base which correspond with that segment of the vertex which received the blow. The brain, on the contrary, being movable as well as yielding, has a momentum communicated to it towards an opposite point, against which it impinges with more or less force, and is bruised and lacerated by the irregular and unyielding surface of the skull which arrests its movement. The motion which is imparted to the brain by the blow is aptly illustrated by the fashionable game of "croquet," in which your own ball, that you fix with your foot, represents the skull; whilst that of your adversary, which you are about to croquet, is the brain. What immediately happens, then, to this organ is seen in the croquet-ball; what ultimately ensues is seen in the bullet flattened against the target. And as with the projectile so with the brain: it is not the initial momentum which injures, but its sudden arrest. In both, the effect of the *coup* is harmless; that of the *contre-coup* destructive.

As regards the treatment of this case, with the strong presumptive evidence of brain laceration, skull fracture, and intra-cranial hæmorrhage, and with the entire absence of all suffering on the part of the patient, what indications were there for medical or surgical interference? Absolutely none. The whole treatment resolved itself into ministering to the patient's physical wants, and abstaining from the exhibition of those drugs which routine indeed may prescribe, but which common sense repudiates. Let it not, however, be supposed that I am an advocate for that *laissez-faire* mode of practice which would leave all to nature when aught can be done for the patient by art. On the contrary, I have the greatest confidence in the life-saving power of our art; and by treatment, prompt, active, energetic; only let it be understood that treatment does not always or necessarily imply active interference, but sometimes the reverse. The surgeon who knows *how* to act when action is called for has attained a high standard of professional excellence; but he who knows *when* to act and when to abstain from acting has attained a higher.

Storey's-gate, Westminster, March 29th, 1866.

ON THE APPLICATION OF THE BACONIAN METHOD TO MEDICINE.

By J. G. FRENCH, Esq., F.R.C.S.,
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In a leading article of *The Times*, October 4th, 1865, is the following passage:—"On what general principle is the medical profession agreed? What point can be said to be settled after two thousand years that nothing can be urged to the contrary? Perhaps it will be then found that the study of anatomy and the study of disease have not been conducted so strictly and rigidly on the principles of Bacon as might have been expected; that Nature has rather been observed than interrogated, and that there are hundreds of truths of the most vital consequence to the human race which could be brought to light by a steady application of those methods of investigation which have borne such rich fruits in other departments of science."

Now, this passage from *The Times* is written thirty-three years after the successful application of this very method to the subject of cholera; that is to say, a far more complete explanation of that disease was then afforded than has yet been offered of any other analogous disease whatever.

It may be remembered by some of my surviving friends of that period that I then remarked, "this view of the disease is fifty years in advance of its reception." This foresight I learned from Bacon himself; for while, on the one hand, he declares that his method levels all intellects, and infallibly conveys the mind step by step direct to the goal, which is never reached at all by the most vigorous and active intellect taking a wrong direction; on the other hand, he fully points out the obstacles which lie in wait to obstruct the reception of truth.

These are the false images (*Idola*) which beset the human mind, and are of four kinds, all of which were arrayed against these views—viz., the *Idola Tribus*.

- „ Specus.
- „ Fori.
- „ Theatri.*

In order to offer an example of the Baconian teaching, I

* Bacon's *Novum Organum*.

transcribe the doctrine of a tyro in medicine addressed to the Board of Health of 1832, which was composed of the *élite* of the profession. It may be explained that the scheme aspired to present what may be termed a *telescopic* view of the matter by so arranging the more important phenomena in a series of aphorisms as easily to permit the mind to induce an important conclusion from them. Thus:—

"The alimentary canal becomes subjected to a process which altogether supersedes digestion, and by this process a large quantity of fluid is produced as an excretion, which rapidly diminishes the bulk of the blood. With the mechanism of this production we are at present unacquainted.

"That in some instances this process continues its progress until the death of the patient; but in the large majority of cases, when left to nature, the process in question ceases when it has produced a state of collapse varying in intensity.

"That this state of collapse is remarkable in the phenomenon that the patient himself complains of heat felt throughout the body, while to the by-stander he appears to be perfectly cold.

"That extreme thirst attends this state of collapse.

"That though fluids requiring digestion are rejected by the stomach, and therefore with difficulty find their way into the system,—cold water, which is most grateful to the patient, becomes gradually received and retained.

"That the blood, in consequence of a change in its constituent principles, by which it becomes more viscid, is thereby rendered less easy of circulation.

"That, though the evacuations of the morbid excretion cease, retching continues, which assists mechanically the circulation of the blood, and produces a general relaxation of the system, hence diminishing the obstacles to the circulation of this fluid.

