enlightened by the doctrines he promulgated by means of posthumous (*sic*) generosity."

As to the guiding principles put forth by Mr. Carmichael, Dr. Mapother, as will be seen in the next chapter, has departed widely from them.

I must again remind you that the above are not extracts from the original printed slips sent by Dr. Mapother to each of his colleagues, but from the corrected Essay published three months after the prize had been awarded.

ERRORS AND MIS-STATEMENTS.

Let me briefly run through the strange vagaries and inexcusable mis-statements of the Author, and again, let me ask you whether the adjudicators, as stated in their written report, "carefully read, studied, examined and compared the five Essays"?

I will first draw your attention to the estimate formed by Dr. Mapother and the Irish College, of the general practitioners of England.

They are called shopkeepers, and are said to be paid according to the quantity of drugs they send, and a disgusting account, called a most faithful description, is given of these "nostrum vendors" in Tom Taylor's play, "An Unequal Match," spiced with the English town Apothecary, who sold Warren's Blacking, Pickles, Fish Sauces, &c., and attended midwifery for 2s. 6d., (68, 70, 74.) A "hash of his mother's tongue," is not included! In Ireland, the country practitioners do not sell medicine by retail, (68.) I have never met with an instance in England, in a country district, where a general practitioner has sold medicine. It is only in the populous parts of large towns and cities, where this is sometimes done. Dr. Mapother's ignorance upon this subject is inexcusable. "In cities, the general practitioner is forced to keep an open shop, and his assistants will require to study the prices of drugs more than the works of Watson, Fergusson, Quain, and Beale. The duties of the apprentice of fifty years ago included the sweeping of the surgery, lighting the fire, and assisting the groom, 70."

I scarcely need say that the general practitioners of England do not sell drugs, nor do they keep shops; that they are not generally paid now according to the quantity of medicine they send, and the groom story, fifty years ago, is equally imaginary. Dr. Mapother quotes exceptions, not rules, and is ignorant of the fact that the system of sending in long bills, and of charging for medicines, has to a great extent disappeared. John Bull's appetite for physic has fortunately diminished, and the drugging medico-apothecary system is almost extinct. The apprenticeship system, fifty years ago, was in some respects far preferable to the wandering life led by many of our Students at present. Formerly, a Student learnt practically the proper method of combining and preparing medicines; now, this important art is greatly neglected, especially in Ireland. The system, too, of taking half-educated boys at half-price, or at any price, to swell the number of the Students at the Schools, did not then exist. As quoted by Dr. Mapother, at page 165—"The doubling of one Medical Class in Dublin, within the last few years, is wholly due to the activity in such matters of its registrar." Such "touting" could not exist with a Faculty of Medicine.

UNIVERSITY OF ST. ANDREW'S.

Dr. Mapother, in his animus, says, "that the University of St. Andrew's was not deemed worthy of a separate representation on the Medical Council," forgetting Edinburgh, Aberdeen, and Glasgow. (189) "The only University that grants degrees without residence" (he forgets the University of London) held up to scorn with Aberdeen as a doctor-dubbing University, did much to bring the degree of M.D. into disrepute by giving it *without examination*; and until 1863, when the Scotch University Commission advised otherwise, without residence; ten gentlemen may be capped annually without residence."

Dr. Mapother might have added, thanks to the other Scotch Diploma shops, and their aristocratic backers. If we are to be saddled with eighteen licensing boards, why cripple this University where the examiners are not the teachers of those they examine, provided that a good searching examination be instituted, and the Graduates have proper control over the affairs of the University, the election of the University Court? The assertion that degrees have been given without examination is utterly untrue, and Dr. Mapother made this false statement when the franchise was in jeopardy.

I published my printed examination questions at this University in 1848, twenty-two years since; and as examinations were then conducted, it may be called a good practical examination.

In the first volume of the "Transactions of the St. Andrew's Medical Graduates' Association," page 12, the Registrar of the University writes:—

"There is no truth whatever that the degrees were got by purchase. During the war at the end of the last century and beginning of the present, degrees were granted to candidates obtaining appointments in the Army and Navy for instant duty on certificates from three or four London Physicians, &c., and then often were rejected from the certificate being unsatisfactory." In the next page it is shewn that at the Army and Navy Medical Departments Examinations, that whilst 32·52 per cent. of the Members of the London College of Surgeons, and 18·18 per cent. of the Edinburgh Graduates have been rejected, only 8·33 per cent of the Graduates of St. Andrew's have failed. The examination (written and verbal) now lasts three days. The late celebrated Dr. John Reid, in answer to some remarks of the late Sir W. Lawrence, 1845, (25 years since,) says, "The bitterest enemy could not have slandered your own College (Surgeons of London) more than you have done, for nearly one in five of your Members are rejected at this University."

The wholesale making of Doctors or of Physicians, with or without examination, is not to be commended; but the stringent and absurd laws in England and Ireland, to the disgrace of our legislature, have compelled men to go to Scotland for diplomas. The whole affair with most of the Corporations (not excluding St. Andrew's) has been one of money! money! money! Like the shoemaker, in the fable, "nothing like our parchment," has been their cry!

Dr. Mapother, who crows on the very dung-hill of corruption, might have found better examples "in our city." At his own College in 1844, £4,368. were taken for the sale of fellowships without examination, *and* 128 *of those who bought the fellowships and their votes, were not even Members of his College.* At the Dublin College of Physicians, during the years of grace 1859 and 1860, 78 were dubbed Physicians in the former year, and 174 during the latter, adding about £2,646. to the College coffers, and nearly all of these without examination. The London College of Surgeons, up to the present time, has pocketed more than £12,000. for the sale of fellowships and votes, without examination. At the London College of Physicians during these two years—1859 and 1860—212 were made Physicians during the former year, and 129 in the latter; giving to this Corporation the acceptable and much needed sum of £3,500. But the greatest cormorant of all in the non-examination diploma market, has been the Edinburgh College of Physicians. Dr. Alexander Wood and his colleagues have done "a roaring trade," to use a vulgar term, in Physician-making, and the title of Doctor is also thrown in for the money! Thus, from 1863 to 1868, the number of titles sold, with and without examination, is as follows—106, 248, 261, 271, 292, 403, making in all 1,638, and adding £17,199. to the College revenues! How much Dr. Alexander Wood and his colleagues pocketed, I am unable to divine, as no accounts are published. Sir D. Brewster, in his Parliamentary Evidence, 1843, Q 5655, said—"In the year 1845, when a rush was made to the University of St. Andrew's, in consequence of Mr. Wakley's Bill, 106 degrees were granted. The price of these amounted to £2,665. 18s.; the University received £540. 12s.; Dr. Reid, £222. 12s.; Mr. Connell, £166. 12s; the three Examiners, £333. 18s.; and the Government got for stamps, £1,060!

How truly are my lines, quoted at page 9, applicable to the Government, which takes money with equal avidity from the quack for his licence, and from the legitimate practitioner for his diploma. Since this period, a larger number of Doctors has been made, but a fair practical examination has been always given. As I have shewn, in the 2nd volume of the St. Andrew's Graduates' Association, page 17—

Of the 498 Graduates then belonging to the Association, their united diplomas amounted to 1469, exclusive of 85 Licentiates in Midwifery, the diplomas with the Midwifery Licences averaging more than three to each Graduate. The Graduates of this University can also boast of being the first and only University Graduates to publish an annual volume of Transactions; they have, moreover, taken the initiative respecting the general registration of disease, and for better laws respecting the responsibility of the insane. Let the recent execution of William Mobbs bear witness to the necessity of a change in the law.

If this University be framed on a liberal basis, and if the Graduates elect the governing body, it will "hold its own" against any University in the Kingdom. Men of mature age, and of practical knowledge, don't want to go to school again (as required by the University of Edinburgh), they are too glad to forget much of the rubbish they have learnt. I hope there is not a Graduate of this University, who, like Dr. Mapother (p. 145), will consider dissection the *third* great element in Medical and Surgical Education.

ARMY AND NAVY.

37 and 40. Young men are advised to enter the Army and Navy, under the persuasion that they are honourable services, when it is notorious that the best of our students shirk them, and that many in these services are dissatisfied. I heard Dr. Jacob, at the Dublin College of Surgeons, 1848, tell the students that they were badly treated, but he advised them "*to get all they could*"; at this time Assistant-Surgeons messed with the midshipmen. Who can wonder at the want of unanimity and *esprit de corps* when such advice as this is given? 37. Public Medical Services. 38. "It is then in respect to remuneration, rank, and retiring allowances, a service that any disinterested adviser should recommend for adoption for young Surgeons, if they do not grieve at the barriers to marriage and domesticity which it certainly presents."

In my own Essay, (page 45,) I say both services are very unpopular, and the best men in the profession avoid them. Quoting from the "Standard," January 25, 1868, I also mention that several ships were without Medical Officers; and at page 62, in analyzing the returns of the Medical Commissioners of the Navy, 1866, I shew that of nineteen candidates, most of whom had two diplomas, only three are described as good in all subjects; eleven passed, and eight were rejected; these nineteen candidates had no less than nineteen different degrees from various Corporate bodies! The chief reasons I have assigned for this deficiency in so-called qualified men are four; stuffing and grinding; want of uniformity in curricula, and in examination, deficiency of the tests they had previously undergone, and especially the absence of good men, from the unpopular nature of the service. Mr. Synan, July 4, 1867, in speaking in the House of Commons of the great unpopularity of these services said, "only inferior candidates presented themselves." Thus although the maximum mark was 3,400, the highest attained was only 1,097. The Editor of the "Medical Times and Gazette" has done good service in exposing the unsatisfactory condition of these departments; he says, 1866, p. 405, "that no less than 137 Surgeons have voluntarily left the Navy, and 117 the Army, since 1850, and that some of these had served for a long period."

In the "Pall Mall Gazette," Nov., 1866, it is stated, "for some few years it has been hardly possible to obtain any English students, and not many Scotch; the Irish schools have been swept freely." How fully does the following confirm the correctness of this opinion! I have analyzed the returns of the Army Medical Examinations, 1866, 1867, 1868, where the schools at which the candidates studied are generally given, and the following is the result—of 195 successful candidates, 21 were English, 23 Scotch, 135 Irish; Irish and Scotch 8, Irish and English 1, English and Scotch 6; Foreign and Colonial 3. For farther information I refer you to my conclusions in the Summary.

MEDICAL REFORM.

16. "The first agitator in this cause was Dr. Harrison, of Horncastle, 1807." I have not time for research, but Dr. Mapother has forgotten Dr. Mason Good, who, in 1796, in his "Hints on Medical Reform to the Corporation of Surgeons," exposed some of the delinquencies of this body, quoting from Mr. Gunning, who, eighty years before, said "that the examiners were heated with wine, and that the funds of the College were wasted in extravagance."

Before this time, and up to 1815 (as seen in Mr. Harrison's Pamphlet, 1810), the College of Physicians claimed the sole right of its members to practise medicine. Advertisements were put in several newspapers, and notice sent to all Magistrates of Quarter Sessions to this effect. The more recent "dodge" has been to send the list to be suspended in Chemist's shops, and to shut out all men from Hospitals and Dispensaries who have not bought its Diplomas. In 1810, probably, there were not more than 200 Fellows, Licentiates and Extra Licentiates belonging to this "time-honoured" institution, and these were the only persons licensed to practise medicine, forming about one in 100,000 to the population. How truly did the petitioners to the House of Commons speak of the "great sacrifice of life" due to this College; 16 and 159, the Apothecaries' Company, in 1815, licensed general practitioners in *conjunction* with the College of Surgeons. "There was no conjunction; they cordially hated each other, except at feeding time.

Both Colleges refused to have anything to do with the examination of the so-called general practitioner.

Dr. Mapother, page 11, speaks of the disorganized state into which the profession had fallen, and at page 16, he says, "to alter many undesirable conditions into which it had lapsed —— "

The fact is, there was no lapsing or falling, the farther we go back the worse the condition; the few governed the many, for their own selfish ends, and cared little about the public good or the advancement of science.

16, "the institution of the British Medical Association became a necessity."

The British Medical Association, (16), is confounded with the Provincial, which was not formed for a political purpose, and Mr. Carmichael and the Irish Association have the credit of originating a movement for the establishment of a Faculty of Medicine, which entirely belongs to the British, as you may see on referring to the "Lancet," Oct. 1836, p. 173. As I have said before, I was one of the first members of the British Medical Association; the Irish Association followed in our wake, and adopted our laws. Dr. Mapother says, the "Journal of the British Association" is edited with extreme ability (subs. £1. 1s.) At this time he was the paid Irish correspondent, and hence, probably, the refusal of the Editor to acknowledge even the receipt of my letters. (?)

LONGEVITY OF MEDICAL MEN.

But, gentlemen, there are matters connected with some of these erroneous statements of vital importance to Members of our profession.

Dr. Mapother, to use his own words, page 37, "to gladden the seniors and cause their successors to be patient," would entice men to enter the profession on the authority of Caspar, Neison and Guy, who have all, he says, testified to the longevity of Medical men, and all have shewn (what a strange statistical coincidence!) that 52·27, 61·13, and 58·52 are the average years of general Practitioners, Physicians, or Surgeons, and Army and Naval Officers." The fatality among Dr. Mapother's countrymen should have taught him better

than this. Dr. Cusack, in his "Parliamentary Evidence (Q. 2982)" said, "We found that 179 Irish Medical Practitioners, exclusive of pupils and Army Surgeons, died in the year 1847—about one practitioner in every fifteen—and 64½ per cent of the whole died of fever."

The Registrar-General's Returns entirely falsify Dr. Mapother's conclusion. In the eloquent address recently delivered at the St. Andrew's Graduates' Association, by the President, Dr. Richardson, "Transactions," vol. ii., page 32, says, "Up to fifty-five years of age, we, of all the human living world, present the shortest of existences. At 20 years we die at the rate of nearly five to four of the great community; at 45, as two to one and four-fifths." In the "London Medical Examiner and One Faculty Journal," 1852, vol. ii., page 172, in a paper I wrote on the longevity of Medical men, (?) that Drs. Caspar and Lombard, of Berlin and Mr. Chadwick in his Sanitary Report fully prove this: of 1,000 professors of the healing art, only 24 will reach the age of 70; 600 died before their 62nd year, whilst of persons leading a quiet life, the mortality is only 247. To use Dr. Caspar's words, "We are the sign-posts to health; can show the road to old age, but seldom tread it ourselves!" and yet Dr. Mapother, with the sanction of his colleagues of the Council, invites youths to enter the profession under this false assumption.

THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

"The London College of Surgeons of England, chartered 1800, supplementally 1822, 1843, 1852, and 1859," page 16, "established 1800." I find at this period there were 798 members. What a strange account is this?

The first company was incorporated in the reign of Edward IV., confirmed by Henry VII. The Charter was renewed by Henry VIII. Another Charter was obtained in the reign of James I. In 1745 the Surgeons were separated from the Barbers. In 1796 the Corporation became dissolved in consequence of a legal court being unattainable. In the following year (to quote from Mr. Lawrence) 1796, "a bill was nearly smuggled through Parliament, for it had passed the Commons and had been twice read in the Lords, when Lord Thurlow and others luckily discovered its iniquitous nature, and defeated it. It was elicited before the Committee that of the £80,000. paid in fees since 1745, £16,000. had been pocketed by the examiners. In 1800, George III. gave them what the wisdom of Parliament had denied," a Charter that enabled them to put money into their pockets in various ways, as Lecturers, Examiners, Councillors and Hospital Surgeons; they had nearly all bought their appointments by paying large apprenticeship fees to Hospital Surgeons. The lectures of good men, such as Brooks, Bennett, King and Dermott, were ignored by the Council, and members of the College were compelled to enter at the back door, and the Library and Museum were closed to them; to complete the picture, under the shew of liberality, Charters were obtained, 1843, 1844, enabling them to select Fellows; the selection depending chiefly on the absence of a medical diploma on the part of the elected, although 19-20ths of their practice was medical. In addition to this, all members who attained the respectable age of 40 might purchase their votes and fellowships for ten guineas, and by this sale of votes and titles, as I have said before, (page 30,) more than £12,000 have been received for the sale of votes and fellowships.

Can the reader believe that he is living in the nineteenth century? The accounts of this College, or rather outlines of the accounts, were first published in 1834. In 1850 I wrote to the Council for proper details, ("Medical Examiner," vol. i., p. 46,) as to how much the examiners received? How much was spent in dinners, &c.? I was informed by the Council, May 17, 1850, "that the published accounts contained all the information that they deemed it proper to publish." The money received by the examiners was published for the first time in 1865, and comparing the last five years up to 1869, with the first five years (1834 to 1839) the receipts have been £6,683. less. £2,896. 5s. 6d. less have been spent on the Museum, and £1,160. 7s. 10d. less on the Library. As shewn by Dr. Parkes at the Medical Council (March 5, 1870) during the last seven years, 1862 to 1868, a large decrease has taken place in the Diplomas granted by this College: in 1862 531, in 1868 only 404. So that the liberal policy recently adopted becomes a matter of necessity.

During these five years I find that the examiners have received £17,220., and the Council £1,376. 15s. The large sum of £189. 0s. 4d. has been spent in prizes, including Mr. Jackson's prize!

The receipts and expenditure in the 35 years (1834—1869) have been as follow. I avoid shillings and pence, but these are included in the sum total. Beginning with 1834 and ending in 1869: £12,254., £20,459., £29,039., £14,492., £20,662., £13,190., £15,185., £14,856., £15,734., £16,656., £13,536., £11,542., £10,605., £26,732., £10,816., £11,722., £9,623., £25,391., £14,823., £13,692., £13,334., £14,459., £12,784., £13,678., £19,687., £22,307., £13,894., £14,135., £12,410., £13,806., £12,085., £10,993., £10,409., £11,744., £10,852. The receipts and expenditure for the first decennial period to 1843, £172,762. 16s. 4d.; for the second to 1854, £180,792. 12s. 9d.; for the third to 1864, £150,008. 3s. 1d.; and for the half period to 1869, during which the accounts have been fully given, £48,086. 3s. The large expenditure—1835, 1836, 1838, 1847, 1851, 1859, 1860—was occasioned by the sale of stock, and by Government grants. The sum total is £562,149. 15s. 2d.: of this sum the examiners have probably pocketed about £140,000., although, as I said before, no accounts were published until 1865. The Museum has cost £88,916. 16s. 9d, taking the same decennial periods, £27,368. 5s. 4d., £25,449. 4s. 7d., £22,817. 2s. 1d.; and for the five years, £9,875. 15s. 3d. The Library for these 35 years has cost; the decennial periods £8,890. 18s. 1d., £5,567. 16s. 9d, £5,567. 18s. 9d., and for the last five years £3,104. 13s. 6d. The Library expenses always include the salary of the librarian.

It will be seen that although four additional sources of income have been added, (examination for Fellowship, Dentistry, Midwifery, and Medicine,) the College income has greatly fallen off. To use the words of the late Mr. Key, "The only way to make this body popular is to rest its claim of support on the attachment and esteem of its own members, by allowing each member a vote in the election of the Council."

In justice to this College it may be said, that it affords, by means of its Library and Museum, more advantages to its members than that of any other Corporation. The London College of Physicians has only recently opened its Library; but at most of the Universities, Colleges and Halls, the graduates pay their money, and like children at the peep-show, have no further interest in the concern. The London College of Surgeons opens its Library to all. When in Dublin in 1848, I could not be admitted to the

Library of the College of Surgeons unless I went with a member; and at the University of Edinburgh, although I had a letter from Professor Simpson, I was refused admittance to the Library. Such was, and probably still is, the custom of these liberal institutions. In Paris the Libraries were open to me, and I obtained Certificates of Lectures and Hospital attendance without fee, or payment of any kind.

Dr. Mapother, (p. 6,) says, "The Hunterian Museum was entrusted to the College without stipend, although £2,000. a year must be spent on its maintenance;" he omits to mention that £42,000. have been paid by the Government. As will be seen above, the expenditure for the last five years has not reached this amount. When this College has a more liberal basis—the Government should allow an annual sum for the support of the Museum.

21. "In 1858, by the establishment of your Council, Medicine for the first time became one profession. In my letter to you last year, I shewed that since 1858 no less than 759 students had one degree—chiefly that of the non-medical examination—at the London College of Surgeons." Medicine *one* profession! What a mockery is this. It has been more neglected than ever, for the "Medical Act, 1858," legalized all qualifications.

136. "Edinburgh University professors are said to be elected by the Town Council." The practice has long since been abolished.

145. "Dissection is the third great element in Medical and Surgical education." There is scarcely a man in the profession who will not admit that it is the first and essential element—the basis of all!

23. "The general practitioners are represented by Mr. Rumsey on the Medical Council." This is entirely an error; Mr. Rumsey disclaims all connexion with them. To quote from Dr. Mapother (avoiding the bad grammar), they are truly "sheep without a shepherd."

211. "3,000 Surgeons belong to the English College, without medical qualification." This error was propagated at your Council Board by Dr. A. Smith. I showed to you in my letter of last year that the number in 1867 was 2,173, and many of these had passed the Army or Navy Boards.

170. "A grinder is paid according to his success." Dr. Mapother is more likely to be correct on this subject than myself, but he is probably speaking of Dublin grinders. I understand that it is not so in England and Scotland.

125. "Hospitals built twenty years ago are termed dangerous for treating surgical accidents, and the demolition of those in which pyæmia has arisen is called for." How many hospitals in the United Kingdom would remain?

29. The British Pharmacopœia (*sic*) "that just issued surpasses any other ever compiled in other countries." 153. "The greatest boon the Medical Council has conferred." The first Pharmacopœia published by this Council was so imperfect, that Dr. Watson, when elected President of the College of Physicians, said "he was only expressing a general and deep-rooted opinion, that the work had occasioned great disappointment and perplexity, and that many of the changes that had been effected were not only injudicious, but highly dangerous. He would write his prescriptions in the old manner." By means of assistants, the present volume is greatly improved; but it is entirely undeserving the praise bestowed upon it by Dr. Mapother.

189. "At the examinations of the London College of Surgeons, dissections are prepared by students of various schools. Care should be taken that they would not peach to others about the parts they had prepared." Dr. Mapother should have known that this is impossible.

73. "The Pharmaceutical Society meanwhile (1867) acquired the right of educating and examining dispensing chemists." They had no such right; it is only very recently granted.

25. "Other physicians alone are fit judges of a practitioner's actions, and therefore it is that such need exists for the highest moral and charitable tone." Every man must be the best judge of his own actions.

173. "Books," we are told, "are often written in a diffuse and unpractical (*sic*) a manner. At one time it was a rule in medical ethics, never to publish during an author's lifetime." It would puzzle Dr. Mapother to give the date when such a rule was in existence; it is an entire myth. "In England the Coroners are paid a guinea and a half in every case." This statement is incorrect, the average is probably not 22s. per case in many places.

But I must bring these selections to a close. (I could greatly increase them.) At page 108 it is said, "That the roots of all technical terms are derived from the Greek." 13. "That the human body is the object of all the care of licensing bodies." (Greed would have been a better term!) 87. "That the meeting at Burlington House of separate sections of Societies at the same time, has been found most advantageous." 184. "That the students at the medical examinations at Cambridge, form an appreciative public." 150. "That the intermaxillary bone of most mammals is imitated in double hare-lip, and cleft palate." 27. "That before the Act of 1858, if a surgeon put M.D. after his name, he was to be considered as a physician, and could not recover." 30. "The uneducated had witnessed the fall of entire orchards before Newton developed the first law in physics from having seen one apple drop." 220. "That there are fifty-four degrees that qualify for practice."

SUGGESTIONS AND OPINIONS.

Dr. Mapother, page 136, suggests, "that the election to medical officerships of important public institutions might be effected by a system of nomination by such authorities as the President (*sic*) of the Colleges of Surgeons and Physicians; this would be most desirable and feasible." What a practical suggestion! Is this one of Mr. Carmichael's "Guiding principles?" What a substitute for the *concours!*

69. "If the system of general practitioners were established in Irish towns, the fees to persons of rental under £25. might be 5s., and 10s. above this rental. I scarcely need say that such fees cannot generally be obtained in London. Dr. Mapother might as well try to extract blood from the "Blarney stone." Patients must pay, to a great extent, according to their means, but in Ireland a large portion of the population who should pay small fees, are physicked by charity; these people are virtually paupers.

83. "If a supply of men cannot be had because they ambition (*sic*) medical practice, let the art of the Apothecary be handed over to females."

126. "The poor in hospital have better advice than their wealthy brethren, for they are attended by the most eminent men assiduously, as any want of

skill or care would be detected by colleagues or pupils." What a mythical conclusion is this. The investigation as to the comparative number of deaths in college hospitals, or in private practice, would tell a different tale, but I would not leave the estimate to be made by pupils or colleagues.

"At one time the Examiners at the Veterinary College were Sir A. Cooper, Sir B. Brodie, Sir C. Bell, and Drs. Babbington and Bright. No Court of examiners in modern or ancient times ever contained so many men whose names are immortal," and I may add that no Court of Examiners ever contained men so thoroughly ignorant of the subjects they had to examine in. To quote the remark of Mr. Fenwick in the Appendix to my Essay, "where human surgeons, ignorant of the anatomy and diseases of horses, are the examiners."

153. "It is much to be regretted that the examinations of bodies by Coroners do not take place in the medical schools, where the lecturer on medical jurisprudence and his class would learn much." Coroners do not examine bodies, and the circumstances attending such deaths are sufficiently painful to the relatives without such an exhibition as this.

51. "The office of Coroner should be subdivided, its legal *function* transferred to the stipendiary magistracy or constabulary officers, either without juries, as in Scotland, or with them; and those Coroners who are medical men would be eligible for the new office of Medical Supervisor." I believe the plan suggested by Dr. Mapother to be utterly impracticable, and if it could be carried out, it would be highly complicated and objectionable in many respects.

UNSUCCESSFUL ESSAYS—COMPARISON.

"Not written in accordance with the enlightened spirit of the Testator's bequest, nor even up to the present advanced position and requirements of the Profession."—*Report of Adjudicators.*

Gentlemen, I need only refer you to my plan of Medical Reform (which I forwarded to each of you), promulgated eighteen years since, for a falsification of this statement. It is, I fear, far beyond the advanced position of the profession, and the same remark applies to that of my present Essay, as seen in the summary.

