Association, though much remains still to be accomplished in this department.

In representations made at various times to the Army and Navy Boards, with respect to the unfavourable position in which the rules of these services place the medical officers; in suggestions as to the compulsory Vaccination Bill, the Artisans' Dwellings Bill, the possible provisions for the Care of Habitual Drunkards, for Provident Dispensaries and the medical relief of the sick poor, and for the social and moral improvement of the medical profession at large, we have only to look at the annual records of the transactions, as published in the JOURNAL, to become aware of the earnest desire of the Association to accomplish measures which have for their object at once the good of the profession and the service of the public.

It is right also to allude to two other matters connected with the Association. One of these is the appropriation of a portion of its funds annually to the granting of sums of money in encouragement of scientific inquiries in connection with medicine, for which £165 was dispensed during the past year. The other is the Benevolent Fund, raised by voluntary subscription, for the temporary relief of distressed medical men, their widows and orphans, and the management of which has, since 1835, been a part of the business of the Association. The relief is confined to the cases of regularly educated medical men of irreproachable character, who are in actual distress. The income of the fund, which was for some time small, rose in 1853 to £655, and has been fully maintained since that time.

It could scarcely be expected that on such subjects as fall to be described at various times in the Association entire unanimity of opinion would be held, and occasionally, therefore, keen enough disputes have occurred. But if we consider the exciting nature of some of the topics, and the various locality and condition of those engaged in the contests, I think the proceedings of the Association may be regarded as having been on the whole conducted with a degree of harmony which could scarcely have been anticipated.

But while we are disposed to give full credit to the Association for its exertions in promoting the advance of scientific and practical medicine, and the attainment of useful and important objects connected with the social and political status of the profession, it can scarcely be doubted that the greatest of its advantages have been, and are to be, derived from its ethical or moral effects directly upon those attending its meetings, and, through them and the records of the JOURNAL, upon other members of the profession. It will, indeed, be freely admitted that a great stimulus to exertion must be given to the younger members by the example of the more advanced and able men who deliver the addresses and contribute to the scientific business of the meetings; and all who have joined in these meetings acknowledge with lively satisfaction the pleasant effects of the rational and kindly intercourse which they produce, tending to excite emulation, to lessen differences of opinion, to remove prejudices, and to create harmony and friendship among men of congenial pursuits.

Such, gentlemen, being the nature and progress of the British Medical Association, and it having been determined to found a Branch for Glasgow and the western counties of Scotland, I purpose to direct your attention to the capabilities which our district presents for this Association of its medical practitioners. On a consideration of these and other circumstances, we shall have to determine how far we can sympathise and approve of the objects of the Association, and in what manner and to what extent we are disposed and able to forward them; and we may be expected also to inquire what benefits we may hope to reap from the combined action of the medical profession which is contemplated.

It will occur to many that, while the want of such an union as that of the British Medical Association might be felt in remote provincial towns, destitute of medical organisation, as in the circumstances which led to its first foundation in the English provinces, there does not exist in Glasgow or its immediate vicinity, the centre of two public licensing bodies, of several important and long-established institutions both of a charitable and an educational character, any urgent necessity for new means of bringing together the body of medical practitioners, or stimulating them to united work for the good of the profession. And this is no doubt so far true. But the same remark would apply, and perhaps even more forcibly, to London, Edinburgh, and Dublin; and yet, in these places, the influence of the Association has been found to be beneficial, and the general meetings at all events have excited much interest, and have not only contributed in a marked manner to the furtherance of those general professional objects which the Association contemplates, but have also assisted and stimulated the labours of the existing institutions.

In the attempt to establish a Branch Association in this place, it will

of course be necessary, as is very properly suggested by the Committee's Report, to guard against its interference with the operations of any societies or institutions already existing. And I would, therefore, venture to suggest that, in the meantime, the operations of the Branch intended to be established here should be made subsidiary to those of the other existing institutions, and should rather be such as will pave the way for a greater degree of general union and co-operation among the members of the profession.

