

Observations on wounds of the head : with a particular enquiry into the parts principally affected, in those who die in consequence of such injuries / by William Dease.

Contributors

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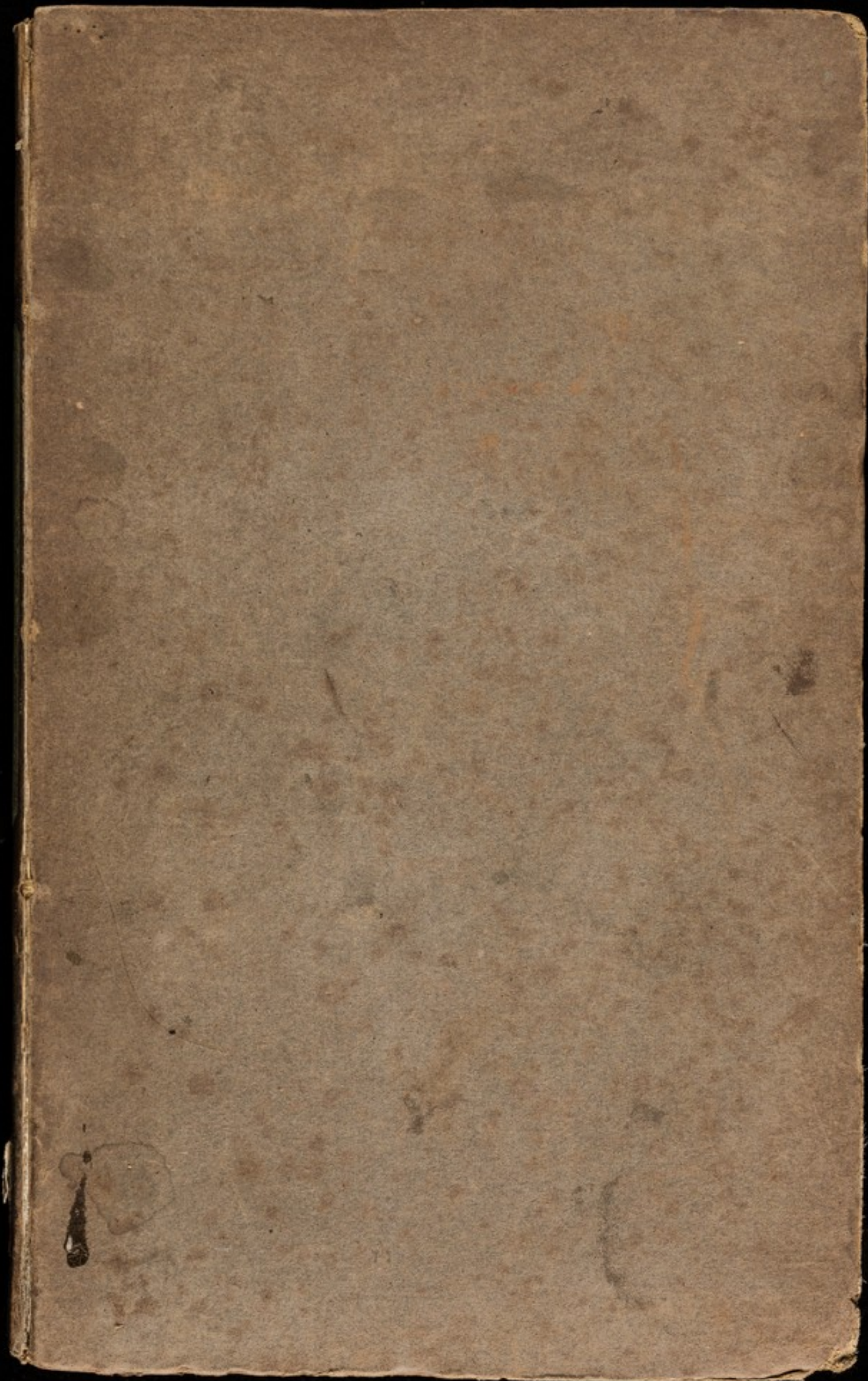
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OBSERVATIONS
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ON

WOUNDS of the HEAD.

(C. 2.)
WITH A

PARTICULAR ENQUIRY

INTO THE

PARTS PRINCIPALLY AFFECTED,

In those who DIE in Consequence of such Injuries.

BY

W I L L I A M D E A S E,

SURGEON to the united Hospitals of St. NICHOLAS
and St. CATHERINE.

Nec te lateat hoc quod in vulneribus Capitis sæpius contingat, ægrum venire usque ad vigesimum diem sive vigesimum primum, sine aliquo malo accidenti; at, circa tale tempus, superveniunt pessima accidentia, et moritur æger, et hoc ut plurimum contingit a sanie retenta in profundo Capitis.

BERENGARIUS Carp. cap. xiii. p. 109.

L O N D O N,

Re-printed for G. ROBINSON, Pater-noster Row.

MDCCLXXVI.

MEDICAL
OBSERVATIONS

WOUNDS OF THE HEAD.

WITH A

PARTICULAR INQUIRY

INTO THE

PARTS ESPECIALLY AFFECTED

IN THOSE WHO ARE IN THE HABIT OF DRINKING

BY

WILLIAM D. A. B.

OF NEW-YORK, M.D. AND F.R.S.E.
AND OF THE UNIVERSITY OF EDINBURGH.

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1854.

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GEORGE DAUNT, Esq.

S I R,

THE constant attention you have always shewn to every endeavour, which may tend to improve the practice of Surgery, leaves me no room to doubt of your favourably receiving those Observations, which I have taken the liberty to address to you. That rank you have so many years sustained in the profession, with so much honour to yourself, and utility to the publick, makes an address to you of this kind come with peculiar propriety. From your long
extensive

iv DEDICATION.

extensive practice and confessed abilities, there is no gentleman to whose judgment I would so readily submit. I hope, SIR, that, whatever their fate with the Profession in general may be, You will receive them, at least, as the well-meant endeavours of one, whose first wish is the advancement of his profession. I am, with the sincerest respect and esteem,

S I R,

Your obliged

humble Servant,

MEATH-STREET,
July 18, 1776.

WILLIAM DEASE.

INTRODUCTION.

IF the knowledge of any particular point of surgery advanced in proportion to the number of authors, who have selected it for an object of their enquiry, the method of treating wounds of the head, as it has engaged the attention of by far the greater number of surgical writers, had long since arrived at a superior degree of perfection.

BUT surgery, in this particular, shares the common fate of literature in general. Each author seems ambitious of erecting his theory on the ruins of that of his predecessors; and but too often his views seem to terminate in a vain display of their ignorance. Perhaps this is as strongly exemplified in our present
B subject

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subject as in any other point of medical enquiry.

IN looking over the multiplicity of authors who have treated on wounds of the head, we find them unanimous in declaring the event of all, but more expressly those where the cranium has sustained any degree of injury, to be extremely precarious.

MANY of them represent*, with much judgment and accuracy, the number of alarming symptoms that frequently originate from such, even from those where the cranium apparently was but little interested, and the patient so free of all complaints for some days, as to make any treatment than that for a simple wound appear unnecessary.

* Vide Bereng. Carp. Fienus, Bohnius. Ambr. Pare. Hildanus. Falloppius Fabric. ab Aquapendente.

WHEN

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WHEN we consider the importance of the subject, and that the frequency of accidents, where the cranium is liable to a variety of injuries, presents, even an inconsiderable practitioner, with many opportunities of informing himself of the parts principally affected in those cases, and the consequences they are productive of, we are apt to be surprised that so essential a point of practice should so long lie involved in rudeness and obscurity, and that we should be indebted to the surgeons, of almost the present times, for the degree of knowledge which we now have of wounds of the Head.

BUT, by throwing together before the reader a short comparative view of the ancient and modern state of surgery, which I hope will not be

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deemed an useless digression, he will at once see the many disadvantages the profession in general laboured under to oppose its advancement, and circumscribe it within those illiberal and narrow limits, in which we find it, antecedent to the present century.

THE fate of surgery, in the earlier ages, was peculiarly severe, although confessedly the most useful branch of medicine. The practice of it was held in such general contempt as to have been consigned to the most illiterate men, so far disqualified in general for this important trust, in being divested of every literary acquirement*, as even made it impossible they could derive any great advantage from experience, and conse-

* Vide Freind's History of Physic, and Recherches sur l'Histoire de la Médecine, par Mr. Borden.

quently

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quently totally incapacitated from transmitting to posterity any observations, that at this day would be worth preserving.

THE reason why a science, in the advancement of which the welfare of mankind is so closely connected, lay for so many centuries almost totally neglected, especially in Europe, may not only be attributed to that universal indifference and even contempt in which all those useful and polite arts, that serve to characterize and illustrate a polished age, were held, but to several other circumstances.

MANY concurring events centered the learning then in Europe among the clergy: in the ecclesiastic were united the lawyer, physician, and surgeon. About the tenth century, the profession of the latter was

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thought incompatible with that delicacy necessary to form the character of a clergyman ; and was forbidden, “ propter lasciviam curationum, et occupationem nimiam, feparatos fuisse chirurgos à medicis conflet*.” This totally prohibited the practice of furgery to men that had even the leaft pretenfions to any degree of literature.

It was not until the fourteenth, or towards the clofe of the thirteenth century, that phyfic put on the form of a regular fcience in France†, and had a feat in the univerfity, where the Greek and Arabian writers, with very little advantage to the real advancement of medical knowledge were commented on. Human diffections were looked on with the

* Reg. Chirurg. Vol. B. f. 159.

† Vide Recherches fur l’Origine de la Chirurgie.

utmoft

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utmost horror, and were accounted sacrilegious. Experimental physics and chemistry could hardly be said to be in their infancy.

It is evident, that, during this dark period, men endowed with the greatest strength of genius, when they had to encounter with all those disadvantages, could make but an indifferent progress in medical knowledge.

IN the fifteenth century, the spirit of enquiry, which so long lay dormant, began to appear, and gradually dispel that thick cloud of ignorance*, in which the human understanding had been enveloped for so many centuries before. The happy consequences thereof conspicuously displayed themselves, with every su-

* Dr. Robertson's Introduction to the History of Charles V.

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perior advantage, in the revival of the arts and sciences. To the study of medicine it was peculiarly propitious. The importance of anatomical knowledge in the investigation of diseases came to be understood, and assiduously cultivated, and philosophy to be divested of that metaphysical subtilty, which served no other purpose, but to engage the mind in idle speculations.

WHILE those avenues, which led the way to the farther cultivation and progress of medicine, were thrown open and facilitated, to surgery they were inaccessible.

The practice of this science, from which at present mankind derives so many happy effects, had been long in the possession of men of the most inferior class, rude in their manners, and far from possessing that degree of education

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education that would enable them to participate in this fortunate event of the restoration of letters *. The most delicate and capital operations fell to the province of itinerants and quacks, no otherwise qualified than by that temerity which often accompanies a want of knowledge with respect to the importance of the parts engaged.

PHYSICIANS, with a selfish policy, far beneath that liberality of sentiment which should characterise men of learned professions, looked with a jealous eye on any attempts, which they deemed innovations, towards forming a regular system of surgical education, or considering it as a science with which literature had any sort of connection. From men, unfortunately so influenced, little could

* Recherches sur l'Origine de la Chirurgie.

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be expected towards the advancement of a science their private interests and imaginary rights urged them to oppose*.—We, therefore, will not be surprised that the practice of surgery in those times was extremely rude, if not barbarous.

To France are we indebted for the first generous effort that was made to raise this profession from so abject a situation, and which, by persevering industry, they have now placed, in that respectable rank, its importance and utility to the public so justly deserve. John Pitard, who instituted the college of surgery in Paris, and William Vavasseur, who in 1544 procured it the privileges of an university, were among the first who shewed themselves zealous to

* Vide Memoirs des Docteurs de Paris contra les Chirurgiens, 1748.

effect

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effect it; and la Peyronie in 1738, by procuring a total separation from that preposterous union with the company of barbers, as was obtained in England through the means of Ranby and Chefelden in 1744, enabled surgeons at present to teach this science on the most liberal plan.

WE may trace the happy effects this produced by the rapid progress surgery has made, particularly within these last fifty years, to that degree of perfection the practice of it is now arrived at. From this digression, the reader will readily conceive the information he is likely to meet with on the subject of our present enquiry in the surgical authors of those times.

THERE is no doubt that many of them describe with great perspicuity the number of dangerous symptoms

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that often arise in consequence of wounds of the head, and in fractures that are attended with such as they thought denoted extravasation under the cranium of blood, or pus, ordered the dura mater to be exposed by abrazion, or perforation; and the necessity of this operation appeared still more obvious to them where a depressed bone was to be raised. Yet the want of that knowledge which we at present have of the anatomical structure of the parts engaged led them into many errors. The symptoms which we annex to concussions of the brain, they, in general, attributed to the injury the bone received *: and this was of the worst consequence to the patient, as it often influenced the surgeon to adopt a

* Vide the greater number of surgical authors antecedent to the present century.

wrong

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wrong mode of treatment ; and if we consider, that even until of late years, the application of the trepan was only allowed to certain parts of the head * ; and how extremely defective and ill-calculated the instruments they made use of were to fulfil any useful indication, we will find, that at this day, the precepts they have left us on this subject, are rather more curious than useful.

LET us now turn our eyes towards the surgeons of the present times, and see what lights they were enabled to cast on this subject, as being in general possessed of all those advantages of which their predecessors were divested, and how far they have improved the method of treating wounds of the head.

* Vide Cheselden, Ranby, Sharpe.