Let me endeavour to make a fair comparison between the state of advancement of the two Essays, although the task is not an easy one, as it is difficult often to get at Dr. Mapother's meaning. Take the main and important point; the form of Medical Government and Examination. I advocate, as I have done for thirty-three years, a Representative Board or Faculty, elected by the various graduates or members of Universities, Colleges, and Halls in each of the three Kingdoms, which Faculty, Board, or Council, under the supervision of the Privy Council, is to regulate all matters relating to medical education, examination, registration, &c., so as to ensure a good preliminary examination, and one efficient, uniform, medico-chirurgical test for all. After this, let them take as many degrees and titles as they please. Dr. Mapother coquets with State Examinations and Colleges. The corporate clog of "our college" is too heavy for him.

215. Dr. Mapother would have the state (*sic*) examinations solely under the control of the profession, but by what means this is to be effected, he does not say. Gentlemen, as you know, a State Examination, over which the profession has entire control, is an utter absurdity! So much for practical suggestions.

At page 81. "The public desiring it, the College of Physicians, and the College of Surgeons are to examine the general practitioner." How consistent! The public are utterly and entirely ignorant about the matter. At page 215. The state examination (*sic*) it might be better to enforce before those of the present licensing bodies. Then there is to be a higher grade in medical titles. At page 21, it is said, "the only way of obtaining anything approaching to equality of examination is to compel everyone, before or after obtaining any diploma or degree, to submit to another trial precisely similar for all, and held in each metropolis (*sic*) of the United Kingdom." 214. "The measure should not be retrospective, and only applicable to those candidates who should present themselves two years hence for licenses." What a boon this for anatomical teachers, stuffers, and grinders! 83. "All present Apothecaries should be allowed to continue to act as before, or, if they desire it, to choose between the practice of pharmacy or that of medicine, or to postpone their selection for five years." The Irish Apothecaries now number about 1,000, and, as I have shewn at page 41, the number of Medical Practitioners to the population is miserably defective. Should these Irish Apothecaries desert the practice of medicine (not a very likely occurrence) the Irish will be as badly off for medical practitioners as the English were in the time of Sydenham.

114. "For the matriculation examination the Examiners might be sent into the principal towns, and 216, the Examiners of the three Boards are to interchange occasionally."

Although my Essay "is behind the present advanced position and requirements of the profession," I would enforce a good preliminary examination, B.A., and would not allow any student to pass his final examination until he had been six years acquiring professional knowledge. Dr. Mapother, under certain circumstances, would reduce the term to three years; page 119, he says, "Considering there is often a pressing want of officers for the public service, (why?) nine months during each of the three years need not be rigorously enforced." This is a fit subject for the Society for Suppression of Cruelty to Animals. A boy to be let loose on our soldiers and sailors after three years' study! (less than 27 months.) A horse Doctor in France, as seen in my Appendix, is required to study nearly double the time!

I insist that five subjects, now thought unnecessary by the Medical Council, Botany, Histology, Zoology, Hygiene, Midwifery and the Diseases of Women and Children, should form part of every student's examination. Dr. Mapother, page 183, makes no mention of Zoology, Hygiene, Histology, or of the Diseases of Women and Children, and yet my Essay is reported by Mr. Hargrave to be behind the present advanced position and requirements of the profession! How, Gentlemen, moreover can a State Examination square with the Corporate Examination of the two Colleges? And to make confusion "doubly confounded," at page 214, "the Medical relief of the country is to be given by an organized body of officers, somewhat similar to the constabulary system. The conduct and selection of Examiners to be

vested in the Medical Council." I again ask you, Gentlemen, was this an honest and true report? My plan is beyond the spirit of the age, but it is consistent.

LEGAL ELASTICITY OF CORPORATE BODIES.

In the "Dublin Medical Press" (June 9, 1869) Report of the College Council, it is said "that Mr. Lawson gave it as his opinion, that Dr. Mapother, one of the Council, might receive the prize;" but the Council omit to add, that Mr. Lawson said also, "that the adjudicators might be fairly remunerated." This Journal is the property of Dr. Jacob, (editor and proprietor) one of the Council of the Irish College, and, therefore, it must be, I presume, correct. In the same Journal (February 24, 1869, p. 171) it is stated that the Master of the Rolls, in opposition to Mr. Lawson, has decided that the award must be made without remuneration. Why is this omitted from the recent College Report? I hope that Mr. Hargrave will tell you what has become of the interest of the £3,000. since 1849.

Mr. C. Hawkins told your Council "that the London College of Surgeons had recently ascertained, contrary to an opinion formally given, that they could examine in medicine;" although the late Mr. Joseph Green said, in his Parliamentary evidence, "that they would as soon think of examining in Theology."* The London College of Physicians had, until very recently, such a horror of Surgery that a Member of a College of Surgeons, before joining this College, was obliged to get absolution by the payment of ten guineas. I find that during the years 1834 and 1836, £73. were received by the College of Surgeons for these surgical absolutions! Dr. Alexander Wood, in his Parliamentary evidence on the Pharmacy Bill, 1852, said "the drugs were greatly adulterated in Edinburgh. (Q 2005) Could not complain of those who adulterated their drugs, because the College of Physicians might have been liable to an action for damages." "What course did you take when you found adulterated drugs? None; because we thought our powers limited to a small portion of Edinburgh; but since that time *we have had a legal opinion that they are not.*" (Q. 2018.) Dr. Wood goes on to say, "they do not exercise the power because they think that free competition does more to secure good articles than arbitrary enactments." So, in a matter of life and death, the inhabitants of Edinburgh are left to free competition in drugs (adulteration and cheapness); and the same remark applies to the United Kingdom. A man possessing less sanity than Dr. Wood pretends to, might think that free competition and adulteration would *necessarily* go together, and that it is a disgrace to the Government to allow such a tampering with human life. In France, a person who adulterates milk, for sale, is imprisoned. When will our legislators begin at the right end—cleanse this Augean stable? But let me return to the lawyers, and to legal opinions. In 1859 a legal opinion was obtained, stating "that the Dublin College might be compelled, by law, to adjudicate." "Mr. Lawson ('Times,' January, 1, 1869)

* In this day's "Times," (April 6th) is a glorious example of the uncertainty of the law. Can a man cheat his creditors in the Royal Palace at Hampton Court with impunity? Can his goods and chattels be distrained there? In the Court of Exchequer, Baron Martin and Baron Bramwell differed from the Lord Chief Baron. In the Exchequer Chamber, Justices Lush, Mellor, and Blackburn supported the decision, whilst Justices Keating, Smith, and Willes, were of an opposite opinion. At the Lords' Appeal, the Lord Chancellor would reverse the judgment of the Exchequer Chamber, but Lords Chelmsford and Colonsay were in favor of affirming it. *After-note.*

and Mr. Justice Keogh, on the question of the Belfast Journals, were opposed to the Chief Justice and to Mr. Justice Morris, so that there was no rule and no costs."

But, gentlemen, is there one of you who can believe, that in a legal point of view Dr. Mapother was entitled to this prize? The other aspect I have shewn in its proper light. I have so lifted the veil as to exhibit this extraordinary production in its true colours. If Dr. Mapother left the room when the adjudicators were appointed, how could he fulfil his duty as a councillor? According to the Will, the award is to be made by the Council; if all are captains, who is to row the boat? If Dr. Mapother, to use the explanation of the "Dublin Medical Press," might compete in his "private capacity," all the councillors might go in for a little stroke of *private* business, and aim as Dr. Mapother did at the £400. and the £200.

What should we think, if one of the Council of the London College of Surgeons competed for a Jacksonian Prize? Sir Astley Cooper has shut out his prize from all nepotic influence, by debarring officers of Guy's and St. Thomas's Hospitals, or those related to them, from becoming candidates. What a condemnation is this of our whole system?

Gentlemen, the Carmichael Prizes are virtually defunct. Who can wonder, that in a city where hospital appointments are bought like oxen in the market, and where Scotch and English degrees are nearly as numerous as the Irish,* as I have shewn in both my Carmichael Essays, and I especially directed the attention of the Irish College to the fact, where, as in your own Council, the unrepresented many are governed by the aristocratic, and nearly self-elected few—that men must be paid for their scientific services? In France, where the prizes are twenty times more numerous, the adjudicators, irrespective of reward, give a clear and instructive report.

* Dr. Farkes has recently told the Medical Council, (March 5, 1870,) "That 18 per cent. of the Irish graduate in Scotland; and that at the last Examination of the Army Board, of twenty-two Irishmen, six graduated in Edinburgh." What an important piece of information is this! How novel too! Twenty years since, in the "London Medical Examiner," vol. i., p. 49, 1850, I asked, why should the majority of the Irish obtain their degrees from Scotland? I find, of the 70 practitioners in Cork, there are 29 Irish diplomas, 29 English, and 41 Scotch. In addition to these, there are 30 with the diploma of the Dublin Apothecaries' Company. In Belfast, 67 practitioners; among these are 34 Irish diplomas (21 of these Apothecaries), 8 English, and 69 Scotch. In my Carmichael Essay, 1860, I shewed (p. 51, and "Lancet," October, 1859,) that of 1,825 Irish practitioners, ("Directory," 1856,) there were 961 Scotch, and 477 English diplomas; 236 with Scotch diplomas only, and 161 with the degree of the English College of Surgeons only. That at this period, 1859, the proportion of Medical practitioners to the population was, in England, 1 to 1,563; in Scotland, 1 to 1,665; in Ireland, only 1 to 3,258. At this time there was not one Scotchman with an Irish diploma! I said, in both of my Essays, that, if I should gain the Prize, these important facts should be made known to the members assembled at the Dublin College. What can shew more fully (as directed by Mr. Carmichael) the rottenness of the present system; the damaging influence of cliqueism, nepotism, and the sale of Hospital appointments? This, and some other matters have been added to the letter, but nothing that in the slightest degree affects the subject of my request.

I refer you, gentlemen, to Mr. Carmichael's speeches, and I ask you, whether I may not with truth exclaim, *Sic transit gloria Carmichaeli?*

I now ask you—as you are, to quote your own words again, "essentially a Court of Justice"—to form a Committee to investigate the conduct of Mr. Hargrave, and of his colleagues, in this matter of education—to measure out the same amount of justice to one of your own body as to a commoner. The question is far more important than the sale of Foreign degrees; it is one of life and death.

I again repeat, that I bring this subject forward solely on public grounds, and under the belief that the exposure will tend to forward that which I have so long advocated, a representative Faculty of Medicine in each of the three kingdoms. Waiting your reply,

I am, Gentlemen,
Your obedient servant,
EDWARDS CRISP.

29, *Beaufort Street, Chelsea,*
July 3, 1869.

On the 20th of July, the Registrar informed me "that the reply of the Council must be the same as that given to my previous letter, *on the same subject*," but the reader will see, on turning to page 15, that the subject was entirely different. The concluding part of my letter to the Medical Council, at their last meeting, March 5th, 1870, will better explain the matter. I omit the first part, as it is only a brief repetition of statements already given.

Gentlemen, your statement that the subject is the same as last year is quite erroneous; I said at the beginning of my letter (page 15) *that the question is one of an entirely different kind.* The subjects are distinct and well defined—1st, non-adjudication; 2nd, adjudication to an adjudicator; 3rd, a false report.

We are told, gentlemen, by one of the Council of this College (Dr. Jacob, the editor and proprietor of the "Dublin Medical Press," February 24th, 1869, page 171,) that in 1863 "no less than thirteen essays were sent in for these prizes." All were pronounced unworthy! Can any one of you believe that of these thirteen essays, all were inferior to that of Dr. Mapother, which Mr. Hargrave and his colleagues so warmly commended. I have not done with the Carmichael Prizes. I have yet a fourth subject to bring before you. In the 5th volume of your Minutes, 1867, page 170. Dr. Aquila Smith reports of the Irish College of Surgeons, "that when the four Candidates had been examined by the four Examiners, the latter handed in their voting papers to the Senior Examiner. The vote was 'yes' or 'no;' and in case of an equality of votes, the Candidate was passed. No conference took place before the voting papers were handed in." If you have the power to issue recommendations to this College that such a method of examination should not be persisted in, have you not also the power to enter your protest against the mode of adjudication of this, the first public Medical Prize awarded in Ireland, and one, too, on Medical Education, over which it is your province to preside? I shall do myself the pleasure of placing in the hands of each of you my letter of last year, in a printed form. In the mean time, as your Committee mistook the nature of my communication, I ask you to reconsider the subject.

I am, Gentlemen, yours obediently,
29, *Beaufort Street, Chelsea,* EDWARDS CRISP.
February 23*rd*, 1870.

Dr. F. Hawkins, the Registrar, replied March 7th, 1870, that the above letter had been "submitted to the Council," but that it did not fall within its province to interfere. On asking if my communication had been read, Dr. Hawkins informed me by letter "that it had not."

There is one circumstance connected with these letters to the Council, that must not be omitted. Mr. Hargrave, instead of courting enquiry, ("Dublin Medical Press," July 8th, 1868, p. 45) "rose to move that it was not within the province of the Council to give its opinion thereon."

AUTHOR'S EXPLANATION.

I have never stated that my Essay deserved the Prize, but I at once, as mentioned at page 17, accepted Dr. Mapother's challenge, believing that as a councillor and adjudicator (page 14) he could not legally be a recipient, and knowing also that the report respecting "enlightenment and requirements of the profession" was a false one. "The care and reflection bestowed upon the composition" I was at that time in total ignorance of. I, moreover thought, to copy from my letter to Dr. Mapother, May 6, 1868, that the publication of my Essay (although hastily written and carelessly copied) might benefit the cause of Medical Reform, by adding a feeble light to his corporate blaze, and as he was not entitled to the Prize, and aimed at £400. instead of £200., the sum advertized, ("Dublin Medical Press," May 6, 1868, page 410,) I had no compunction in a pecuniary point of view.

I will not nose tire the reader with the correspondence, but from the first I insisted, as one condition of publication, that I should see one of the original slips, without which the "highest Court of Appeal," to use Dr. Mapother's own words, could not fairly decide. The challenge without this became mere bunkum. I could get no answer to my request until October 9th, Dr. Mapother, however, telling me "that he would oppose no obstacle." I had no answer to my question, "yes or no?" until October 11th, 1868. "I will not send my slips, as they belong to the College of Surgeons, who have already refused them to you." Can the reader believe that the College could legally claim *three* original Essays? and if so, let him ask why they were kept in the dark? I offered to go to Dublin to see one copy. At the London College of Surgeons, and at other places, original Prize Essays are not allowed

to be taken from the library. The conditions were, a "preface, (as in Dr. Mapother's book,) all words to be published as spelt, doubtful errors excepted, no alterations to be made, and the manuscript not to be seen by me until after the publication of the Essay; all copies taken by myself to be paid for." I agreed to take fifty copies; but without an explanatory preface, and with the absence especially of the undermentioned explanatory sentence, to say nothing of the omission of side notes and capitals, the reader will not be surprised that I declined to fulfil my promise, although "Printed for the Author" is on the title-page. I agreed to leave the matter in dispute to any two gentlemen in Dublin, but this Dr. Mapother declined.

My Essay is published and sold by Dr. Mapother *against my protest to himself, the printer, and publisher* (Messrs. Fannin & Co.,) with a falsehood on the back of the title-page: "The Printer feels called on to announce that according to directions of Dr. Mapother, the manuscript *has been closely followed*. The historical part is crossed out as in the original manuscript." Notwithstanding this statement, more than 300 words are deprived of their capitals (many of them essential), and in several places, apparently to destroy the uniformity; the omission of a few capitals by the copyist is no excuse for this wholesale desertion. 71 side notes, placed for the purpose of directing the reader's attention to certain passages, omitted, and the following *important explanatory sentence* purposely left out, although it was printed by Dr. Mapother. "Again, table of contents, introduction, importance of glancing at the past history of the profession for the better understanding of the subject, Colleges of Physicians, Surgeons, Apothecaries, Co, Universities, Annals of the College of Physicians, strange disclosures, vulgar invasions, imprisonment, fines, rejections. Sarah Gamp. See heading to pages; *not time to complete this; many of the numbers relating to the analysis of the register to be filled in.*" If this paragraph had been published, it would have farther convinced the reader that the Essay *was sent in in an unfinished and uncorrected state;* that *I had not even time to fill up some of the vacant spaces, and to re-peruse the Essay.* I only offer this as an excuse for the errors. It is the duty of all candidates for prizes to see that their Essays are sent in in a proper condition.

Fortunately I have this saving clause, which Dr. Mapother was obliged to print at the commencement of the Essay. *The unprinted part (two pages cut from books), of this Essay is copied by a child, so that some mistakes may have escaped the author's notice.*

Let me now point out the errors of the copyist, a child under 12 years of age, who writes a more legible hand than her father.

"Warburton, Cæsar (*bis*), Graylaus (*bis*), Wackley, Hofman, Laurence (*bis*), Earle Derby, Syne, compulsion, mention, independant (*ter.*), inconnected, monopoly, medal (for medical), statue book, aristocarcy, govenors, goverment, characters for character, licentiates (*ter*), passes, said omitted, the for they, arbitary, exagerated, comittee (four times), commissioners, moderate, of omitted, artifical, preliminary (*bis*), probibility, exegarated, comparitively, physcians, Regi-lar, haff, othalmiscope, omni ignotum, preventitive, collegate, banded, enlightment, compulsary (*bis*), imaginary, stremously, wiggs for whigs, doube for double, representatives, unchechled, competion, government, laziness, epeaulette, Chancelor (*bis*), Lying Inn (*bis*), receiving, 1860 for 1867, peddlary, Lichfields (without s), sacraficed, corporals (for corporate 37,) Pharmacopia, colliagate, de for du, inquistaque for indigestaque, their for there, twentieth for twentieths, equaled, her for Her, Halls, omitted, ensue for ensure, incongrous, *semestricelles*, examinations for examiners, *preuve* for preuves, morality for mortality, contaigous."

Words that are spelt differently by different authorities, such as licence, practice, are omitted. I could notice many of these in Dr. Mapother's Essay, (page 22.) Frequently

I have when writing hastily, omitted the capital when Irish, English, and Scotch are used as adjectives, as Irish student, *e. g.* This is entirely my mistake, but I think the sooner the French and German plan is adopted the better. The printer's errors are: (the numbers indicate the pages.) 6, scercerly for scarcely; 13, Burrowes for Burrows; 15, Laurence, Lefevres, and conge, without accent. Inverted commas omitted pages 11, 18. 21, claptrap for claptraps. 26, omitted 50 and 49, fr 7 times instead of fs. 33, el ct for elect; 34, examinatiome for examinations; 25, gratuates for graduates; 62, discoveres for discovers; 60, practitionazes; 28, compulsion; 76, counter practice; 22, ab ses; 42, enir ly; 18, the for they. 62, page 17 left out; 58, Pharmacopœia; 15, angustæ; inoculabitlié for bilite, £80,00. instead of £4,000. (£ the sum of £40,000.) before stated.

It will be seen that the great majority of the above are childish mistakes from careless writing, that most men would feel ashamed to notice; and nearly all the words are spelt correctly in other places. I have however this advantage over Dr. Mapother—the Essay scarcely contains a grammatical error, or error of composition; whereas, if the reader will turn to pages 22 to 27 of this Pamphlet, he will find more than 300 errors of grammar and composition, besides errors of spelling and accentuation, p. 22, and the mis-statements, pages 28 to 37. As my book has been published and sold by Dr. Mapother, against my protest, without preface, (notwithstanding the alterations and omissions pointed out above) I am obliged to offer this explanation. As I have said before, *I only object to adjudications and examinations when they are illegally and unfairly conducted;* and therefore, I have abstained from reading the Essay of Dr. Ashe, which gained the second prize, which, I need not say, is reported to be far superior to that of Dr. Mapother. I direct the reader's attention to Dr. Dale's Essay, and to the letter of Dr. E. Lee, "Dublin Press," June 24th, 1868.

SUMMARY OF DR. CRISP'S CARMICHAEL ESSAY ON MEDICAL REFORM AND MEDICAL EDUCATION, 1867.

SUGGESTIONS AND CONCLUSIONS AS DIRECTED BY MR. CARMICHAEL, UNDER THE THREE HEADS.

That the Medical Profession in the United Kingdom, in the Army, Navy, and in the Colonies, is in a most unsatisfactory and disgraceful state, owing to the number of antagonistic licensing bodies that require different curricula and adopt different modes of examination.

That the Medical Registration Act, 1858, although it has in some respects tended to produce greater uniformity as regards education and examination, has, by placing these Corporations on a firmer basis by the licensing of diplomas of all kinds (many of which before did not qualify for practice), been positively injurious, by encouraging the registration and increase of half-qualified men and incompetent practitioners.

That since the passing of this Act, 1858 (for which the profession has paid about †£40,000.), no less than 759 men have been placed on the Register with one qualification.

That more than one-fourth of the practitioners in the United Kingdom are practising with only one diploma; more than 2,000 with the non-medical diploma of the College of Surgeons of England; and more than 600 with the non-surgical diploma of the London Apothecaries' Company. The remainder, holding single diplomas, are generally but inadequately qualified.

† Annual income to 1867 see p. 18.

That in the Army* there are 809 English diplomas, 916 Scotch, and 531 Irish. With English and Irish diplomas, 46; English and Scotch, 138; Scotch and Irish, 62.

That the number of Surgeons in the Army with one qualification is 395, whilst those in the Navy amount to 186. Of these, 195 are members of the College of Surgeons of England only. That out of those practising in the Colonies, the Packet and other services, there are 100 with one qualification only.

That there are more than 300 graduates of Edinburgh with this degree only, and that the greater number of these Edinburgh graduates reside out of Scotland. That the graduates of St. Andrew's amount to more than 1,500; a very few of these have a single degree; and that the graduates of this University possess a larger number of medico-chirurgical diplomas than those belonging to any other University in the United Kingdom (see page 31).

That more than nineteen-twentieths of the above-named practitioners have no voice in the management of their own affairs, or a vote in the Corporate body to which they belong.

That the vast majority of votes, when allowed, as at all the Colleges of Physicians, the College of Surgeons, (in the majority of instances,) the Edinburgh College of Surgeons, and the Faculty of Physicians and Surgeons at Glasgow, are bought by the payment of sums varying from ten to fifty guineas; in other examples the affairs of the Corporation are governed by a small self-elected clique, that have an interest in the sale of the diplomas and in the division of profits.

That the great body of the profession, ninety-nine in a hundred, although they have been praying for many years for a representative form of government, have had no voice in the election of the Medical Council; and that in this Council the general practitioners of the United Kingdom are scarcely represented.

That this Council is composed almost exclusively of men who are connected with the Corporations, and have a direct interest in continuing the system of self-election and irresponsible government in these Corporations, that the great majority of the members of the profession have so long protested against; and that the President of this Council and the Secretary in their Parliamentary evidence, both objected to a general system of medical registration.

That the Council is composed of eight Englishmen, nine or more Scotchmen, and seven Irishmen; the Scotch, in proportion to the population, forming about 1 in 333,333, the Irish 1 in 857,142, and the English 1 in 2½ millions!

That more than half of the members of this Council have only one medical or one surgical qualification.

* In addition, in the army, two or more diplomas; English, 179; Irish, 80; Scotch, 204; English and Scotch, 131; English and Irish, 47; Scotch and Irish, 62. Navy: one degree English (R.C.S.E.), 89; Irish, 34; Scotch, 63. Two or more diplomas: English, 47; Irish, 17; Scotch, 36; English and Scotch, 52; English and Irish, 21; Scotch and Irish, 20. Of the 2,113 army diplomas, the English bear about the proportion of 1 in 23,550 to the population; the Irish, 1 in 1,200; and the Scotch, 1 in 333. Register, 1867.

It must be remembered that these gentlemen have also passed the Army and Navy Boards. *After-notes*, 1867.

That in 1867, in the United Kingdom, 929 students were registered; for England 459, for Ireland 212, and for Scotland 258; and the teachers and examiners amount to 792.*

That the annual Prizes at the Academy of Medicine and the Academy of Sciences of Paris, and at other institutions, amount to more than £8,000. yearly; those in the United Kingdom have not equalled £150. a-year.

That in the Houses of Parliament the medical profession is represented by only two† medical practitioners, whilst both Houses are crowded with members of the legal profession; and the Church, directly in the upper House, and indirectly in the lower, has a numerous staff of interested advocates.

That in the legal profession (and the same may be said of the Church) the rewards, pensions, and salaries, amount to an enormous sum yearly (£785,818.), whilst to the members of the medical profession is meted out a miserable pittance.

That the only effectual method of correcting this incongruous state of things is to establish a Faculty of Medicine in each of the three Kingdoms, the Councillors of which Faculty shall be elected by the whole profession, and be paid by the State.

That this Council shall have the power of selecting examiners in medicine, surgery, pharmacy, and other branches of medical science, from the various Universities, Colleges of Physicians, Surgeons, and Apothecaries' Companies, and for the degree in Arts, from any part of Her Majesty's dominions.

That after a certain time all who practise medicine and surgery shall take the degree of Bachelor of Arts in the above Faculty before they commence their medical studies.

That all who enter the medical profession shall undergo two examinations—one in medicine and its collateral branches, the other in surgery as regulated by the Council of the Faculty; that all shall take the degree of Licentiate of Medicine and Surgery, which shall alone qualify them to be on the Register.

That these examinations shall be made as practical as possible, by placing drugs and chemicals before the candidate, by anatomical examination on the dead body, by the use of the microscope, and as far as practicable by the investigation of diseases on the living subject.

That the four subjects now thought unnecessary by the Medical Council—Botany, Zoology, Histology, and Hygiene—shall form a part of the examination.

That an examination in Midwifery and the Diseases of Women and Children should also form a compulsory part of the examination at the Faculty—not, as at present, be left to the option of the candidate.

That as it is utterly impossible, even by the present system of puffing and cramming, to crowd into a student's head in four years (the time now demanded by the licensing boards of this country) the various subjects necessary for an efficient examination, the time required for acquiring professional knowledge shall be six instead of four years, and that the age of the candidate shall be twenty-two or twenty-three years before he passes his final examination and is qualified to be on the Register.

* Many examiners and teachers: some, too, lecture and teach two or more subjects.

† One of these, Dr. Brady, has done his utmost, I believe, to benefit the profession; but what is he against so many? [I did not know at this time that Sir J. Gray and Mr. Vanderbyl were members.]

That all the verbal examinations shall be conducted in public.

That the efficient test of a man's qualification to practise shall be, as far as possible, a good searching examination that will ensure a foundation for practice, the accurate registration of facts, and the right mode of inference from these facts.