With a view to this object, I think we must look forward to obtain, at no very distant date, a general meeting of the British Medical Association in Glasgow. As a proof of the advantages of such a meeting, I need only refer to the brilliant success which attended that held at Edinburgh in the past year; and I feel assured that when the matter is viewed in its proper light, it will soon be felt that Glasgow and the west of Scotland must not lag behind in the endeavour to bring about such an union of the active intelligence of the profession, as may stimulate and invigorate the exertions of its members for their own improvement and for the increased utility of the profession to the public.

[To be continued.]

CLINICAL LECTURE

ON THE

TREATMENT OF COMPOUND DEPRESSED FRACTURES OF THE SKULL.

Delivered in Queen's Hospital, Birmingham.

BY SAMPSON GAMAGE, F.R.S. EDIN.,

Surgeon to the Hospital; President-elect of the Birmingham and Midland Counties Branch of the British Medical Association.

GENTLEMEN,—Is the trephine to be employed or not in compound fractures of the skull, with depression? No question more than this has engaged the attention of practical surgeons: it is still unsettled, and I shall endeavour to lead you to a correct understanding of its merits in commenting on three cases which I have to bring before you. In each case the scalp was divided, and the bones of the skull were broken and driven in, without, however, producing evidences of injury to the nervous centres. In none of the cases was the trephine employed; in all the result has been perfectly successful.

The man before you, Thomas Moran, a bricklayer's labourer, aged 55, was admitted to Ward 3 on September 15th. While he was at work just previously, a brick fell from a considerable height upon his head, making a Y-shaped scalp-wound about two inches and a half in length, and situated rather above the middle of the left parietal bone. The flap of the wound being turned back, a Y-shaped fracture became visible, with its centre depressed to one-third of an inch; the sides of the fracture sloping evenly towards the central and most depressed point. The man seemed little affected by the accident, and had no idea of its serious nature. The edges of the wound, admitting of easy approximation, were brought together and dressed with dry lint; and for the first fortnight the patient was kept perfectly quiet in bed, on milk diet, with an ice-bag on the head. No signs of constitutional disturbance appeared, and the man was discharged at the end of seven weeks, to use his own terms, "in as good health as ever he was in his life". The wound was then quite healed, and the area of the depressed bone measured one inch and a half longitudinally, seven-eighths of an inch transversely; its depth was three-eighths of an inch in the centre.

The next patient, Henry Hadden, a machinist, aged 25, was admitted into the Queen's Hospital at 11.20 P.M. on September 25th. A few minutes previously, in a street row, a brick had been thrown at his head, producing a wound an inch in length, over the left temporal ridge, in a line above and in front of the ear. The hæmorrhage was considerable. The probe passed into a very abruptly punctured fracture of the skull; the amount of depression being half an inch, and the edges on one side at least, being quite perpendicular. Mr. C. W. Keetley, our house-surgeon, to whom I am indebted for the notes of these cases, made a memorandum at the time, to the effect that, in Hadden's fracture, a small piece of bone appeared to have been driven right in. The man was quite sensible, though faint from loss of blood. He was put to bed, with an ice-bag on the head. At 8.30 next morning, a little headache was complained of; the pupils were even; temperature 101 deg. A magistrate took the depositions at the bed-side in the afternoon.

September 27th, morning. Pulse 80; temperature 98 deg. There was a thin drab fur on the dorsum of the tongue. The bowels were not open. He had slept well; was very hungry. The wound was healthy. His eyes were slightly swollen.

The bowels acted the next day. The wound gradually healed; and on October 9th, the ice-bag was left off, a flannel cap allowed to be worn, and the man to get up. At the end of another fortnight the man was discharged in perfect health; the cicatrix was quite sound; and the depression at the seat of fracture admitted the end of the little finger, which did not seem to touch bone at the bottom.*

The third case which I have to bring before you is that of T. Smith, a joiner's labourer, aged 25. He was stooping down at his work, when a brick fell on his head from a height of thirty feet. When admitted to Ward I (4 15 P.M., October 15th, 1875), half-an-hour after the accident, he was quite sensible. A wound on the left side of the head was bleeding freely; corresponding to it was a depressed fracture of the skull, the depressed piece of bone being horse-shoe shaped, and situated near the middle of the lambdoidal suture. The depressed surface was about one-eighth of an inch below the surrounding bony level. No head-symptoms. Pulse 80; temperature 99; respirations 24. The edges of the wound were approximated and dressed with dry lint. An ice-bag was ordered to be kept on the head constantly.