"That when the system becomes replenished with fluid to a certain extent, and the circulation thus acquires a certain degree of energy, the gall-duct, which remained closed during the progress of the disorder, now permits the flow of the bile. The bile, often in a vitiated state, becomes ejected by vomiting (this action still assisting the circulation); a further flow of bile then gradually prepares the alimentary canal for a renewal of its proper functions.

"That, though no specific fever follows the disease, the shock thus given to the system commonly produces the most severe effects in the form of local inflammations and congestions in the various viscera."*

Now what is the induction from this arrangement of the phenomena of the disease?

It is the interpretation of the natural mode of recovery from the collapse of cholera, which, reduced to the simplest mechanical principles, may be thus expressed:—

- 1st. By absorption of water into the bloodvessels.
- 2nd. By vomiting.

The drinking of cold water *ad libitum*, although greatly feared and even derided when this was originally written, is now universally adopted in practice.

It is necessary to explain clearly what part "vomiting" plays in the reaction of the collapse of cholera, as unfortunate blunders may arise from a misunderstanding of the matter.

In the whole range of physiological knowledge nothing is better or more universally known and agreed upon than "the circulation of the blood," which, mechanically speaking, is effected by the pumping action of the heart, the action of the left ventricle being the power not only by which distribution of the blood is carried out, but also by which, as supplying the *vis a tergo*, the blood is returned to the right auricle. But how is arrested circulation to recommence? (if there be no action of the ventricle—no distribution—no *vis a tergo*.) How, if the heart having feebly expelled the last small quantity of blood which reached it, and has therefore become empty, is a further supply to reach the heart at all, in order to a further distribution? By vomiting, which, in the most effectual manner acts the part of the *vis a tergo*, for in this action the abdominal wall approaches the spinal column, and thus compresses the abdominal viscera and the vena cava, by doing which blood is carried to the heart: just as, in the hydraulic pump, water is conveyed into the exhausted piston by the pressure of the atmosphere.

The fallacy, chiefly to be guarded against in the reception of this doctrine, is an over-anxiety to bring about this action of vomiting, for the heart, as it is necessarily feeble, can only at uncertain intervals dispose of the blood thus carried to it.

Another fallacy may occur in the supposition that the vomiting may be an eliminative process; but I venture to assert,

* Letter to the Central Board of Health, by J. G. French. Rivington, 1832.

that if all the poison be already eliminated, it is still absolutely necessary as a *vis a tergo* until the pulse is re-established.

Nobody believes in the existence of a poison to be eliminated in *sea-sickness*: here, indeed, the malady is *syncope*, a condition commonly induced by the swinging motion of a ship; here, also, the significance of the vomiting is only that of a *vis a tergo*.

As a rule, its occurrence may be relied upon confidently where there is any vital power at all, and its subsidence may be as confidently expected when the pulse has obtained sufficient strength and regularity; indeed, the consummate skill with which all this is done, naturally, is worthy of our most careful study.

The data which furnished this induction commenced on the 8th July, and continued until the 28th August, 1832, when it was published: Nature having been not only observed and interrogated, but interpreted also, in this time. The data were the facts recorded in the journal of the Cholera Hospital of St. James, Westminster, made on the spot and at the time of their occurrence. So that, by Bacon's teaching, as much was learned in two months as Dr. Maclean acquired in a life of experience, as recorded in his lecture published in THE LANCET of the 17th February last.

Much more was, however, acquired by the induction in question. It led up to a knowledge of principles, from which I made a deduction,* and from this I believe as much knowledge of the physiological resources of Nature in the reparation of lesion has been obtained as has yet been derived from the investigation of any other disease whatever.

I cannot but think that the study of Bacon's works, and of his method of interpreting Nature, is too much neglected; and that important results might be obtained by the application of his method to the investigation of the cattle plague.

Great Marlborough-street, March, 1866.

A Mirror

OF THE PRACTICE OF MEDICINE AND SURGERY IN THE HOSPITALS OF LONDON.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum aliorum, tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv. Proœmium.

ST. GEORGE'S HOSPITAL.

AMPUTATION AT THE HIP-JOINT FOR RECURRENT FIBROID DISEASE OF THE THIGH.

(Under the care of Mr. HOLMES.)

THE cases of amputation to which we refer this week represent an incident which is probably unique in the history of surgery. In two of our metropolitan hospitals, at one and the same time, were three patients in each of whom the most formidable of all amputations—that at the hip-joint—was performed, with a successful result:—

1. Sept. 14th, 1865. St. George's Hospital. A female, aged thirty-six. Recurrent fibroid disease of thigh. Amputation performed by Mr. Holmes.