To

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To Mr. le Dran * we are in particular indebted for first distinguishing and describing with his usual exactness the symptoms that attend concussions of the brain, and those that arise in consequence of the fracture, which the surgeons of this day have farther illustrated. And, in general, they have, by ordering the trepan, in cases of necessity, to be indiscriminately applied to all parts of the cranium, rendered the operation more extensively useful than it was heretofore, and by abridging the number of instruments formerly employed in operating, and improving them all, the operation is much less complex, and the surgeon's intention more immediately fulfilled; and by exploding the use of syndons, and all hot stimulating applications,

* Operat. de Chirurgie et Observat.

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bandages, &c. in dressing, and substituting an opposite method of treatment with the necessary evacuations, cool regimen, &c. we have a right to expect a superior degree of success.

BUT we will not find authors so well agreed as to the method of treating those wounds, which peculiarly make the object of the present enquiry, and seem at first to be of an inferior order, where the cranium is laid bare, contused, or in the various divisions of the bone that come under the general denomination of fracture, extending no farther than the first table, or not evidently penetrating both. The most approved authors * are of opinion in those cases, if not attended with some particular symptom, we should by no

* Le Dran, Heister, Garengéot, La Motte, Ruysch.

means

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means proceed directly to trepan, as this operation appeared to them only necessary to give exit either to blood or pus, or facilitate the raising of a depressed bone, and where none of those conditions occurred, they did not think the operation an advisable means to secure the patient from future danger.

MR. POTT, a respectable authority in surgery, from considering the free communication which exists by means of blood vessels between the parts without and within the head, and that in all those wounds where the cranium is contused, or its tables divided; in short, in all simple fractures, the vessels that connect those two membranes; viz. the pericranium and dura mater to the scull receive such injury as renders them unfit for the office of circulation,

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lation, and consequently, after some days, they become inflamed and floughy, and are gradually detached from the cranium, and suppuration and putrefaction succeed, attended with a variety of the worst symptoms, which he describes with singular precision. Those considerations have induced this gentleman to be a warm advocate for the immediate application of the trepan in most cases that come under the denomination of fractures; for, as he says, although some would undergo an unnecessary operation, such an established rule would contribute to save many an useful member to society*.

WHOEVER will maturely consider what Mr. POTT has written on this subject, will find, that his whole ap-

* Vide his Observations on Wounds of the Head.

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prehension of danger in those wounds, arises from the inflammation and putrefaction of the dura mater, in consequence of which, as he expresses himself, more die, than from all other causes put together. The early application of the trepan, plentiful evacuations, in particular bleeding, which he esteems the sheet-anchor, are, in his opinion, the only means we can make use of to obviate this danger.

MR. BROMFIELD *, a later writer, introduced another method of treatment in those cases, from considering that obstruction in the capillaries, or extravasation of the circulating fluids, is to be always suspected in concussions, and that bleeding usque ad deliquium, recommended by those who thought

* His surgery, vol. i. page 9.

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inflammation proceeded from obstruction kept up by a plethora, and, consequently, that emptying the vessels by every possible means was the only rational method of cure, was not attended with any superior degree of success; on the contrary, the patients in general died.——He strongly recommends the giving large quantities of sudorifics, in which opium has a principal share, so as to keep up a gentle diaphoresis until the patient is out of danger. The happy effects of this method, he says, he has fully experienced, even in fractures, without the operation of the trepan. This mode of treatment he has been induced to adopt, on the presumption that inflammations are frequently caused by spasm.

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THE success that each of these gentlemen attach to the respective method they recommend of treating those cases, seems to have fixed them in an opinion of its superiority; and each has produced many instances to prove it. Perhaps the motive that induced me to make public those Observations, will apologize for choosing a subject that to many may seem already exhausted.

I HAVE been often surprised at the number of patients I have seen die, in consequence of wounds of the head, apparently the most inconsiderable, where the scull was either but laid bare, or the injury done extended no farther than the external table. It is true, on the first appearance of such symptoms as usually attend an inflamed or suppurated state of the parts underneath,
the

INTRODUCTION. xxi

the trepan was always applied, and with success, as far as I have seen, where only the dura mater was engaged, which was rarely the case; for, although, by the operation, sufficient exit was frequently given to a quantity of matter formed on it, yet it proved ineffectual in relieving the patient, who generally died some days after.

I CONSIDERED those fatal consequences too often to proceed from the obstinacy of the patients in not submitting early to the necessary evacuations, and their general neglect of keeping to any low regimen; as the greater number by far of them were under no apprehension of danger, from a wound unattended by any other disagreeable circumstance: so that, until they were seized with those symptoms,

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which shewed the suppuration begun, they for the most part followed their usual employments.

I DETERMINED, therefore, to persuade such as presented themselves, especially those who had wounds where the cranium was so injured as to make me apprehend the dura mater, or it's vessels, suffered, as in those who had simple fractures, to come into the hospital, informing them of the bad consequences their not complying would be productive of: all those who fell under my care in such circumstances, from the beginning, I treated in the manner I then thought most likely to prevent any future inflammation or suppuration taking place in the brain or its meninges, profuse bleeding, purging, severe regimen, &c. were not spared; and all those who

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had

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had simple fractures were immediately trepanned.

HOWEVER, I can assure the reader, the event by no means answered my expectation; for, notwithstanding fevers, shiverings, and all the concomitant symptoms of matter underneath the cranium, succeeded as frequently in ten, twelve, or fourteen days, and terminated as fatally, as if they were entirely left to nature; and such as recovered I could by no means attribute to the treatment, as many in similar circumstances did well, without having the least alarming symptom intervene, although they neglected all advice, and some lived very irregularly; and even in such as were after seized with symptoms they did not appear earlier or more severe, than in those who were treated with the most exact attention.

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FROM this I am induced to think that a surgeon who applies the trepan in simple fractures, where he has not a strong probability of the detachment of the dura mater, extravasation, &c. in order to obviate the consequence of its future inflammation and suppuration, subjects his patient to a severe operation, ever more or less dangerous in itself, often productive of disagreeable effects, which remain during life, and by no means indicated; and that the good effects of profuse bleeding, in disengaging the parts affected, are extremely doubtful.

It will give me singular pleasure, if what I have to offer to the Profession on this subject, will in any measure tend to set a point of practice, so interesting to the public, in a clearer light than has as yet been done.

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To step out of the common road of practice, is ever dangerous to the reputation of an individual; and in this case people are too ready to expect, when they hear a man has received a fractured scull, that he will be immediately trepanned, without ever considering the many circumstances that may induce the prudent surgeon to defer it. And if the operation do not take place, and the patient be attacked with symptoms that may hereafter make it necessary, and it not succeed, they impute his death to the ignorance or neglect of the surgeon to apply it at a proper time.

To obviate this prejudice in favour of an operation, that in all those cases can in no manner tend to the safety of the patient, is the design of these Observations, drawn from a
good

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good deal of experience, which has enabled me to point out more immediately the parts affected in wounds of this nature, and to shew they are seldom within the reach of the trepan, and that the inflammation and putrefaction of the dura mater are not in general the cause of death in such injuries.

I HAVE been led to refer for farther illustration of this subject, to such cases as fell under my care in the hospital; as I had an ample opportunity of inspecting the state of the brain and meninges in those who died, which is a privilege hard to be obtained in private practice.

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OBSERVATIONS

ON

WOUNDS of the HEAD.

SECTION I.

THE anatomical structure of the head is so clearly described in most of our modern books of anatomy, that to enter into a minute detail of it, would at present be entirely superfluous. However, I thought it might be an advantage, particularly to the young reader, to throw such a general view of those parts before him, as is most essential he should have a present recollection of, in the course of our subsequent enquiry.

THE

THE cranium is made up of eight bones, so put together as to form a large oval cavity, flatted on each side, and narrower before than behind. Their exterior and interior surfaces are composed of compact bony laminae. The intermediate space between them is formed of a curious cellular substance, and constitutes the diploe, where the various vessels from the pericranium and dura mater, that pervade those tables, spread and deposit a fine medullary oil. This disposition, in old age, is either effaced, or greatly lessened, and may be one reason why we do not find the effects of concussion, in consequence of smart strokes on the head, to be so often productive of danger in young subjects, as in adults: This intervening spongy substance, and the less resistance of the bones, being extremely well adapted to oppose their extending to the brain.

THE

THE external and internal surfaces of those bones of the head, which admit the application of the trepan, appear for the most part smooth and polished, except where by their mutual indentations they form the sutures, these appear internally rather depressed lines. In separating the pericranium in a recent subject, particularly if young, it is easy to perceive the great number of vessels that enter the cranium, and firmly attach this membrane to it. The internal or vitreous table is more marked by the transit of blood vessels, some of which run in through the diploe, and small pits, where the ligamentous fibres of the dura mater are inserted.

THE envelopes of the cranium are the common integuments, the frontal, occipital and temporal muscles, their tendinous expansions which serve to form what WINSLOW calls

the aponeurotic cap and pericranium, this last is extended over the external surface of the cranium, to which, as we have already observed, it intimately adheres, but more particularly at the futures, and does not differ from the periosteum of other bones. The scalp receives blood vessels from the ramifications of the external carotids, and nerves from the portio dura of the seventh pair and second cervical, it's veins unload themselves into the jugulars.

IN large lacerated wounds of the scalp, where a flap hangs and no other injury done, we are directed*, after freeing it from all extraneous matter, as dirt, gravel, &c. to bring it up to its natural situation, and support it so by future. If an union does not take place, and that those parts become inflamed, sloughy, and collections of matter form, openings

* Pott, on Wounds of the Head, page 7.

must

must be made in the most dependent part to give it free exit.

THAT this method of treating such wounds is ill-calculated to fulfil the surgeon's intention, or abridge the cure, will obviously appear on considering that contused and lacerated wounds will not unite until, by an abundant suppuration, some of those parts are flung off that are so injured, and for the most part we find in those cases, the flap not only extremely contused and ragged, but so foul with dirt, &c. as not to be freed from it by our best endeavours. Flaps in this condition, if replaced immediately in their natural situation, and supported there by future, are ever succeeded by very disagreeable symptoms, inflammations, erysipelatous swellings of the whole scalp and face, smart fevers, that generally end in collections of matter, which

which we are obliged by incisions to let out.

I SHOULD, in those cases, recommend an opposite mode of treatment, which is, after having cleared the wound as well as possible, to interpose a soft piece of old Holland, or lint, spread with some mild digestive, between the flap and cranium, and the former to be just sustained in situ, but by no means in close contact: after some days dressing in this manner, when all the sloughs will be flung off by suppuration, and the wound quite clear, one or two points of suture with proper bandage, soon procure an union of those parts. In this method, if proper evacuations, soft cataplasms, &c. take place, we seldom see the inflammatory symptoms run high, or any necessity of making dependent openings, to which it is ever disagreeable to have recourse.

THE

THE immediate envelopes of the brain are the dura, and pia mater. The dura mater is a strong ligamentous membrane made up of two laminae, whose fibres cross each other in different directions, the external is firmly connected to all the internal surface of the cranium, which was demonstrated by Roonhuyse in 1663, as we find in his surgical observations, and after him by many others. This connection is formed by the various vessels that enter the internal table, and the ligamentous filaments insinuating themselves into the small pits already taken notice of, and is firmest at the futures where these filaments seem to pass out and communicate with the pericranium. The internal lamina is smooth and polished, and constantly bedewed with a fine lymph, which is discharged through its pores; its connection to the pia mater is only by the veins of

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this

this last, where they enter to unload themselves into the sinuses ; it is of much greater extent than the external, as it sustains and divides, by its different duplicatures, the brain ; and serves also to form the sinuses that convey the venal blood into the internal jugulars. The dura mater receives arteries from the carotids and vertebrals, and the blood is returned by their respective veins, which are generally double the number of arteries, into the sinuses : although it is by no means probable that this membrane should be divested of nerves ; yet they are so fine as to be scarce discernible. Winflow says they are from the fifth, seventh, and eighth pair. There exists a sort of general communication between the different vessels throughout this membrane.

THE pia mater is likewise composed of two fine laminæ connected
by

by the cellular membrane. The external is stretched over the convexity of the brain, to which it is intimately attached by various vessels, while the internal dips into all its intricacies. Between those two laminæ, involved in some cellular membrane, run the various orders of vessels supplying this organ. In those who die, where the pia mater has been inflamed, we see it an entire texture of fine vessels, which it sustains, and, as it were, links together.

THE particular description of the brain is unnecessary for our purpose, more than observing it to be a soft, inert, insensible mass, although the fountain of sensation; the true structure and uses of its particular parts are very little known to us: this we know, that some of them are more essential to life than others, as we see patients recover of wounds of the superior lobes; while those of

the cerebellum and medulla oblongata, in general, soon prove mortal. The brain, like all other glands, is furnished with vessels of various orders, so disposed by their frequent anastomoses, that some of them may be obstructed and rendered unfit for carrying on the circulation, without sensibly impairing the functions of this organ, the fluids taking their course through the pervious vessels of communication. The cortical substance seems entirely vascular, and innumerable small vessels traverse the medullary.

THE circulation carried on through this viscus, requires a more particular attention. From the convexity of the arch of the aorta arise the two subclavian arteries, and left carotid. The right carotid generally springs from the right subclavian, immediately at its origin. The two carotids ascend on each side of the trachea, enveloped

enveloped along with the eighth pair of nerves and internal jugular veins, in a thick, common cellular membrane, as high as the thyreoide cartilage without parting with any branches : here each divides into two trunks, one anterior, the other posterior ; the anterior is chiefly distributed to the external parts of the head, except some branches it sends to the dura mater. The posterior or internal carotids in their ascent part with no branch, but after a serpentine flexure, by no means so considerable as it appears in an injected subject, enters a bony canal formed in the os petrosum, which is lined by a continuation of the dura mater, to which those arteries adhere, and traversing this canal, they penetrate into the cavity of the skull, where, after some new inflexions and incurvations, they branch out into innumerable ramifications.