October 16th. Temperature 99; pulse 72; respirations 20. He was perfectly sensible. He had taken plenty of milk. He was ordered to have an ounce of castor-oil.

October 17th. He slept four or five hours in the night. The bowels had acted. Temperature 101; pulse 104; respirations 22.

October 18th. Temperature 101.6; pulse 76; respirations 25.

November 10th, morning. Temperature 99.2; pulse 84; respirations 22. There were still no symptoms of serious lesion or constitutional disturbance.—7 P.M. Temperature 104.4; pulse 104; respirations 32. He had a rigor half-an-hour ago. A full dose of castor-oil was administered, and the bowels freely relieved. No other untoward symptom occurred, and the rigor and rapid rise of temperature remained an inexplicable incident.

Dec. 8th. He had continued perfectly well, and for the last month had acted as assistant porter in the hospital. He was now discharged, and I made the following note. "The length of the cicatrix is one inch and three-quarters. The depressed portion of bone measures one inch and one-eighth, by seven-eighths of an inch. The depression is deepest in the centre, where no bone can be felt. The man looks perfectly well, and says that he is so†."

You have here three cases of compound depressed fracture of the skull, admitted within a period of one month, treated successfully, without the trephine or elevator. You may form some idea of the interest attaching to these cases, by a statement of Erichsen, that, with a single exception, he does "not recollect ever having seen a case recover, in which a compound depressed fracture of the skull occurring in the adult had been left without operation.‡"

Prescott Hewett's counsel is given in no doubtful terms. "What", he asks, "is to be done, supposing there be a wound leading down to the bone in a depressed fracture of the vault without symptoms? The rule is that we are to operate and at once."§ With the utmost regard for this dictum of one of the most thoughtful surgeons of our time, who has made injuries of the head the special object of his clinical studies, and conceding that, in his advocacy of operative interference in compound depressed fractures of the skull, Prescott Hewett is at one with many eminent surgeons, especially British, I am clearly of opinion that the practice followed in the cases before you should be the rule of practice.

When addressing you on the treatment of compound fractures of the limbs, I have sought to impress upon you the wisdom of the precept, "to aim at reducing a compound to the condition of a simple fracture, and to treat both alike"||. This precept is equally applicable to compound depressed fractures of the skull, when the brain is not injured.

Although unanimity has not yet been attained, the progress of surgery has powerfully contributed to the establishment of this proposition. A century ago, operative interference was the rule in all fractures of the skull. It was Quesnay, himself an advocate of the prac-

tice of interference, who gave force to the opinions of dissentients, by the very title of one of those masterpieces of clinical study embodied in the memoirs of the old Academy of Surgery.* It fell to the lot of another of the academicians to substitute for traditional empiricism rules of practice as prudent and safe in their application, as their conception was enlightened and their demonstration closely and carefully reasoned. With few reservations, Desault was opposed to the use of the trephine in fractures of the skull.† It was otherwise with his great rival on this side of the Channel, Percivall Pott. The elevator and trephine were his favourite instruments, and so great was his ascendancy in the surgical world, so much more fascinating for the multitude, then as now, were boldness and complication than prudence and simplicity, that his heroic action had many imitators;‡ foremost amongst whom was his most illustrious pupil John Hunter, who went so far as to advocate the trepan in some doubtful cases, "as the operation can do no harm."§ The impending French Revolution, and its attendant slaughter on the battle-fields of Europe, was soon to furnish those lessons which, in surgical as in other experience, make men judicious.