That all these changes must be gradual, and care must be taken not to make the course of study *so expensive* as to shut out the *poor and industrious student*.

That nothing herein suggested shall interfere with the present Universities, Colleges, and Halls, which shall continue to grant degrees as at present; but that hereafter all members of the Faculty, and all those on the Register shall have taken the degree of Licentiate of Medicine and Surgery of the Faculty before taking such degrees.

That no person shall be allowed to sell or dispense drugs and chemicals without undergoing a proper examination by a Government Board,* the examiners of which shall not be teachers, and shall have no interest whatever in the examining fees.

That counter practice (prescribing for all ailments), which is now carried on to a greater extent than ever (backed by the diploma of the Pharmaceutical Society), by unqualified practitioners, to the detriment, especially of the junior members of the profession, shall be made illegal, as in France and other countries.

That as soon as the chemists and druggists in the United Kingdom undergo a compulsory examination,† and a proper system of drug inspection is instituted, it will be desirable, as far as is practicable, to separate medicine from the practice of pharmacy.

That the state of the Veterinary profession, so intimately connected with the science of medicine, is in a most unsatisfactory and disgraceful condition in England and Scotland, and that in Ireland no Veterinary school exists.

That at the three Veterinary schools in France, as shewn by the Appendix, the course of instruction for a Veterinary student is longer by eighteen months than that of a Medical student in the United Kingdom; and that four subjects—botany, zoology, histology, and hygiene—form a part of the Veterinary student's examination in France that are thought by our Medical Council unnecessary for an English medical student's examination.

CONCLUSIONS, 1870.

That from an analysis I have made of this year's Irish Medical Directory, 1870,† there are 2,350 names recorded. Of the various practitioners enumerated, there are 2,136 Irish degrees,

* Since this was written, (1867,) the examination has been made compulsory, but the examiners are wholesale or retail chemists and druggists. As regards counter practice, this is not likely to be done away with until general practitioners abandon pharmacy.

† As will be seen at page 41, in my first Carmichael Essay, 1859, the analysis of that year gave 261 Scotch degrees and 477 English. I select the names in the Directory, 1870, for the purpose of comparison, but a large number of the addresses are unknown; probably, 2,000 practitioners would be about the number, but this does not affect the general conclusion. All the analyses are made by myself.

1,903 Scotch and English—1,347 of the former, and 556 of the latter.

That in Ireland 607 are practising with one degree only, and 187 of these with the Licence of the Dublin Apothecaries' Company.

That although the Universities of Oxford, Cambridge, and Durham do not afford five Doctors of Medicine annually, they return three members to the Medical Council, whilst more than 20,000 members of the profession are unrepresented.

That at the Pharmaceutical Society, consisting of about 3,000 members, the Twelve Examiners are elected by the Council, and the Council by the general body.

APPENDIX.

THE STATE OF THE VETERINARY PROFESSION IN THE UNITED KINGDOM.

This question is so intimately connected with everything that concerns the progress of medical science and the good of the profession, as I hope to shew hereafter, that I make no apology for introducing it as an Appendix to this essay. We can scarcely be said to have any efficient mode of instruction for our Veterinary students in the United Kingdom. Up to a late period those who examined them were members of the medical profession, and at the present time, to use the language of one of the few reformers among the Veterinarians, Mr. Fenwick, ("Veterinarian," July, 1829), "A joint-stock company where gentlemen send their horses at the cheapest rate, and where human surgeons, ignorant of the anatomy and diseases of horses, are the examiners."

For thirty-seven years, only one member of the Veterinary Profession was allowed to be on the examining Board. The College receives £200 a-year from the Royal Agricultural Society, the members of which society and other subscribers have the liberty of sending diseased animals free of cost.

There is one advantage this College has over our Medical Corporations, viz., that the representative system is *fully* adopted; ladies and members of Parliament being allowed to vote by proxy, a kind of constituency not becoming a scientific body. I am unwilling to make an ill-natured remark, but it must be apparent to all that, like many of our Medical Corporations this body is very far behind similar institutions on the Continent—that the system of education and instruction is very inefficient. A new Charter is now prayed for, one object of which is to prevent those calling themselves Veterinary Surgeons who are not members of the College. If this Charter is granted it will only add another piece to the patchwork, and effect but little scientific good. The members of this College are about 1,000; a very inadequate number for the supply of the United Kingdom, as was fully

shewn during the late outbreak of Cattle Plague. In Scotland, the Veterinary College, under the Highland Society, is in a more unsatisfactory state; and in Ireland *there is no Veterinary Instruction of any kind.* A friend in Dublin tells me "that Mr. Peele was the last Veterinary Professor in Ireland, 1827."

The Government should at once establish a Veterinary College in Dublin upon a liberal basis, with an annual grant of money to make the institution entirely independent of annual subscribers. The same should be done in England and Scotland; there is no other means of making this body efficient and respectable. A College so instituted might, as in France, Austria, and Germany, go hand-in-hand with our medical and surgical institutions, and thus effect great good.

THE STATE OF THE VETERINARY PROFESSION IN FRANCE.

I will now place before the reader, by way of contrast, the state of the Veterinary profession in France. Here, there are three Veterinary Colleges, as there are three schools of Human medicine—Alfort, founded 1765; Lyons, 1762; and Toulouse, 1761. During three recent visits to Paris, I have made it my duty to visit the school of Alfort, and to enquire into the course of study and mode of examination of the students of this College. The regulations are the same at Lyons and Toulouse.

All appointments, as at the medical schools, up to the grade of *agregé* are competitive (by *concours*). The students are boarded and partly provided for by the Government. At the present time, (October 1867), there are about 260 students at this school, besides those of Lyons and Toulouse. Each student on admission must be between 17 and 25 years of age; he must produce certificates of birth and good conduct. These only are admitted who can pass a satisfactory examination in the French language, arithmetic, geometry, geography, with a written narrative of some subject treating of geography and history. For his board, the student pays 450 francs yearly; he remains at the school for four years, the only holidays being Sundays and fête days. In addition to his board, he finds his dress (blue clothes with gilt buttons), and his under-clothing The diploma is fixed at 100 francs. Besides the ordinary students, 40 military students are maintained by the Government, who must be the sons of persons in the army, and recommended by the Ministers of War. No student leaves the establishment, which is surrounded by extensive grounds, without permission from the Director.

At the three Veterinary schools, 178 rewards *(dessibourses)* are yearly given to the most deserving students, and the half-yearly reports *(notes semestrielles)* of progress, are the only documents consulted by the minister for the distribution of these rewards.

The course of study is as follows:—1st year, Anatomy, Natural Philosophy, Mechanics, Chemistry, Botany, and Histology. 2nd year, Anatomy, Physiology, Zoology, Chemistry, Materia Medica, Botany, Histology, and the structure of the different domesticated animals. 3rd, Pathology, Hygiene, and Agriculture. 4th year, Breeding of animals, Anatomy, Physiology, and Pathology (theoretical and practical).

Several Lectures are given daily by the Professors (paid by the Government), who have obtained their appointments by *concours*, and who have

distinguished themselves by their various writings and discoveries. I need scarcely say that the examiners at the Medical and Veterinary schools have no pecuniary interest in the examination.

I will not offend the reader by asking him to contrast this state of things in France with that which I have described in the United Kingdom, but I ask him if a Veterinary surgeon in France is required to be examined in Botany, Zoology, and Hygiene, why should these important subjects not of necessity form a part of the examination of medical students in England?

It must be observed that these students are educated at the expense of the Government. They pay nothing for attendance upon Lectures, as the professors are remunerated by the State, and that when time is taken into account, the period, compared with that of the medical students in England is one year longer; for our medical session is only about nine months. When I passed the London College of Surgeons, it was necessary that a student should be *twenty-two* years of age, and that he should have been engaged for *six years* in the acquirement of professional knowledge; but now the age is twenty-one years, and the period of acquiring professional knowledge limited to *four years*, so much for the progress of science in England in this the 19th century! 2,173 persons in the United Kingdom, in the Army, Navy, and in the Colonies, are practising with this non-medical diploma only, although more than nineteen-twentieths of the practice of every medical man, civil, military, or naval, is medical.

But let me return from this vital digression to the state of the Veterinary Profession in the United Kingdom. As I have recently said, in Ireland there is not a single teacher of veterinary science; let us suppose cattle plague appears in Ireland (a very likely circumstance), and is undiscovered until the poison is disseminated in various parts of the country, where are the veterinary surgeons to carry out the requirements of the Privy Council? During our late visitation in England, the want of proper inspectors (from the neglect of veterinary science by the Government) was fearfully felt, but what would be the condition of things in Ireland with the horse-leech and the cow-doctor? I have good reason to believe that if Ireland had been provided with an efficient class of Veterinary Practitioners, pleuro-pneumonia would not have made the ravages it has done among cattle in many parts of Ireland, and that the importations of the disease to England would have been less extensive. This is a question that concerns every well-wisher of his country, and the sooner the Irish people begin to stir in the matter the better. It is one of the many grievances of this part of Her Majesty's dominions.

I have, however, another motive for introducing this question of the state of the Veterinary profession in the United Kingdom in this Appendix, viz., the great bearing it has upon the progress of medical science. In France, Belgium, Germany, and Austria, where veterinary surgeons are well instructed, many subjects of great physiological and pathological importance are referred to certain Professors of the Veterinary Profession, who, from their greater knowledge of the structure of our domesticated animals, are better able to decide. Many of these Veterinary Professors, too, have made important discoveries in anatomy, physiology, and pathology. To give a practical illustration, let me quote an investigation now going on at the Academy of Medicine in Paris. M. Villemin, as shewn in his work, "Études sur la Tuberculose, Preuves Rationelles, Experimentales, de sa

Specificité, et de son Inoculabilité, 1867," has shewn that tubercle, or something very much allied to it, may be conveyed from man to the rabbit and to other animals; he believes that "tubercle is a zymotic and contagious disease." His book is now before the Academy of Medicine, and for the proper investigation of this important matter—one of the most important as regards human mortality that could come before a body of scientific men—the Academy appoints certain persons who are thought to be most competent to investigate the subject and make their report. Among these is the well-known and laborious experimentalist, M. Colin, the Professor of Pathology at Alfort, the school I have just described.

When will a Faculty of Medicine of England, Ireland, or Scotland appoint a Veterinary Professor to investigate any subject connected with human pathology? When will all our *medical* students be *examined* upon subjects that are thought necessary for a Horse Doctor in France? And lastly, when will our Government cease from patronising quackery and imposition by its stamp, and from taking money at the same time from the qualified practitioner for his registration fee and for his diploma? These conclusions were written in 1867, and I had not time to add some of the statistics, 759 single degrees, and the Army and Navy statistics.

PREDICTION 1870.

As I have said, the above summary was written in 1867. Since this period all Chemists and Druggists in England are obliged to pass an examination (p. 48.) The London College of Surgeons (which, like the College of Physicians, should be a Commonalty) has opened its Hall to the members, although, as I have said at page 35, the change is one rather of necessity than of choice. The members assembled passed resolutions in favour of a One Portal for all, based on the representative system, and nearly 10,000 medical practioners, 1870, have petitioned Government for the like reforms. Notwithstanding these unmistakable expressions on the part of the profession, Earl De Grey is to introduce a Bill in the House of Lords, the second reading of which is fixed for the 2nd of May; in this Bill not a word is said about the representative system, and if the Corporations, "*in consequence of the services they have rendered,*" (see pages 8 to 12, 30, 32, 34) do not agree, the matter is to be referred to the Committee of Corporations, the General Medical Council, (page 10.)

I leave the reader to his reflections, and in conclusion I volunteer a prediction. I have stated that Botany, Zoology, Histology, and Hygiene, subjects now ignored by our Medical Council; in the year 1970, will not only form part of every Student's examination, but that the whole system of examination will be changed; Students will not only be required to know the structure and anatomy of plants and animals, but they will be required to know their diseases—to trace the various forms of structural derangement, from the lowest forms of organization to the highest; a beautiful and wonderful revelation, that will lead to more practical good than any method of research yet pursued?

29, *Beaufort Street, Chelsea,*
April 25th, 1870.

ON THE

TREATMENT

PULMONARY CONSUMPTION

BY

HYGIENE, CLIMATE, AND MEDICINE.

BY

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LONDON:
JOHN CHURCHILL & SONS, NEW BURLINGTON STREET.
MDCCCLXVI.

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ON THE

TREATMENT OF PULMONARY CONSUMPTION

BY

HYGIENE, CLIMATE, AND MEDICINE.

CHAPTER I.

ON THE CAUSE AND NATURE OF PULMONARY PHTHISIS.

So much has been written during the last twenty years on pulmonary consumption by men of the highest order of intellect, that it requires a certain amount of moral courage to enter the arena. No one, indeed, would be justified in so doing unless he conscientiously thought that he had information to impart calculated to be of use to his fellow-practitioners and to humanity at large. It is because I believe that such is really my case that I have written the present essay.

I have little that is new to bring forward—at least that is new to those who keep pace with the progress of Medicine; but I have important testimony to give in favour of modern science. One who, like myself, has been thirty-two years in the profession, belongs both to the past and to the present, and is able to speak from personal experience of the views and opinions of former days as well as of those of the present time. This fact should give weight to the judgment of an author, who certainly does not appear in the character which, according to the Latin poet, characterizes the later periods of life—that of a "laudator temporis acti."

I may, perhaps, lay claim to having had peculiar and ex-

ceptional opportunities for forming an opinion respecting the value of the treatment of pulmonary consumption pursued thirty years ago as compared with that now adopted by the leading authorities at home and abroad. My medical education was carried out partly in England, partly in Paris. During four years I was resident medical officer to several of the Paris hospitals, and there gave clinical lectures on auscultation (not then as generally studied as it is now) and on diseases of the heart and lungs to several hundred young English and American medical men. Thus I became thoroughly imbued with the knowledge of the day, and may add, that I have ever since remained much interested in thoracic pathology. Later in life, after practising many years in London, I became myself affected with pulmonary consumption, and, seven years ago, had to abandon everything in order to go and die, as I thought, on the shores of the Mediterranean. Relieved from the fatigue, the harass, and the cares of our arduous profession, I have managed, by the application of modern science, to save my own life, and since then I have helped to save the lives of many similarly affected who have followed me in my health-exile to the south.

The great fact to which I have to testify is, that pulmonary consumption is a curable disease—indeed, in its early stages, often a very curable disease—under proper treatment. In making this assertion, I have merely to enlarge, and to confirm by matured knowledge, an unpublished paper written in 1840, entitled "On the Curability of Consumption," which I recently found among my manuscripts. At that date I had just passed a year as one of the resident medical officers of the Salpétrière, a large asylum hospital in Paris, more especially devoted to aged and infirm women. There I had found in the dead room, in the lungs of women who had died in advanced life from other diseases, large cretaceous deposits and puckered cartilaginous cicatrices, which proved, emphatically, undeniably, that they

had been consumptive at some antecedent period of their life, but had got well, spontaneously no doubt, dying at last of other disease. Indeed, in those days, the real treatment of phthisis was so little understood by the generality of practitioners, that I truly believe a sufferer had a better chance of recovery if the disease was not discovered than if it was. The low diet, the confinement, the opiates and fever medicines, the leeches and blisters, which constituted the usual therapeutics of such cases, were certainly but little calculated to arrest a disease the essence of which is organic debility. The inhabitants of the Salpétrière are mostly aged women belonging to the lower classes, and the pathological conditions observed were undeniable evidence of their having recovered from an advanced stage of consumption, at some period or other of their life, apparently through the unaided resources of their constitution. Possibly, feeling ill and weak, they had taken refuge with their relations or friends in the country, and had gradually recovered under the mere influence of improved hygienic conditions.

In the year 1840, when I became aware from these pathological facts that pulmonary phthisis is spontaneously curable, it was considered by most of the physicians with whom I had come in contact to be all but inevitably fatal, especially when advanced to its second stage—that of softening. Since then, the same pathological evidences of the spontaneous cure of phthisis have, I believe, been found by all, or nearly all, who have had special opportunity of making post-mortem observations in the aged. Among these observers I may more especially mention my namesake, Professor Bennett of Edinburgh, whose luminous work on Pulmonary Consumption, first published in 1852, has much contributed to improve our knowledge of this disease, and of its hygienic management. Moreover, a more rational treatment, founded on a truer appreciation of the nature of the disease, has proved that in the

living, in many cases, when recognised before the lungs are so diseased as to be unable to discharge their physiological functions, this malady is capable of arrest, and even of cure. This I may safely assert is the opinion of all practitioners, at home and abroad, whose attention has been specially directed to the subject, and who have had sufficient opportunities for observation to give importance to their views. There are very many, however, who still look upon pulmonary phthisis as incurable or all but incurable, and it is for them more especially that I write.

Pulmonary consumption was formerly considered by most pathologists to be merely a disease of the lungs, having, generally speaking, some intimate connexion with inflammation and with inflammatory states. This view has now been generally abandoned, and the most enlightened observers in all countries recognise the fact that this dire malady, by which a considerable portion of the human race pass into eternity, is the result of defective nutrition, a disease of the blood. According to this view, undoubtedly the correct one, the exudation or deposit of tubercular matter in the lungs, and the ravages which it therein causes until it destroys life, are merely the epiphenomena, the secondary results of a constitutional disease, of a morbid general diathesis which precedes, occasions, and rules the tubercular manifestation. Given the tubercular diathesis, the deposit of tubercular matter may take place in any organ, in any part of the body, and there pass through its various stages, but the lungs are its seat of predilection, in adults.

In the investigation of the nature and causes of pulmonary consumption, and of tubercular disease in general, we may perhaps go a step further. I firmly believe that the appearance of tubercular deposit ought to be looked upon as the evidence and result of a serious, perhaps final, diminution of vital or nervous energy. In other words, it may be considered

the evidence of incipient decay of the organization from defective vital or nervous power. Thus, tuberculization, especially when seated in the lungs, is simply a mode of dying. Unless the vitality of the individual can be roused, the morbid condition will surely progress, and life will be extinguished sooner or later, according to the state of the constitution of the patient, and to the consequent type of the disease.

The very essence of life is the organic vitality, variable in different species, variable in different individuals, with which each organism, vegetable or animal, merges into being and develops itself. It is owing to inherent organic vitality that the medium duration of life in the oak, the ash, the fir, is different, as it is also different in the whale, the elephant, the horse, the dog, and in man himself. The medium duration of life in each species is reached in the organisms that are created under favourable conditions, with unimpaired organic vitality, and that pursue their existence under conditions favourable to life. On the other hand, this medium duration is not reached by those individuals that are created under unfavourable conditions, with defective vitality, or in whom originally sound vitality is modified, diminished, destroyed by the unfavourable conditions in which their existence is carried on.

In such considerations, in my opinion, must we seek for the real explanation of tubercular disease, and especially of pulmonary tuberculization; as also for a key to the types under which the disease presents itself and to the results of treatment. They include, of course, hereditary predisposition.

Viewed in this light, so far from pulmonary consumption being a dire inexplicable pestilence striking indiscriminately the young and the old, it becomes one of the provisions by which Providence has secured the integrity of the human race. If those who are, from birth or otherwise, sickly or weak, in whom vitality is defective originally, or secondarily and accidentally, could propagate their kind so that their progeny

could live, the human race would soon degenerate and become a race of pigmies, of sickly dwarfs, and eventually die out. Pulmonary tuberculization is in reality one of the diseases by which Providence eliminates those that are weak, imperfect, and consequently unfit to perpetuate the race in its integrity. Individually it may be very hard to be thus eliminated for the good of the human race; but if we rise above individuals and grasp the interests and well-being of the entire human family, it will be seen that these diseases are, in truth, a bountiful dispensation of Providence. They may be compared to hurricanes in tropical climates, which purify the earth and contribute to make it habitable, although often at the expense of great individual suffering.

A man or woman who is old, who has inherited disease, who labours under disease, or has become weakened by disease, by privation, by cares—parents, in a word, in whom organic vitality is weakened,—cannot give strong or even medium vitality to their progeny. No one can give to others what he does not possess himself. It is the same with plants. The seeds of a young vigorous plant produce healthy vigorous plants; whereas the seeds of old, weak, sickly plants produce a like progeny.

The human, like the vegetable, progeny, may at first be fair to look at—may appear sound and vigorous; but this state does not last. It is a mere deception; for the inherent, the inherited, vitality is defective. Such beings are like bad watches made with bad works. They may look well, and go well for a time; but they soon wear out, go badly, and, if patched up again, get out of order, and finally stop. The good watch, on the contrary, made with good works, will go a hundred years; or, if it accidentally gets out of order, it will go as well as ever when once it has been set to rights. Thus is explained death by consumption at the age of fifteen, twenty, thirty, of young people born with defective vitality,

even when brought up and living in favourable conditions for life, and apparently healthy and vigorous. They have thus early exhausted the amount of vitality which they received from their parents; they have used to the last shred their constitutional powers, and decay commencing in the shape of pulmonary tuberculization, closes their earthly career, unless their vitality can be roused by rational treatment.

Those who are fortunately born with a fair amount of organic power, their progenitors being young and healthy, may damage it as they advance in life. Unfavourable hygienic conditions, accidents, cares, the thousand incidents of the struggle of life, may impair their originally good constitution, and diminish or even crush their vitality. When such is the case, death may come in a hundred ways, through the attacks of a hundred diseases; but one of the most common modes of decay, especially in towns, is pulmonary consumption. In town life the supply of atmospheric air is generally deficient, and this, I am convinced, is one of the most efficient immediate causes of phthisis.

In both cases—whether pulmonary consumption attacks persons deficient in inherited organic vitality, or whether it attacks those in whom originally sound vitality has been accidentally diminished by the wear and tear of life—it is in reality a secondary element. It is not the real disease, but a symptom of it. The real disease is exhausted or lowered vitality. Thus when a tree in a forest or plantation is attacked by insects, fungi, and parasites of all kinds, they are only *apparently* the cause of its decay and death. The young, vigorous, healthy tree resists their attack through its high vitality; full of life, it fears no such enemies. If they attack its less fortunate companion, it is because the latter is already sickly, diseased. The true remedy is not merely to scrape away the moss and to kill the parasites, for others will come; but to remove all causes of ill-health and decay: in a word, to rouse

the vitality of the tree by trenching and draining the soil, by putting good loam round its roots, and by protecting it from all injurious influences. Thus only can we hope to succeed in arresting the decay. If we are successful, the tree will itself gradually shake off its enemies, and may even eventually be restored to pristine vigour and beauty.

Such, I believe, should be the treatment of pulmonary consumption. There is no panacea whatever for a disease which is merely a symptom of lowered vitality, of positive decay. But much may be done towards arresting the progress of this decay, and even towards effecting a cure, by the combined influence of hygiene, of climate, and of rational medical treatment. These are the three modes of treatment which I mean to discuss, and that in the order given—the order of their relative importance.

CHAPTER II.

HYGIENE.

If, as I have stated, the deposit or exudation of tubercle in the tissues, which in the lungs constitutes phthisis, is the result of defective nutrition, consequent on defective vitality, inherited or acquired, the rules for treatment become self-evident—they must be found principally in the strict observance of the laws of hygiene. In most cases of this disease it will be discovered, on careful inquiry, that these rules have been grossly infringed. The laws of hygiene may be considered to embody the conditions, bodily, social, and mental, which are the most favourable to the healthy development of the human economy, the most conducive to its well-being. These conditions have only been clearly elucidated by modern research, and are daily ignored and infringed by the immense majority of the human race—with comparative impunity by the strong, the vigorously constituted, but not so by the weak, by those who are born with defective vitality, or are living in unhygienic conditions. In both cases existences which, although weak, might have reached the ordinary term of human life under favourable conditions, are prematurely brought to a close.

Bodily hygiene includes, principally, good and abundant food, pure air, a clean skin, and exercise. Theoretically, the injunction to scrupulously attend to these points seems so rational in a disease of debility that it appears scarcely necessary to lay stress upon them; but practically it is not so. A large pro-

portion of the medical profession, instead of looking upon the progressive deposit of tubercle in the lung, with its gradual softening, upon the hæmorrhages, and the bronchial and laryngeal affections which it occasions or which precede it, as mere local symptoms of a general diathesis, have their attention arrested by the local condition. They exaggerate its inflammatory nature, and dare not apply to their patients the ordinary rules of hygiene; they dare not give wine and plenty of animal food; they dare not give fresh, cool air day and night; and they dare not keep the skin clean and cool by cold or tepid sponging. Yet this timidity is a fatal mistake, for these are the principal means by which nutrition is to be improved and restored to a normal condition, and consequently by which the disease is to be arrested and cured.

The food taken by consumptive patients should be of the most nourishing kind—meat, fish, fowl, eggs, milk, bread,—well cooked, and abundant in quantity. Indeed, the quantity of food taken should merely be limited by their digestive powers. In my opinion, the principal value of medical treatment in phthisis is in the restoration of digestive tone when impaired or absent. If patients can be brought to eat, to digest, and to assimilate, they have a chance of recovery. If they cannot, their chance is indeed slight.

The medical attendant, however, must never forget the important fact which I developed at length in my work on "Nutrition in Health and Disease," published in 1856—viz., that there are two great types of digestive power, the quick and the slow. In many persons, in most indeed, the digestive process is rapid. Such individuals require food often—three, four, or more times in the twenty-four hours, and in that period they can take and digest animal food two or three times. If they have not frequent meals they feel faint and ill. The other class digest more slowly, more laboriously. They can only take food, with advantage and comfort to themselves,

twice, or at the most three times, in the twenty-four hours, and only one meal must be a meat meal. Such individuals become dyspeptic if they try to assume the habits of those who require more frequent meals. The real remedy for their dyspepsia is not physic, but the adoption of a dietary more suited to their constitution. These peculiarities remain in disease, and must be attended to if the patient is to do well. There is no rule but the patient's own individual constitution. It is worthy of remark that the people who make two or three meals only, evidently get more out of their food than those with quicker digestions, and consequently thrive on less food.

A moderate amount of wine, as a tonic and gentle stimulant to digestion, I consider beneficial—say six or eight ounces; that is, three or four glasses of claret, burgundy, hock, or two of sherry, taken with meals, and diluted with water; or a glass or two of bitter beer if the stomach can bear it. Of late years, in America, whisky has been much lauded as a cure for consumption, on what rational ground I am really at a loss to conceive. I have seen a certain number of cases in which it had been long taken, but I cannot say with benefit. The daily ingestion of large quantities of nerve-stimulating spirit certainly does not come under my notion of hygienic treatment. Carbonaceous food can be given to all but any extent in a more natural and less pernicious form.