THE vertebral arteries arise generally from the subclavians, but I have often seen them both spring from the curvature of the aorta. They ascend, one on each side, to the sixth vertebra of the neck, and then enter the foramen in its transverse process, and continue their ascent in the oblique processes of the other vertebræ, in a serpentine manner, detaching some small branches to the muscles of the neck, pia mater, spinal marrow, &c. They grow less at the second vertebra, and send off some small branches to the dura mater; and after a considerable inflexion round the transverse process of the first vertebra, they pass through the great foramen into the cavity of the cranium, and ascending the direction of the medulla oblongata, they soon approach each other, and after detaching some branches, form by their union the arteria basilaris, which soon after divides

divides into innumerable branches, the anterior ones anastomosing with the carotids, the rest are spent chiefly on the posterior lobes of the brain.

THESE four arterial trunks, on entering the cavity of the cranium, are divested of their thick, strong, elastic coats; their capacity is somewhat enlarged, and their tunics become similar to those of veins. From this, Luteau * was led to imagine they had no pulsation; but this assertion is by no means well founded. Haller computes the quantity of blood sent by the heart at each pulsation to the brain, by those arteries, to be the sixth part of the whole that circulates through the body †. On considering with what force and velocity the left ventricle of the heart

* *Essais Anatom.* p. 356. † *Physiol.* vol. i. p. 272.

propels the blood through the aorta, and that those trunks which pass to the head take their origin from its curvature, we might at first conclude it sufficient to forward the circulation through the smallest arteries of the brain; but that this is by no means the case, a little reflection will convince us; for, if we consider how much of this velocity and force derived from the heart will be lost in the ascent of the blood in those arteries, and at all the angles and different curvatures they form, which the effort of the heart tends to change, and that these four arteries are enclosed in bony foramina, to whose internal periosteum, as I may say, they closely adhere; from this it will appear more than probable that the power of the heart to forward the circulation through the arterial system of the brain is by no means adequate,

adequate, and of course it must depend on some other principle.

It has been long since known, that the impulse, which the blood driven from the ventricles of the heart, receives, extends little farther than the larger arteries*, and even in them, perhaps, would be insufficient to continue the circulation, did we not consider the whole vascular system as endowed with a moving or irritable principle, which the stimulus of the circulating fluids excites to contractions or oscillations. From this it appears obvious, that, as the cortical, and even medullary substance of the brain, appears chiefly made up of vessels, linked together by the cellular membrane, and whose tunics have but little elasticity, that, did not the arterial system in the brain possess

* Vide Whytt on the Motion of the Fluids in the small vessels; and Sauvage's Nosolog. vol. i.

this

this principle of motion, the circulation through this viscus could never be carried on by the sole influence of the heart ; and farther, that the fluids do not follow that regular direction which we are taught to believe they do, in most of our systems of physiology.

ALL the blood sent to the brain by the arteries is taken up, from time to time, by the veins, which are here of a peculiar structure and without valves, and conveyed to the sinuses formed in the duplicatures of the dura mater : but it is obvious that a great part of it is necessary to be always retained for the secretion and constant supply of the nervous fluid. Those sinuses discharge themselves into the internal jugulars which run into the vena cava superior, and from thence into the right auricle of the heart. From considering that in expiration the right
ventricle

ventricle cannot propel the blood through the pulmonary artery, or receive it from the right auricle, FABRE* thinks that, in this last, there will be a sort of reflux of the blood through the vena cava, internal jugulars and sinuses, which, with the diastole of the arteries in the basis of the brain, subjects this last to a gentle alternate pressure, and determines the succus nervosus into the nerves. Many observations seem to confirm him in this opinion ; for, on exposing the dura mater, its elevation corresponds to expiration, its descension to inspiration ; as in this last act a free passage is given for the right ventricle to drive the blood through the pulmonary artery, and, having emptied itself, to receive it from its respective auricle.

* Essais de Physiol. p. 33.

S E C T II.

THE injury which the different series of vessels that connect the pericranium and dura mater to the scull, sustain in wounds of the head, where the cranium has suffered either contusion or division of its external table, is considered by the greater number of authors on this subject, as the chief source from whence arise the many threatening symptoms, that in some days after we often see succeed in consequence of such accidents, and which but too frequently, notwithstanding our best endeavours to prevent them, terminate in death.

I SHOULD look on it as a very fortunate circumstance in the patient's favour, did the mischief extend no farther, as it would put it more immediately

mediately in the surgeon's power to obviate the danger by having recourse to the trepan, an operation which we would by no means find so ineffectual in relieving the patient, as we but too often experience it to be when this is not the case.

I AM very far from thinking, that the inflammation or suppuration of any part of the dura mater, let it be ever so circumscribed, is not an alarming circumstance, and which of itself is capable of destroying the patient ; but from what I have seen it is ever in the surgeon's power, by the application of the trepan, to rescue his patient from this danger ; provided no other part of more importance be engaged.

THOSE gentlemen who have been induced to believe, on considering the free communication of vessels that exists between the scalp, pericranium, and dura mater, that injuries of the
outward

outward vessels will easily affect those of this last membrane, and consequently be followed by its detachment and putrefaction, an event which appears to them so imminently dangerous as to occasion the death of more patients in those cases than all other causes put together, have considered this matter in too general a light. This will obviously appear on having recourse to the following reflections, with which experience, the sure guide in researches of this nature, will always furnish us.

HAS it not been a practice recommended by far the greater number of both ancient and modern authors, in many diseases of the head, to open fontenels by the actual cautery over the futures, and that on account of the free communication which exists between the exterior vessels and those of the dura mater; and have they not ordered those issues to be kept

kept

kept open even for years? Is not this practice revived, and strenuously recommended by Mr. BROMFIELD, who has experienced the most salutary effects from them on the same principle? Have we in their several works a single instance of those issues being productive of an inflammation or suppuration of the dura mater. Although it evidently appears, there must be a total destruction of all those exterior communicating vessels, and that in subjects, it may be well supposed, of no good habit of body.

In venereal patients where the bones of the cranium are elevated into nodes or corroded by caries, in which the venereal virus seems to be as it were centered; do we find the death of the patient occasioned by a detachment and putrefaction of the dura mater? Does not the caries in those and scorbutic, and even

cancerous cafes, often extend to both tables, where the bones become so perforated with small holes, that we can perceive the pulsation of the dura mater pumping the most acrid matter through them? How long do we see those unfortunate patients hold out in this miserable situation, and when they die, do we in general impute their death to this as a local complaint, or rather to a broken-down constitution, perhaps exhausted by medicine, and still infected by the pocky virus? Do we not frequently experience when this is subdued, and the caries, &c. is rendered a real local complaint, that by a milk diet, country air, a decoction of the bark, of sarsaparilla or both, nature, thus assisted, will by exfoliation cast off those rotten bones, and a laudable pus succeed to this thin acrid sanies, and the dura mater appear in a state of

of healthy incarnation, and a perfect recovery ensue?

If a detachment and putrefaction of the dura mater in such diseased patients does not of itself put them in that imminent danger of being rapidly taken off how are we to account for that which succeeds an injury done those vessels by contusion or simple fracture, terminating in death in a few days after the appearance of those symptoms, which would indicate such a state, and that in subjects not labouring under the disadvantages of a vitiated habit of body, and where immediate discharge is given to the matter by the trepan?

Does the inflammation of this membrane caused by the venereal or cancerous virus, run less high, previous to its producing a fetid sanies, than that which precedes a laudable suppuration succeeding the

E obstruction

obstruction or destruction of the vessels that pass between the pericranium and dura mater, in consequence of contusions or simple fractures?

IN this point of view we cannot certainly, with any degree of propriety, consider the putrefaction or inflammation of the dura mater in those cases to be so immediately the cause of death, and must have recourse to some more powerful one.

ALL those wounds are to be considered more or less dangerous, in proportion to the degree of concussion the brain or its meninges are supposed to receive. The dura mater being a strong ligamentous membrane, and firmly attached to the scull, seems not to be so easily affected, being a fitter medium to transmit any shock it receives to the brain, than oppose it.

The

The subsequent reasons will convince us, the pia mater and brain are the parts that most frequently suffer in those cases.

WE have already seen the large proportion of blood that is sent to the head, and that the arteries that convey it, on entering the cavity of the cranium, are divested of their thick, strong, elastic coats, and after divide into innumerable ramifications which run between the duplicatures of the pia mater into the cortical and medullary substance of the brain. The impulse the fluids receive from the heart, must be, for the reasons we have already mentioned, very unequal to forward the circulation through such an infinite number of vessels; so that it is kept up by the oscillations excited in them by the circulating fluids. That elevation and descension we see, on exposing the dura mater,

E 2 and

and which corresponds to expiration and inspiration, gives us room to imagine the brain is not always in so close contact with this membrane that it generally is supposed to be.

FROM this disposition we can readily conceive, how easily the concussion in consequence of fractures or smart strokes on the head, will be transmitted so as to affect the vessels of the pia mater and brain. And the degree may appear, either in a temporary suspension of the faculties of this last to a total abolition of them, as happens when death ensues; however many of those cases are attended by no immediate alarming symptoms, and yet those vessels will suffer so much by the shock as to be rendered incapable, by their oscillatory powers being weakened, to continue the circulation, and which after some time,

time, if not restored, will infallibly lay the foundation of their future inflammation.

WHEN we consider the infinite number of vessels that run through this viscus, the general communication that exists between them, we will not be surpris'd that a great number may be obstructed, or rather rendered incapable of the office of circulation, and the fluids be suspended in them, and no immediate injury arise that will impede the functions of the brain, and of course the patient feel no present complaint.

HOWEVER we well know our fluids cannot long exist in this situation without being liable to degenerate from their original mild nature and become a principle of irritation, which will excite the surrounding vessels to quicker oscillations, so as to determine their fluids with

redoubled velocity towards the point irritated; and of course an inflammation will succeed. Dr. WHYTT* has, with his usual accuracy, explained this; for he says, an inflammation is not owing to an encreased force of the heart and larger arteries, consequent upon an obstruction, as some authors of great name have imagined, but to an encreased alternate contraction in the small vessels, whether this arises from some obstructing matter overstretching their fibres, or acrid matter irritating them.

HERE we have an inflammation formed without the heart or larger arteries being any way affected, and quite independent of the general laws of circulation, and have no criterion to judge by, whether such an event takes place until the inflammation is advanced, or, what is more generally the case in those of the

* On the Motion of the Fluids in the small Vessels, p. 240.
brain

brain and pia mater, until the sup-
puration is formed: for inflamma-
tions of the pia mater and brain, the
first being extremely extensible, and
the second itself not endowed with
any great sensibility, although the
origin of all, are not in general ac-
companied with those early symp-
toms that attend other parts of far less
importance. Mr. Le Dran, in his
Surgical Observations, is extremely
clear on this point, as he remarks,
*Les abscesses qui se font dans le
cerveau ne sont pas accompagnées
des mêmes accidens que ceux qui
se font ailleurs; ainsi les signes de
suppuration, lorsqu'il y en fait
ne sont pas les mêmes. 1°. La
tumeur est sous le crane ainsi elle
n'est pas à portée de nos sens.
2°. Il y a peu de douleur, parce-
que le cerveau est presque insensi-
ble, et cette douleur est si equi-

* xxv. Observation, page 167.

voque, qu'elle ne peut nous indiquer ce que nous cherchons à connoître. 3°. La chaleur, si le malade en, ressent à toute la tête, est une signe encore equivoque, parce qu'elle peut-être une suite de la fievre. 4°. La tension n'est pas manifeste, ni pour nous, ni pour le malade; parce que le cerveau est une partie tres molle. 5°. La pulsation, ou le battement des arteries se fait si souvent sentir à la tête, lors même qu'il ne s'y fait pas de pus, que ce battement ne marque pas une supuration, mais seulement la tension de meninges. Comment, donc, connoîtrons nous qu' il se fait du pus dans la substance du cerveau? C'est aux observations a nous en instruire.

To this we may attribute the little advantage the patient derives from all our endeavours to relieve him, after the symptoms that usually attend

tend a similar state of the parts, declare themselves.

THE progress of those wounds of the head, in by far the greater number of patients I have seen, where the cranium was laid bare, contused, or its tables simply divided, was as follows.

IF the instrument with which the blow was given, was not heavy nor the force very great, the patient, after a few minutes, perceives no complaint more than might be expected from a simple wound. If he be attended, it is seldom the surgeon will be able to determine, the first days, whether any farther injury has actually taken place or not. The wound digests as kindly, and the patient performs all the functions necessary to health, as well as before he received it.

Now in such as become afterwards affected, whether they underwent
profuse

profuse evacuations, or were entirely left to nature, it made so very little difference, as to the time or manner, in which they were first invaded by the symptoms that usually attend an inflamed or suppurated state of the parts underneath the cranium, that I could never attribute the variation to the treatment.

THE first symptoms, that generally alarmed those patients that came to the hospital, were slight shiverings, attended with an inclination to puke. In some this was preceded by a languor over them, accompanied with more or less degree of fever, and often with a dull pain in the head and melancholy look. The wound in some put on the appearance Mr. POTT * describes; but this was by no means constant, nor that infallible sign of the inflammation and putrefaction

* On wounds of the Head, p. 63.

of the dura mater he makes it : nor did this appearance often take place, until the fever and other symptoms were far advanced. In some those symptoms made a rapid progress, so as to carry off the patient in a few days. In others they seemed to advance more slowly, and were less severe, although not less fatal. I have seldom seen them appear earlier than the eighth day, or later than the sixteenth or seventeenth ; between the eighth and sixteenth being in general the period most to be dreaded.