When, after the battle of Talavera de la Reyna, the order was given for all the wounded who could leave the town to march, Surgeon Rose found himself in charge of a large number of the disabled Guardsmen. Twelve or fourteen of them had compound fractures of the skull, some with depression. In none of these was the trephine employed. The retreat in the burning sun lasted sixteen days, and yet every one of those who were wounded in the head recovered.||

Hennen¶ relates the case of Corporal Corkeyne, wounded by a musket-ball in the head at Waterloo. The fractured portion of bone was driven into the brain (being exactly an inch and one-fourth from the surface of the scalp). No operation was performed, and yet the man was discharged cured in a few weeks. After quoting a similar case, Hennen sums up: "We have here sufficient proof that there is no absolute necessity for trepanning, merely for depressed bones from gunshot"—an opinion strengthened by the cumulative experience of military surgeons, many of whom now entirely discard the trephine, while almost all are agreed that its use should be restricted to very exceptional cases.††

Desault's conservatism told directly on the civil practice, not merely of his own countrymen,‡‡ but of British surgeons. John Bell,§§ with his true surgical instinct, with his impetuous energy, and with the furnished eloquence of his ripe culture, threw in his lot against the trepan. "After the expiration of my apprenticeship at these hospitals," Astley Cooper has placed on record, "I went over to Paris, to see the practice of Desault at the Hôtel de Dieu; and there I found that scarcely ever under any circumstances did he trephine; and he was more successful than the English surgeons." Abernethy,¶¶ and Lawrence,*** too, were in this matter disciples of Desault, and on the same side must be mentioned one of the most enterprising surgeons of the century—a master who combined in a very rare degree fearlessness and judgment, power of brain, and skill of hands—I allude to Robert Liston. In his *Practical Surgery*††† he thus writes: "When fracture of the skull is complicated with wound of the scalp, the surgeon will not in general mend matters much by trephining, as has been advised, merely because there is a wound; if the depression is pretty extensive, and unless he has a better reason to give for the proceeding than the mere circumstance of the fracture being compound, as it is called, he will often thus add as much to the injury and to the risk which the patient is subjected to by it, as he would by dividing the scalp in simple fractures."

* *Précis de Diverses Observations sur le Trépan dans les Cas douteux*, par M. Quesnay. *Mémoires de l'Académie Royale de Chirurgie*, 8vo edition, tome i, p. 311, et seq. Paris: 1774.

† *Œuvres Chirurgicales de P. J. Desault*, par Xavier Bichât. Paris, an. ix, 1801. *Mémoires sur les Plaies de Tête*, vol. ii, p. 1, et seq.

‡ *Fractures of the Cranium, with Depression*, in the *Chirurgical Works of Percivall Pott*, vol. i, p. 213, et seq. London: 1783.

§ *The Works of John Hunter, F.R.S.*, with notes, edited by James F. Palmer, vol. i, p. 494. London: 1837.

|| Quoted in Ballingall's *Outlines of Military Surgery*, fourth edition, pp. 288-9. Edinburgh: 1852.

¶ *Principles of Military Surgery*, by John Hennen, third edition, p. 290. London: 1829.

** Desault's *Op. cit.*, p. 291.

†† *Vide* Professor Longmore on the Treatment of Gunshot-Wounds of the Head, in Holmes's *System of Surgery*, second edition, vol. ii, p. 175, et seq. 1870.

††† Dupuytren, *Leçons Orales de Clinique Chirurgicale*, tome vi. Paris: 1839. *Blessures de la Tête*, p. 128, et seq.

§§ On Fractures of the Skull, with Depression, in John Bell's *Principles of Surgery*, vol. ii, part ii, p. 764, et seq. London: 1806.

||| *Lectures by Sir Astley Cooper on the Principles and Practice of Surgery, with Notes and Cases*, by F. Tyrrell, vol. i, p. 279. London: 1824.

¶¶ *The Surgical Works of John Abernethy*, a new edition, vol. ii, pp. 24-5. London: 1827.

*** Quoted in Guthrie, on *Injuries of the Head affecting the Brain*, p. 118, et seq. London: 1842.

††† London, 1846, fourth edition, p. 45.

* I saw this patient seven months after the accident, and he continued in perfect health.

† I have seen this patient while this lecture has been in the press. The man continues (nine months after the accident) perfectly well, never having missed a day's work. Three small pieces of bone have worked through the cicatrix, which is quite solid, painless, and painless, over the depressed bone.

‡ Erichsen, *Science and Art of Surgery*, sixth edition, 1872, vol. i, p. 433.