The above dietary may be insisted on, within the limits of reason, under all and every condition of the lung, with tubercular softening or without, with fever or without, with local inflammatory complications or without. We must try to struggle through unfavourable stages and complications without letting down nutrition.

I last year stated in the *Lancet* that I find many of the females whom I attend in the south each winter to be suffering from uterine disease, and that, through the usual morbid reaction of the uterus on the stomach, they have no appetite, are

tormented with nausea, and cannot eat. They all perish if I am not able in time to remove the uterine malady, and thus to restore the tone of the stomach, the natural desire for food, and the power of eating and digesting. Sometimes even when this has been accomplished, and they can eat and digest, it is too late. The disease has progressed too far, the lung is all but gone, has become a mere shell, and the patient sinks a victim sooner to uterine disease than to consumption, the apparent cause of death.

It seems also, at first sight, as superfluous to state that in a disease of debility like pulmonary consumption patients should breathe pure air as that they should live on nourishing food; but it is not so. Theoretically the value of pure air—of atmospheric food—is universally accepted by the medical profession; practically it is all but universally neglected. The physiology of respiration—a modern discovery—has yet to be applied, not only in every-day life, but even in the treatment of disease. Most medical men as well as their patients ignore the all-important fact that the demands of respiration are so great that one or two human beings soon use up and contaminate the air contained in a good-sized room. Such being undeniably the case, unless it be renewed artificially, or by an open window or door, in other words, unless the air in an inhabited room be constantly undergoing change, impure air is breathed—air calculated to produce disease even in the healthy, and to increase it in the sick. So universal is the neglect of this fundamental law of health, that the healthy persons who do not sleep in rooms with the windows, doors, and register stoves shut, and who do not thereby poison their blood all night with their own excreta, are as yet the exception.

In ill health, and especially in diseases of the respiratory organs, the dictates of science and of common sense are still more grossly outraged. At a time when, perhaps, the principal food the economy can take is pure air; when the diseased

lungs, partly inefficient, require the purest and best air-food that can be afforded them, the doors and windows are generally kept shut on pretence of chills, cold air, and draughts, a due supply of respirable air being thus refused to the unfortunate patient.

In my younger days this fatal and cruel error was carried to an insane extent by many medical practitioners, as it still is in most parts of the continent, and especially in Germany. The windows were often hermetically shut, and paper pasted over the chinks. The doors were made double, and one always shut before the other was opened. The healthy friends of the patient considered it a penance and a trial to have to remain in the polluted atmosphere "necessary" for the miserable sufferer, and often paid for their devotion by the loss of their own lives. On the other hand, the wretched patients suffered from constant suffocation as well as from a steady aggravation of the symptoms of the disease. This suffocation, the mere result of want of pure air, was called dyspnœa, and treated by opiates and sedatives instead of by opening the windows.

All my consumptive patients, whatever the stage of the disease, live night and day in a pure atmosphere, obtained by allowing a current of air to pass constantly through the room, either by a more or less open window and open fireplace, or by a door opening on a well-ventilated staircase, if the weather does not admit of the window being even slightly open. Rational, reasonable ventilation is not encompassed, however, without trouble and discrimination for human beings any more than for plants, although it is to be accomplished. Since I have been an invalid I have devoted much time and study to horticulture, and have had former convictions as to the necessity of efficient ventilation thereby confirmed. Plants under glass, too crowded and not well ventilated, soon sicken, wither, and die. To well ventilate them, enough and not too much, requires constant trouble, attention, and good sense on

the part of the gardener; in a word, exercise of both judgment and discrimination.

Consumptive patients bear ventilating perfectly well, as well as healthy people, day and night. They neither get pleurisy nor pneumonia, nor are their coughs aggravated by breathing pure cool atmospheric air night and day; whereas all these evils pursue those who are shut up, as are the numerous continental patients whom I see in consultation with their own doctors every winter at Mentone. Moreover, suffocation, medically called dyspnœa, is all but unknown, even in the latter stages of the disease, to those who are allowed plenty of fresh cool air. It soon comes on, however, if the window is shut and the room becomes close. These persons, accustomed to free ventilation, *will* have more air; indeed, I often stand aghast at the amount of ventilation such patients, previously freed by me from groundless fears, insist on having. All who have damaged lung-tissue, unless accustomed by long habit to a close atmosphere, feel more or less oppression in a confined atmosphere, owing to the diminished field of their respiration. A concert-room, a theatre, a close chamber at night, bring on dyspnœa all but immediately. This I have learnt from personal experience, and thus most fully can I sympathize with my patients. I fully admit, however, that free ventilation without dangerous draughts is difficult to attain, and that it is much more easily and safely accomplished in a southern than in a northern climate.

Before I leave this subject I would draw attention to the physiological fact that the lungs are made to breathe cold as well as warm air—indeed, air of any temperature from zero to 100° Fahr., just as the face is made to bear exposure to the external atmosphere. How could the lungs be protected, if they required protection, which they do not? Domestic animals that live out in the open air winter and summer are freer from colds than those that live in warm stables; and

men who are much exposed, and constantly breathe air at a low temperature, are less liable to colds and influenza than those who live constantly in warm rooms. All who have horses are aware that to keep a stable warm is the surest way for the inmates to suffer from constant colds.

I may mention two facts that aptly illustrate the evils of defective ventilation. Some years ago I was riding in the Highlands of Scotland with a local proprietor, when we came upon a village of well-built stone houses with slate roofs, which strongly contrasted with the miserable shanties or hovels generally met with. On my complimenting him on his rebuilt village, he told me that he had acted for the best in erecting these good weather-proof houses for his tenants, but that, singular to relate, they had proved more unhealthy than the miserable dwellings which their occupants previously inhabited. Fever and other diseases were rife among them. On close examination, I found that the windows were fastened, and never opened, and I have no doubt that their comparative unhealthiness was in reality owing to their being quite weather-tight, and consequently unventilated. In the miserable hovels they previously inhabited, if the rain of heaven came in, so did pure air.

The other fact is narrated by Professor Hind in a recent interesting work on Labrador. Consumption appears to be all but unknown to the natives living wild in the fastnesses of this desolate region, in tents made of spruce branches imperfectly lined with skins, and more or less open on all sides to the external air, although they are exposed to famine and every species of hardship. But when these same natives come down to the St. Lawrence to take a part in the fisheries, occupy well-built houses, and, being well paid, live in comparative luxury, most of them in the course of a year or two become consumptive and die miserably. I am fully impressed with the idea that the development of the disease under these

circumstances is principally the result of their living in closed houses in a vitiated atmosphere, as it no doubt is in our own towns.

Attention to the functions of the skin is, I consider, next in importance to attention to food and air—that is, to digestion and to respiratory nutrition. The skin has very important eliminatory functions to perform. It is by excretion through its pores that the economy partly throws off the effete or used-up carbonaceous and nitrogenous elements of the system. This is illustrated by the strong odour of the cutaneous secretion when not washed off. Moreover, the skin and the lungs seem to partly replace each other in this work of excretory purification. In warm summer weather the skin and liver act freely, and the lungs and kidneys are comparatively at rest. In the cold damp weather of winter the pores of the skin are closed, and it rests, the lungs and the kidneys taking up the excretory process. Thence, probably, the feverish colds of cold damp weather. The blood is poisoned with the elements that the closed pores of the skin should have eliminated, which occasions the fever; whilst the lungs often succumb to the increased duties they have to perform, and inflammatory affections supervene. Whatever the explanation, the fact is certain, and it is now well established that the best mode of preserving the respiratory organs from winter colds is to keep the pores of the skin open by the use of cold or tepid water, combined with friction; or, in other words, to keep the cutaneous excretions up to their normal standard.

Acting in accordance with this view, I make all my consumptive patients, whatever their condition, if they have the strength, use a sponge-bath at a temperature of from 62° to 68° daily, and with the greatest possible benefit. I neither have to contend with hæmorrhage or chills, nor with aggravation of the cough, but quite the contrary. The cold sponge-bath produces in nearly every instance a feeling of indescribable comfort and lowers the pulse. The contact of the cold

water may accelerate the expectoration of the muco-pus collected during the night in the bronchial tubes, but that never alarms when it is explained that such a result is naturally to be expected. I myself derived the greatest possible comfort and benefit from cold sponging in summer in the open air on the banks of a Scotch loch, the waters of which were at 60°, and that when I was very ill, pulse 100, and skin hot and feverish. This gave me a confidence I have never lost, and of which I have never had reason to repent.

The question of exercise is an important one, and one that requires discussion and elucidation. I would say at once that, from personal experience and observation, I believe it is a great mistake for consumptive patients to take much active exercise. Every winter I see some such patients walk themselves to death. They have been told by their medical attendants at home to take exercise, and they do so, thinking that what gave them an appetite and did them good when well will do so now they are ill; but they merely walk themselves into their graves. The disease from which they are suffering is one of debility. The strength of former days has gone out of the youth and of the man, although perhaps he knows it not. Or the strength he has is fictitious, unreal strength, the result of a febrile condition, of a state of morbid nervous excitement. So he walks up hill and down dale, loses his appetite, cannot eat, becomes "bilious," is dosed for liver, and the disease progresses rapidly. Every winter, towards January or February, some invalids consult me who have up to that time taken their case in their own hands, and have thus walked from breakfast to dinner, with the healthy, in order to gain strength. But they have lost it instead—have become paler and thinner; and when I see them, I find that they have lost ground, that the disease has gained upon them since they arrived in the autumn, and that they are decidedly worse—all from over-exercise.

The sound rule for a consumptive patient is to take passive exercise, not active; to ride in an open carriage; to be rowed in a boat; to sit and lie hours in the open air; to live with windows open, but never to incur great muscular exertion. The amount of vital power in such cases is small. If it is too freely expended in exercise, there is not enough left for normal digestion; food is imperfectly assimilated, nutrition is defective, and the disease progresses.

A singular, but explicable fact is, that during the existence of active disease, when tubercles are forming and softening, very often no lassitude is felt on exertion. But when the disease is arrested, and a curative process has been set up, extreme debility and lassitude may be experienced and complained of, lasting for months, or even years. I felt this lassitude for five years. The explanation is simple. As I have already stated, in active disease there may be a false, feverish strength, like that of the delirious patient whom it takes half a dozen men to hold. In the curative stage, the false strength is gone; the real condition of the patient comes to light, as it does with the delirious patient when the delirium is gone, and he can scarcely lift his hand from the bed.

The social and mental hygienic condition favourable to the treatment of consumption may be summed up in a few words. Rest, repose, the absence of the ordinary duties, cares, harass, and worries of life. To obtain these is difficult in the social medium in which the disease has appeared. Therefore, the duties and obligations of life should be surrendered for a time, if possible; modified, diminished, if not. Those, however, have the best chance of arresting the progress of disease who can escape from the social medium in which it appeared. To do this it is always necessary to make great sacrifices—sacrifices which many cannot make. But those who can must remember that the struggle is one, not merely for a higher or lower stage of health, but for life itself.

CHAPTER III.

CLIMATE.

If, as I have assumed, the deposit of tubercle in the lungs is a disease of defective nutrition, itself the result of exhausted or lowered vitality, the debated question as to what climate is the most calculated to arrest and cure the disease, is easily answered.

Theoretically, or rather physiologically, a cool, dry, sunny, stimulating climate is the one most likely to rouse depressed vitality and health; not a warm, moist one. Practically, my own experience and that of many other observers shows that such is the case, that consumptive patients do best in a dry, cool, sunny region, and that they are rather damaged than improved by a warm moist climate.

This, the modern view, is certainly one of the most valuable contributions that modern science has made to the treatment of phthisis. And yet, although most true, I cannot say that it is a principle of treatment generally understood or practically carried out even in our own country, which is, I consider, much in advance of the Continent in the rational treatment of consumption. Indeed, abroad the hygienic and climate treatment of phthisis is still in its infancy, and nearly all the old errors are in full operation.

Thirty years ago, when pulmonary consumption was generally considered to have an affinity to inflammatory disease, and when undue importance was attached to the inflammatory conditions—bronchitis, local pleurisy, local pneumonia—

which characterize its later stages, it was quite natural that warm weather and warm climates should be considered desirable. In warm weather, as we have seen, when the skin and liver are acting vigorously in the work of blood purification, inflammatory affections of the lungs are neither common or severe, and are easily subdued. Was it extraordinary that a warm climate should be thought the one thing desirable in the treatment of a disease, the prominent outward symptoms and features of which are these very inflammatory affections? And yet the results obtained by the antiphlogistic mode of treatment, combined with warm air, were so little satisfactory that most, nearly all, the patients died, and the disease itself obtained the reputation of being all but incurable.

If, as I maintain, following in the wake of many sound pathologists of the present day, these inflammatory conditions are merely epiphenomena, symptoms of a disease itself the result of organic debility, of exhausted vitality, having nothing akin to inflammation, it is clear that warm weather cannot cure them. Indeed, it is much more likely to aggravate them by increasing the organic debility which is at the root of the evil, and by interfering with that active nutrition which alone can arrest their progress.

Practical experience proves that such is the case; not merely my own experience, but the experience of the medical profession in many different climes and regions. Perhaps the most valuable and conclusive evidence on this subject is that furnished by the English and French Army Reports during the last thirty years. From them it has been established that soldiers suffering under tuberculosis of the lungs get worse in all warm climates, especially during the summer—in the East and West Indies, at Malta, in Algeria, &c. Consumptive soldiers are now sent home to a temperate climate from all these colonies, as the best course that can be followed for their welfare.

I may here mention a valuable illustration of this fact, drawn from private experience. My old friend, Dr. Dundas, practised for twenty-three years at Bahia, in the Brazils, a tropical climate, leaving in 1843. Many years ago he told me that during his residence there he was constantly receiving patients from Europe affected with phthisis, sent there by the faculty as to one of the best climates that could be found for their disease, calculating on high temperature. These patients invariably got worse, and died much more rapidly than if they had remained at home. So fully did he become impressed with the conviction that the climate—a very healthy one in all respects apart from its tropical character—was deadly to the consumptive, that if any of his own patients among the European population were thus attacked, he instantly sent them home to Europe.

These facts are at once explained when we recognise the principle that pulmonary consumption is a disease of debility, of exhausted vitality, and not an inflammatory disease of the respiratory organs; that it is an affection in which the indication for treatment is to strengthen, to invigorate, not to soothe and calm "symptoms." Warm weather produces languor, a disinclination to take exercise and to eat, often a positive disgust for meat and for fatty substances, and interferes with sound sleep. In warm weather the natural desire is to remain recumbent, idle, and half-dressed, to drink lemonade, and to eat ices. The attempt to take a fair amount of nitrogenous and carbonaceous food, from duty, is often followed by disturbed conditions of the liver, and of the digestive and intestinal organs generally, to which there is so great a tendency at all seasons in the consumptive. I only ask, in common sense, is such a state of things, is a temperature or a climate that produces such results, to be relied on in a case of debility?

A temperate, cool climate, on the contrary, with the thermometer varying between 55° to 65° Fahr. in the day, and between 45° to 55° in the night, has a diametrically different

physiological effect on the constitution. It braces and invigorates the system; it stimulates to exercise, improves the appetite, and admits of the ingestion and digestion of both meat and fats, so necessary for perfect nutrition. Thus it favours our attempts to rouse vitality by improving the nutritive functions.

The temperature which I describe, one ranging from 45° Fahr. at night to 65° in the daytime, is physiologically the most conducive to the well-being and longevity of the human race. The extremes of cold and the extremes of heat, on the contrary, are not conducive to longevity. In warm climates generations succeed each other more rapidly than in temperate ones. The inhabitants marry early, reproduce their race early, inherit property and arrive at positions of trust early, and die early, to make room for the next generation. This is the case in India, and in tropical countries in general. In temperate regions the span of life is longer; the succession of its phases is less rapid, less feverish. Thus Scotland, essentially a cool temperate climate, is also one of the healthiest countries in the world; the average duration of life being, I believe, above that of any country in Europe. It is certainly above that of England, itself superior to Continental Europe.

Having thus established the data by which we ought to be guided in the search of a climate calculated to assist in arresting and curing consumption, it remains to apply them. We may eliminate at once all tropical regions, all climates in which the mean annual temperature is high, above 60°, or where the winter mean is above 54°. It must be remembered that a high annual mean may be the result of extreme heat in summer, as at Malta, where the summer mean is 78°; whereas the winter mean is 57° only. At Mentone the winter mean is 49°, with a summer mean of 73°. (See Table, p. 408, in my work "Winter in the South of Europe.")

Firstly, as to summer, there is perhaps no better climate in the

world for the consumptive than the British Isles. The nights are generally cool, and the days temperate, the thermometer seldom rising above 70° in the shade. Sometimes, however, it does; we have "dog days" in England, days when the thermometer reaches 80°, or even ascends above. This degree of heat is very trying in England, much more so than on the Continent, on account of the generally moist state of the atmosphere. Owing to our insular position, and to the warm water of the Gulf stream impinging on our western shores, the atmosphere is generally loaded with moisture, and the sky partially covered with clouds even in summer. Warm moisture stops insensible perspiration, and is very oppressive and trying.

Generally speaking, this warm, oppressive weather is of short duration with us; but there are exceptionally warm summers, in which the thermometer may remain for many weeks above 70° in the daytime. This weather, really tropical in the south of England, is most pernicious to the consumptive; but they can easily escape from it by going north, to our northern counties, or to the Highlands of Scotland. The west coast of Scotland is proverbially moist; but moisture with the thermometer between 55° and 65°, as it generally is in summer in the Western Highlands, does no harm whatever, neither causing cold or cough, nor increasing them if they already exist. A consumptive person, with a bad cough and free expectoration, provided he be warmly clothed and protected, may sit in a boat all day on a Scotch loch, exposed to frequent showers, in summer, with the thermometer at about 60°, without taking any harm. I have done so myself for weeks and months together, not only with immunity, but with the greatest possible benefit to the general health, and as a result, to bronchial suffering.

Continental Europe is by no means so suitable as a residence for mid summer, owing to the great heat which nearly every-

where prevails from June to September. The coasts of Brittany and Normandy, and those of Holland, however, share with the British Isles the milder climate which a canopy of vapour and cloud gives us, by protecting us from the direct rays of the sun. In central and southern Europe, and even in Switzerland, the only means of escaping great and pernicious heat is to ascend the mountains some four thousand feet. But in the higher regions there is a great drawback: the nights are often very cold in fine weather, through radiation, and in wet weather you may be in vapour and mist, in the clouds, for weeks together.

To find a temperate winter climate we must leave the British Isles, and descend south. Those who are suffering from phthisis or chronic disease of the respiratory organs, and can do so, thereby immeasurably increase their chances of recovery. For seven months in the year, from the middle of October to the middle of May, not only is the temperature too low in Great Britain, generally below 55° Fahr., but it is all but constantly moist. Cold moisture arrests the action of the skin, throws extra work on the lungs, and is a fruitful cause of cold, influenzas, bronchitis, pleurisy, and pneumonia. Moreover, these influences increase, aggravate the inflammatory complications, and sequelæ of phthisis. Indeed, a severe feverish cold, such as nearly all experience at least once in England during the winter season, may soften in a few days a great amount of tubercle, and create a large cavity. Thus, in the course of these few days, the consumptive patient may pass from the first to the third stage of the disease. Indeed, chronic bronchial affections, whether existing alone, or complicating phthisis or asthma, are all but constantly aggravated by our winter.

The confinement, also, to which persons suffering from these affections must be condemned during the many months of bad weather which characterize an English winter, saps at

the very root of constitutional improvement. After even a few days' confinement to the house the appetite, digestive power, and nutrition flag; and thus a barrier is raised to the amelioration of the general health, which alone can arrest the progress of the disease.

After devoting seven successive years to the study of the winter climate of the south of Europe, after much travelling and reflection, after a careful perusal of the writings of other authors on climate, I have come to the conclusion that the most favourable and accessible climate for chronic disease of the respiratory organs, and especially for phthisis, as also for all diseases characterized by organic debility, is the undercliff of southern Europe, or the coast ledge which forms the north shore of the Mediterranean from Cannes to Pisa.

For the various climatic and meteorological data on which this opinion is founded I must refer to the third edition of my work entitled, "Winter in the South of Europe," in which they are fully developed. I will only here state, that the winter climate in this region is exactly the one which would theoretically respond to the requirements of phthisis, as I have described that disease. It is cool, sunny, bracing, stimulating, and dry. During the invalid season, which may be said to extend from the 1st of November to the 1st of May, there are seldom more than about thirty days' rain. Thus, out of the one hundred and eighty-one days comprised in the six months named, about one hundred and fifty are generally days of brilliant sunshine—so dry, that the hours from breakfast to dinner may usually be passed with perfect safety by an invalid, lying on the ground on a cloak in the sunshine. During more than half the days of rain even the rain is only partial, and several hours of sunshine are enjoyed.

In such a climate, if the rules which I have laid down in my work for the guidance of invalids, in this to them unknown

region, are strictly adhered to, there is an energetic stimulus given to organic vitality, and if it is not too late, or altogether unattainable, the powers of the system are effectually roused. The appetite and digestion improve, assimilation and nutrition become more natural, the progress of disease is averted, and nature at once begins to repair existing mischief. In phthisis crude deposits of tubercle are often absorbed and reduced to their inorganic cretaceous elements, cavities cease to secrete muco-pus, and then contract and cicatrize. These are results which I witness every winter at Mentone, the most sheltered and favoured spot of the whole Riviera, in many cases, although of course by no means in all. In many the disease is too far advanced, or the organic taint or exhaustion is too profound for any stimulus—hygienic, climatic, or medicinal—to arrest the onward progress of the malady. The rapidity only of its progress is modified, and it terminates by death, as in the ordinary run of cases in which all these means of treatment are not, or cannot, be applied.

There are cities in the south of Europe, such as Naples, Rome, Pisa, Malaga, that have long enjoyed an exceptional reputation in the treatment of pulmonary consumption. I believe that the climate of all these southern cities is very inferior to that of any part of the Riviera, with the exception, perhaps, of that of Malaga; but they are all, without any exception, very inferior to any part of the Riviera on hygienic and health grounds. They are all dirty, unhealthy, southern cities, with a very high rate of mortality from the diseases which produce the same results in the worst parts of our worst cities.

I maintain that consumptive people should reside in the country or in the suburbs of healthy towns, in order to secure the most favourable hygienic conditions; these favourable conditions are not obtained by those who live in the centre of badly-drained unhealthy towns. On the Riviera, at Cannes, Nice, Monaco, Mentone, St. Remo, the houses occupied by invalids are all suburban, in the country, with the sea in front and mountains behind.

The great winter sanitarium for consumptive invalids up to the present day has been Madeira. With all its charms and all its advantages, it does not appear to me to offer the conditions which are indispensable to rouse exhausted vitality. It seems rather to satisfy the requirements of the bygone period of the professional mind, when pulmonary consumption was considered a species of inflammatory disease, than to satisfy present requirements. For have I not repeatedly said that phthisis is now considered a disease of debility, of anæmia, of organic exhaustion, and of defective nutrition? According to the former view, a moist, mild atmosphere, a kind of natural orchid-house, would be just the place chosen. According to the latter, such a climate should rather be avoided, as calculated to depress vitality. The immunity from colds and inflammatory diseases of the respiratory organs which a mild, moist climate is calculated to afford, is purchased too dearly if it is gained by a loss of general tone, and by a diminution of appetite and nutritive power.

The most recent writer on Madeira, Dr. Stone, of the Brompton Consumptive Hospital, says, in the pages of the *Lancet* (December 2nd, 1865),—

"That the first effect of the climate of Madeira is peculiarly soothing. It is not until some months have elapsed that the balmy influences of equable temperature, and the soft breathing of moist, warm sea-breezes become absolutely cloying, and tend to enervate both mind and body. Some temperaments resist the approach of this *dolce far niente* longer than others; not a few, with well-meant efforts at resistance, pay by feverish attacks for unnecessary activity purposely indulged. . . . . All local varieties, however, are subordinate to the dominant

character of the climate, which is warm, equable, and moist almost to saturation."

The slightest consideration must lead any physiologist to the conclusion, that although such a climate may be a very agreeable one, may be especially soothing to all who are suffering from chronic bronchial disease, idiopathic or symptomatic, it cannot rouse organic vitality as the more trying, cool, dry, sunny climate of the undercliff of the Riviera undoubtedly does.

Seven years ago, impelled by the spirit of self-preservation, imbued with the views respecting the nature of phthisis which I have propounded in this essay, and which I believe are the views of the more advanced members of the profession at home and abroad, I carefully analysed the claims of the various winter stations. I thought of Madeira long and seriously, but shrank from it on the above-mentioned grounds. Already well acquainted with the south of Europe as a traveller, I thither directed my steps as an invalid, and I believe that I found in the Genoese Riviera the region that corresponds with the medical ideas of the day; the latter being in advance of the medical ideas of former times, and in my opinion the expression of truth.

Dr. Stone, in the article I have quoted, thinks there is a fashion in these things, that formerly Madeira was the fashion, and that now the Riviera and Mentone are becoming the fashion. I believe that he is mistaken. Madeira was supported by the medical profession as long as it thought that such a climate answered its requirements, which were then moisture and warmth. Now that it does so no longer, that other views prevail, that a cool, bracing, tonifying climate is demanded, Madeira falls in professional estimation, and the Riviera rises.

I thus lay claim to having been, during the last seven years, as a result of my own break-down in health, once more a

medical pioneer. I have sought and found a locality suited to the present state of the professional mind abroad and at home. All that I have written and said would have fallen to the ground had I not met with a ready response in the tone of mind of my professional brethren, who, after all, alone direct public opinion in these questions.

CHAPTER IV.

THE MEDICINAL TREATMENT OF PHTHISIS.

I HAVE now reached the most difficult part of my subject, one that still affords great room for difference of opinion, even if the premises contained in the previous papers are admitted. It would be vain to endeavour to reconcile the conflicting views which reign in the profession respecting the therapeutics of phthisis, so I shall confine myself to a statement of the conclusions at which I have arrived from my own personal experience in practice.