If the trepan was applied, at any time after those symptoms took place, the appearance of the dura mater was invariably this : either it was detached and in a state of suppuration and floughy, or found in every respect. If the injury was confined to it, the operation, as far as I have seen, proved successful.

And

And if the patient died, I have ever found the cause of his death in the suppuration of the pia mater or brain, but more generally in both.

WE will at present make some few reflections, on how far the general method of treating those wounds, is calculated to secure the patient from future danger, or relieve him after the symptoms have appeared. For this purpose we will consider the treatment under two different points of view. First that which should commence from the receipt of the accident, and where for the most part our endeavours will be entirely preventative. Or secondly that which should take place, on the patient's being seized with such symptoms, as leave us little room to doubt, the meninges or brain to be in an inflamed or suppurated state.

A SURGEON who is called to a patient, who has just before received
a wound,

a wound, which leaves the scull bare, or its first table simply divided, and sees him make no particular complaint, often finds himself at a loss, what course to take; not having any sure criterion by which he would be enabled to judge, whether any injury or not, farther than simply that of the wound, has taken place. If he follows what he judges the surest method to secure his patient from danger, it may in fact be superfluous, and the certainty whether it was or not, he can never know if the patient gets well, or how far the treatment contributed to his recovery.

BUT if the means recommended to prevent the danger, that so frequently arises from such accidents, cannot materially injure the patient, we are certainly justified in making use of them; and with much more reason, if on considering the circumstances

stances attending the wound we have a probability, that the degree of concussion was such, as to be capable of injuring the parts underneath.

WE have already shewn that the bad effects of such injuries, are generally propagated to the small vessels involved in the pia mater, which deprive them of their oscillatory powers, and suspend the circulation in them, and which if we cannot find the means to restore, an inflammation, after some days, will in all probability succeed.

To obviate this consequence, Mr. POTT * contends for copious bleeding, immediately after the accident; and in a note adds, as long as the pulse requires, or strength permits; and again, that there is an early something in the

* On Wounds of the Head, p. 67.

pulse

pulse and countenance, not easy to convey an idea of. And in truth he might with more propriety add, not easy to be perceived; which points out the necessity of it. And concludes by saying, that of all human means it bids the fairest to succeed.

WE have already shewn on what principles Mr. BROMFIELD, in those cases, disapproves of this method, and prefers the giving of Dover's powders.

THAT a man who has received a wound in the head, which lays the skull bare, and is perhaps attended with other circumstances, may from this cause, independent of any injury the vessels of the meninges or brain received, have a quickness in his pulse, &c. which will indicate bleeding, is often the case. But that such an injury as makes at present the subject of our enquiry, is attended
the

the first days with those symptoms, is I believe very seldom.

FOR were we here to consider the pulse as our direction in making use of evacuations, it would rarely for some days indicate any. And even after the symptoms of matter under the cranium appear, we sometimes find the pulse very little quickened. Nor will this, on considering the true nature of the injury and parts affected, appear surprising. And experience, superior to all those considerations, will certainly prove the truth of the above assertion.

PERHAPS a few reflections on the general effects of bleeding, in local inflammatory complaints, may afford us some light, in judging how far it is indicated in the present case.

THE great advantage practitioners derive from the free use of the lancet, in the cure of general inflammatory diseases,

diseases, by lessening the impetus of the fluids and irritability of the solids, is too well known at present to be in the least doubted. But local inflammations do not depend on an encreased motion in the larger vessels, nor does an acceleration of the pulse necessarily ensue, more than from that general sympathy, which exists throughout the solids. It is notwithstanding a frequent consequence. This Dr. WHYTT* has extremely well explained, in saying, as often as the inflammation is great, or the part inflamed very sensible, the whole nervous system will be so affected by pain, as to render the heart and larger arteries more irritable; whilst the blood, now vitiated by the obstruction and inflammation, must act on them as a stronger stimulus than usual.

* On the Motion of the Fluids in the small vessels, p. 240.

Now, although bleeding is well adapted to allay those symptoms of general inflammation ; yet, as in those cases under our present consideration, the inflamed parts being the smaller series of vessels of the pia mater or brain, where we have already seen the impulse of the larger ones have but little influence, the good effects from its profuse use, is with reason much doubted, as it is in all other local inflammations by the most informed physicians of the present age.

If this holds good with regard to parts actually in a state of inflammation, with what degree of propriety can it be so strenuously advised in those cases, where we have no foundation for suspecting the obstructed vessels to be in this state, whatever they in future may be. And obstruction without irritation in the obstructed part, never occasions

ons an inflammation, (WHYTT.) * so that all the good effects we can propose from this profuse bleeding arise by lessening the sensibility of the nervous system, and momentum of the circulation, the after effects of irritation will not be so great. But we cannot see how it possibly will contribute so immediately to disengage those parts, by restoring the small vessels to their pristine oscillations.

It is an unfortunate circumstance that often attends those injuries of the head, that before the patient is attacked with such symptoms, as would excite any particular attention, the inflammation formed in the pia mater or brain has made such a rapid progress as to be in suppuration.

* On the Motion of the Fluids in the small vessels, p. 230.

FROM considering all local inflammations as the effect of some particular irritation in the part affected, and really may be looked on as an increased oscillatory motion in the capillaries, and which we have already seen must continue some time, before any change will be observed in the general circulation, which is often not affected until the parts fall into suppuration ; and if we add how little those small vessels are influenced by the action of the larger ones, we will find that although we may derive advantage from the free use of the lancet in allaying the symptoms attendant on inflammation, yet it is by no means equal to remove the disease itself. This a late judicious writer has well remarked ; **mais lorsqu' une forte irritation attire le sang vers une partie, la saignée qu'on nomme revulsive est*

* *Physiol.* p. 257.

incapable

incapable de le détourner, parce que la force de l'attraction elude les loix par lesquelles les fluides doivent se porter vers les parties où l'on diminue la résistance : Aussi dans des cas semblables, multiplie-t-on souvent en vain les saignées, soit pour dissiper un engorgement dangereux, soit pour prévenir une suppuration funeste ; on égorgeroit, pour ainsi dire, plutôt les malades par une évacuation outrée de sang, avant de détourner le dépôt qui se forme dans une partie. Fabre.

MANY are the examples that might be produced in support of this, as inflammations of the eye, panaris, and even strangulated hernias, when the whole intestinal canal is not engaged, which it often is. The chief good derived from profuse bleeding depends much on the temporary suspension of the symptoms, in consequence of the

weakness and insensibility the patient is often thrown into, and of which the surgeon, with success, often avails himself, by the happy reduction of the intestine : if this does not happen, we soon see the symptoms, when the weakness that suspended the irritation is over, as severe as ever. Acrid clysters, in particular the smoak of tobacco, thrown up, contribute, in general, more to the reduction of the intestine, than bleeding.

As such topical applications, as are generally made use of to lessen the excess of oscillatory motion, in other parts inflamed, can have no place here, we will proceed to the next means generally employed, which is purging.

By purging, from time to time, we not only considerably lessen the quantity of circulating fluids, particularly in the serous vessels ; but, if made use of in the beginning,
as

as a preventative, may contribute to restore those small vessels, that have by concussion suffered, to their former oscillations, by the higher degree of nervous energy they excite throughout the general system, and from their altering the balance in the circulation, especially in those small vessels. We find, in other local inflammations, they are peculiarly serviceable to divert the impetus of the blood from the parts inflamed.

THOSE medicines called sedatives, also contribute to allay the intenseness of oscillatory motion, and should not be neglected: spt. nitr. dulc. or spt. vitriol. ten. and antimonials hold the chief rank in this class.

DR. WHYTT* thinks blisters extremely well adapted to this purpose; for not only the derivation and evacuation of serous humours

* On the Motion of the Fluids in the small Vessels, p. 241.

which they cause, but they also considerably lessen the sensation in the inflamed part, and quiet the excess of oscillatory motions in those vessels, and consequently the cause that continues and encreases the inflammation; and it appears that a blister, although it tends to encrease the force of circulation in general, may lessen the impetus of the blood on the vessels inflamed, even more than bleeding: sinapisms are made use of on the same principle.

FROM opium given in those cases, we can only expect a temporary relief of the symptoms, in as much as it blunts the sensibility and irritability of the nervous system, for a time; and although it may be considered so far a sedative, as that while its effects last, it considerably lessens the action of the smaller vessels in particular, and larger in general, on their

their contained fluids; yet it is by no means calculated to fulfil the real indication, which should be to disengage the obstructed vessels from their distending fluids, by restoring them to that elasticity necessary to their carrying on the circulation. For as to its being an attenuant, or removing spasmodic stricture, * here we have no reason to suspect viscosity in the fluids or constriction of the vessels.

SHOULD all our endeavours prove fruitless, in preventing an inflammation succeeding those wounds, from taking place in the brain or its meninges, and the symptoms usually attending such a state appear, and that the fever, &c. hourly encreases, the irregular shiverings become more frequent, constant inquietude and delirium succeed, we have every reason to imagine,

* Vid. Bromfield's Surgery, vol. i.

there

there is matter formed underneath the cranium, and are justified in applying the trepan, which will in general prove successful in relieving the patient under the circumstances we have already mentioned.

BUT as the injury is seldom confined to the dura mater, the pia mater being too often the seat of suppuration, it may be thought an adviseable means to open the first membrane, if by the trepan no relief has been procured the patient. Although in such a desperate case, any attempt that even bore the possibility of succeeding should be embraced; yet this will prove in general, from all I have ever seen, ineffectual; and for this reason: the matter is seldom or ever collected in one place, but generally diffused over one or both hemispheres of the brain, or part of them; and although it should be immediately
under

under the perforation, we cannot consider the fine pia mater by any means equal to form such a cyst, as might limit or circumscribe it, as we see the cellular membrane does in external inflammations that suppurate.

HOWEVER, as opening this membrane, in those desperate circumstances, cannot add to the danger, a small one may be made with a lancet; which afterwards, if it be thought necessary, or of any advantage to the patient, may be enlarged. I have recommended a small incision on this account, that the crucial one, as is ordered in most of our treatises on operations, is attended with the disagreeable circumstance of the brain's protruding.

As it is inconceivable how far the efforts of Nature will contribute, under the most alarming circumstances, to recovery; and as we,
have

have many instances of matter formed in the most important viscera absorbed, and either expelled the body by urine, stool, &c. or translated to parts which admit of being assisted by art; the patient, notwithstanding we have every probability that matter is formed in the pia mater or brain, should not be neglected. And as the opinion of so great a man as Sir JOHN PRINGLE, may excite us to use our best endeavours in the worst cases that may happen, we shall quote a passage from observations on jail fevers to this purpose. He says, * if there be an appearance of an hectic fever, from an inward abscess, the case is to be treated accordingly. Upon comparing some of the remaining symptoms of those who recovered, with the condition of the brain in such as died, I have been induced to

* Pag. 527.

think,

think, that some part even of that substance might suppurate, and yet the patient recover. So that we should, by giving the bark in as large quantities as the patient can take it, acidulating his drink with spir. vitriol. ten. strive as far as we can, to obviate the dangerous effects that arise from absorption, and procure nature time to accomplish this desirable effect. In some of the following cases it will appear probable, such an absorption took place.

C A S E I.

August 24th, 1766.

I WAS sent for from corn-market, to see a boy of seventeen years of age, who had just received a blow of a wooden faulchion, over the superior part of the os frontis, which

which laid near two inches of the bone bare. No fracture or visible contusion appeared, and the boy seemed no other way affected than by the pain the wound gave him. Having dressed him, I took twelve ounces of blood from his arm, and enjoined his being kept quiet, and to a low regimen. For the two or three first days, his pulse was rather quick; which induced me to repeat the bleeding, and procure some stools every day with a solution of manna and rochel salts. By this his pulse became quiet; and after the fourth day he was free of every complaint, and got up.

THE wound digested and looked extreamely well to the seventh of September, when he was seized with a smart shivering, and inclination to vomit every time he drank. He complained much of a pain in
his

his head, and had an extream quickness in his pulse, and was very hot. I immediately bled him, and ordered a clyster to be given him, and two spoonfuls of a saline julep from time to time. The discharge from the wound was less, and the lips pale and flabby. In the night he had two irregular fits of shivering, each fit continued half an hour; he raved at times. In the morning I found the fever much higher, and his head vastly engaged, and the wound looked much worse. I had him removed to the hospital, his friends being unable to support or give him the proper attendance.

As his symptoms made it extremely probable that a suppuration was formed underneath the cranium, I immediately scalped him, and applied a large crown of the trepan. When the piece was sawed through, a good deal of fetid matter sprung up;

up ; the dura matter appeared floughy, and to be detached beyond the circumference of the perforation. However, as the matter had free exit, I judged one perforation at this time sufficient. Two hours after the operation, I ordered him to be bled, and a clyster to be given in the evening. The night he passed extreamly well, and in the morning his head was quite disengaged, and his pulse much quieter ; however, I took about eight ounces more of blood from him, and desired the clyster to be repeated as usual. He slept very well that night, and the next day I found his pulse quite settled, and the dura mater kindly digesting. After this he had not the least alarming symptom ; and perfectly recovered, and was discharged the hospital on the second of November.

THE

THE quickness of this boy's pulse, and the slight degree of fever he had, for the first three days, I impute to his being extremely irritable, and not to any injury the vessels that connect the dura mater to the cranium sustained ; for from the fourth to the thirteenth, he had not the least particular complaint.

I AM confident that had I trepanned him immediately on the first appearance of the symptoms, I should have found the dura mater in a state of suppuration ; which shews the inflammation that preceded it, did not occasion any disturbance in the general system ; and that it is rather to the absorption of some of the matter, we may attribute the symptoms he was seized with the thirteenth day. We find that the dura mater being the only part engaged, the operation had the desired success.