§ Prescott Hewett, on Injuries of the Head, in Holmes's *System of Surgery*, second edition, vol. ii, p. 271. London: 1870.

|| On the Treatment of Fractures of the Limbs, by Sampson Gamgee, p. 112. London: 1871.

This warning is of special significance, emanating as it does from one who had had abundant opportunities of witnessing the effects of the trephine and elevator, and who possessed operative skill and courage in so high a degree, that he never felt the temptation to inaction as a refuge from responsibility.

Samuel Cooper* was equally conservative; but it is due to you to state that three of his contemporaries—Guthrie,† Brodie,‡ and Velpeau§—in the very first rank of surgical authorities, rather inclined to the heroic practice of Pott than to the physiological watchfulness and the gentle medical measures of Desault. Italian surgery|| has gradually come round to non-interference as the rule of practice in fractures of the skull, while the German school has traditionally been opposed to the trephine.¶ Neudörfer, writing after the Franco-German war, sums up directly against it.** Mac Cormack†† reflects the experience of the French and German surgeons on the battle-field of Sedan, in the statement that, “as a general rule, the largest proportion of good results (in gunshot fractures of the skull) obtain amongst those cases where the amount of operative surgery has been at a minimum”.

Jules Rochard‡‡ has contributed an interesting summary of the international position of the question. Speaking of trephining, he says: “The spirit of reserve distinguishes French surgery. It holds a position between the practice of the Germans, who scarcely ever trephine, and that of the English and of the Americans, who, though resting on the same rules as ourselves, have much more frequently recourse to this operation. Léon le Fort has analysed the trephine operations on the two sides of the Channel from 1855 to 1866. He has found one hundred and fifty-seven of them in England, and only four in France, in that period.”

The authorities I have quoted will be sufficient to convince you that the masters of our science have treated this question as a very important and difficult one. From their differences you will learn caution and toleration in judging others, and the need of most careful inquiry, before you determine to use the trephine. The three patients whom I have brought before you with compound depressed fractures of the skull, successfully treated without the trephine or elevator, have not recovered by accident or in virtue of a curious coincidence. As many authorities are against me, I have deemed it my duty to compare my opinion with that of others, for your instruction. In examining the question from an historical point of view, I do not pretend to have exhausted it; but I do hope to have proved that the progress of opinion has, on the whole, been in favour of non-interference, when the scalp is wounded and the skull broken and driven in;§§ without, however, producing symptoms of brain-lesion. The lesson very impressively taught by a careful study of the subject is this: that whereas the trephine was almost indiscriminately employed before surgery attained to the position of a science, its use has steadily decreased as enlightened experience has accumulated. Many surgeons, from being advocates of the trephine, have gradually abandoned it; but, so far as my researches have extended, I cannot find an instance of conversion to the practice of trephining by a surgeon whose reason indisposed him to adopt it, or whose experience had once led him to relinquish it. That there may be cases of compound depressed fracture of the skull justifying operative interference I do not deny, and I have myself had occasion to operate successfully in such cases in this theatre. Another opportunity may present itself for discussing

these cases. For the present, I shall limit myself to again impressing upon you my conviction that, in compound depressed fractures of the skull without brain-symptoms, the proper course of practice is NOT TO TREPHINE.

ABSTRACT OF RESEARCHES ILLUSTRATIVE OF THE PHYSICO-CHEMICAL THEORY OF FERMENTATION, AND OF THE CONDITIONS FAVOURING ARCHEBIOSIS IN PREVIOUSLY BOILED FLUIDS.*

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THE author first called attention to the fact, that no previous investigator has professed to have seen well marked fermentation set up in urine that had been boiled for a few minutes, if it have thereafter been guarded from contamination. The previous invariable barrenness of this fluid after boiling has been ascribed by germ-theorists to the fact, that any organisms or germs of organisms which it may have contained were killed by raising it to the temperature of 212 deg. F. (100 deg. C.).

In executing some of the experiments with urine described in this communication, two chemical agents have been brought into operation under novel conditions, and an ordinary physical influence has been employed to an entirely new extent. In several respects, therefore, these new experiments differ much, as regards the conditions made use of, from those hitherto devised for throwing light upon the much-vexed questions as to the possible origin or fermentations independently of living organisms or germs, and as to the present occurrence or non-occurrence of archebiosis.