As that experience has increased, I have gradually arrived at the conviction that there is no medicinal panacea for pulmonary tuberculosis, any more than for any other form of tuberculosis. There is no one remedy, in my opinion—no one drug that can act as an antidote to this morbid diathesis; neither cod-liver oil, nor iodine, nor iron, nor the preparations of phosphorus, nor any other pharmaceutical agent. Those who believe that there is such an antidote appear to me to ignore the very nature of the disease, not to be aware that it is merely the local evidence or symptom of exhausted vitality, of general vital decay, a mode of death, manifesting itself as the result of worn-out organic power.

Such a condition is not to be remedied by physic, but mainly by physiology, with physic as an adjuvant, a handmaiden. It is only by removing all the causes that are depressing life, that are contrary to the healthy development of the functions of life, and by placing the sufferer in the most

favourable hygienic conditions for the development of his organization, that we can hope to arrest or cure such a disease. Here, again, horticulture has been of use to me. If a plant is failing because it is of a bad stock, or because it is placed in conditions of air, moisture, sun, shade, or soil, unfavourable to its habits and nature, it is not by adding this manure or that to the soil in which it grows, that it can be restored to health. All such efforts are vain. Its nature and habits must be studied, and then the conditions favourable to its healthy development in every respect must be adopted. Once this is done, a favourable change may take place, provided its vitality be not already too far depressed, or provided disease has not advanced too far to admit of recovery. At the same time, well-chosen manures, the addition of a necessary element deficient in the soil, may materially help the horticulturist.

So it is with physic in phthisis, although no mere drug can give new life to a decaying organization, can arrest and cure a disease in itself a mere symptom of such decay, an enlightened use of medicinal agencies may do much to aid improved hygienic conditions, in rousing and restoring vitality, and in arresting the progress of disease. There are many stumbling-blocks in the path of consumptive invalids, many conditions of disordered functional activity, which render the most hygienic treatment nugatory, and which physic has the power to modify and remove. Such are disordered conditions of stomach, liver, and intestines; morbid states of innervation, cerebral and spinal; uterine, vesical, rectal complications, functional or local, all of which are more or less under the influence of medicine.

To meet these and other complications we have numerous and valuable medicinal agents at our call: mineral acids, alkalies, vegetable bitters, sedatives, narcotics, alteratives, astringents, all of which in turn do good service in the hands of the experienced physician. There are few stages or con-

ditions of the disease in which such a practitioner does not find an important indication, something to do medicinally, by which nature and hygiene may be assisted in their operations. I am a firm believer in physic, and seldom or ever leave my consumptive patients entirely to nature. I firmly believe that I can help them by the application of rational therapeutics, and try to do so. When myself a consumptive invalid, for many years I was always doing something in the way of medicinal treatment; and have the decided conviction, right or wrong, that I increased my chance of recovering by thus meeting the varying phases of my own case.

Having laid down on a broad basis the principles which should, in my opinion, regulate the treatment of phthisis, I have a few words to say on some of the therapeutical agents which stand highest in the professional mind, pre-eminent amongst which is cod-liver oil.

Professor Bennett, of Edinburgh, first introduced this agent to the profession in Great Britain, in a work written, *ex professo*, on the subject in 1841. He had found it extensively given in Germany; and in this work communicated to his countrymen the experience of his German friends, as also his own. A few years later, Dr. C. B. Williams, our most eminent and enlightened thoracic pathologist, gave cod-liver oil the sanction of his great experience. From that time its influence in favourably modifying nutrition, and in arresting tuberculosis in the lungs, has been universally acknowledged; so that now it has become the great remedy for consumption, and that most deservedly. Some of our American brethren state that, since its general use in phthisis, the mortality from the disease has sensibly diminished, and as a result, that the general death-rate is lower.

The question naturally presents itself, if cod-liver oil undoubtedly exercises a beneficial and even curative influence on pulmonary tuberculosis, why and how does it produce this

effect? Chemical analysis of fish-oil does not give a clue, for the amount of iodine and bromine discovered is so infinitesimal that we can hardly admit that theirs is the potent influence; especially when we find that, administered alone in these or even in larger doses, the therapeutical effect is not produced. To discover the clue we must fall back upon physiology.

It is now generally admitted by physiologists that fatty substances, if not absolutely essential to digestion and nutrition, exercise a most beneficial influence over these processes; indeed, nature appears to have placed fats within the reach of man all over the world, and to have implanted an instinctive craving for them in mankind. In northern climates, the natives consume largely fish-oils alone, or with their food; in temperate climates, butter and meat-fats take their place; while in sub-tropical regions vegetable oils, such as olive-oil, form an important element of the food. Even in the tropics there is the palm-oil, and gee, or butter, to satisfy the absolute want of fatty substances. From physiological requirements to those of the morbid condition of nutrition which constitutes tuberculosis there is only a step, which observation has made. It has been long remarked that in these morbid conditions of the human economy a larger amount of fatty nutritive elements than is usually required becomes a means of restoring nutrition to a more healthy state, and that these fatty elements become, positively, therapeutical agencies.

If this view of the action of cod-liver oil is the correct one, if in giving it we are merely ministering, in an exaggerated degree for therapeutical purposes, to a natural health requirement, any fatty substance would have the same result. Within certain limits I believe that such is the case—cream, fat meat, vegetable oils, bacon, butter, all answer the physiological condition, and I invariably give them, if possible, when the patient's stomach cannot bear the fish-oil. But I also believe with the rest of the profession, that the

fish-oil is the best, is the easiest digested and assimilated, and is the fat to which the stomach gets the soonest reconciled, and which it can take the longest. I myself took an ounce and a half a day for five years without intermission, at last with pleasure, and always with benefit to the digestive processes. A medical friend of mine, well known to the profession, who has, like myself, saved his life by the combined influence of hygiene, climate, and physic, could never take cod-liver oil; "but then," says he, "I took fabulous quantities of butter with my meals."

It is a known and admitted fact that the greater number of those who now recover from phthisis are persons who have taken cod-liver oil. This fact certainly redounds to the credit of the remedy, but it must be remembered that those only can take it in whom the digestive organs are in a sound condition naturally, or in whom they have been restored to a sound condition by proper medical treatment. Women in whom uterine disease sympathetically produces nausea and sickness, those who are suffering from chronic dyspepsia, or from chronic liver or kidney disease, generally speaking, cannot take the fish-oil; it nauseates them, makes them sick, and destroys their appetite, as often do all other fatty substances. Thus, the recovery of those who can, and do, take cod-liver oil may be not so much because they take it, as that their digestive system is sound, and that they can take and digest fat and plenty of good nourishing food besides. On the other hand, those who cannot take the oil, and die, may die not so much because they do not take the oil remedy as that their digestive system is bad, and cannot be restored to a healthy state, so as to admit of the food-cure.

The undoubted improvement of the majority of the consumptive patients who can take cod-liver oil or other fats, in health, in strength, and in condition, has received additional and most valuable explanation and confirmation from some recent interesting physiological experiments. These experiments have been made during the last year by Dr. E. Smith, the Rev. Professor Haughton, Dr. Frankland, and Professors Fick and Wislicenus, of Zurich, with a view to arrive at a clearer notion than we had before respecting the origin of the power shown or spent by animated beings. They have been carried on under the influence of modern views respecting the correllation of physical forces, and the doctrine of the conservation of force and of the equivalency of heat and mechanical force. The generally received physiological idea of nutrition is, that nitrogenous or albuminous food, by the process of assimilation, is transformed into muscle and force; whereas carbonaceous, fatty, amylaceous food, is burnt, and generates animal heat. The experimentalists whom I have quoted appear to have satisfactorily established that the production of the muscular power spent by animals and man is not so much to be attributed to the assimilation of nitrogenous food as to the slow combustion of carbonaceous food. According to this theory, the formation of animal heat by the combustion of carbon is attended with the development of "force," of which the muscles may possibly be only the instruments, not the producers.

This view may be familiarly explained by the steam-engine; the latter, in burning coal, does not only produce heat, but power, the power that drags the train along. In a more obscure, but equally evident manner, the slow combustion of food in the processes of nutrition is attended with the development not only of heat, but of power, force. If the above views are correct it would follow, singular as the statement appears, that more power or strength is to be got out of fat than out of meat or muscular tissue; and this really seems to be the case. Tyrolese chamois hunters find that they can endure greater fatigue on beef-fat than on the same weight of lean meat; and accordingly, when about to absent themselves for several days

in the mountains, they take beef-fat with them instead of meat. (See *Intellectual Observer*, July, 1866.)

Thus is explained the craving of mankind for fatty food, and for carbonaceous food generally. Thus is illustrated the generally acknowledged physiological principle, that man is omnivorous, and is also explained the strength of the rice-eating Hindoo, and of the potatoe-eating Irishman. A rational dietary is evidently the one in which nitrogenous and carbonaceous food are mingled in due proportion.

Lastly, we may safely conclude that fats are not "bilious," bile producers, as popularly believed, but that the inability to digest them is merely an evidence of defective, or of weak and easily disturbed digestive powers. The great majority of those whose digestive system is in good order digest fats with the greatest ease, and that in large quantities. The dislike so often shown to fat by persons in good health is often merely a result of education—of mothers most foolishly and erroneously picking out the fat from their children's food in early life "as unwholesome and bilious."

Iodine has a great reputation in the treatment of other forms of tuberculosis, and especially scrofula, which may be said to be almost the same disease. I presume this reputation is a deserved one; but, as iodine is always administered conjointly with a generous dietary, and with persevering hygienic treatment, it is very difficult to form an estimate as to its real value. In pulmonary phthisis it certainly does not appear to me to exercise much influence; and as it is apt to disorder the stomach and to interfere with the appetite, I now seldom give it internally. I constantly, however, use it externally, over the diseased regions of the lungs, as a counter-irritant, and to promote absorption of adhesions.

Once it is admitted that the treatment of phthisis ought to be sthenic, invigorating,—not antiphlogistic or debilitating—iron and its preparations naturally present themselves to the

mind. I have often administered them, and I believe with benefit, in the stage of convalescence or retrogression, when tubercle is no longer deposited, but in process of absorption or cretefaction and when the period of debility and lassitude supervenes. I have also given them during the acute stage, but I think without beneficial result. Indeed, at that stage they appear to me, like iodine, often to disorder the stomach, and to interfere with the appetite and digestion. When I observe this under any medication, I at once stop the remedy, firmly believing that food is of more value than physic if the choice is between the two. It is a remarkable fact, that no physicians writing on chalybeate or iron waters recommend them for active phthisis; indeed, the opinion that they are not only useless but dangerous appears to prevail.

Preparations of phosphorus, and especially the hypophosphites of soda and lime, were introduced by Dr. Churchill some ten or twelve years ago as a positive remedy for pulmonary phthisis. This is still Dr. Churchill's belief; and I, who have known him from early life, am convinced that he is sincere—that he really believes that he has found an antidote, a remedy for pulmonary consumption. The subject has of course much occupied my thoughts, and during the last seven years I have administered the drug to a large proportion of those whom I have attended.

Were I only to quote the successful cases that I have had under my care, the cases in which the tubercular disease has been arrested and even cured, I could furnish Dr. Churchill with many instances of cure, myself included, which have apparently taken place under the influence of the hypophosphites, as they were long and constantly administered. But, on the other hand, I have quite as many, perhaps more, cases of death to narrate in patients whose condition admitted of recovery from the extent of the disease, and who perseveringly took the hypophosphites from the beginning to the end.

Were the preparations of phosphorus given really an antidote to the disease, and the cause of the recovery in the first class of cases, they ought also to have cured many of the latter, for they were all placed under the same hygienic and social conditions. The scrutiny and comparison of these cases of success and non-success, however, have left in my mind the conviction that the different results obtained are to be explained by considerations of general pathology, by the type of the disease, the constitution of the patient, the conditions under which it was generated, and that the patients were not taking a remedy that had the power to control antecedents and conditions unfavourable to recovery. It is worthy also of remark, that I have always administered either Dr. Churchill's own preparations, or salts furnished by his own manufacturer, so that there is a certainty as to the genuineness of the drugs used.

Although not admitting that phosphorus and its preparations are an antidote to pulmonary phthisis, for I have seen too many cases of failure to be able to admit it, I believe that they constitute a valuable medicine in asthenic disease, and especially in tuberculosis. Their administration, also, is quite rational physiologically, and I may say also agriculturally. Phosphate of lime is one of the principal elements of our economy. It forms the bones, and is found in our tissues, and especially in the brain and nervous tissues. It is sound physiology and pathology to give freely to the animal system as food, or as physic, the elements of which that system is composed. If it is right to do so in health, it is equally right in disease. In tuberculosis observation shows that it is judicious to increase the usual amount of fat given in the system, and my observation seems to show me that it is equally right to increase the amount of phosphates. Phosphorus is only contained in limited amount in our food, although it exists in so large a proportion in our system. Its administration in a

disease of debility may, in my opinion, be compared to manuring an exhausted field. If corn is grown several years in succession in the same soil, the crop at last fails for want of phosphate of lime, which is necessary to form the grain. Add bone-dust or phosphate of lime and the corn comes up vigorously, and the grain forms healthily and well. It is in this sense that I give the preparations of phosphorus, and that I myself took them for five years.

The above views must have gained greater credence and weight with the profession than is generally admitted, for I am seldom consulted by a new patient at Mentone, each successive winter, without finding that he or she has been taking phosphorus in some shape or other, and that when the prescriptions are signed by the heads of the profession. Indeed, although I do not think Dr. Churchill is warranted in claiming for phosphorus the position which he gives it as a "remedy" for pulmonary consumption, I consider that the thanks of the profession are due to him for directing our attention to a valuable therapeutic agent in this dread disease.

In a sthenic, or strengthening treatment such as I describe, in the curable stage of the disease opiates can have but little place. What availeth it to allay irritation, to quieten cough, and procure sleep, if thereby the appetite for food is destroyed, as is usually the case when opiate cough medicines are given? Is it not better that the patient should have a moderate amount of distress and discomfort and eat, if eating is life and fasting death? In the latter stages of disease, when all hope of recovery is gone, and it is merely a question of soothing the last stage of life, then opiates become an inestimable blessing in judicious hands. There are, however, other sedatives—prussic acid, hyoscyamus, belladonna, conium—from which much ease may be obtained in the earlier stage of the disease when there is still hope of recovery.

As to expectorants I cannot say that I have much faith or

reliance in them. If muco-pus is abundantly secreted, it is better away, and nature expels it by the natural and then easy process of coughing. When secretion diminishes, as it does as the disease diminishes, and the patient coughs spasmodically to get rid of a sticky tenacious secretion, which causes tickling and irritation, I do not see what good is done by loosening it, as the term is, by squills, even if they have the power to loosen it, which I doubt. The real remedy is an effort of strong will on the part of the patient to repress coughing until the natural action of the bronchial villi has pushed the muco-pus into the larynx, whence it can easily be expelled. My attention was first drawn by Professor Bennett to the fact that the dry irritating cough for which expectorants are generally ordered, is often merely the result of positive improvement, and is best met by emollients and moral restraint.

The local inflammations of pulmonary tissue around softening tubercles, the local pleurisies which are the result of tubercular deposits reaching the surface of the lung, are no doubt benefited by counter-irritation—by painting the chest with caustic-iodine, by croton-oil liniments, by small blisters; but I question whether much good is done by issues. Indeed, I think the pain and annoyance they occasion often counterbalance all the good done, and that the remedy is out of all measure with the benefit obtainable by its employment. The inflammation can only be radically cured by the natural subsidence of the causes of internal irritation, which the counter-irritation of the issue does not in the least control.

A volume might be written on the treatment of phthisis according to these views; but I purpose limiting myself to the above brief general exposition, leaving my readers to fill it up themselves. I have now only to devote a few pages to the consideration of the "results of treatment," and I shall have then accomplished my self-imposed task.

CHAPTER V.

THE RESULTS OF MODERN TREATMENT.—PROGNOSIS.

Acute Phthisis—General Phthisis—Chronic Phthisis—Phthisis among the Rich — Phthisis with Complications — Scrofulous Phthisis — Localized Phthisis—Phthisis of the Aged—Gouty Phthisis—Phthisis among the Poor.

HAVING in the preceding chapters briefly analysed the nature of pulmonary tuberculosis, and described its treatment by hygiene, climate, and medicine, I am desirous, in conclusion, to say a few words on the results obtainable, in accordance with my experience, by the employment of these means.

As I have already stated, by combining the various agencies which I have described, and which constitute what I have termed the modern treatment of phthisis, many patients may be and are saved; but many still die, and must ever die. The question that I now purpose investigating, as far as possible, is: who are those who may live, and who are those whom all the resources of our art are unable to rescue from death? The answer to this question can only be approximated by referring to the laws of general pathology, by analysing the type of the disease, the circumstances under which it was generated, its stage of development when discovered and first treated, and its complications.

All diseases are greatly modified in their symptoms and progress, as also in the results of the treatment to which they are subjected, by the form or type which they assume from their first development, and none more so than pulmonary consumption. This disease may be acute or chronic.

In the acute type phthisis may run through all its stages in

a few weeks or a few months. I have known patients seized with a series of febrile symptoms, having all the appearance of typhoid fever, and die in four or five weeks. On a post-mortem examination the lungs have been found full of miliary tubercles. No treatment has or can have any influence whatever on the termination of such a case; the patient is destined to die from the first day. In other equally fatal cases of acute phthisis, although the disease does not assume the form of a continued fever, and occupies several months, instead of several weeks, in passing through its successive stages, there is no lull whatever, no interval of arrest. The lung tissue is progressively invaded by tubercular exudation, which rapidly softens, so that both lungs soon become a mass of advanced disease, and the patient dies without the disease having experienced any remission. What can medical science, climate, or hygiene do in such cases? Most surely is such disease a mere mode of dying. Indeed, it is a question whether the most active and judicious treatment much retards the fatal issue.

Acute phthisis is much more frequently seen in youth than in middle or advanced age. The disease participates in the vigour and energy of the vital functions in early life. I consider it to be the evidence of a profound and final decay of vital power; so profound that there is no effort whatever made by the economy to contend with the evil that attacks it. The cause of acute phthisis must be sought for in the exaggeration of all the causes, hereditary and social, that produce the disease, and perhaps in their concentration in the same individual. Thus, I have repeatedly witnessed it in persons who, with the hereditary predisposition or taint, have been exposed to extremely unfavourable hygienic conditions—town life, bad and scanty food, contaminated atmosphere, and great sorrows and cares.

Next in gravity to acute phthisis is the type of the disease in which the tubercular formation takes place, not in isolated patches, but all over both lungs simultaneously, at the apex,

in the centre, and at the base. If the patient dies from other disease in the early stage of this form of phthisis, the lung is found studded with crude tubercles in its entire extent. When they soften simultaneously, as they often do, the secondary bronchitis is generally severe, and the constitutional symptoms are very marked.

There are many degrees of intensity in this type of the disease; but the more the case recedes from tubercular development localized at the apex,—the favourable type for treatment,—the more serious is the prognosis.

When phthisis assumes the chronic type, as is generally the case (most fortunately), an unfavourable form for treatment is that in which the disease shows itself in the midst of very favourable hygienic and social conditions. If a poor sempstress, half starved, made to work eighteen hours out of the twenty-four in a polluted atmosphere, living in a state of constant mental depression, becomes consumptive, common sense tells us that the disease may have manifested itself from the action of removable causes. If she can be placed under more satisfactory hygienic and social influences, she may therefore, and often does, recover. But if, on the contrary, the disease appears in one who has been bred and nurtured in the lap of luxury—who has known no hardship, no privation, no sorrow—of course the prognosis is more unfavourable.

It must be more difficult to arrest the progress of disease in such cases, for probably the cause is some strong hereditary predisposition, some defect originating with the progenitors, or some defective condition of individual innate vitality. It is in such cases, more especially, that everything should be done that is humanly feasible to arrest the disease, that no agency should be left untried that can possibly rouse the vitality of the patient. It is in such cases that he or she should be at once removed from the social medium in which the malady has been generated, in the hope of counteracting some unknown,

unrecognised, and yet powerful home antagonistic influence. A change of climate is of inestimable value with these patients; indeed, it may be the only chance of arrest or recovery. Everything that is done, likewise, should be done from the very first; no time should be lost, for the foe is a most formidable one from the onset of the attack.

A class of cases still more inamenable to curative treatment is that in which there are serious complications present. Phthisis not unfrequently comes on in persons advancing in age, between thirty and sixty, who have led a hard life—who have taken large quantities of stimulants, and have exhausted perhaps an originally good constitution by excesses of various kinds. With them the stomach is generally out of order, the liver is often diseased, and sometimes the kidneys. What can treatment do in such cases? The disease may be considered a general break-up of the constitution, and the most judicious and persevering treatment seldom does more than retard the fatal termination.

Again, phthisis may attack at puberty those who during childhood have suffered from scrofula. This is a grievous and serious complication, but by no means so unpromising as those just described. Tuberculosis, or tubercular exudation, affects different organs at different periods of life. In infancy and early childhood it more especially attacks the meninges and the mesentery. In childhood and until puberty it attacks, in preference, the glandular structures of the neck, the extremities of the long bones, and the spongeous tissue of the bones in general, giving rise to the diseases of the articulations and bones which characterize scrofula. In early life, during my Paris career, I had charge for two years of a scrofulous ward of eighty young females, from fifteen to twenty years of age, in the hospital of St. Louis. They had nearly all glandular swellings, with or without scrofulous disease of the bones, ankles, knees, elbows, and a sad assemblage these poor girls were.

On several occasions I carefully examined the lungs of all my young patients, for I was publishing the clinical lectures of my master, the celebrated Dr. Lugol, and was much interested in everything connected with the pathology of scrofula. He wished to establish the connexion between scrofula and pulmonary consumption, and I found the evidence of localized tubercular deposits in the lungs of many of these scrofulous girls. The tubercular lung deposits were met with more especially among the elder ones, and that often although the patient presented little or no evidence of their presence. Dr. Lugol told me that he had long found this to be the case with his young scrofulous patients. When death, through accidental disease, afforded an opportunity for post-mortem investigation, the development of tubercles in the lungs of scrofulous youths was much more frequently observed in those who were arriving or had arrived at puberty than in those who were younger. Such tubercular exudations often remain crude and dormant for years, but when they assume a more rapid development and soften, the previous existence of scrofulous disease stamps the case as serious, although not necessarily as fatal. In these patients phthisis seems to appear, in its progressive form, as a species of climax to the antecedent tubercular or scrofulous affections. The crude tubercles which co-exist with scrofulous disease in the young, in the latent form, are no doubt often present without giving rise to any symptom, and they may be subsequently absorbed and the patient may recover without their presence having been even suspected.

The more favourable type of phthisis, that in which rational treatment is the most likely to arrest the progress of the disease, and even to effect a cure, is that which may be termed accidental phthisis, in a chronic form, localized to the upper regions of the lungs. In this type of the malady there is no very decided hereditary taint, the patient is not born of very aged or very sickly parents, and does not

present very serious complications in other organs, the evidence of a thorough and irremediable break up of constitution. Again, the disease generally manifests itself under unfavourable hygienic conditions, under the influence of overwork, sedentary town life, or harass, care, and anxiety. Sometimes in the most apparently luxurious and easy-going life some of these influences may be at work, so that appearances must not always be trusted. The habits and general life of persons moving in the highest circles, and having within their grasp every comfort, may be unhygienic. Moreover, they may be a prey, like humbler mortals, to cruel cares, none the less felt for not being recognised. Their nights may be sleepless, their days without joy; disappointed affections—social ties—or ambition may deprave digestion, and pave the way to the inroads of disease. In all such cases we may reasonably hope that the old saying, "sublatâ causâ, attolitur effectus," may be verified. If we can remove *all* the causes that are depressing vitality, and the disease is in an early stage of its development, we may hope firstly to arrest its progress, and secondly to effect a cure, and that at any period of life short of extreme old age.

Pulmonary phthisis in extreme old age—not so rare an affection as is generally supposed—appears to me an all but incurable form of the disease, a mere mode of dying. I saw a number of cases of this form of consumption in the year 1840, when in medical charge of the infirmary of the Salpétrière Hospital, Paris. This infirmary is fed by a population of three thousand five hundred old infirm women, between sixty-five and a hundred, all living within the walls of this magnificent institution. The disease assumes the form of chronic bronchitis, but is characterized, besides the stethoscopic and percussion symptoms, by a most unearthly degree of emaciation. In no other disease have I seen patients live in such a ghastly state of emaciation. They become at last

like living mummies—nothing, literally, but skin, bone, and "concealed" organs.

There is a form of phthisis, of which I have seen a good many examples, although it is not generally described. It may be termed gouty phthisis, and the prognosis, I consider, is rather favourable than otherwise, especially in its early stage. Consumption and gout are considered by many physicians to be antagonistic, but experience has proved to me that such is not the case, and the discrepancy between the theoretical and the practical view admits, I think, of easy explanation.

Gout develops itself, primarily, in persons of healthy, robust constitution, who live generously. Their digestive system being good enables them to take and assimilate a considerable amount of nitrogenized food, and of stimulants, which appear to be the cause of gout developing itself. These people—the primarily gouty—do not become consumptive, for their vitality is high and antagonistic to a disease of debility.

But when such robust gouty people, who have themselves developed gout in their organization by a luxurious existence, marry late in life, as they often do, and have children, they do not generate healthy, robust children like themselves. Their children are often delicate, without being positively unhealthy; they have weak digestions, and suffer all their life from what may be termed gouty dyspepsia. If their organization is not much tried they get through life very well, and may reach old age, even when suffering more or less from low forms of gout. If, on the contrary, they are much tried, body or mind—if they are placed for a continuance under unfavourable hygienic conditions, they fall below par, are liable to suffer from inflammatory affections of the aerial passages, which become chronic from lowness of general tone, and the deposit of pulmonary tubercle may follow. As I have stated, I do not think this form of phthisis an unfavourable one for treatment, for the constitution received from the parents is

often originally a good one, merely weak and tainted with the low type of gout. There is often great latent vitality to work upon. My own case is one of this kind.

An all-important element in estimating the probable result of treatment—in forming a prognosis, in a word—is the extent of lung diseased when the patient is fairly brought under rational treatment. I often familiarly compare the lung attacked with tuberculosis to a large house on fire. The fire may begin in the servants' rooms or garrets—that is, at the top of the lung, the most frequent original seat of tubercular deposit. If it can be put out before it has extended to the story below, but little inconvenience is afterwards experienced by the owner of the house. He can live very comfortably in it under ordinary circumstances, only feeling that there is "less room" than formerly on extra occasions, such as visits from friends. If the story below, or the two stories below, are destroyed before the fire is put out, he feels more or less inconvenience in his "daily" life, but still he can get on. But when all the house is destroyed except one room, or the cellars, it becomes quite impossible for him to live in it by any amount of contrivance. Moreover, it is all but impossible to save even that one room, when the fire has reached this point.