G C A S E

C A S E II.

February 27th, 1773.

BARBARA HINTON, aged between twenty and thirty, fell from a hay-loft, by which she received a wound, on the superior and left side of the os frontis ; the next day she came to the hospital. On examining the wound, which was contused and ragged, I found a small part of the scull bare. She said she was stunned for a short while after she fell, but soon recovered. At present she had no complaint but what might be expected from the contusion and wound of the scalp, her pulse seemed not at all disturbed ; she was bled, and had phyfic to take home with her, as she was an extern patient ; and a low regimen, and
quietness.

quietness was recommended. The two following mornings after dressing, she was bled, and desired to take as much of the laxative mixture as would procure three or four stools daily.

SHE went on extremely well to March the 4th, when she complained of a pain in her head, and said she had a slight fit of shivering the evening before, her pulse was rather quick and low. She was advised to come into the hospital, to which she would not consent. Eight ounces of blood were taken from her foot, and she got some opening powders to take. She was pressed to come into the hospital next day, if she did not find herself much better. The next day she was much worse, and could not come to be dressed; and as she was under an apprehension of being trepanned, would not suffer herself to be carried. The 7th of

March she came, being nine days from the time she received the wound.

HER situation now was extremely alarming ; she complained that the pain of her head was intense, her pulse was low, hard and rapid, her skin burning hot, and dry, her tongue quite parched ; she shivered from time to time, and though not delirious, had all that anxiety and restlessness, which generally precede it ; the wound was gleetly and ill conditioned, the pericranium was detached all round the circumference of the wound. In consultation, the trepan seemed to be the only method, by which we could relieve her. I immediately applied a large crown of the trepan. We found the dura mater firmly attached to the cranium, and in every respect unaltered from its natural state : a clyster

clyster was given an hour after the operation.

IN the evening she shivered, and at night became delirious. The next day every symptom was increased. The 9th, we opened the dura mater with a lancet, nothing, but what the division of the small vessels produced, followed. The 11th, she could hardly articulate a word, and was quite delirious, shivered or rather seemed in one continued tremor; the aspect of the wound corresponded to the symptoms. She lived to the 13th, when feeble convulsions put a period to her misery.

DISSECTION.

ON removing the scalp, I found nothing worth noticing, except that the supercilia were œdematous, and a small quantity of tenacious matter in

the orbit, and under the temporal muscle on the wounded side. On opening the cranium, the dura mater, except at the perforation, appeared unchanged from its natural state. On uncovering the brain, on the middle and superior part of the left hemisphere, the pia mater and small vessels of the cortical substance of the brain, were melted into matter, and seemed as an ulceration to the breadth of a shilling, and such another we found near the longitudinal sinus. The internal lamina of the dura mater, that lines the middle fossa, was bedewed with a thin purulent kind of serosity, and speckled with red spots like vibices.

FROM this case it appears, 1st, that a detachment of the pericranium round the wound, puffy swelling of the scalp, ill conditioned gleet, and a discolouration of the bone,

bone, do not always indicate a detachment of the dura mater ; which may remain uninflamed, notwithstanding the exterior communicating vessels between the two membranes, are destroyed. 2dly, That although, for the most part, irregular shiverings attended with fever, pain in the head, &c. coming after such a wound, and not yielding to the general method of treatment, are sufficient reasons for our applying the trepan, we should be cautious how we promise success from the operation, or declare matter on the dura mater. 3dly, We see in general, how little is to be expected from opening the dura mater, as the matter is seldom collected in any particular part, but diffused up and down.

C A S E III.

August 2d, 1772.

A WOMAN, aged between thirty and forty, seemingly of a good habit of body, came to the hospital in the morning to be dressed, having received a blow of a pewter quart the night before in a quarrel, which made a contused wound, over the left parietal, of near two inches in length, by which the scull was laid bare. She was dressed and bled, and desired to be careful of herself.

SHE came every morning for eight days to be dressed, during which time she remained free from any complaint; the wound looked well in every respect until the seventh day, and the eighth day the lips became pale and flabby; the pericranium

cranium detached, the bone quite dry and in one spot discoloured; she had a shivering on the evening of the eighth day, counting from the time she received the wound; the next day her face was flushed, her pulse extremely quick, although by no means full, quite restless, and complained of a pain in her head. She was bled in the foot, and a clyster ordered immediately to be given, and a laxative mixture, of which she was to take some spoonfuls, to be given until four or five stools were procured.

IN the evening she shivered again, and her symptoms encreased. The surgeon, whose patient she was, scalped her, in order to apply the trepan next day; and ordered her to be bled again, and a saline julep with a grain of tartar emetic; two spoonfuls to be given her every second hour. Next morning she
was

was better, her fever being considerably less; and as she had no return of the shivering, the trepan was deferred: the clyster was repeated and the julep continued. In the evening I did not see her; but next morning I found her in some measure delirious, her fever extremely rapid; and she shivered twice in the night, and had a shivering then on her which lasted a quarter of an hour: the wound was quite dry.

In consultation it was thought expedient to apply the trepan, as there was every reason to imagine matter, either in the brain, or on the dura mater. This was immediately done, but we found this membrane firmly attached, and in a natural state. We dressed her up, in order to wait the issue, before we would proceed to open the dura mater; and ordered her to be bled

bled again and the clyster to be repeated in the evening.

SHE rested tolerably well that night, and had no return of the shiverings. Next day she was much better every way. She went on after this, in the usual manner with those that recover after the trepan. She never had the least return of the shiverings ; and left the hospital, in about two months, perfectly recovered.

How extremely similar were all the symptoms, which appeared in this woman's case, to those which attacked Barbara Hinton ; but how different the event ? Certainly there was every reason to apprehend the meninges, or brain itself to be in a state of suppuration ; and the application of the trepan was judicious ; for although on the evacuations made use of, the most alarming symptoms were much allayed the

next

next day: yet on the following day they came on with redoubled violence, and she had every symptom, that is usually attendant on matter under the cranium.

FROM what cause those symptoms originated, and why, on the application of the trepan, they vanished, I confess myself at a loss how to account for. The only useful inference I can deduce from this case, to serve for the better conducting apparently similar ones, is, 1st, That in such wounds of the head, although those symptoms which indicate the dura mater or brain, to be in an inflamed or suppurated state, should arise in eight or nine days or more, it will be ever prudent in the surgeon, not to be precipitate in applying the trepan, until he waits the effect of such remedies as his own judgment will lead him to prescribe: nor will this delay render
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the success of his operation more doubtful; in case he is obliged to have recourse to it. If the disease is wholly confined to the dura mater, we have seen, in case the 1st, an example of success. Besides, how exceeding doubtful is his finding matter under the trepan, and the not finding it often casts a reflection, both on the surgeon and the profession, in performing an operation, which was not only cruel but useless. And if the patient should die from matter being formed in the brain, nevertheless, it is often imputed to the operation.

I would be far from advising the operator to be on the other extreme, and defer operating until the patient is dying, and then only to perform it for a matter of form. That mode of conduct is exceeding criminal, and beneath the character of a surgeon; as it deprives the patient of
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the little chance he has for life. The best method to pursue in those cases, in my opinion, is this:

AFTER making use of such evacuations, &c. on the first appearance of those symptoms, as the surgeon shall think proper; if he finds they are not mitigated, or although they should for two or three or even more days, if they return and the patient grows ever hour visibly worse, I think the trepan should not be deferred. 1st, Because we cannot tell but the disease is confined to the detachment of the dura mater and its supuration, and the brain may not be materially injured: so that in this case the patient will be relieved by the operation. 2dly, As there are no visible means left but the operation to relieve the patient; to give him ever so small a chance,

chance, will be better than leave him to certain death.

IN all cases similar to this, I advise the surgeon to bear in mind, whilst operating, that although he should have ever so strong reason to suspect the dura mater to be detached, and matter to be between the scull and it, that those symptoms equally indicate the matter to lie between the dura mater and brain; and that we often find this membrane firmly attached in those cases contrary to our expectation: therefore he should be cautious and keep to the old adage, *festina lente*, in cutting through the internal table; for I have more than once seen, from the operator's being sure of finding matter underneath, and of consequence the dura mater not in danger from the teeth of the saw, by not taking care to raise the piece before he entirely cut through, he has extremely

treably injured this membrane ; which was productive of a protrusion of the brain, succeeded by the worst consequences ; and it will be impossible to avoid this accident happening, if the dura mater is attached, if we do not go on leisurely, and with the elevator raise the piece before we cut entirely through.

C A S E IV.

June 2d. 1769.

I WAS sent for to Thomas-street, to see a girl aged twenty, who had the night before received a contused wound, near an inch long, with a light stick, over the anterior and superior part of the left parietal, which laid only bare the pericranium. As there was a good deal of extravasated blood confined between it

it and the scalp, I dilated the wound in order to give it free exit, dressed lightly, bled her and ordered her a laxative mixture, and to keep to a spare diet. She was bled the next day, and had the mixture repeated every second or third day for the first week.

THE wound went on well, and she remained free of all complaints to the 21st, at which time the wound was near cicatrised, when she became hot and feverish, and complained of a pain in her head. I ordered her to be bled and the laxative mixture to be repeated. The 22d, she was much better and cooler in the morning, but in the evening she had a fit of shivering. 23d, In consultation, as she appeared tolerable well, neither her pulse very quick, nor she feverish in any great degree, or her head much engaged, it was agreed to postpone
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the application of the trepan. That evening she had another fit of shivering, and the next day, the 24th, she was highly feverish, and her head much engaged, all this time the wound shewed no bad appearance.

It was now thought proper to apply the trepan, which I did immediately, but found the dura mater firmly attached and in a natural state; she was bled that evening and had a clyster. The next day she was much better and had no return of the shiverings, and was quite free from the fever, &c. by the 27th; and after went on very well, the wound digesting, and the dura mater incarning, to the 18th of July; at which time, the perforation was almost filled up by the incarnation, and the wound of the incalp much contracted, but no exfoliation.

SHE

SHE now became on a sudden hot and feverish, her pulse extremely quick and low, great pain in her head and constant inclination to vomit. She was bled in the foot, and a clyster given, a saline julep ordered, &c. 19th, much worse in every respect. Blisters were applied to her legs; the wound became pale and gleety. The 20th, raved much, her pulse quite sunk. In the evening she was in the agony, and that night died.

DISSECTION.

ON opening her head, the dura mater shewed very little signs of inflammation; but the pia mater, and left hemisphere of the brain, were in many places gangrened and quite in a putrid state; the right was also in part affected. Indeed

there was such an offensive smell from them, that although she was but a few hours dead, I could not stand in the room or bear to examine them, it being very hot weather.

C A S E V.

January 3d, 1774.

MICHAEL MULLEN, aged twenty-seven, was carried to the hospital. He received a blow of a poker, eight days before, over the left superior part of the os frontis, which laid about an inch of the scull bare. He was bled three times the first days, and kept open in the body by a laxative mixture, and was attended in his own room by a surgeon. He continued free from any complaint to the eighth day, and then complained of a pain in
his

his head. The ninth day, that is the day he was received into the hospital, I found the wound looked florid and well, and the integuments firm all about. He was neither hot nor his tongue foul, and his pulse was very little quicker than if he was in perfect health. When asked, he denied he ever had the least fit of shivering, and his whole complaint was the pain in his head. He was ordered to be bled in the foot, and an emollient clyster to be thrown up. That night he passed extremely ill, fainting away often and quite restless from the pain in his head. The next day, although much worse as to the pain and very weak, his pulse was quite regular, nor had he any feverish heat or thirst on him, and the wound looked extremely well.

HOWEVER I immediately scalped and trepanned him, and found, I

am sure, two tea spoons full of well-conditioned matter on the dura mater. After the operation, he fainted ; but, in two hours he was rather better of the pain in his head. In the night, he raved much, for the first time, and became thirsty, could not lie down, but was supported all night by one under him: the 5th, his pain was intense, and the conjunctiva of his left eye made a fungus-like appearance ; his pulse was quick and weak. He had two drachms of the bark ordered him every two hours. In the evening his face became flushed, and he quite delirious, the wound not digesting, and the dura mater black and sloughy: the 6th, he was dying, and died the 7th.

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DISSECTION.

ON opening his head, the dura mater over the left hemisphere of the brain seemed thickened, and had a yellowish hue. Under the perforation there were a few specks of matter on the brain, and, two inches posteriorly and superiorly, there was a suppuration in the pia mater, to the breadth of a crown, of a well-conditioned pus, which descended along the falx under the anterior lobes of the brain. The pia mater that envelopes the optic nerves was in a state of suppuration. I observed that the suppuration every where was confined to the pia mater, and the small vessels involved in it; and I could see some of their coats half suppurated. The brain itself shewed no sign of inflammation; but the pia

mater of the cerebellum, medulla oblongata and spinalis was in suppuration here and there; and there came a wheyish kind of matter up from the occipital hole.

WE see, in this case, that a suppuration may be formed in the pia mater, and its vessels become inflamed and floughy, without any sensible degree of fever being the consequence: for, this man's pulse certainly never became quick before he was trepanned; although it is extremely probable, that the matter had been formed two or three days before the operation took place; nor had he any of the concomitant symptoms of a fever, except the pain in his head. As to his not shivering, I really did not believe him; the more so, as he was well aware that, if he confessed it, he would have been much sooner trepanned, to which he was
extremely

extremely averſe. I muſt declare, I do not remember a ſingle caſe, of matter ever formed under the cranium, unattended by irregular ſhiverings; notwithſtanding the patients and their friends often ſtrive to deceive you, in order to avoid the operation, little imagining the danger they are in.