2. Dec. 7th, 1865. St. George's Hospital. A male, aged fourteen. Disease of hip-joint and pelvis. Amputation performed by Mr. Lee.

3. Dec. 29th, 1865. University College Hospital. A male, aged twenty-seven. Encephaloid tumour of the femur. Amputation performed by Mr. Erichsen.

So full and interesting an account of the last case has already appeared in THE LANCET (March 3rd, 1866) that it will be unnecessary to recapitulate the particulars upon the present occasion. We may, however, point out, as bearing possibly upon the successful result, that in that case, as well as in those which we here record, Lister's tourniquet for the abdominal aorta was found a most efficient means of controlling hæmorrhage.

* The Nature of Cholera Investigated. London: Churchill. 1835.

It will be seen that in both the operations at St. George's Hospital a method of amputation was adopted differing from each other and from that usually employed. The peculiar process was necessitated in each case by the situation of the disease, but so convenient were the methods found that their employment on future occasions may very possibly be repeated with advantage.

The successful result of these three cases is highly encouraging for the performance of the operation where it is indicated on account of disease. It tends to confirm the opinion which combined experience has pronounced, that it is especially under these circumstances that success may fairly be expected. Where injury, especially from gunshot wounds, has necessitated the procedure, the results have not been encouraging. In the article "Amputation," in Cooper's Dictionary of Surgery, we find that of 62 cases in which the operation was performed on account of injury, 47 were fatal—75·8 per cent. Of 40, on the other hand, performed on account of disease, 21 (or 52·5 per cent.) only died.

We are indebted to Mr. Wilson, Mr. Holmes's clinical clerk, for notes of the following case:—

In the autumn of 1864, Anne A.—, aged thirty-five, was admitted into St. George's Hospital with a tumour about the size of two oranges on the back and middle part of the left thigh, perfectly movable, and not apparently deeply situated. This was removed without any difficulty by Mr. Tatum. Under the microscope it appeared to be of recurrent fibroid character. She recovered in about six weeks. Three months afterwards she returned, with the swelling much increased in size, more deeply situated, and more firmly attached.

In Mr. Tatum's absence Mr. Holmes made a long incision, and freely divided the fascia lata. The tumour was found lapping round the femur. The sciatic nerve passed through it, but did not seem to be affected. So deeply and extensively was the diseased mass attached that the operator was obliged to desist after removing as much as possible, but not all, of the growth. This operation was followed by sloughing; and, secondary hæmorrhage occurring two or three times, her health became much broken down. Meantime the growth reappeared, and, as a last resource, amputation at the hip-joint was decided upon. Her condition at this time is thus described:—"The whole leg is much decreased in size, and she is unable to straighten it. There is a tumour the size of a cocoa-nut in the situation of that previously removed. She suffers much pain along the course of the sciatic nerve, gets no rest, and is evidently sinking."

On Sept. 14th, the patient being well under the influence of chloroform, Lister's tourniquet was applied to the abdominal aorta. Mr. Holmes then cut a long elliptical flap, consisting merely of skin and fat, out of the front of the thigh; divided the muscles and vessels about two inches below Poupart's ligament; cut into the hip-joint, and then brought the knife out directly backwards, so as to take hardly any flap behind. Mr. Holmes adopted this particular method on account of the position of the disease, which had infiltrated the muscles both at the inside of the thigh and nearly up to the buttock. But little blood was lost. Sutures were introduced, but no plaster was applied. The resulting stump was so good, and required so little dressing, that Mr. Holmes said that he should feel much disposed on future occasions to repeat the proceeding. Twice during the evening a quarter of a grain of morphia was injected hypodermically, and some sleep was procured during the night. Support was given by brandy and beef-tea injections every four hours. A good deal of sickness occurred for the first day or two, which was relieved by hydrocyanic acid and bicarbonate of soda.

On the 18th she was able to take some fish.

On the 19th the upper part of the wound was almost healed, and a tolerably healthy discharge of pus was taking place from the lower portion.

During the next few days the ligatures of the smaller vessels dropped off, and on the 30th that attached to the femoral artery came away.

The patient got up on the 2nd October, the stump being then nearly healed.

On October 24th she left the hospital. The stump was then healed, with the exception of a small aperture, which discharged a thin watery fluid.

Examination of the tumour.—There was a large diffused mass closely adherent to the upper two-thirds of the linea aspera of the left femur, and infiltrating all the tissues at the back of the thigh. It extended from close below the great trochanter to the upper border of the popliteal space, and presented on its surface a foul ulcerated mass. In making a section of it,