So it is with the lungs, which are not renewed, restored, when once destroyed; for we do not renew our organs as lobsters are said to renew their lost claws. Once a portion of the lung is destroyed, it is destroyed for ever, and its functions must be carried on by the healthy remainder. The only limit to curability, therefore, in my opinion, is the fact of there remaining a sufficient portion of healthy lung to carry on the functions of hæmatosis once the progress of the disease is arrested. The amount of healthy lung-tissue compatible with life evidently varies in different individuals according to their vitality. One lives long on a bit of healthy lung no larger

than a small apple; another dies with even less than that in a state of disease.

The first and all-important point, therefore, is to arrest the progress of the disease, as it also is to arrest the fire in the house. Unless that can be done, in the one and the other case, the entire tenement will be destroyed, more or less rapidly. The living in the damaged tenement afterwards is a matter of adaptation; and it is wonderful what either nature or man can and will do to adapt themselves to altered circumstances. We must also bear in mind that the more the fire or the disease has progressed, when it is first discovered, the more difficult it always is to arrest it.

When by the combined influence of hygiene, climate, and medicine the progress of phthisis has been arrested, crude tubercles have been absorbed or reduced to their mineral constituents, and cavities have been entirely, or all but entirely cicatrized, it must not be supposed that the patient is well and safe. The recovery generally, always indeed, takes place through improved nutrition, and often the convalescent consumptive patient is fat and rosy, and looks healthy and well. But these looks are deceptive, the result of a life passed under the most hygienic circumstances possible, in unnatural quiet and repose. At the bottom there is still the tubercular cachexia, which reveals itself by a want of power, by lassitude, and even prostration, if the habits of invalidism are abandoned, and the sufferer once more quits the shores of the stream of life for the rapid current.

Consumptive convalescents should consider themselves invalids for years, and it is only by doing so that they can hope really to regain a firm footing in life. They may aptly compare themselves to a railway truck, "warranted to carry six tons," which, after having been smashed, and then mended, painted, and varnished, looks as good as new, but is not so. It may carry two or three, or even four tons safely,

but no longer the original six, under penalty of a final catastrophe.

Those who cannot, or will not, thus consider themselves invalids, despite the outer appearance of health, relapse, and then all but invariably die miserably, for nothing saves them. I have now seen many such instances. One or two winters passed in the south, and rational treatment, arrest the disease, and bring with the improvement, delusive confidence. The patient either cannot, or will not, listen to advice, and goes out again to fight "the battle of life," but only to relapse, and to return to the south in a hopeless state.

What proves that even in those in whom the progress of pulmonary tuberculosis is arrested, tubercular cachexia, or defective vital power, long remains, is the frequency with which cachectic disease of another type subsequently attacks other organs. Thus last winter (1865-6) I lost at Mentone four patients from Bright's disease, all cases of arrested consumption. In one case consumption had been arrested for ten years, in another, six, in a third, two, in the fourth, one. They all four died with all but complete lung quiescence; serous infiltration gradually rising until it reached the lungs, and then extinguishing life.

A year or two ago, some of the Parisian friends and companions of my younger days, now men of mature experience, and occupying the most prominent positions in the Parisian medical world, gave me a dinner as I passed through Paris on my way south. After we had dined, my case was talked over, and one after the other gave the results of his experience of the treatment of phthisis. All believed in its curability; all could quote cases of arrest and cure in their practice; but one and all stated that many of these cases of arrested consumption had subsequently died of some other form of cachectic disease, and principally from albuminuria, like my four patients of last winter.

Thus, perseverance and energy are long required, not only during the course of treatment but for years after, if a thorough recovery is to be made, or even if a prolongation of enjoyable life is to be secured. This is really one of the most trying features of the disease, even when successfully treated. If we succeed in escaping death we must accept invalidism for a long period, perhaps for the remainder of our lives. I would remark, however, that this applies more to the middle-aged who recover from phthisis than to the young. The latter have such an amount of organic activity about them, the characteristic of early life, that if they recover completely they may, with care, and by leading a hygienic life, regain a firm hold on life.

To secure this result I often advise my young male convalescent patients to abandon, if possible, sedentary pursuits, and to turn their thoughts to out-door occupations. Our Australian and South African colonies offer valuable fields for such persons. Life in the bush, among cattle and trees, in a dry climate like those I mention, is certainly more favourable to the prolongation of life in a tubercular convalescent patient than a city counting-house. Had I myself been a younger man, I should have adopted this course. As it is, I have come as near to it as possible by becoming an "amateur horticulturist."

Foolish people have scarcely a chance of recovery—they must perish. They generally do everything that is wrong and pernicious to please their own passing whims and fancies, and often look upon the friendly physician, who tries to rescue them from death, as one to be deceived and deluded. I repeat it, such unfortunate people have scarcely a chance of recovery. They have neither the sense to follow the right course when it is pointed out to them or to grasp the hand of fellowship and sympathy when it is held out; nor will they sacrifice pleasure, money, or ambition to the pursuit of life. Indeed, I consider a weak, vacillating, peevish tone of mind, or an inordinate

appreciation of, and clinging to, the enjoyments and possessions of life, to be as unfavourable an element of prognosis as any of those already discussed. Such mental conditions all but certainly preclude recovery, however favourable the case may otherwise be.

When I reflect on the convictions that have gradually gained ground in my mind respecting the treatment of phthisis —convictions embodied in the preceding pages—I am often saddened by the thought, How are the poor to struggle successfully with such a disease? If rest from weary labours, if protection from atmospheric vicissitudes, if ample, nay, a luxurious dietary, if expensive medicines, such as cod-liver oil, if change of climate, to escape winter cold and wet, are necessary, how can those who live by their daily labour—and even many above them in social rank—hope to escape from the grasp of this fell disease? Is not the battle itself for them a hopeless one?

To these questions I would answer, that although the struggle for life cannot, most assuredly, be made with the same chance of success by the poor as by those whose position enables them to do all that is calculated to arrest disease, yet their case is by no means a hopeless one. The means of treatment that I have recommended—hygiene, climate, medicine—may be attended to at home, in our own country, in the midst of the duties and occupations of life, although in a minor degree. I have met with cases of arrested and cured phthisis in persons who have never left England, and who have never given up their social pursuits, and so have other physicians. Some of the most satisfactory and conclusive cases given in Professor Bennett's valuable work "On Pulmonary Consumption," are cases of this description.

To attain this end, however, nothing should be neglected. Unhygienic, unhealthy occupation should be given up; all the rules of hygiene to which I have alluded should be scrupulously followed; out-door occupations substituted for in-door during the summer months, if possible; and, more especially, town should be abandoned for the country as a residence, whenever feasible.

Cities exercise a mysterious attraction over the lower as well as the higher classes of mankind. It must be the feverish excitement of city life, the hope of greater social advancement —for the greater portion of the lower classes in cities live as hard or harder lives than they would if similarly engaged in the country. No doubt the vitiated air breathed in cities, in the close crowded workshops, and in the closer and still more crowded sleeping-rooms, gradually weakens the constitutional powers, and constitutes the principal predisposing cause of phthisis. The poor should return to their native villages, if by any means feasible, even if there they have to accept a lowlier position than that which they have attained. The younger members of the family, when attacked with phthisis, should be sent to board or work with country relatives. The country air would do them more good than all the physic they can get from hospitals and dispensaries in town, and give them a better chance of recovery.

Indeed, it has often struck me that the funds of our city charitable institutions would be best employed by boarding their consumptive patients in farm-houses and agricultural villages, than in maintaining them in the wards of a city hospital. Or the hospital itself might be placed on some heathy, pine-covered moor, like the Convalescent Hospital at Walton-on-Thames; and out-patients only seen in town.

It must be well understood that I am now speaking only of *curative* treatment. If all hope of recovery has been abandoned, if the lungs are all but destroyed, and the disease cannot be arrested—if an asylum to die in is all that is required—then it is of but little avail to drive the poor patient into the country, away from home ties and home assistance.

Then, when the last scene is at hand, any asylum will do to die in—the small home, with dear friends around, the city hospital, the workhouse infirmary.

The recent researches regarding nutrition, to which I have elsewhere alluded, are consolatory as regards the poor. As long as we believed that, in the scheme of nutrition, meat meant muscle and strength, fats and cereals heat only, the poor at home seemed to have but a slight chance of recovery in asthenic diseases, diseases of debility. With meat nearly a shilling a pound, how can they obtain ten shillings' worth each week; and if it is indispensable, how are they to get well without? But if, as is now stated—and, I believe, with truth—meat is principally a muscle repairer, and the force created is in reality principally obtained out of the carbonaceous food, fats and amylaceous substances, the chance of the poor is infinitely greater when "force" has to be regained. Oatmeal or any cereal with milk and oil or fat will, in that case, do as well as butcher's meat, and a few shillings a week will go as far as ten.

I have certainly, throughout my professional career, remarked, as already observed, that meat-fed children, and great meat eaters, are not stronger than other people. With children, indeed, I believe it is the reverse. The children whom I have attended, who have lived on meat, eating it three times a day—certainly not by my advice,—have not proved as strong nor as healthy as those who have lived on a more mixed dietary. Compare these town-fed children, who eat from ten to twenty shillings' worth of meat every week, with the Irish or Scotch peasant children, fed all but entirely on potatoes and milk, or oatmeal and milk. These researches also explain the disastrous effects which have, in many instances, resulted from the very nitrogenous or animalized dietary recently vaunted as a remedy for obesity.

Of course, I am well aware that the advice I now give can

only be partially followed, that there ever will be persons affected with phthisis in all classes of society, by whom it must be accepted as the decree of Providence, and who must struggle with it *in situ*. But even in such cases, in the earlier stages of the disease, a curative treatment may be attempted by all, even those whose means are small, or who depend on their daily labour for their bread. In more advanced disease, likewise, a lull may be taken advantage of to make the attempt. Pulmonary consumption does not usually progress steadily, uninterruptedly; its very nature is, on the contrary, to advance *per saltum*, by jerks, as it were. When not treated, it generally remains stationary for a time; then progresses, then again remains stationary, to again progress. We may take advantage of these lulls, which represent nature's own unaided efforts to limit and control the morbid action, in order to further hygienic treatment.

Following out this train of argument, I advise the young clerk, if able, as soon as a lull takes place, or is obtained by treatment, to give up sedentary pursuits, and turn farmer at home, in Australia, New Zealand, or the Cape. I advise the young artizan to abandon the town, and to follow his calling in the country. I advise the town maid-servant, or sempstress, to leave the city, and to find service or work in some country place. Nearly all have country friends, who will help them in their efforts.

There was a time when, like my neighbours, in such cases, among the poor, I prescribed tonics, cod-liver oil, and a generous dietary, and thought my duty performed. Now I have learned better; I have learned to place but little confidence in the curative value of mere medicinal treatment, pursued for a time, then abandoned. If the patients, whatever their class of life, remain exposed to the influences under which the disease is generated, their fate is generally sealed, whatever the treatment. Now, therefore, I try in such cases to encourage them

to make the family and social sacrifices which a more radical treatment of their disease entails. Family and social ties are as strong with the poor as with the rich; and the tendency is even stronger with them than with the better educated, to demand from the physician a remedy which is to cure their complaint without any change or sacrifice on their part. As I have repeatedly said in the course of this essay, no such remedy exists for pulmonary consumption, nor is it probable that it will ever be discovered.

The various cures for pulmonary consumption that are constantly brought forward are founded on entire ignorance of the laws of general pathology. Those who are acquainted with these laws know well how utterly impossible it is for any one of the remedies proposed, for the inhalation of any medicinal substance, or of any amount of compressed air, or for any degree of forced inspiration, to cure a disease such as I have described, one of defective lowered vitality.

Nothing but an appeal to the laws that regulate the preservation and development of life can have that result. An intelligent application of those laws, as demonstrated by physiology, with the assistance of climate and rational therapeutics, may, however, be made most unquestionably the means of saving very many lives. As I have stated in my work on Climate ("Winter in the South of Europe," third edition), I am now surrounded, both at home and abroad, by a little centre of friends and patients whose lives have been saved, like my own, by the steady application of these principles.

FINIS.

LONDON:
SAVILL AND EDWARDS, PRINTERS, CHANDOS STREET,
COVENT GARDEN.

RECHERCHES ET OBSERVATIONS

SUR LA

HERNIE LOMBAIRE

COMMUNIQUÉES

A L'ACADÉMIE IMPÉRIALE DE MÉDECINE

SÉANCE DU 9 MARS 1869

PAR

M. H^te R^on LARREY

Inspecteur, Président du Conseil de santé des armées,
Chirurgien ordinaire de l'Empereur,
Membre de l'Institut (Académie des sciences),
de l'Académie de médecine et de la Société de chirurgie,
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Rue Hautefeuille, 19, près du boulevard Saint-Germain.

1869

RECHERCHES ET OBSERVATIONS

SUR

LA HERNIE LOMBAIRE

Par M. Hte Bon LARREY

Le fait remarquable de hernie lombaire présenté à l'Académie, dans sa dernière séance (2 mars 1869), par M. le professeur Hardy, est assurément, comme l'a énoncé notre honorable collègue, un cas fort rare, mais moins exceptionnel qu'il ne le pense, d'après les trois ou quatre exemples rappelés par lui, sous l'autorité des noms célèbres de J. L. Petit, Pelletan, Boyer, J. Cloquet, et sous la garantie des savants chirurgiens qui les ont successivement cités ou reproduits.

Malgaigne, notamment (*Anatomie chirurgicale*, t. II, 1838), et d'autres auteurs, depuis, acceptant le témoignage de sa vaste érudition, ont accrédité, à cet égard, une erreur qu'il devient utile de rectifier. Il s'agit simplement de faire à chacun sa part, dans l'étude et dans l'observation de la *hernie lombaire*, que je proposerais d'appeler *hernie inter-costo-iliaque*, si j'attachais aux mots plus d'importance. J'admets donc volontiers la dénomination qui semble prévaloir, pour en venir au but de ma communication.

J. L. Petit auquel on attribue la première description de la *hernie lombaire*, avec le mérite de lui avoir laissé son nom, avait cependant été précédé dans l'examen des cas de ce genre, comme me l'ont démontré des recherches que j'ai entreprises autrefois. Je demande à l'Académie la permission

de lui en exposer aujourd'hui un aperçu sommaire, afin de joindre à l'observation que j'aurai l'honneur de lui lire, le résumé ou l'analyse des principaux faits publiés par d'autres, mais encore assez peu connus. Il me sera facile ensuite de compléter, dans le *Bulletin*, les développements nécessaires à ces différents faits, que je me bornerai ainsi à indiquer dans cette séance, afin de ne pas abuser de la bienveillante attention de mes collègues.

Il y a une quinzaine d'années que j'avais commencé ces recherches sur la hernie lombaire, pour en faire l'essai d'une monographie, à propos d'une observation recueillie dans mes salles de clinique du Val-de-Grâce. Mais je n'avais pas donné suite à cette étude, à cause de la diversité des faits signalés par d'autres chirurgiens, et mis en doute par quelques-uns, comme exemples de hernies lombaires proprement dites, soit traumatiques, soit spontanées, à ce point que bon nombre d'ouvrages les ont même passées sous silence.

C'est à peine s'il en est question, non-seulement dans la plupart des traités généraux de chirurgie, mais encore dans les publications spéciales sur les plaies ou sur les hernies de l'abdomen. Ni Heister, entre autres, dans ses *Institutions de chirurgie*, 1770, ni Sabatier, dans sa *Médecine opératoire*, ni John Bell, dans son *Traité des plaies*, ni bien d'autres écrivains classiques de différentes époques, ne parlent de la hernie lombaire, soit méconnue, soit contestée par eux.

Léveillé (*Nouvelle doctrine chirurgicale*, t. III, 1812), dans le chapitre des hernies abdominales, décrit les variétés épigastrique, ombilicale, de la ligne blanche, inguinale, crurale, obturatrice, ischiatique, vaginale, périnéale, mais ne dit pas un mot de la hernie lombaire.

Sir Astley Cooper (*Œuvres chirurgicales*, traduites par MM. Chassaignac et Richelot, 1837) disserte assez longuement sur la hernie ventrale, mais il se tait sur celle qui se produit dans le flanc ou dans la région costo-iliaque, appelée région lombaire.

Samuel Cooper, dans un bon article sur les *Abcès lombaires*

(*Dictionnaire de chirurgie pratique*, traduit de la 5e édition, 1826), ne cite pas les tumeurs ou les hernies qui peuvent simuler ces abcès, comme « dans un cas singulier, dit-il, d'abcès du psoas, dont le pus fut à la fin résorbé ».

Garengeot (*Mémoires de l'Académie royale de chirurgie*, t. Ier, 1743) ne parle pas de la hernie des lombes, dans son *Mémoire sur plusieurs hernies singulières*, et néanmoins il en rapporte ailleurs, ainsi que nous le verrons bientôt, l'un des premiers exemples les mieux observés.

Leblanc (*Nouvelle méthode d'opérer les hernies*, 1782) n'y fait pas seulement la plus simple allusion.

Hoin (*Essai sur différentes hernies*, publié à la même époque) ne s'occupe pas davantage de celle qui nous intéresse, et cependant il recherche les cas rares.

Richter (*Traité des hernies*, traduit par Rougemont, Bonn, 1788) garde le silence sur les hernies lombaires qu'il semble ranger dans la classe des hernies ventrales.

Scarpa (*Traité pratique des hernies*, traduit par Cayol, 1823) ne dit rien lui-même de la hernie lombaire, malgré toute la valeur de son ouvrage (publié en Italie de 1809 à 1810).

M. le professeur Gosselin (*Leçons sur les hernies abdominales*, recueillies par M. Labbé, 1865) ne parle pas des hernies lombaires, qu'il comprend peut-être implicitement parmi les hernies traumatiques, sous le titre générique de *Hernies à travers une plaie récente de la paroi abdominale*. Mais notre savant collègue fera sans doute connaître, plus tard, son opinion sur cette étude rétrospective.

J'ai eu l'occasion de dire, en commençant, que les cas de *hernie lombaire* ne sont pas absolument aussi rares que l'avait supposé M. Hardy. Leur petit nombre, en effet, ne se réduit pas à trois ou quatre exemples, comme il le pensait, mais s'élève à vingt-cinq déjà, d'après mes recherches seulement. On en trouverait encore davantage, je suis porté à le croire, en parcourant, d'une manière plus suivie, les annales de la science et surtout les travaux de la chirurgie étrangère.

Les chirurgiens d'autrefois ne paraissent pas avoir connu

la hernie lombaire, à moins d'admettre qu'ils l'eussent désignée sous le nom de *hernie dorsale*, mais cette désignation s'appliquait plutôt, pour eux, à ce que l'on entend aujourd'hui par hernie ischiatique.

Arrivons maintenant à l'origine historique de la *hernie lombaire* proprement dite.

Paul Barbette, dans un passage de son livre de chirurgie (*Opera chirurgico-anatomica*, Lugd. Batav. 1672), indique la région du flanc qui peut donner lieu à la formation d'une hernie traumatique. La première notion de ce fait, quoique un peu vague, nous semble pouvoir lui être attribuée.

Reneaulme de Lagarenne, dans un petit volume intitulé : *Essai d'un traité des hernies, nommées descentes*, et publié en 1726, comme traduction d'une thèse latine de 1721, dit formellement et en termes que nous devons souligner :

« Dolée parle d'une espèce de *hernie* qu'il nomme *lombaire*, dont il donne la situation *entre les dernières des fausses côtes et la crête de l'os des îles, arrivée par la division des fibres des muscles obliques et du muscle transverse*. Elle paraît si singulière, que l'on pourrait douter qu'elle eût jamais existé sans plaie qui l'eût précédée. »

Voilà certainement, on ne saurait le contester, la première désignation exacte et précise de cette hernie lombaire ou de la région costo-iliaque, dont la description a été attribuée plus tard à J. L. Petit, tandis qu'il n'en avait pas la priorité.

Croissant de Garengeot (*Traité des opérations de chirurgie*, t. Ier, 1731) raconte dans sa 23e observation, celle d'une blanchisseuse, qui, après un faux pas, ressentit une douleur au côté droit du ventre, entre la crête de l'os des îles et les cartilages des fausses côtes. Prise ensuite de vomissements, elle envoya chercher un médecin qui ne put les faire cesser, malgré diverses prescriptions. Garengeot, appelé trop tard, trouva cette femme morte, en arrivant chez elle. L'idée d'un étranglement herniaire se présenta aussitôt à l'esprit de l'habile chirurgien, dès qu'il eut été renseigné sur la nature des

accidents, et en examinant le ventre, il remarqua au côté droit une tumeur grosse comme une noix, siégeant dans l'espace compris entre la crête de l'os des îles et les cartilages des fausses côtes. « En maniant, ajoute-t-il, un peu artistement cette tumeur qui était dure, elle rentra tout d'un coup, en faisant un bruit assez clair. »

Garengeot, dans les réflexions qu'il joint à cette observation, critique la conduite et l'ignorance du médecin venu, avant lui, auprès de la malade. Mais quoi qu'il en fût, il paraît bien évident, d'après ce fait oublié encore ou méconnu, que l'une des premières observations de hernie spontanée des lombes, sinon la première de toutes, appartient à Garengeot, qui a eu le mérite de porter un diagnostic exact, *post mortem*.

Le Dran (*Traité des opérations de chirurgie*, 1742) semble avoir entrevu ou supposé l'existence de la hernie des lombes, en indiquant, à propos des hernies ventrales, celles qui peuvent se former en dehors et sur les côtés des muscles droits. Mais il ne cite aucun fait à l'appui de cette supposition qui, de sa part, n'est peut-être pas suffisamment établie.

Ravaton, chirurgien des armées (*Traité des plaies d'armes à feu*, 1750), rapporte l'observation (60e) d'une hernie ventrale de la région lombaire. Cette observation, eu égard à son importance décisive, mérite une analyse assez développée.

Ravaton avait été mandé, en 1738, auprès d'une femme enceinte ayant, depuis trois semaines, une tumeur hémi-sphérique à la région lombaire gauche, et vomissant, depuis son apparition, tout ce qu'elle prenait. Plusieurs médecins successivement appelés, considéraient cet accident comme un effet de l'état de grossesse, en déclarant que la tumeur et les vomissements disparaîtraient, au terme de l'accouchement. Mais de la fièvre et quelques symptômes inquiétants firent consulter Ravaton, qui, en examinant avec soin la tumeur, constata les signes les plus caractéristiques d'une hernie ventrale irréductible.

N'osant d'abord tenter l'opération du débridement, il prescrivit, en vain, différents remèdes, propres à faire cesser les

symptômes d'étranglement. La malade le supplia ensuite elle-même de tout entreprendre pour lui sauver la vie, et il s'empressa de l'opérer, en présence des autres médecins convoqués exprès. Voici comment il rend compte de cette opération :

« L'incision des téguments et des muscles faite, quelques membranes et le sac herniaire déchirés, je découvris d'abord un dépôt de matière purulente qui s'évacua et me laissa voir une portion de l'épiploon altéré, suppuré, que je nouai et coupai tout de suite; il y avait au-dessous trois petites circonvolutions des intestins grêles que je fis rentrer, parce qu'ils m'avaient paru dans l'état naturel, avec la portion de l'épiploon noué. Après avoir suffisamment dilaté la plaie et arrosé toutes ces parties d'un mélange d'huile et de vin tiède, j'appliquai dessus un morceau de linge fin trempé dans la même liqueur, plusieurs compresses mouillées d'eau-de-vie, et le bandage de corps pour soutenir le tout. Deux heures après, la malade fut copieusement à la selle, dormit dix heures d'un sommeil profond, garda les aliments que je lui ordonnai, et ne fut plus travaillée des vents, comme elle l'avait été, depuis le commencement de sa maladie, de façon que ses parents la crurent hors de danger. »

Mais la suite de l'observation nous montre que les accidents reparurent le lendemain, soit par la ligature de l'épiploon, soit par la sortie des intestins; l'appareil fut levé, difficilement réappliqué; les symptômes généraux, toujours graves, se calmèrent cependant, les forces épuisées se ranimèrent peu à peu, par un régime approprié; la ligature faite à l'épiploon se détacha, le onzième jour, par la suppuration; et quoique les intestins fissent irruption, à chaque pansement, quoique de la diarrhée survînt avec quelques vomissements et persistance de la fièvre, cet état si alarmant fut enfin modifié, puis amélioré, par les soins excellents de Ravaton pour sa malade. Le danger, encore extrême, parut moindre, du douzième au quinzième jour, et ensuite la diarrhée cessa, les vomissements se calmèrent, les pansements devinrent plus faciles, par la réduction graduelle des intestins et par la cicatrisation progressive de la plaie, qui

fut enfin guérie tout à fait, deux mois et quelques jours après l'opération. Cette femme se rétablit ainsi peu à peu et accoucha heureusement.

Ravaton ajoute à ce fait si remarquable une très-judicieuse réflexion, que je crois devoir citer en termes textuels :

« Ce qui a rendu, dit-il, cette maladie rebelle et dangereuse, c'est qu'elle fut méconnue, au commencement et qu'on laissa passer un temps précieux, sans y apporter aucun remède. Si l'on eût tenté la réduction de la hernie, au moment qu'elle parut, et qu'on l'eût contenue avec un bandage, il ne serait point arrivé d'accident. Le succès de l'opération était bien équivoque, cependant elle a réussi; c'est pourquoi je conseille de tout tenter, pour sauver les malades, dans les cas désespérés. »

Lachausse, dans une dissertation intitulée *De hernia ventrali* (*De la collection des thèses médico-chirurgicales* de Haller, vol. III, 1759), relate l'observation d'un perruquier, porteur de plusieurs hernies abdominales, dont deux siégeaient dans chaque région lombaire. Mais les signes descriptifs de cette hernie sont assez vagues et incomplets. L'auteur se contente de dire : « Lateraliter vero, versus re» giones lombares, duo alii tumores magis notabiles con» spectui sese sisterent. »

Portal (*Précis de chirurgie pratique*, t. II, 1768) fait allusion seulement aux *hernies ventrales* qui peuvent se former par causes mécaniques sur les parties latérales de l'abdomen; mais il n'en fournit point d'exemple.