C A S E VI.

March 1ſt, 1773.

A WOMAN, aged about thirty, came to the hoſpital. She received a cut of a hanger on the poſterior and ſuperior part of the left parietal, and another on the anterior and ſuperior part near the cornal future, which laid the cranium bare in both places. She was dreſſed and bled, and ordered
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to keep quiet and live low. She came every day to be dressed as an extern patient.

How far she obeyed those directions, I cannot tell; but, on the 8th, she became hot and feverish, and shivered irregularly. I advised her to come into the hospital, which she refused. I did not see her again, until the 12th. I found her fever much encreased, pain in her head, and the shiverings became more frequent. The wound was almost dry, and the little matter which was on the dressings was of a milky kind. She was scalped immediately, in order to apply the trepan; but, as I left the hospital, being sent for, the surgeon did not trepan her. Next day, her shiverings had left her, and she seemed better: but, the day following, when I again saw her, she was speechless. The trepan was

was now applied, and the dura mater found in a state of suppuration in both places. She died in about forty hours after the operation.

DISSECTION.

ON opening her head, all the left hemisphere of the brain, was found full of matter; which descended along the falx, down to the cerebellum.

CASE VII.

November 22d, 1773.

I WAS sent for to Prussia-street, to see a woman, about thirty-five years of age, who received a blow of a pewter quart over the left eye, which made a wound of about an inch

inch and an half long, and laid bare the cranium. She was three months gone with child. I bled her, and bid her keep quiet. Stools were procured occasionally, by a cooling laxative mixture, and she kept to her bed, and nothing allowed her but chicken-broth, gruel, &c.

THE wound digested kindly, and every thing went on well to the fourteenth day; when she had a slight shivering, and became hot and restless. The fifteenth, her face was flushed, her pulse was quick and small; round the wound there was a puffy swelling, and it was filled up with a soft fungus, spread over with a cream-like matter.

I MADE no difficulty to pronounce matter under the cranium, and proposed the trepan; but there being another gentleman called in, upon consultation, he thought it adviseable to defer it to next day.

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We ordered the laxative mixture and saline julep. The next day, she was better, and said she did not shiver. The surgeon thought he did well in desisting from the trepan, but I was of a contrary opinion; for her pulse, though slower, was still quick.

For two days she remained much in the same situation; but on the third her left eyelid swelled, but the eye itself did not look ill. She said, for two hours in the night, she had a great pain and stiffness in her jaw. No material alteration was made in her medicine, and the wound looked tolerably well. The next day her neck was quite stiff. Although I thought it now too late for the operation, yet I proposed it to her friends, at the same time informing them, the little chance she had of deriving any benefit from it. They seemed unwilling to suffer any operation

tion to take place; and I, knowing how little it would avail her, did not press them. Next day she was speechless, and died the 9th of December.

DISSECTION.

ON examining the wound, I found the puffy swelling entirely subsided. On opening the head the dura mater, under the wound, was found detached and slightly spotted with matter: all the rest of it was in a natural state; on lifting it up, the anterior part of the left hemisphere of the brain was in a state of suppuration; and some fluid matter lay on the anterior and left fossa cerebri. Nothing more material was found.

C A S E VIII.

August 7th, 1774.

A MAN aged fifty was overturned by a carriage, and the wheel passed over his head, by which the convex part of the right parietal was laid bare, and an angular flap formed. He was immediately carried to the hospital, and the surgeon in attendance, after freeing the wound from all extraneous matter, replaced the flap and supported it so by future, bled him, and ordered an opening mixture. Next day he was bled twice, and kept to a strict regimen, and had a saline julep.

THE wound seemed to promise fair, he had no greater degree of fever or pain in his head, than might reasonably be expected from such a large lacerated wound. The
fourth

fourth day he was again bled, and had the opening mixture repeated every second day to the fifteenth, at which time every thing bore a good appearance. The wound looked florid, and was in a great measure united, and he free of all complaints.

IN the evening he became chilly, and his head ached. The sixteenth, he was feverish, but not in any great degree. The 17th, 18th, and 19th, his symptoms encreased. His shiverings were more frequent, and his fever more rapid: his pulse, though quick, was light and low; therefore it was not thought advisable to draw any more blood from him. The 20th, the wound, although it bore not a very bad appearance, except the discharge being thinner, yet we perceived the flap disunited from the cranium in the center, but at the edges it was firmly united. He was
extremely

extremely sensible, yet he faltered in his speech.

As he was growing visibly worse, we took part of the flap off, and found the cranium rough and discoloured. We set on a large head of the trepan, and on raising the sawed piece, found the dura mater firmly attached, and undiseased. We dressed him up and ordered the bark. In the evening he had a rigor, that held him a quarter of an hour and more, and had a subfultus tendinum, and, though sensible, could not express himself.

FROM this time forward, he shivered two or three times in the twenty-four hours, and became irregularly convulsed, or rather trembling. The right eye was protuded, and the conjunctiva was puffed up into a yellow fungus. He became all over yellow as if jaundiced, and died the twenty-second.

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HE seldom raved, and seemed sensible to the last.

DISSECTION.

ON opening his head, we found the dura mater on that side of a yellowish hue, but it shewed no sign of inflammation or suppuration, nor was there any detachment, except round the trepan. The pia mater that covered the right hemisphere of the brain, was greatly inflamed, and in many parts there were gangrenous spots to the breadth of six-pence, which extended to the cortical substance of the brain; the rest seemed in a putrid state of suppuration. It is amazing how much the pia mater was thickened. The opposite side was inflamed, but not in any great degree.

C A S E IX.

August 4th, 1774.

ELINOR FARREL, aged upwards of forty, received a blow from her husband, with an oak sapling, over the superior and posterior part of the right parietal, which laid about an inch of the scull bare. She was, as she said, neither knocked down nor stunned by the blow. Next day she came to the hospital, and was dressed; but after absented herself, as she imagined the wound of no consequence, until the 15th, being taken ill the night before with chilliness, and pain in her head.

THE surgeon in attendance, as the scalp was œdematous, enlarged the wound, and took her into the hospital, and ordered a laxative mixture.

Next day she was much better, and said she had no return of the chilliness, and her pulse was pretty quiet. She remained growing seemingly better to August the 19th, but then became hot and feverish, and complained much of a pain in her head. Her pulse was quick and low, and her breathing much interrupted by a stitch in her side. She had a blister applied over it, and some opening powders.

SHE was better the next day, but on the 21st, she shivered repeatedly, and her skin was very hot, her pulse quick and low, and the wound quite dry. Although she was sensible, she did not complain much of her head. 22d, She was much worse, shivering from time to time; so that it was judged proper to apply the trepan. We found the dura mater firmly attached, and perfectly found.

found. From this time her fits of shivering became weaker, but more frequent, and she died feebly convulsed the 28th.

DISSECTION.

ON opening the cranium, the dura mater shewed not the least sign of inflammation, but on lifting it up, the pia mater was much inflamed, the right hemisphere of the brain posteriorly seemed to be formed into an abscess. On the other side the vessels were extremely turgid. And there was, I am sure, half a naggin of water in each of the ventricles.

C A S E X.

April 3d, 1775.

MARY DUNN, aged twenty, received on the 16th of March, a blow of a stone over the superior angle of the occipital bone, which laid the future bare. The person that first dressed her, I believe, took it for a fracture, and scalped her. She began to shiver irregularly, attended by a fever, and at times delirious, the eighth day; and was brought to the hospital.

APRIL the 3d the wound was quite dry, her tongue furred, her pulse extremely quick and small, and her countenance cadaverous. A trepan was set on the part exposed, which was the future, and the dura mater was found attached, except

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at one spot, where there was a speck of matter, which really seemed to have dripped through the ossa triquetra. She died in the evening.

DISSECTION.

ON raising the cranium the dura mater that envelopes the posterior lobes of the cerebellum, was speckled with suppurated points, which extended to the medulla spinalis; and on raising it, the cerebellum itself seemed here and there in the same condition, and a purulent serum was seen pumping up out of the occipital hole. The whole brain was remarkably soft.

I THINK we should never perform any operation, but where there was more probability of succeeding than appeared in this case; as both the operator and operation are

brought into discredit. For, although the signs of death are often fallacious, yet in a case of this nature, where the patient had been shivering for a week before, and quite exhausted, to trepan, at this time, was certainly an unnecessary operation.

C A S E X I.

May 10th, 1773.

A GIRL of fourteen years of age, was brought to the hospital, having received a wound over the left eye, with a blow of a stone, which laid the scull bare, nine days before. There was a small contusion in the bone, but the wound looked florid and well, and the scalp about it was firm. She had, the day before she was brought, taken a violent puking and pain in her head.

head. Her pulse was quick and her skin extremely hot, and her eyes wild and bright, but she was not delirious.

ALTHOUGH her friends denied she ever had the least shivering, I did not hesitate to apply the trepan, and found the dura mater detached, and covered over with well conditioned pus. I ordered her a clyster an hour after, and a saline julep. The next day we had no remission of the symptoms, the scalp became tumid, and she raved at night. As there seemed to be a detachment of the dura mater, extending lower down than the circumference of the trepan, I applied a crown over the superciliary arch, and found this membrane smeared over with matter, but not tense. The clyster was repeated. Next day she was worse in every respect, and insensible, and continued

nued so for two days, and then died convulsed.

DISSECTION.

ON opening her head the dura mater all about the perforations appeared sloughy, and on lifting it up the anterior portion of the left hemisphere was extremely putrid.

C A S E XII.

June 3d, 1773.

WILLIAM BEAD, a strong middle-aged man, came to the hospital, having received a wound on the superior and posterior part of the left parietal, which laid the skull bare, ten days before. He on the eighth day sickened and became hot and restless, and complained

plained of a pain in his head ; his pulse was quick and low, he had a continual puking on him and shivered from time to time. The wound looked dry and gleety, with a spontaneous detachment of the pericranium all round.

HAVING no doubt of matter under the scull, it was agreed in consultation to apply the trepan, which was instantly performed. We found the dura mater firmly attached, and in a natural state : a clyster was ordered in an hour after. He raved much in the night, and shivered twice, and became quite delirious ; his pulse began to fail. Next day he was speechless and apparently dying, and died the succeeding morning.

DISSECTION.

ON opening his head, the dura mater shewed not the least sign of inflammation or disease, but a supuration covered very near the whole surface of the left hemisphere of the brain.

SECT.

S E C T. III.

THE various divisions of the cranium, which make the object of our present enquiry, are those that are ranked under the general denomination of simple fractures, and which may be distinguished into such as are made by incision, and those that are made by blunt weapons, or by contusion.

IN the first case, the surgeon, on examination, judges whether there is sufficient reason to apprehend, that both the tables of the scull are cut through, or but the external; and this consideration is of much consequence in directing his future mode of treatment.

IF the cut is of any length, and not given slanting but perpendicular, it is not hard to determine;

termine ; as the pulsation of the dura mater is often perceived through those large fractures. The general consequence of such is, more or less extravasation, which detaches this membrane round the circumference of the cut.

IN this case, as we have the greatest reason to imagine, that the dura matter in all probability will inflame and suppurate, and the extravasation if of any great moment which is seldom, I believe, the case, by pressure or by time becoming acrid and stimulating will cause many alarming symptoms, which will make the application of the trepan necessary, I think it will be but prudent to prevent them by its timely application : and that, although it appears extremely probable the dura mater may suppurate under the fracture, if the pia mater and brain are not engaged, unattended

tended with that degree of danger generally described by authors ; provided by the trepan you give the matter sufficient exit, as soon as the symptoms declare its existence underneath.

BUT in many cases of this kind where we have no pressing symptom that immediately appears, and perhaps some other favourable circumstances attending, I believe it will be extremely advisable for the surgeon to defer the operation for some days ; and try by a proper application of those means recommended, in the choice of which his own judgment and experience must direct him, to prevent the inflammation, &c. of the dura mater. Nor do I believe the patient will run any additional hazard, although our attempts to save him from undergoing a severe operation should not succeed,

ucceed, and that we are after obliged to have recourse to the trepan.

WE will now consider what method we should pursue in those cuts of the cranium, where we have no reason to suspect more than the first table injured. Those wounds in my opinion merit no particular attention on account of the first table being cut through, more than if it was only bare.

FOR we will suppose a man after having received a cut of a hanger slantingly, or in such a manner that we have no visible division of the cranium farther than the first table. The patient feels no particular bad effects from the wound. In this case the warmest advocates in favour of the trepan, would be at a loss to declare to what purpose is their making the patient undergo a severe operation. If in expectation to find the dura mater detached, and
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by a rupture of its vessels an extravasation where we have no symptoms that would indicate such a consequence, it is not by any means justifiable; as we might, with equal propriety, apply the trepan in every wound where the scull is bare. If from the apprehension we are under that the contusion and wound of the bone, may in future be productive of the dura mater becoming inflamed, its vessels sloughy, and its detachment ensue, there are several methods, to prevent such an effect taking place, besides a severe operation which will be ever followed by what it is meant to oppose. Besides, we have seen the operation ever succeed, where the matter was only confined between the scull and dura mater, when let out on the appearance of the usual symptoms. In such a case, instead of rashly having recourse to the trepan, in order to

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obviate

obviate consequences which may never happen, we should wait until such symptoms appear as would make it necessary.

FRACTURES received by blunt weapons ever require a particular attention, and the more so in proportion to the degree of concussion you have reason to imagine the brain has received, and contusion round the fracture. For as the degree of force requisite to fracture even the first table of the cranium, in those cases, must be far superior to cutting through it with a sharp weapon, the danger will be proportionably greater. However, if we have not very strong reasons to imagine the dura mater detached, &c. we should, by no means, for those already given, think of the operation, but endeavour to obviate the bad consequences that may arise from the concussion the brain has received.