The chemical agents employed under new conditions in these experiments were liquor potassæ and oxygen—both of them being well known as stimulants, if not as promoters, of many fermentative processes.

It has been recognised by several investigators of late years, that neutral or slightly alkaline organic fluids are rather more prone to undergo fermentation than slightly acid fluids. This fact may be easily demonstrated. As the author pointed out in 1870, if two portions of an acid infusion are exposed side by side at a temperature of 77 deg. F. (25 deg. C.), fermentation may be made to appear earlier, and to make more rapid progress in either of them by the simple addition of a few drops of liquor potassæ; on the other hand, if a neutral infusion be taken and similarly divided into two portions placed under the same conditions, fermentation may be retarded, or rendered slower in either of them at will, by the simple addition to it of a few drops of acetic or some other acid.

A neutral or faintly alkaline organic solution can in this way be demonstrated to possess a higher degree of fermentability than an otherwise similar acid organic solution. It seems, therefore, obvious that the changes capable of taking place in boiled acid and neutral solutions respectively should also vary considerably. Numerous experiments by different observers have demonstrated the correctness of this inference. Boiled acid infusions guarded from contamination mostly remain pure and barren if kept at temperatures below 77 deg. F. (25 deg. C.); though other infusions similarly treated and similar in themselves, except that they have been rendered neutral by an alkali, will oftentimes become corrupt and swarm with organisms. The latter result follows still more frequently with neutral infusions when they are exposed to a higher generating temperature in the warm-air chamber; and under this stronger stimulus a small number of boiled acid fluids will also ferment.

On the other hand, the influence of oxygen in promoting fermentation has been fully appreciated since the early part of the present century. Formerly an influence was assigned to it as an initiator of fermentation as all-important as some chemists assign to living germs at the present day. But this was a very exaggerated view. In some fluids, as the author has shown, fermentation may be initiated just as freely, or even rather more so, in closed vessels from which the air has been expelled by boiling, as in others in which atmospheric air, and consequently oxygen, is present. The explanation of this fact is probably to be found in the supposition that, in starting the fermentation of these fluids, diminution of pressure may be of as much, or even of more, importance than contact with free oxygen. In respect to other organic

* Article “Trephine” in *Dictionary of Practical Surgery*, by Samuel Cooper, seventh edition. London: 1838.

† *On Injuries of the Head affecting the Brain*, by G. J. Guthrie, p. 92 and 117. London: 1842.

‡ Pathological and Surgical Observations relating to Injuries of the Brain, by B. C. Brodie, F.R.S., in *Medico-Chirurgical Transactions*, vol. xiv. London: 1828.

§ Velpeau, *De l'Opération du Trépan dans les Plaies de Tête*. Paris: 1834.

|| *Lezioni di Medicina Operatoria e di Patologia Chirurgica*, di Regnoli e Ranzi, volume quarto, p. 47, et seq. Firenze: 1850.—*Istituzioni di Patologia Chirurgica*, scritte da Felice de Rensis e Antonio Ciccone, terza edizione, volume primo, p. 178, et seq. Napoli: 1852.

¶ *Vide Durchbohrung des Schädels in Die Chirurgischen Krankheiten und Verletzungen des Gehirns und seiner Umhüllungen* von Victor Bruns, p. 1037, et seq. Tübingen: 1854.

** “Die Trepanation niemals eine Heil-Operation sein kann.” Neudörfer, *Handbuch der Kriegschirurgie und der Operationslehre*. Zweite Heft. Spezielle Theil. Leipzig, 1872. Erste Abtheilung, p. 82.

†† *Notes and Experiences of an Ambulance Surgeon*, by William Mac Cormack, p. 65. London: 1871.

‡‡ *Histoire de la Chirurgie Française au XIXe Siècle*, p. 862. Paris: 1875.

§§ Since this lecture was delivered, Mr. Bryant has published the second edition of his *Practice of Surgery*, and Mr. T. Holmes his *Treatise on Surgery*. Both authors are substantially in agreement, though Mr. Bryant is much more decided that the trephine should not be employed in compound depressed fractures of the skull without brain-symptoms.