Balin, ci-devant chirurgien aux armées, avait publié, en 1768, un petit volume ayant pour titre : *L'art de guérir les hernies*, dans lequel se trouve un court chapitre sur les *hernies des lombes*, etc., commençant ainsi :

» L'hernie lombaire peut survenir entre la dernière fausse côte et la crête de l'os des îles, à l'endroit où le muscle oblique externe n'est attaché que par un tissu cellulaire. « Barbette, ajoute Balin, est le seul, que je sache, qui paraisse avoir

connu cette espèce de tumeur. L'expérience, dit cet auteur, m'a appris que le péritoine peut se rompre aussi, à la partie postérieure, vers le dos et y former hernie. »

Chopart et Desault (*Traité des maladies chirurgicales*, t. II, 1779) disent à ce sujet :

« Les hernies ventrales se forment dans les régions latérales de l'abdomen, au côté externe des muscles droits ; *rarement dans la région lombaire*, après des chutes, des efforts violents, et communément à la suite des plaies pénétrantes, ou de l'ouverture d'abcès situés sous les aponévroses et les muscles. »

J. L. Petit vient ensuite et, dans son *Traité des maladies chirurgicales*, t. II, 1783 (*Œuvres posthumes*), rapporte l'observation d'une femme que divers praticiens croyaient atteinte, les uns d'une tumeur venteuse, les autres d'un dépôt laiteux. « Personne, dit-il, ne soupçonnait que ce fût une hernie. » Cette tumeur, survenue à la suite d'une grossesse, comme on le voit dans d'autres hernies ventrales, était placée en arrière du flanc gauche, entre les fausses côtes et la partie postérieure de la crête de l'os des iles. Elle avait le volume de la tête d'un enfant et se réduisait, tantôt spontanément, par le décubitus dorsal, tantôt par la pression des mains. Mais un jour elle donna lieu à des accidents d'étranglement; J. L. Petit fut appelé, et quoiqu'il n'eût jamais observé de hernie de cette espèce, les symptômes ne lui laissèrent pas de doute sur un étranglement herniaire, « à travers les fibres du transversal, entre le muscle triangulaire et l'endroit où finissent les obliques ». Ici malheureusement l'observation reste inachevée, quoique l'auteur se réserve d'en publier plus tard le résultat. Mais il n'en dit plus rien ailleurs.

Nous devons reconnaître que si le grand chirurgien n'a pas décrit le premier la hernie ventrale costo-iliaque, il en a du moins, après Garengeot et Ravaton, constaté les caractères, dans un cas rare d'étranglement et fixé, encore mieux, le point des parois abdominales où se forme la hernie lombaire, dite improprement *hernie de J. L. Petit*.

Desault (*Journal de chirurgie*, t. I^er^, 1791) cite une observation de Plaignaud, relative à un jeune garçon tombé d'un quatrième étage sur le pavé, transporté à l'Hôtel-Dieu et mort aussitôt. L'autopsie démontra, outre une fracture de la base du crâne, une hernie ventrale de la partie externe de la région ombilicale, produite par une déchirure du péritoine et la portion charnue des muscles grand et petit oblique et transverse, « de sorte que les intestins n'étaient retenus que par la peau ».

Benjamin Bell (*Cours complet de chirurgie*, t. V, traduit par Bosquillon, 1796) dit, à propos du traitement des abcès lombaires qu'il recommande de vider :

« Si néanmoins la maladie n'était pas bien reconnue, et s'il y avait le moindre doute sur la nature de la matière contenue dans la tumeur, il faudrait, au lieu d'y plonger tout à coup le trois-quarts, l'ouvrir peu à peu avec un bistouri droit, comme cela se pratique dans le cas de hernie, afin que si par hasard il s'y trouvait quelque partie sortie de l'abdomen, on ne pût la blesser. »

Mais il n'ajoute rien de plus sur la question en litige.

Callisen (*Systema chirurgiæ*, t. II, 1800) semble faire allusion aux hernies lombaires, en parlant des hernies ventrales qu'il distingue en deux espèces, celles de la partie tendineuse ou de la ligne médiane, et celles de la partie musculeuse ou des parties latérales.

Cartier, de Lyon (*Précis d'observations de chirurgie faites à l'Hôtel-Dieu de Lyon*, 1802), s'exprime ainsi :

« J'ai eu occasion de voir la hernie observée par J. L. Petit, sur les parties latérales du ventre, c'est-à-dire dans l'espace compris entre le bord du grand oblique et celui du grand dorsal. Le muscle grand oblique, ne se terminant pas toujours postérieurement au niveau du grand dorsal, laisse un espace affaibli, par lequel les parties peuvent facilement s'échapper. » Ce langage est assez explicite.

Lassus (*Pathologie chirurgicale*, t. II, 1806) a observé comme J. L. Petit, une hernie lombaire qui avait été prise,

un moment, pour un abcès. Il en parle, à propos des hernies ventrales, en disant : « Quelques-unes se forment sur les parties latérales du ventre, dans l'intervalle qui existe entre la dernière côte et la crête de l'os des îles. »

Il mentionne ensuite le cas attribué à Lachausse, qui avait vu un homme porteur de quatre hernies ventrales; savoir, l'une au-dessus, l'autre au-dessous de l'ombilic et deux autres vers les régions lombaires.

Lassus expose enfin le fait examiné par lui, relatif à un homme frappé au ventre par le timon d'une voiture. De la fièvre, de la tension et de vives douleurs dans la partie latérale droite et inférieure de l'abdomen furent combattues par les soins convenables; mais vers le troisième jour, se manifesta une tumeur offrant les apparences d'un abcès. Lassus, appelé à voir le malade, reconnut les signes d'une hernie réductible, « car la tumeur, dit-il, disparaissait complétement par la plus légère pression de la main »; et il prévint ainsi les conséquences d'une erreur fâcheuse de diagnostic.

Pelletan (*Clinique chirurgicale*, t. III, 1810) rapporte deux observations incomplètes, sous le titre de : *Écartement et hernies multipliées à la circonférence du ventre, par suite de plusieurs accouchements.*

La première observation est celle d'une femme de trente ans, ayant eu huit ou neuf grossesses successives, toutes parvenues à terme, mais toutes suivies aussi d'une distension considérable des parois abdominales et de hernies multiples, à ce point que le ventre offrait partout des bosselures. Cette femme en était si souffrante, dans les intervalles de ses grossesses, et tellement soulagée, lorsqu'elle était parvenue à une époque avancée de chacune d'elles, qu'elle ne redoutait plus de se trouver enceinte.

Mais Pelletan ne dit rien de particulier sur le siége de ces hernies dans les régions lombaires. Il ajoute seulement que la réduction facile de chacune des tumeurs n'en rendait pas moins leur contention multiple très-difficile et que cette femme mourut du choléra-morbus.

La seconde observation, analogue à la précédente, quoique aussi rare, n'est pas plus explicative, au point de vue de la hernie lombaire. La femme succombait aux angoisses de la plus violente douleur, lorsque Pelletan fut appelé auprès d'elle. Il ne décrit pas davantage les symptômes précis de cette douleur, ni les autres accidents qui pouvaient bien être ceux d'un étranglement interne, chez les deux malades, dont on ne fit point d'ailleurs l'autopsie.

Richerand (*Nosographie chirurgicale*, t. III, 4e édit., 1815) cite une blessure faite par un coup de sabre dans l'hypochondre droit, et dont la cicatrice, dégagée de tout appareil contentif, se souleva plus tard, après dix-huit mois, sur une tumeur du volume des deux poings, aisément réductible.

La production de la hernie traumatique se comprend bien, dans ce cas, comme dans certaines éventrations, par l'affaiblissement de résistance des parois abdominales, après la formation de la cicatrice.

Delpech (*Précis des maladies chirurgicales*, tome II, 1816) indique le triangle décrit par J. L. Petit, en parlant *des hernies abdominales qui ont lieu à la faveur de l'éraillement des fibres aponévrotiques ou musculaires de l'enceinte du bas-ventre ;* et il explique, d'après la disposition anatomique de la région du flanc, le mécanisme de l'évolution des hernies connues sous le nom de *lombaires.* Il tire de là cette conséquence que le diagnostic en est simple, facile, et que la tumeur ne peut guère être jamais accompagnée d'accidents sérieux.

« Du reste, ajoute le célèbre professeur de Montpellier, s'il devenait nécessaire d'ouvrir la tumeur, pour faire cesser un étranglement, la situation profonde de l'ouverture qu'il s'agirait de débrider, et le danger d'intéresser une des artères lombaires, devraient faire renoncer à l'usage de l'instrument tranchant, pour cette partie de l'opération, et donner la préférence aux dilatants connus. »

Delpech ne montre aucune preuve clinique à l'appui de son appréciation supposée.

Notre éminent collègue et maître, le professeur J. Cloquet, a rappelé une observation des plus remarquables qui lui est propre et qu'il a publiée, dès 1819, dans une thèse de concours, intitulée : *Recherches sur les causes et l'anatomie des hernies abdominales.*

L'intérêt de cette observation bien complète et détaillée avec soin, nous engage à la reproduire sommairement :

Un homme âgé de soixante-quinze ans, d'une bonne constitution, mais sujet, depuis une vingtaine d'années, à des maux d'estomac et à de fréquents vomissements, fait un jour, le 10 mars 1812, un effort violent pour soulever un matelas, et aussitôt il éprouve une douleur vive dans la région lombaire droite, avec sensation de déchirement. Cette douleur, d'abord fixe, disparaît au bout de six semaines, par des moyens simples, sinon spontanément ; mais elle se manifeste de nouveau, deux mois après, dans le même point, pendant un mouvement du malade pour se lever sur son lit.

M. Cloquet, appelé le lendemain, constate les signes d'un étranglement herniaire dans la région lombaire, coliques, nausées, vomissements, constipation, etc. Une tumeur siégeant entre la dernière côte et la crête de l'os iliaque, présente tous les caractères d'une hernie incomplétement réductible, avec une douleur vive et continue dans la région iliaque et lombaire, selon la direction du cæcum et du côlon ascendant. L'augmentation de volume de cette tumeur dans la station debout, et sa diminution dans le décubitus, sont suivies d'une réduction spontanée par la position du malade sur le ventre, à ce point qu'au lieu d'un gonflement, une dépression devient manifeste.

» Ne doutant pas, dit M. Cloquet, que cette hernie ne fût une hernie lombaire », il se contente d'abord de prescrire quelques palliatifs, puis, ayant fait transporter le malade à l'hôpital Cochin, il s'entend avec M. Cayol, pour lui faire appliquer une ceinture bouclée, garnie d'une pelote, qui maintient la hernie parfaitement réduite, sans que le malade en éprouve ensuite aucune incommodité.

Tel est, en aperçu, ce modèle d'observation de hernie lombaire, dont l'intérêt l'emporte sur le fait de J. L. Petit.

Boyer (*Traité des maladies chirurgicales*, t. VIII, 1822), en exposant, avec son savoir méthodique, les caractères des *hernies ventrales*, rapporte avoir vu une hernie consécutive à un coup de pied de cheval, porté sur la partie moyenne et latérale droite du ventre. Mais ce n'est pas là précisément la hernie lombaire, que Boyer devait définir.

Il rappelle d'ailleurs l'observation incomplète de J. L. Petit; et c'est probablement cette citation souvent reproduite, sans contrôle, qui a contribué à faire admettre l'opinion erronée que l'illustre directeur de l'Académie de chirurgie avait décrit le premier la hernie lombaire.

Jalade Lafond (*Considérations sur les hernies abdominales et les bandages herniaires*, 1re partie, 1822) signale la rareté de la hernie dorsale ou lombaire, en indiquant de même le fait de J. L. Petit; et il présume que l'on a donné aussi le nom de *hernie lombaire* au déplacement ou à la dilatation contre nature du rein et de son bassinet, soit par l'urine, soit par un corps étranger, comme des calculs et des graviers.

Beaumont (de Lyon) (*Notice sur les hernies*, 1827) s'exprime de la manière suivante sur les hernies lombaires :

« Nous avons fort peu de chose à dire sur les déplacements qui se font quelquefois à la partie postérieure du dos, à travers l'intervalle que laissent entre eux le bord postérieur du muscle grand oblique et le bord externe du grand dorsal. Il est certain pourtant que ces hernies, auxquelles on donne le nom de lombaires, ont été observées un jour par J. L. Petit, et une fois, à notre connaissance, par M. Cartier (de Lyon). — On les reconnaît aux signes communs à toutes les autres hernies. Un chirurgien instruit doit être prévenu de leur possibilité, pour ne point les confondre avec d'autres maladies qui peuvent survenir dans cet endroit. Tels sont les dépôts par congestion, les loupes, etc. »

Jobert (de Lamballe) (*Traité des maladies chirurgicales du canal intestinal*, t. II, 1829) se contente de reproduire, à

propos des hernies ventrales, les deux observations de J. L. Petit et de J. Cloquet, sous le titre également de hernie lombaire, et il y joint quelques remarques, d'après Boyer, sur les causes mécaniques, les symptômes, le diagnostic et le traitement des hernies ventrales.

Velpeau (*Traité de médecine opératoire*, t. II, 1832) cite simplement la hernie lombaire parmi les hernies ventrales que l'on peut exceptionnellement rencontrer, et en disant que « si elles venaient à s'étrangler, ce qui est presque inouï, leur opération n'aurait non plus rien de particulier. Il faut en dire autant, ajoute-t-il, de cette hernie du flanc ou *lombaire*, signalée par J. L. Petit, dont il mentionne l'observation, avec celles de Lassus, de Pelletan et de J. Cloquet.

Will. Lawrence (*A treatise on ruptures*, 5e édition, 1838) décrit et admet sans conteste la hernie lombaire, dont il précise le siége, d'après J. L. Petit, en rappelant l'observation de M. J. Cloquet comme type de description la plus complète.

Il fait allusion ensuite à l'observation de Ravaton (*loc. cit.*), et mentionne un fait relaté dans les *Philosophical transactions*, n° 410, par Budgen. Il s'agit d'un cas présumé de cystocèle lombaire congénitale, mais dont l'existence n'est rien moins que démontrée, d'après la remarque de Lawrence.

M. Decaisne, médecin de l'armée belge (*Bulletin de la Société de médecine de Gand*, janvier 1839), a publié une observation de hernie lombaire que je dois analyser :

Un enfant de six ans était tombé, d'une hauteur de 30 pieds, sur des palissades et avait été transporté à l'hôpital, avec trois fortes contusions, l'une à la tête, l'autre à la poitrine et la troisième au flanc droit. Une tumeur instantanément produite dans le flanc gauche, ayant la grosseur d'un œuf, une base large et une consistance assez ferme, « siégeait, dit M. Decaisne, un peu au-dessous de la partie moyenne de l'espace » compris entre la dernière côte et la crête de l'os des iles, à » quatre travers de doigt sur le côté des apophyses épineu- » ses », dans le point délimité par J. L. Petit.

Cette tumeur, examinée avec soin par MM. Decaisne et Vanvarenbergh, offrait tous les signes d'une hernie réductible et fut en effet immédiatement réduite dans le décubitus latéral du côté opposé, en faisant entendre un gargouillement caractéristique de l'entérocèle, et en laissant une dépression avec écartement appréciable, à la place de la tumeur. Un appareil contentif maintenu par un bandage de corps fit cesser aussitôt les vomissements et les cris du malheureux enfant. Mais il fut atteint, par la contusion de la tête, de symptômes cérébraux très-graves, et succomba, dès le second jour de l'accident, sans que l'autopsie pût être faite.

Verdier (*Traité pratique des hernies*, 1840) fournit l'observation (55e), trop écourtée, d'une hernie lombo-abdominale, survenue chez un homme, à la suite d'une chute violente sur la région du flanc droit. — Le malade avait été adressé à Gase (l'un de mes honorables prédécesseurs au conseil de santé des armées), qui avait constaté avec Verdier une tumeur molle, pâteuse, élastique, à demi réductible, située entre la dernière fausse côte et le bord supérieur de l'os coxal. — C'était, malgré le laconisme de l'observation, une hernie lombo-abdominale, qu'un bandage spécial, muni d'une plaque et d'une ceinture, finit par maintenir réduite, après avoir provoqué, dans les premiers temps, de la gêne et des douleurs qui se dissipèrent peu à peu.

Malgaigne (*Leçons cliniques sur les hernies*, 1841) n'a pas tout à fait passé sous silence les hernies lombaires; mais il se contente de dire, à propos des éventrations : « Sir Astley Cooper a décrit d'autres hernies, siégeant sur la ligne demi-circulaire, c'est-à-dire en dehors des muscles droits. Il y a aussi des hernies lombaires, en arrière du muscle grand oblique, etc. », mais il n'ajoute rien à ce sujet.

Vidal, de Cassis (*Traité de pathologie externe*, t. V, 1841), répète simplement le fait de J. L. Petit et celui de M. Decaisne, sans y joindre aucune remarque.

M. Van Hengel, des Pays-Bas (*Gazette des hôpitaux*, 1848),

a rapporté la curieuse observation d'une femme qui, à la suite d'une chute, éprouva une douleur vive au-dessous des fausses côtes du côté gauche, fut traitée pour une pleurésie par plusieurs médecins et soumise à un traitement spoliatif et prolongé. — Cette femme reçut les soins, trente-six ans plus tard, de M. Van Hengel, qui constata l'existence d'une tumeur située dans le flanc gauche, et dont l'origine, d'après le dire de la malade, remontait à l'époque de sa prétendue pleurésie. Cette tumeur s'abcéda, et au fond de l'abcès ouvert spontanément, il fut facile de reconnaître une anse intestinale. La guérison se fit heureusement.

William-Coles (*The Dublin Journal*, mai 1857) fait mention d'une petite fille de trois ans, qui avait dans le flanc gauche une hernie lombaire congénitale, d'assez petit volume et facilement réductible. La *Gazette médicale de Paris*, janvier 1858, reproduit le fait, sans lui donner plus de développement.

M. Nélaton (*Éléments de pathologie chirurgicale*, t. IV, 1857) rappelle seulement l'observation de la hernie lombaire de J. L. Petit, mais en admettant la possibilité de ce cas rare qui, depuis, s'est en effet présenté, une fois, à l'observation de notre éminent collègue, dans les circonstances suivantes :

Il m'a dit avoir été consulté, vers 1858 ou 1859, par un chef de gare qui avait reçu dans le flanc gauche le choc violent d'un tampon de wagon. Des symptômes primitifs assez graves furent suivis de la production d'une tumeur du volume du poing, de forme hémisphérique, d'une consistance molle, dépressible et réductible, offrant tous les signes d'une hernie lombaire. Elle avait donné lieu d'abord à des erreurs de diagnostic, telles que collection sanguine, dépôt purulent, hernie musculaire, etc.

Une ceinture à boucle, garnie d'une pelote, fut suffisante pour maintenir la hernie réduite, en faisant cesser tous les accidents, et bien des fois, depuis cette époque, M. Nélaton a constaté la réduction définitive.

M. Chapplain (*Bulletin des travaux de la Société de médecine*

de Marseille, juillet 1861) publie l'observation d'un ouvrier qui eut le corps pris entre un mur et le timon d'une charrette, sans en éprouver aucun mal immédiatement; mais bientôt il ressentit dans le flanc droit une douleur devenue fixe, permanente, et suivie de la formation d'une tumeur qui nécessita son entrée à l'hôpital. — M. Chapplain, dans le service duquel il fut placé, constata en effet, par une exploration attentive, l'existence d'une tumeur réductible, siégeant dans le point précisé par J. L. Petit, entre la dernière fausse côte et la crête iliaque. Elle disparaissait spontanément dans le décubitus horizontal, tandis qu'elle reparaissait dans la station verticale, avec tous les signes d'une entérocèle. — Un appareil contentif fut appliqué, mais nous ne savons pas le résultat définitif de l'observation, qui suggère cependant à l'auteur quelques remarques utiles sur la rareté, le siége, le diagnostic, l'étranglement et la réduction des hernies lombaires.

M. Marmisse, de Bordeaux (*Gazette des hôpitaux*, 1862), a trouvé, sur le cadavre d'une femme âgée de soixante-deux ans et très-obèse, une tumeur dans la région latérale gauche de l'abdomen, entre l'os iliaque et les fausses côtes, ayant acquis le volume d'une tête de fœtus à terme. Cette tumeur, selon les renseignements obtenus, datant d'une vingtaine d'années, sans avoir provoqué d'accident, n'avait jamais été réduite. La peau qui la recouvrait, devenue très-mince, enveloppait une masse élastique et dépressible, dont la réduction facile et les autres signes caractéristiques ne laissaient aucun doute sur la présence d'une hernie intestinale.

De justes réflexions, jointes à l'exposé du fait, tendent à expliquer le mécanisme de cette hernie lombaire par l'accumulation excessive de la graisse dans l'épaisseur de la paroi abdominale, en indiquant que du vivant de la malade, on aurait pu, à l'aide d'une lumière artificielle, constater la transparence de la tumeur et le mouvement vermiculaire de l'intestin, pendant le travail de la digestion.

Si cette femme n'avait pas succombé aux effets anatomo-

pathologiques de l'obésité, elle eût été exposée, par un effort ou par une cause mécanique, à la rupture de l'enveloppe tégumentaire et à une large éventration.

M. Basset (*Bulletin de la Société de médecine de Toulouse*, 1864) a fait connaître une observation de hernie lombaire, chez un jeune homme de dix-huit ans, après avoir rappelé la rareté de cette affection et les deux ou trois faits toujours cités. Voici le résumé de cette observation :

Un jeune homme des environs de Toulouse, ayant déjà consulté un médecin de sa localité, pour une tumeur de la région postérieure du flanc gauche, croyait avoir, suivant son avis, un lipome dont l'extirpation était nécessaire; mais avant de s'y décider, il vint s'adresser à M. Basset, pour se faire opérer par lui. Il était grand, fort et robuste, n'ayant que dix-huit ans, et portait cette tumeur depuis son enfance, d'après les renseignements donnés par son père.

Siégeant donc à la partie postérieure, du flanc gauche, la tumeur avait le volume d'une pomme ordinaire et une forme ovoïde; elle était indolente, molle, élastique, et sans fluctuation, avec toutes les apparences d'un lipome. Mais les efforts de toux la rendaient plus saillante, comme une hernie, en même temps que l'application de la main à sa surface percevait un mouvement d'expansion marquée. La réduction, facile enfin par le taxis, ne laissait plus de doute sur l'existence d'une hernie, c'est-à-dire de la hernie lombaire.

Le seul antécédent à noter dans ce cas, c'est que le jeune homme appartenait à une famille de hernieux, et avait sans doute subi, en cela, l'influence de l'hérédité. Il ne s'agissait donc plus de l'extirpation dangereuse d'un prétendu lipome, mais de la simple contention d'une hernie confirmée. Une ceinture de gymnase, facile à serrer, fut choisie comme le bandage le plus simple, le plus commode pour soutenir les parois lombaires, en dissimulant une légère difformité.

M. Grynfeltt, interne distingué des hôpitaux de Montpellier, en 1866, a publié, au mois d'avril de cette année-là, dans le tome XVI du *Montpellier médical*, la première monographie

sur la question qui nous occupe, en lui donnant pour titre : *Quelques mots sur la hernie lombaire, à l'occasion d'un fait observé dans le service de clinique chirurgicale de M. le professeur Bouisson.*

L'auteur, qui a bien voulu me demander mon avis sur ce travail, trouvera sans doute opportun de publier le résultat ultérieur de son observation, comme complément de la discussion soulevée devant l'Académie.

Disons, en attendant, que le travail de M. Grynfeltt présente d'abord d'intéressantes considérations sur la rareté de la hernie ventrale, qui se fait entre les fausses côtes en haut et la partie postérieure de la crête iliaque en bas, entre le bord antérieur du muscle grand dorsal en arrière et le bord postérieur du muscle grand oblique en avant. Il indique aussi ou rappelle quelques-uns des faits que je viens de résumer, et auxquels j'ai pu en ajouter plusieurs autres. Notre jeune et savant confrère fait allusion ensuite au cas que j'ai observé moi-même autrefois, et au sujet duquel je viens aujourd'hui faire cette communication. — Il expose enfin le fait nouveau qui a motivé ses propres recherches, en nous fournissant une étude complète de la question anatomique.

L'observation recueillie par M. Grynfeltt, dans le service de M. le professeur Bouisson, à l'Hôtel-Dieu de Saint-Éloi, se rapporte à un homme de soixante-dix ans, admis à l'hôpital en novembre 1865, pour un écrasement sans gravité aucune des membres inférieurs.

Cet homme, ancien soldat, d'une constitution affaiblie, est affecté d'un tremblement général, provoqué ou entretenu par l'abus des boissons alcooliques. Il éprouve de la gêne dans la respiration, et sa dyspnée, d'ailleurs peu intense, paraît symptomatique d'un emphysème pulmonaire et d'un catarrhe bronchique. — Quant à la lésion accidentelle, elle résulte d'une chute et d'un écrasement des cuisses par la roue d'une voiture légère, qui n'a déterminé ni fracture ni accident sérieux, mais seulement une double contusion avec ecchymose étendue aux deux membres.

Le malade était en traitement depuis quelques jours, lors-

qu'on découvre, dans la partie postérieure du flanc gauche, une tumeur arrondie du volume du poing, molle, indolente, élastique au toucher, sonore à la percussion, réductible enfin et constituant, par ses caractères particuliers comme par son caractère anatomique, une hernie lombaire présumée entéro-épiploïque. Nous n'avons pas besoin de reproduire l'exposé de tous les signes confirmant le diagnostic bien établi.

L'origine de cette tumeur, datant de trois ans, a été un violent coup de poing, asséné dans le flanc gauche, dont les parois, éraillées peut-être ou affaiblies, ont favorisé vers cette région la saillie d'une anse intestinale. — Jamais la hernie n'a provoqué de douleurs, ni de troubles dans les fonctions digestives, si ce n'est quelques coliques légères et de courte durée, soit par de la constipation, soit par des écarts de régime. — L'application d'un brayer avait été prescrite d'abord par M. Réveil, de Nîmes, qui avait, le premier, parfaitement reconnu la tumeur herniaire; mais son volume, sensiblement diminué d'abord par le bandage, avait, à sa suppression, pris un développement nouveau. — C'est pourquoi M. Bouisson fait faire un appareil spécial, qui, bien approprié à cette hernie, la maintient définitivement réduite. Une large ceinture élastique, à trois boucles et munie d'une pelote à plaque métallique, forme cet appareil, qui permet au malade d'être évacué ensuite de l'Hôtel-Dieu sur l'hôpital général de Montpellier.