C A S E

C A S E XIII.

December 28th, 1773.

JOHN HOLT, aged eighteen, and
PATRICK MURPHY, aged twenty,
came to the hospital, immediately
after receiving in a quarrel the fol-
lowing wounds.

JOHN was cut, with a hanger, over
the superior and left side of the os
frontis, and had the first table divid-
ed near an inch and an half. Pat
received a similar cut over the su-
perior part of the left parietal.
They had no kind of complaint,
nor were they knocked down. As
it was evening when the wounds
were given, they were both scalped
immediately, for trepanning the next
day, and bled some time after.

29th, THEY had no kind of complaint, but the forenefs of their wounds. However, as there was a vifible divifion of the firft table, for fecurity they were both trepanned, and the dura mater in both was firmly attached, and not in the leaft altered from its natural ftate. They were both bled, an hour after the operation, and the bleeding was repeated in the evening, and an emollient clyfter ordered to be given them two hours after: 30th, John's pulse was very quick, and he hot and reftlefs, having paffed but an indifferent night; but made no complaint of his head. He was bled twice this day, and had stools procured by clyfter. Pat's pulse was very little changed from the healthy ftandard, and had no fever to fpeak of, however he was treated in the fame manner with John. 31ft, John had

had passed a better night; his pulse was not quite so quick, and he was much better in every respect. He was this day dressed, for the first time since the operation, and the dura mater looked tense and crude. He had a laxative mixture ordered him this day. Pat's case had nothing particular, being free from all complaints.

JANUARY the 1st, John's fever was very rapid, his pulse extremely quick, he was hot, thirsty, and restless, but no pain in his head. Ten ounces of blood were taken from the jugular. The dura mater shewed but little signs of digestion. He had a saline julep all along to take. Pat continued as free from all complaints, as if he had underwent no operation. The 2d, John's fever much abated, and the dura mater digesting. 3d, John's fever much on the decline, the

wound digesting and the dura mater
 sloughy. Pat quite undisturbed:
 they had now both a decoction of
 the bark given them. The 4th
 both free from complaints except a
 little quickness in John's pulse. 5th
 No alteration. 6th, John had passed
 a restless night, and raved much,
 his skin was hot, and his face flush-
 ed, his pulse very quick, great pain
 in his head and exceeding thirsty.

THE wound looked well, all the
 sloughs, for the most part, were cast
 off, and there seemed a good incar-
 nation. He was ordered a clyster,
 and the bark to be left off, and a
 saline julep to be substituted. In
 the evening he had a smart rigor,
 an intense pain in his head and got
 no sleep that night. 7th, much
 worse, in the morning he shivered
 for an hour, his pulse was extremely
 quick and weak, the wound looked
 florid but the discharge was thin.

No

No alteration in his medicine. The tunica conjunctiva of his left eye was puffed out. He was sensible at intervals. The 9th, dying, and died the 10th: he could speak within two hours of his death, and then went off convulsed. Pat recovered in the usual time, without ever having had the least alarming symptoms.

DISSECTION.

THE dura mater appeared unaltered from a sound state. The pituitary membrane that lines the frontal and superciliary sinuses, was daubed with a yellowish kind of mucus resembling pus. Under the perforation the pia mater and brain shewed a beautiful network of vessels, but no sign of suppuration. On the superior part of the left hemisphere, the pia mater, and

cortical substance of the brain, was in a state of suppuration to the breadth of a shilling, and more posteriorly, on the same side, there was a suppurated spot to the bigness of sixpence. The internal lamina of the dura mater, over the two suppurated spots, was inclining to be sloughy, which seemed not to proceed from any original inflammation, but the effect of the matter underneath. The vessels of the opposite side were rather distended.

HOWEVER similar, in all appearance, the cases of those two young men were, yet we see how different the event proved. They were both cut at the same time with the same kind of weapon, and the first table of the cranium was visibly divided in both.

ACCORDING to the general mode of practice, they were the next day trepanned; first, lest the fracture
might

might penetrate both tables; or if not, it was uncertain but the dura mater might be detached from the cranium by the violence of the shock, and a rupture of its vessels necessarily ensue, with an effusion of their contents: from which the worst consequences might be feared, except exit was given to the extravasation by the timely application of the trepan. Secondly, in order to prevent any inflammation, which the dura mater, in future, might suffer from the injury the vessels of communication between the two membranes might sustain, by the violence of the shock or division of the bone.

AFTER the operation, they were largely emptied, in order to prevent the symptomatic fever from rising to any dangerous height; or, if any obstruction was formed in the vessels under the dura mater, to
give

give them liberty, by lessening the vis vitæ, of freeing themselves.

WE have only to remark, how unequal this method was, to fulfil the intention in John's case. As for Pat, in all appearance he would have recovered without the operation, much sooner than he otherwise did.

C A S E XIV.

December 21st, 1773.

GEORGE CORRIGAN, aged nineteen, was brought to the hospital, twelve days after he received a blow of a hanger, over the middle and superior part of the left parietal bone.

ON examination we found the first table divided, about two inches or more. There was a large discharge of tolerable pus ; but the lips of the wound

wound were tumid, and the whole head and face was prodigiously swelled and erisipelatous. As he had no surgical assistance from the time of the accident, and now not well sensible, and his friends extremely ignorant, the account he gave us of his situation, from the time of his receiving the wound, was very dissatisfactory. He raved the night before, and had a smart rigor on him. His pulse was strong, full, and quick, his skin dry and hot, and his tongue foul ; but he did not complain much of his head.

IN consultation, it was judged proper to trepan him ; which was immediately performed, so as to take in the cut in the bone by two crowns. On our raising the piece, we found the dura mater firmly attached, and perfectly sound. He was bled two hours after the operation, had a saline julep, and ordered

ed a clyster for night. Next day his fever continued much in the same degree; but he did not shiver. More blood was taken from him, and the clyster repeated. The next day, the second from the operation, the swelling of his head and face was much abated; but his pulse was quicker and smaller. Blisters were applied to his legs; and the julep, &c, continued. The third day, the wound looked dry, and the dura mater sloughy, with a thin fetid discharge. The swelling of his head and face quite subsided.

He now took a decoction of the bark every three hours, he always had two or three motions in the day. He continued much one way, the fever not encreased, until the seventh day from the operation; and then his left eye swelled, and the tunica conjunctiva formed a kind of yellow fungus; however he

he had no gutta serena, which is frequently the case. His pulse now was small and quick, he was shook by irregular rigors, continually raving until the eleventh day from the operation, and three weeks, wanting a day, from the receipt of the wound; and then died convulsed.

DISSECTION.

ON opening his head, we observed the integuments were detached all around the circumference of the wound. The dura mater at the perforation, was covered over with mortified floughs, and all along that side seemed inflamed, and in many points suppurated. On lifting it off the brain, we found the pia mater, as it were, dissolved almost into pus exceedingly offensive; and the brain was affected with the supuration, as far as the medullary substance;

substance ; and in many places gangrened. There was no fluid matter collected in any particular spot ; but I remarked, the internal lamina of the dura mater, after scraping off the matter with which it was smeared, seemed undiseased.

THE right hemisphere, and the dura mater covering it, seemed little affected. The whole brain was remarkably dense ; which is generally the case with those who die where it is inflamed.

ALTHOUGH this man was left to nature, and, it is to be supposed, followed no sort of regimen, but exposed to the various distresses incident to the poor, from the time of his receiving the accident until that of his being brought to the hospital ; yet we find he did not sicken sooner than the generality of patients do in such cases : on the contrary, although it appeared on
dissection

dissection that all the left hemisphere of his brain was affected, and the pia mater in a state of putrid dissolution, he lived three weeks wanting a day.

WE have seen the case of John Holt, who received but a slight cut on the parietal, which barely divided the first table, and from the time of the accident was assiduously attended; trepanned the next day, emptied largely, and kept to a severe regimen: yet he was feverish from the beginning, shivered the eighth day, and died the tenth.

How precarious wounds of the head are, and how difficult it is to form a proper prognostic, has been clearly exemplified in those cases. In the present we see a destruction of the vessels of the first table, by no means affecting those of the dura mater; although no evacuations were made use of to prevent their becoming

becoming inflamed. But then those obstructed in the pia mater and cortical substance of the brain, became irritated from the obstructing fluids degenerating, and inflammation succeeded ; why it did not terminate sooner fatally would be difficult to investigate.

THE two things worthy to be remarked are, first, that it is evident, that though this man was trepanned on receipt of the accident, it would be to no effect in preventing the fatal consequence. Secondly, that by comparing this with the former case, there is room to suspect, that profuse evacuations are not the means to be so much relied on, in restoring to the small vessels their oscillatory motion, which the concussion deprives them of.

CASE

C A S E XV.

June 7th, 1773.

CATHERINE REILLY, aged sixty, came to the hospital, having received, the night before, a confused wound, on the superior and right side of the os frontis, by a brass candlestick which was flung at her, and by which the first table was fractured and one of the edges depressed a little. She was not knocked down by the blow, nor had she any complaint.

HOWEVER, on considering the circumstances of the case, it was thought advisable to trepan her; which was performed immediately. The dura mater was found firmly attached. She underwent the usual

L evacu-

evacuations. The wound digested, &c. extremely well, and she remained free from any complaint until the 15th, when she became hot and feverish, accompanied with a pain in her head. Next day shivered, and in the evening began to rave. The next day much worse, became senseless; and died the 18th, eleven days from the accident. The wound looked florid and well, to the day before she died.

DISSECTION.

ON opening her head, the dura mater appeared perfectly sound. The pia mater that covers the right hemisphere of the brain was highly inflamed, and displayed a beautiful network of vessels, all distended with blood, the anterior part of which was in a state of suppuration, with the cortical substance of the brain, which

which extended along the falx. Her
scull was extremely vascular, which
is rather uncommon at her age.

C A S E XVI.

March 1st, 1774.

MATTHEW REILLY, aged
twenty-one, a robust young
man, was received into the hospital ;
he was cut the night before with a
hanger over the posterior part of the
left parietal bone ; which divided
the first table for about an inch and
an half. As he was scalped, be-
fore he came in, by a surgeon, I
laid a crown of the trepan on, and
found the dura mater firmly attach-
ed.

He was emptied the first days
freely, being ordered three bleed-

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ings

ings in the arm, and one in the foot; and constantly kept open by a laxative mixture; and ordered the slenderest regimen. From the day of the operation his pulse was rapid, but he did not complain of any pain in his head. The dura mater, after six or seven days, was not clear, which in general ever denotes some latent mischief.

He had now a decoction of the bark. He continued without any pain in his head, although the fever never left him, and was cheerful. At the end of a fortnight he began to shiver irregularly, and his pulse became rapid. He always had a hot fit followed by a profuse sweat, and then shivered. He became easy after the paroxysm, which generally lasted three hours. He had a saline julep with some tartar emetic in it, and blisters were applied to his legs. He continued
free

free from shiverings two days after, and then they returned as severe as ever. A blister was applied to his back, which relieved him for two days more from the shivering. All this time his head was quite free and he was perfectly in his senses. He was shivering eight days when he began with the bark. His drink, which was mostly spring water, was acidulated with elixir of vitriol.

He continued shivering irregularly for a fortnight; all which time the wound had a florid appearance and was contracting, except that the dura mater was not as yet clear. He told me one morning that his left leg was a little heavy with him. On examining, I found above his knee a fluctuation. There had been no previous inflammation, nor did he ever complain of soreness, and the skin was not in the least discoloured. I immediately made an

ample incision, and discharged near a pint of well conditioned matter. All the cellular membrane seemed to be melted down the thigh, and the muscles had a flabby soft appearance. His bark was continued in port wine, and he supported with broth, jelly, &c. and dressed twice a day. The feverish paroxysm was removed for two days, but then returned, always preceded by a hot fit; sweating and shivering after. He had a good appetite, slept well, and his head was still disengaged. He took large quantities of the bark and elix. of vitriol.

THE wound in his head became small, but the dura mater never cleared well; he continued much one way for eight days, having the feverish fits very irregularly. I now made a counter opening under the ham, there being a large discharge from below. Two days after there appeared

appeared a tumour over the left clavicle, which I opened, and discharged a quantity of white tenacious matter, that seemed to come from the thorax.

He was now reduced to the last extremity, and was seized with a purging which nothing could check. For two days before he died it is amazing what quantities of coffee-coloured ichor was discharged out of his thigh. He died April the 6th, five weeks from the time he received the cut. He was all along in his senses, except the night before he died, and never complained of any pain in his head.

DISSECTION.

ON opening his head, nothing appeared on the dura mater, but the pia mater of the left hemisphere of the brain, in particular posteriorly,

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seemed

seemed dissolved into a thin wheyish matter. I could not obtain leave to open the thorax, nor more particularly to examine the state of the parts.

C A S E XVII.

November 7th, 1773.

FRANCIS MAGEE, aged thirty-six, came to the hospital, having received a wound with a hanger, on the left side of the os frontis, which visibly divided the first table. He had a drowsiness next day on him; although he was well emptied, it continued the next, which induced me to scalp and trepan him. I found that the fracture went through both tables, so that I divided with ease the round piece that was sawed out, where it was cut. The dura mater was not detached,
but

but in a natural state. He recovered in the usual time; but had as I remarked in the greater number of those who are trepanned, a considerable time after a pain in his head.

C A S E XVIII.

May 7th, 1774.