Telle est l'observation qui a guidé M. Grynfeltt dans son étude sur la hernie lombaire, en le conduisant à une description anatomique des plus attentives et des mieux suivies sur cette région des parois abdominales. On ne pourra, sous ce rapport principalement, produire de nouveaux faits, sans consulter, comme nous, l'excellent travail de l'ancien élève du professeur Bouisson.

Ce qu'il a eu le mérite de faire pour la partie anatomique de la question, j'ai tâché de le faire pour la partie historique, et je vais compléter, à mon tour, ces recherches, par l'exposé de nouveaux faits cliniques, dignes peut-être de fixer encore l'attention de l'Académie.

Un médecin-major de l'armée, auquel je faisais allusion, dans la dernière séance, M. Sistach, a publié, en 1867, dans le *Recueil des mémoires de médecine militaire*, t. XIX de la 3e série, une observation de hernie lombaire, qu'il avait recueillie, dans son service, à l'hôpital militaire de Constantine. Je résume succinctement cette observation, pour en montrer l'intérêt :

Un ouvrier mineur de l'armée d'Afrique, âgé de quarante-six ans, est renversé, le 13 mai 1866, par l'éboulement d'un monceau de terre schisteuse, tombé sur lui d'une hauteur de 6 à 7 mètres. Il en a tout le côté gauche couvert, depuis le cou jusqu'aux pieds, et demeure comme enseveli sous cette masse, d'où il est retiré quelques minutes après. Une vaste contusion et quelques excoriations ou plaies superficielles se montrent sur toute l'étendue du côté correspondant de la poitrine et de l'abdomen, avec un vaste épanchement sanguin dans la région du flanc. — Le blessé, transporté à l'hôpital civil, y reçoit les soins nécessaires, mais à l'épanchement de sang succède un foyer purulent, dont l'ouverture ne se cicatrise que deux mois après la sortie de l'hôpital. C'est alors qu'au même niveau se manifeste une tumeur du volume du poing, saillante, dans la position verticale et dépressible ou spontanément réductible, dans la position horizontale. — Le médecin consulté prescrit l'application d'une ceinture qui maintient la tumeur réduite et permet à l'ouvrier mineur de reprendre son travail.

Mais des douleurs rhumatismales le font entrer à l'hôpital militaire, où M. Sistach l'examine attentivement et constate l'existence d'une hernie lombaire. Il en décrit fort bien le siége et les rapports, les signes et les modifications, suivant la station verticale ou le décubitus, soit dorsal, soit abdominal ou latéral, et selon les efforts d'expulsion ou les effets de la toux. — Le diagnostic est si clairement établi, qu'il ne laisse aucun doute sur l'existence de la hernie lombaire et se confirme d'ailleurs entièrement, par la réduction facile de la tumeur et par son maintien à l'aide d'un bandage circulaire, qui prévient tout accident ou les moindres troubles digestifs.

J'ajouterai deux faits inédits à tous ceux-là.

M. Auzias-Turenne m'a indiqué, en peu de mots, un cas de hernie lombaire observé par lui, l'an dernier, sur le père d'un élève en médecine. La tumeur, datant de trois ans et survenue sans cause appréciable, siégeait au flanc gauche. Elle avait seulement le volume d'une noix, était molle, inégale, bosselée, aplatie, et paraissait constituée par une portion d'épiploon. Réduite facilement, elle était maintenue en place par un simple bandage de corps et n'avait jamais donné lieu au moindre accident.

M. le professeur Dolbeau m'a dit avoir observé dans ces derniers temps, chez une femme, une hernie lombaire intestinale qui, ayant été prise pour un abcès, fut ouverte avec le bistouri et donna issue à des matières fécales. Mais heureusement l'erreur de diagnostic du médecin de la malade n'eut pas d'autres suites fâcheuses, sauf l'anus accidentel dont la cicatrisation amena la guérison définitive.

M. Hardy, par son intéressante communication à l'Académie, dans la dernière séance, m'a suggéré ainsi l'idée de compléter les recherches que j'avais entreprises sur la hernie lombaire, à propos de l'observation dont il me reste à entretenir l'Académie. — Rappelons seulement, avant cela, les circonstances principales du fait signalé à son attention par notre honorable collègue.

L'observation de M. Hardy se rapporte à une femme encore jeune, de forte constitution, traitée récemment à l'hôpital Saint-Louis, pour une paraplégie syphilitique incomplète, dont la cause fut attribuée à une compression partielle de la moelle épinière par une exostose.

Cette femme, en faisant de violents efforts de défécation, éprouva, instantanément, une douleur dans le flanc gauche, avec sensation de craquement, et en y portant la main, elle y trouva une tumeur. Celle-ci, examinée avec le plus grand soin par M. Hardy, siégeait au niveau de la partie externe et postérieure de la paroi abdominale, dans l'espace compris entre les dernières fausses côtes et la crête iliaque. Elle était

arrondie, volumineuse à peu près comme les deux poings, incolore, indolente, élastique, dépressible et facilement réductible, sans occasionner de troubles digestifs. Ces signes parfaitements décrits par notre collègue et constatés, après la séance, par plusieurs d'entre nous, ne laissent aucun doute sur l'existence de la hernie lombaire.

Une particularité remarquable a surtout fixé l'attention, c'est une échancrure manifeste, palpable, du rebord de la crête iliaque du côté correspondant, c'est-à-dire à gauche, tandis qu'à droite cette disposition anormale ne paraît pas exister, comme on le supposait, ou du moins n'est pas, à beaucoup près, aussi appréciable.

C'est sans doute cette échancrure iliaque, soit congénitale, soit syphilitique du côté gauche, qui a favorisé la production de la hernie, comme notre honorable collègue, M. Huguier, en a exprimé depuis l'opinion, en contestant, ici, la justesse du terme admis de *hernie lombaire*, pour y substituer celui qu'il propose de *hernie sus-iliaque*.

Cette série de vingt-cinq observations sommaires d'une hernie assez rare, en offrirait sans doute un plus grand nombre, si tous les faits épars dans les annales de la science pouvaient être réunis, et surtout si ceux qui sont restés inédits étaient publiés. La chirurgie pratique tirerait de là un précieux enseignement, et c'est pour y contribuer que j'ai entrepris ce travail, en l'abrégeant à la lecture.

Il ne me reste plus aujourd'hui qu'à exposer à l'Académie l'observation complète de hernie lombaire traumatique, recueillie autrefois à l'hôpital militaire du Val-de-Grâce, dans mon service de clinique chirurgicale.

M. B..., sous-lieutenant au 3e régiment d'infanterie de marine, en 1851, avait trente ans alors, de l'embonpoint et une constitution robuste, exempte de toute maladie antérieure, en rapport avec l'affection chirurgicale qui réclamait nos soins, et dont voici l'origine.

Il avait été atteint, le 21 juillet 1849, dans un combat au

Sénégal, d'un coup de feu tiré par un nègre en embuscade, à quelques pas de distance. La balle ayant pénétré par la région épigastrique, un peu au-dessous de l'appendice xiphoïde, sur le bord gauche de la ligne blanche, paraissait avoir traversé l'abdomen, sinon dans sa cavité, du moins dans ses parois, d'avant en arrière, suivant une direction oblique, de haut en bas, et s'était arrêtée sous les téguments, vers le bord externe de la région des lombes, au niveau de la deuxième vertèbre lombaire.

La sensation instantanée de cette blessure avait été celle d'une contusion violente du ventre, avec suspension passagère de la respiration et chute immédiate sur le côté, mais sans perte de connaissance. Secouru aussitôt, le blessé fut transporté à l'ambulance, où la plaie de l'abdomen fut explorée, par l'introduction d'une sonde à une assez grande profondeur, sans qu'un pansement provisoire pût être fait. M. B... dut même se rendre à bord, seul et à pied, parce que tous les hommes étaient retenus au combat. La blessure n'avait donné lieu du reste qu'à un très-faible écoulement de sang; mais la boisson ingérée auparavant dans l'estomac (de la limonade) provoqua bientôt des vomissements, qui se reproduisirent chaque fois que la moindre quantité de tisane était avalée. Ce fut à tel point, que, pendant un mois, le blessé dut être soumis à une diète absolue d'aliments liquides.

Une nouvelle exploration de la plaie, faite par le chirurgien du bord, lui fit reconnaître la présence du projectile et sa mobilité sous la peau de la région lombaire. Une contre-ouverture superficielle suffit pour en opérer l'extraction immédiate. La balle s'était déformée, en brisant et entraînant dans son trajet l'épinglette avec sa chaîne, dont les fragments multiples furent successivement rejetés par la suppuration. Réduit par un régime sévère à une faiblesse et à une émaciation extrêmes, M. B... fut sans doute redevable à cet état de la guérison d'une blessure aussi grave. Celle-ci fut même considérée comme incurable par le chirurgien de l'expédition et par M. Chassagnol, chirurgien en chef.

La suppuration établie, dès le troisième jour, par les deux

plaies, fut beaucoup plus abondante par celle de sortie que par celle d'entrée, qui se cicatrisa même, au bout d'une quinzaine de jours. Les corps étrangers trouvèrent tous leur issue par la plaie lombaire, jusqu'à un morceau de drap qui en fut expulsé, après deux mois de suppuration. Mais il n'y eut aucune parcelle d'os éliminée. Réduite enfin à un pertuis fistuleux, cette plaie permit au blessé de sortir de l'hôpital de l'île Saint-Louis, où il avait été transporté du bord, et elle parvint bientôt après à une complète cicatrisation.

Les suites de cette blessure furent d'abord des douleurs assez vives dans tout son trajet, provoquées par les changements de temps, et quelquefois devenues telles, que la respiration en était momentanément gênée. M. B..., au bout d'une année, avait repris des forces et un peu de son embonpoint, par une alimentation suffisante, lorsque, en mars 1850, faisant un effort des reins pour porter le corps en avant, il éprouva tout à coup dans la région postérieure, un peu au-dessus et en avant de la cicatrice de la région lombaire, une sensation insolite qui lui fit reconnaître, pour la première fois, l'existence d'une tumeur bien prononcée.

Cette tumeur, offrant à peu près le volume d'un petit œuf de poule, avait une consistance assez ferme, quoique dépressible et assez facilement réductible sous la main. Elle tendait d'ailleurs à s'affaisser spontanément et à disparaître, sous la seule influence d'une attitude différente, telle que le décubitus sur le côté opposé. M. B..., préoccupé de la manifestation de cette tumeur, la fit examiner par son chirurgien, qui l'envoya de nouveau à l'hôpital de la marine de Saint-Louis du Sénégal.

On supposa d'abord que c'était un abcès : des cataplasmes furent appliqués, et déjà il était question d'une ouverture avec le bistouri, lorsqu'un examen plus attentif fit reconnaître qu'il ne s'agissait pas d'une tumeur purulente. Mais alors les chirurgiens, réunis en consultation, furent d'opinions différentes, quoique s'accordant sur l'existence d'une hernie ; l'un pensa qu'elle était formée par le poumon, un autre par l'intestin, un troisième par l'épiploon.

En conséquence et quoi qu'il en fût, on appliqua sur cette hernie bien réduite un bandage contentif en toile de coutil, muni d'une pelote de charpie, pour maintenir la réduction. — Le premier effet produit par cette compression fut de provoquer le vomissement des substances alimentaires ingérées peu d'instants auparavant. Le malade se débarrassa aussitôt de cet appareil, mangea de nouveau et ne vomit plus, mais pour tromper le médecin, il se contentait de remettre le bandage en place, au moment de la visite. — Une vingtaine de jours se passèrent ainsi, pendant lesquels la tumeur, sans augmenter de volume, devenait plus saillante momentanément, sous l'influence de la toux, de la défécation et des efforts. — Le malade sortit de l'hôpital et put reprendre son service, d'ailleurs peu pénible, en se contentant de maintenir la tumeur à peu près réduite, à l'aide d'un bandage ordinaire de hernie abdominale.

Rappelé en France et envoyé à Metz, M. B... se fit visiter à l'hôpital militaire par MM. Hénot et Scoutetten. Le premier crut que la hernie était formée par l'estomac, le second par l'intestin. Une ceinture en caoutchouc munie d'une pelote compressive ne put être supportée à demeure, sans provoquer de nouveau des vomissements. Le malade quitta bientôt Metz, vint à Paris et entra, le 1er octobre 1851, au Val-de-Grâce, dont j'étais alors le chirurgien en chef.

Après avoir interrogé longuement cet officier sur les antécédents que je viens d'exposer, et qui furent recueillis dans tous leurs détails par mon ancien élève et aide de clinique M. Onésime Lecomte (aujourd'hui médecin principal à l'armée d'Afrique), nous procédâmes à l'examen attentif de l'état local du malade, dont l'état général était d'ailleurs satisfaisant, et voici le résultat de cette exploration :

A la région épigastrique, entre la ligne blanche et le rebord des fausses côtes du côté gauche, existait une cicatrice légèrement déprimée, un peu oblongue, de 2 centimètres environ d'étendue, insensible à la pression, mais douloureuse, quelquefois jusque dans la direction de l'autre cicatrice, sous l'influence des changements de temps.—A la partie

postérieure, inférieure et latérale gauche du tronc, vers le côté externe de la région lombaire, existe cette autre cicatrice, ovalaire, déprimée, offrant l'aspect d'une cicatrice de plaie d'arme à feu, bien que l'extraction du projectile eût nécessité, en ce point, une contre-ouverture. Cette cicatrice est encore moins douloureuse que la précédente.

Au-dessus de cette cicatrice lombaire surgit une tumeur siégeant au niveau du rebord postérieur des dernières côtes, située un peu obliquement, de forme ovalaire, excédant le volume de la moitié d'un gros œuf de poule, susceptible, par les efforts d'expulsion, d'un grossissement visible et palpable. —La surface de la tumeur est parfaitement lisse, sans aucune modification de la peau, qui a conservé sa couleur et sa souplesse normales. Sa consistance, à la palpation superficielle, est molle, dépressible et même susceptible de s'effacer entièrement. Une pression plus forte, non-seulement réduit la tumeur comme une hernie et la maintient réduite, tant que la main reste en place, mais il semble qu'une ouverture profonde, irrégulièrement arrondie, formant presque un anneau fibreux, constitue l'orifice d'un véritable canal, à travers lequel un organe ferait hernie. Le doigt éprouve, de plus, dans cette exploration, le contact d'une petite masse globuleuse qui semble se pelotonner et s'affaisser, pour rentrer dans son ouverture. — La pression par glissement fournit mieux encore cette sensation. Ce n'est pas cependant tout à fait la consistance pâteuse d'une épiplocèle, et ce n'est pas non plus la consistance élastique d'une poche ou d'une anse intestinale, quoique le malade ait cru sentir des gargouillements dans la tumeur. — Il n'annonce du reste ni coliques, ni hoquets, ni envies de vomir, soit habituellement, soit même lorsque la tumeur est soumise à des pressions directes. — La percussion avec le plessimètre, sauf expérience plus exercée, donne de la matité dans tous les points. — L'auscultation au stéthoscope ne fait entendre aucune espèce de bruit particulier. — L'inclinaison du tronc sur le côté droit ou opposé, tend à affaisser et à faire disparaître la tumeur presque totalement. — La pression exercée dans cette attitude perçoit à peine la

sensation précitée, qui se rapporterait encore à quelques pelotons graisseux ou à une frange épiploïque, d'après le frottement, plutôt qu'à tout autre organe. — Ajoutons qu'au moment de l'ingestion d'une certaine quantité de liquide dans l'estomac, aucune modification ne se présente dans la tumeur. Celle-ci enfin aurait augmenté de volume, d'après le dire du malade, avec le développement progressif de son embonpoint.

De tous les renseignements qui précèdent, et de l'exploration attentive de cette tumeur, il résulte pour nous qu'il s'agit là, évidemment, d'une hernie lombaire, mais non d'une hernie de l'estomac, ni exclusivement d'une hernie de l'intestin, tandis que ce serait plutôt, selon toutes les probabilités, une hernie de l'épiploon, avec adhérence ou pénétration partielle d'une anse intestinale.

L'indication était fort simple, mais d'une application assez difficile. Il importait de maintenir la tumeur réduite, à l'aide d'un bandage spécial, assez solide et assez contentif pour que son élasticité ou les efforts de la toux ne pussent le déplacer, en provoquant la reproduction de la hernie.

Je l'ai fait examiner par plusieurs chirurgiens, notamment par Vidal (de Cassis), par mon ami le professeur Sédillot, et par notre collègue M. Demarquay, dont j'appelle le souvenir. Leur opinion, formulée d'abord diversement sur les parties herniées, s'est ensuite rangée à la nôtre.

La fabrication du bandage a nécessité plusieurs modifications, pour le rendre définitivement efficace et supportable, au moyen d'une ceinture fixée à la base de la poitrine.

M. B... quitta le Val-de-Grâce, dans ces bonnes conditions, pour retourner aux colonies, dont il a supporté, pendant plusieurs années encore, le dangereux climat, au milieu des foyers épidémiques. Mais sa vigoureuse constitution fut atteinte par les effets de la pléthore et de l'obésité. Il mangeait énormément, buvait beaucoup et était devenu tellement gras, qu'il respirait avec peine et avait souvent de violentes quintes de toux. Ce fut dans l'un de ces accès qu'apparut une hernie nouvelle, vers le niveau de la cicatrice de la région

épigastrique, en même temps que l'ancienne hernie lombaire, dont la réduction néanmoins fut encore maintenue.

M. B..., dans le courant du mois d'août 1859, se trouvait aux environs de Cayenne, lorsqu'il fut pris d'une fièvre pernicieuse algide et succomba, malgré les soins les plus affectueux, les plus éclairés que lui prodigua M. J. Mayer, aujourd'hui médecin en chef de la marine à Brest.

C'est à l'obligeance de cet honorable confrère que je dois ces derniers renseignements, complétés par le résultat de l'autopsie. Elle fit reconnaître une abondance considérable de graisse, à toute la surface du corps, dans l'épaisseur des muscles et dans les interstices de tous les viscères; une sorte de phlébectasie des grosses veines, gorgées de sang; une dépression notable entre l'épigastre et l'ombilic, avec la cicatrice d'une plaie ancienne; une distension très-grande de l'estomac, avec dilatation des orifices cardiaque et pylorique; une hypertrophie énorme du foie, plus encore de la rate, et une surabondance de tissu adipeux dans toute l'étendue de l'épiploon, dont une portion formait la hernie lombaire.

Quant au trajet de l'ancienne blessure, il offrait une particularité notable qui a fixé l'attention de M. Mayer, c'est que les parois abdominales hypertrophiées par la graisse, paraissaient avoir été seules traversées par le projectile, sans lésion, du moins appréciable, d'aucun organe.

Telle est l'observation, trop longue peut-être, que j'avais conservée, depuis dix-huit ans, parmi celles de la clinique du Val-de-Grâce. Communiquée aujourd'hui seulement à l'Académie, en s'ajoutant au cas intéressant de M. Hardy, au bon travail de M. Grynfeltt et à tous les faits épars que j'ai réunis, elle pourra fournir aux chirurgiens une étude plus complète de la hernie lombaire.

Quelques remarques à la suite de ces *recherches et observations* me permettent aussi de les présenter sous forme de conclusions :

La rareté de la hernie lombaire est assurément reconnue; mais au lieu de trois ou quatre cas seulement cités, ou sans

cesse répétés, jusqu'ici, par la plupart des auteurs, nous avons pu en trouver vingt-cinq exemples et les analyser.

L'expression de *hernie lombaire* est justifiée, d'après son étymologie même, indiquant bien, comme siége, les régions des lombes, situées sur les côtés de la région ombilicale et ayant pour limites : antérieurement, une ligne fictive verticale entre l'épine iliaque antérieure et supérieure et le rebord cartilagineux des côtes; postérieurement, les vertèbres lombaires; supérieurement, une ligne transversale, au niveau de la base de la poitrine; et inférieurement, une semblable ligne, au niveau de la base du bassin.

Le développement des hernies dans la région lombaire ou costo-iliaque est dû, à part les causes traumatiques, à la disposition anatomique des parties, formant un espace que l'on peut désigner sous le nom de *triangle de J. L. Petit*. — Cet espace, circonscrit par le sacro-spinal et le grand dorsal en arrière, par le bord postérieur du grand oblique en avant, et par la crête iliaque en bas, où se trouve sa partie la plus large, a pour fond l'aponévrose dans sa moitié postérieure, et dans sa moitié antérieure les muscles petit oblique et transverse. — Ces derniers muscles étant assez minces en cet endroit, diminuent ainsi l'épaisseur des parois du ventre, et favorisent la tendance des viscères abdominaux à y former une hernie, par éraillement ou déchirure des fibres charnues ou aponévrotiques.

La hernie lombaire serait en effet bien plus fréquente et mieux connue, d'après cette disposition anatomique, si les viscères ne tendaient encore plus à sortir de leur cavité par les ouvertures naturelles, déclives ou élargies de leurs parois, pour former si fréquemment les hernies inguinales, crurales et ombilicales.

La coïncidence de la hernie lombaire avec d'autres hernies abdominales a été signalée quelquefois, et je serais même porté à croire que cette hernie est susceptible de se développer secondairement à l'application fixe d'un bandage, pour une autre hernie; de telle sorte que la résistance des parois abdominales aux efforts naturels étant plus forte, par exemple,

dans l'une des régions inguino-crurales, devient relativement plus faible dans la région lombaire correspondante.

Les plaies du bas-ventre et surtout les plaies pénétrantes de la région lombo-abdominale, lorsqu'elles parviennent à la guérison, présentent une cicatrice d'autant plus mince et plus faible, qu'elle n'est pas soutenue, le plus ordinairement, par un bandage contentif. De là cette tendance des viscères, refoulés vers la cicatrice, à la distendre, à la déchirer et à produire la hernie traumatique de la région lombaire.

D. J. Larrey (*Mémoires de chirurgie militaire*, 1812, et *Clinique chirurgicale*, t. II, 1829) cite des faits de blessures par armes de guerre vers la région des lombes, qui parvinrent à la guérison, et dont la cicatrice, maintenue par un bandage, ne fut point le siége de hernie consécutive.

L'un des cas les plus remarquables de ce genre se rapporte au général B..., de l'armée d'Egypte, blessé, à la révolte du Caire, par un coup de feu dont la balle traversa d'avant en arrière tout le flanc gauche, en entamant l'S iliaque du côlon. Les deux plaies, malgré la gravité de la blessure, se cicatrisèrent, après avoir donné lieu à un double anus accidentel; et les cicatrices soutenues par un bandage approprié, ne furent point suivies de hernie lombaire.

C'est pourquoi il importe essentiellement, à la suite d'une plaie de cette région, de protéger et de soutenir la cicatrice par un appareil convenable. — J'ai agi de la sorte, à l'exemple de mon père, dans diverses occasions, et notamment pour une plaie pénétrante du flanc gauche, au-dessus de la crête iliaque, dans un cas assez difficile dont j'ai entretenu autrefois l'Académie (1).

De ces premières considérations, il résulte que la hernie lombaire doit être admise, tantôt comme hernie spontanée, tantôt comme hernie traumatique; et que, dans l'une et l'autre occurrence, elle peut se manifester soit primitivement, soit consécutivement, eu égard aux causes qui l'ont produite.

(1) *Mémoire sur les plaies pénétrantes de l'abdomen, compliquées d'issue de l'épiploon* (*Mémoires de l'Académie de médecine*, t. XXXI, 1845).

Les signes de la hernie lombaire sont assez faciles à reconnaître, pourvu qu'ils soient attentivement examinés. Confondue quelquefois, en effet, avec d'autres tumeurs, la hernie lombaire s'en distingue cependant par les caractères des hernies réductibles.

Elle se complique rarement d'accidents sérieux, et ne présente en général aucune gravité. C'est par exception qu'elle est exposée à l'étranglement, et encore cet étranglement, à condition d'être reconnu tout d'abord, serait-il susceptible de céder aux manœuvres les plus simples de réduction, sans qu'il fallût recourir à l'opération du débridement.

Le diagnostic de la hernie lombaire une fois établi, elle n'est pas exposée, comme les autres hernies abdominales, à une augmentation notable de volume, parce qu'elle se trouve soustraite, par sa situation propre et par l'attitude du corps, aux effets déclives de la pesanteur des viscères.

Mais si elle est abandonnée à elle-même et non contenue par un bandage, elle peut acquérir un développement assez prononcé, avec imminence de rupture de ses parois, ou bien, dans des circonstances exceptionnelles, elle est susceptible de provoquer des symptômes d'engouement, d'inflammation et d'étranglement.

Le traitement de la hernie lombaire se borne ordinairement à l'application d'un bandage approprié qui doit suffire à sa contention, et peut-être même que, porté en permanence, ce bandage favoriserait la cure radicale de cette hernie.

Une ceinture élastique en caoutchouc vulcanisé, munie de boucles, d'une pelote assez large et, au besoin, de deux sous-cuisses, tel serait, croyons-nous, l'appareil le plus convenable, dans la généralité des cas.

Quant aux autres indications, elles sont, comme pour les différentes hernies abdominales, en rapport avec les symptômes observés, mais d'une application plus rare, si les moyens prophylactiques sont méthodiquement dirigés, pour prévenir toute complication.

En définitive, le point qui domine la question de la hernie lombaire, c'est l'importance du diagnostic, eu égard à une

tumeur que l'on a souvent méconnue ou confondue avec d'autres, soit un abcès, soit un kyste, un lipome, etc. Et la conséquence redoutable de ces erreurs de diagnostic, c'est que, faute d'une exploration attentive, on a imprudemment pratiqué des ouvertures ou des opérations risquant de provoquer des lésions fort graves, sinon mortelles, et d'entraîner à la suite une infirmité incurable.

Puissé-je, en appelant l'attention des praticiens sur une question de cette nature, contribuer à faire mieux reconnaître, dans l'occasion, l'existence de la hernie lombaire et à substituer plus sûrement les moyens simples de la thérapeutique aux entreprises hasardeuses de la médecine opératoire! J'aurai ainsi, une fois de plus, appliqué mes efforts à démontrer les avantages de la chirurgie conservatrice.

Paris. — Imprimerie de E. MARTINET, rue Mignon, 2.

PAMPHLETS

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