A YOUNG man, aged twenty-one, came to the hospital, having received a cut of a hanger the night before, on the superior angle of the lamdoidal future; it divided both tables in appearance. He was dressed up lightly, and ordered to be bled. He lost blood four times the three first days, and was kept open in the body by a laxative mixture. The sixth day, his pulse was quick and his head ached. He was taken into the house, where, by rest and the opening

ing mixture, those symptoms disappeared; and in fourteen days he was discharged the hospital, coming after every day as an extern patient to be dressed until well.

C A S E XIX.

April 12th, 1774

JOHN LEESON, aged forty, received a cut of a hanger, slanting over the left parietal, which took away about an inch of the first table. He was plentifully evacuated in the beginning. Eight days after I was called into consultation with two gentlemen who attended him: for two days before he had some slight shiverings, and pain in his head, quick pulse, &c. the wound looked well, the granulations from the incised bone were florid, his pulse

pulse though quick was soft; so it was agreed to postpone the operation of the trepan, except his complaints became more urgent. A clyster and a saline julep were ordered. Next day he was much better; he had no returns of the shiverings, and recovered in a short time.

THE July after, this man received a cut of a hanger, over the os frontis, which divided the bone; but he never had a bad symptom, and got well with slight evacuations.

C A S E XX.

July 29th, 1774.

JOHN RYAN, aged sixteen, came to the hospital, having received three cuts of a hanger on the head, one of them on the superior

perior and middle part of the right parietal, seemed to have divided both tables. He was dressed every morning as an extern patient, and never had any complaints, although he was but once bled and purged, and I believe kept to no sort of regimen, and lived very irregularly.

As three of the following cases were attended with such circumstances as seldom occur, and the fourth shews us, how little we can depend on the administration of Dover's powders, in the case of concussions, I thought it not amiss to give them a place here.

CASE

C A S E XXI.

August 9th, 1769.

A YOUNG man, aged twenty-three, was brought to the hospital: the account his friends gave me of his case was as follows: that nine months before, his master, on some trifling dispute between them, gave him a blow, with a heavy loaded whip, over the anterior and superior part of the os frontis, he fell immediately, and remained senseless for two days, during which time, he frequently bled out of his ears and nose.

As he was not attended by a surgeon he was but once bled, and the small wound which was made, dressed by an old woman. A fever now succeeded, and he became delirious,
which

which lasted two months, and then two or three splinters of the bone came away. In three months he was able to get up and go about, but was not settled in his senses, and was generally seized, as they said, with fits three or four times a day, and after them he seemed foolish. In five months he was able to walk a mile to an apothecary to be dressed. His friends, not finding him likely to be cured, brought him to Dublin, nine months from the time he received the wound.

ON examining him he did not seem much emaciated. I asked him his chief complaint, and found, although his answers were for the most part incoherent, that the pain in his head was the most troublesome, and the shivering that invaded him generally in the evening, especially if the discharge from the wound stopped or lessened.

He

He seemed not at all firm on his legs, but tottered when he began to walk. The wound had been at first but small, and was now cicatrized, except a small hole where my probe could enter, and which I found would go very far in, if I chose to introduce it.

I IMMEDIATELY scalped him, and made the hole the center of my incision. Upon removing the integuments, I found there had been originally a depressed fracture to more than the breadth of sixpence; as the dura mater was uncovered to that extent, and was raised into a sort of fungus, which had a small hole in it that corresponded to that of the integuments. I introduced a slender probe into it, and found a sinus running into the brain; I applied a large crown of the trepan anteriorly over this sinus, and, after raising the piece, introduced a fine
buttoned

buttoned bistory into the small hole in the dura mater, and opened the sinus to the extent of the aperture in the bone, and cut off the lips with a fine hollow scissars. On inspection, I found there was an ulcer formed under the dura mater in the brain.

I DRESSED him lightly and bled him; in the evening he had no shivering and was quite easy; I ordered him a clyster. He passed the night tolerably. The next day, in dressing him, I found, under the edge of the clipped dura mater, something rough, which I took hold of with my forceps, and extracted a splinter or shell of the vitreous table, shaped like my nail, out of the brain, where it had been at first beat in.

His fever was moderate, and he had no pain in his head. A laxative mixture was all he took, which kept him

him open. His shiverings did not return ; but he had some convulsive startings. Next day he was better in every respect ; and in two days after a second splinter offered ; it was much smaller than the first, and was of the vitreous table. After this, the wound digested and incised, as well as if the dura mater had never been opened, or the brain injured ; nor had he after any return of his head-ach or shiverings, and gradually became quite sensible, and left the hospital in perfect health, in about three months.

C A S E XXII.

November 2d, 1772.

VAL. CARR, came to the hospital, having received a cut with a hanger on the superior and left side of the os frontis. I found a

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fracture, which extended from the superior and lateral part to the nasal process.

I TREPANNED him in five places, so as to take in the whole extent of the fracture. One crown of the trepan was placed on the frontal sinus; I found no difficulty arising from thence, although the sinus was large. Under the fracture there was a large extravasation of blood, the dura mater being detached the whole extent of the fracture. He was well emptied the first days, and went on extremely well for four weeks. At the end of this time, he took a pain in his head, irregular shiverings twice and sometimes thrice in the twenty-four hours. On their first appearance he was emptied by bleeding and clysters, he had a saline julep, &c. and, after, the bark; all which seemed to have but little effect. He raved generally

generally every night, his face was flushed, his pulse quick and low; sometimes the shivering ended in a sweat, at other times in a lassitude.

At the end of ten days, being left to nature and given over, the shiverings left him; and in fourteen weeks he was discharged the hospital perfectly recovered. All the time the fore looked ill and gleety, and the lint could be hardly dragged out of it. The sinus closed nor was there the least disagreeable circumstance attended the opening of it.

C A S E XXIII.

December 11th, 1774.

I WAS sent for to Vicar's-street, to see a young man aged eighteen, who, on Sunday night, received a blow with a watch-man's

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halberd,

halberd, on the superior and posterior part of the left parietal. As he was in liquor when the accident happened, he could give no account of what followed. He was dressed by an apothecary, and remained without complaint until Wednesday the 14th, when he was suddenly seized with an epileptic fit, so strong as to require three men to hold him.

I was called immediately, and found him, although the fit had subsided, quite out of his senses; with a quick light pulse, and a constant inclination to puke. On examining the wound, which was about an inch and an half in length, I found the cranium fractured. On removing the integuments I brought the fracture in view, which was better than an inch long. I bled him in the foot, and ordered a laxative mixture to be given him an hour after. The night he passed extremely

ly ill, had two irregular shiverings, and raved much.

THE 15th, in consultation, I applied a large crown of the trepan, which took in the fracture. We found, on lifting the piece, the dura mater divided under the tragit of the fracture, and discharged near a spoonful of extravasated blood; and seen an artery that bled pretty free from the divided dura mater. We ordered another bleeding, and the saline julep. In the evening we found his pulse less quick, and he more sensible. The bleeding and clyster were repeated. The night he passed rather quiet, having no shiverings, but a kind of grinding with his teeth. The clyster procured him three stools.

16th, MUCH better. The saline mixture with sal polychrest. and rhubarb was ordered, and to be bled again. He was quite sensible. In

the evening rather restless, but no great complaint. His mixture did not operate; the bleeding and clyster ordered to be repeated. His tongue was foul all along, but he had no great degree of heat, his skin being rather moist. 17th, The wound began to digest, but crudely. He passed the night tolerable well, had four motions by the clyster, his pulse rather quick. The bleeding was repeated, and julep continued. Did not complain much of his head, although he struck it against the bed in rising up. In the evening much the same way; the clyster repeated; the night he passed tolerably. 18th, Complained much of his head, the pain mostly in his forehead; sweated much and was hot, in the night had two motions, his pulse rather quicker, his tongue foul, his skin not very hot, the wound pale and crude, the dura mater

mater all sloughy, and the discharge thin. Ordered him the bark in decoction, with a drachm and an half of the sal absynth. saturated in it. 19th, Last night he slept five hours, and in the morning his pulse was slower and fuller, the wound digesting better, and part of the dura mater clear, but fungus-like. No change except the spir. of vitriol ten. to acidulate his drink, and the clyster repeated. The evening better and less pain in his head. 20th, He passed the night well, and in the morning the wound digested tolerably, but the dura mater looked sloughy. No change in his pulse, did not complain of his head much, had an appetite, his tongue clear.

WE made no alteration in his medicine from this time to the 5th of January; he was going on in the usual way, kept to the same low regimen he had from the beginning,

continued the bark, and had a clyster when costive. The 4th of January he made free in talking, and I believe in diet. The wound looked, until the above time, florid, and was coming in; he had no head-ach of any moment: but the 5th, he complained of his head, and the thin pellicle that covered the brain seemed to have given way, and as much as would cover a shilling of the brain came out. He had taken a solution of Rochel salts, being costive. No alteration in his pulse and he slept extremely well. 6th, His pulse very little quicker than in health, but he complained much of his head. More of the brain came out this day than had before, which was mixed with the discharge.

I ORDERED him to be bled about six ounces, and the clyster to be given. His bark to be continued. N. B. My apprentice told me he had

had observed some of the brain to come out for ten days before the 5th, during which time I did not see him, being sick. 7th, He rested well in the night, his pulse quite regular, the wound better, and the discharge not so much coloured with the brain. No change, a severe regimen enjoined, and the bark continued. He went to stool naturally, which he had not done since the accident. 8th, Much better, the discharge not coloured with the brain. 9th, Still better, the wound closing, and no sign of the brain in the discharge. 10th, 11th, 12th, Still better. 13th, The pain of his head returned, and the brain tinged the matter. 14th, The brain still colouring the matter, but his head ached less. An ounce of the bark, with a drachm of tartar soluble in twelve papers, one to be taken every three hours, was ordered.

dered. 15th, No sign of the brain in the discharge. 16th, No pain in his head, nor discharge of the brain, but some small exfoliations came away. From this time he grew better every day, the wound cicatrizing fast. And the 25th of February, 1775, he was quite well.

DURING part of the above period, he after informed me, he had a purulent discharge from his left ear, which he foolishly concealed. I was informed that, nine months after, in exercising too freely, he took an epileptic fit, which returned once or twice since on him: but, in other respects, he enjoys a perfect health.

CASE

C A S E XXIV.

October 1st, 1775.

ON Sunday morning I was sent for, to see a butcher in Corn-market, who fell drunk from his horse, the Thursday before. I found him extremely incoherent in his answers, and those about him could give me no other account, than that he lay senseless some time after the fall, and continued, as they termed it, foolish. He was bled once in the country, and again the night before I saw him. His pulse was rather low, and he spoke thick. I examined his head, but found no mark of contusion.

I ORDERED a purgative mixture, and a clyster; the latter to be injected instantly, and the other to be given

given so as to procure a plentiful evacuation; and fourteen ounces of blood to be taken from his foot, and a scruple of Dover's powders to be given him at night. 2d, The mixture and clyster procured but one stool, the Dover's powders did not sweat him; but he passed the night pretty well, and in the morning was more recollected. His speech was still thick, his pulse rather fuller. More blood was taken from his foot, the clyster repeated, and ten grains of scammony, rubbed with sugar, ordered every two hours, until he had four or five stools. Neither the clysters nor powders procured a stool. He had a scruple of Dover's powders at seven o'clock in the evening. He passed the beginning of the night pretty well, but grew uneasy towards the morning. 3d, As he had no stool either by powders or clyster, I ordered the last to be repeated

repeated with two ounces of salts, which procured but one motion. His pulse was full and well, his speech less thick, and he more recollected. He passed urine very seldom, although he did not sweat. I gave him a scruple more of Dover's powders, and ordered another for eight in the evening. The night he passed tolerably, but did not sweat.

4th, His pulse was lower and quicker, his skin soft and moist, and he passed urine more freely. His clyster was repeated, and thirty grains of Dover's powders, and ordered for eight in the evening again. Light broth was allowed him. 5th, Much the same way; the clyster repeated, and two scruples of Dover's powders ordered, and to be repeated as usual in the evening. He raved from time to time during the day; blisters were applied to his legs. 6th, Much worse, raves incessantly,
his

his pulse quick and weak, no evacuation by stool or urine, nor did he sweat. The clyster repeated, and Dover's powders discontinued.

HALF an ounce of tartar solubile and three grains of tartar emetic in a pint of water, two spoonfuls to be taken every two hours, was ordered him. He had three stools in the day, passed urine freely, and rested well at night. 7th, Remarkably better, both as to recollection and pulse, and knew every one. The blisters on his legs dressed with unguent. epist. and the clyster repeated. 8th, Still better, passes water freely, and had three stools. 9th, and 10th, still better. As he seemed pretty well, and had not taken the Dover's powders for some days, I gave him thirty grains; that night he passed restless, did not sweat or urine, and next day was quite costive, and visibly worse every way.

way. I again left off the powders, and ordered the clyster with the solution which agreed extremely well with him. 14th, He was sensible, but raved at times. All well as to evacuations. And after this recovered gradually.

I HERE gave a fair trial to the pulvis Dovari, on Mr, BROMFIELD's principle ; * but was rather disappointed to find it did not answer the opinion he entertains of it. It checked all the sensible evacuations without producing any salutary effect ; and although he took four grains of opium in the dose, it did not procure him any refreshing sleep.

* Aut non tentes aut perforce.

F I N I S.

way. I again left off the powder,
and ordered the cylinder with the
station which agreed extremely
well with him. He was then
left, but saved at times. All well
as to circulation. And after this
I returned gradually.

I have given a full trial to the
principle of Dr. Brown's
principle; and have never
known it to stand at all. It is
twice the opinion, the estimation of
it. It checked all the febrile ex-
citations without producing any in-
jury effect; and although he took
four grains of opium in the dose,
it did not procure him any relief.
ing feet.

And to some end.

THE END

