Surgical observations on injuries of the head ; and on miscellaneous subjects / by John Abernethy ... [etc.].

SURGICAL OBSERVATIONS,

&c. &c.

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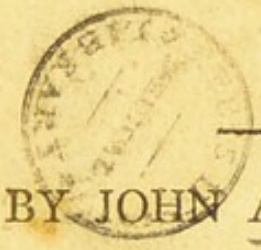

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SURGICAL OBSERVATIONS.

ON INJURIES OF THE HEAD.

SECTION I.

When the Members of the Academy of Surgery in France, and Mr. Pott in England, ſeverally inculcated to the ſurgeons of their reſpective countries, the propriety and neceſſity of trephining the cranium under various circumſtances conſequent upon injuries of the head, they probably recommended a too free and frequent performance of that operation. Such appears to be the opinion of many reſpectable writers who have publiſhed ſince their time; particularly of M. Deſault of Paris, Mr. Deaſe of Dublin, and Mr. John Bell of Edinburgh. But al-

though theſe writers unite in cenſuring the frequency of the practice, they are very far from being agreed in other reſpects; and many material points ſeem to me to require ſtill further elucidation.

Believing that the obſervations, which I have had an opportunity of making at St. Bartholomew's Hoſpital, enable me to throw ſome light on this important and intricate ſubject, I am induced to ſubmit to the public a ſhort account of ſeveral caſes that occurred there, and the inferences which I drew from them.

The difficulties connected with this part of ſurgery are ſufficiently proved by this circumſtance, that, notwithſtanding it has at all times excited the attention of ſurgeons of the greateſt talents, and poſſeſſing the moſt extenſive field for obſervation, much difference of opinion ſtill ſubſiſts, and the practice that ought to be followed in particular caſes yet remains a matter of diſpute. It is not, indeed, probable, that any part of medical

ſcience

ſcience can in a ſhort time receive all the improvement of which it is capable; for, in proportion as we advance in knowledge, we are led to remark many circumſtances in the progreſs of a diſorder, which had before paſſed without notice, but which, if known and duly attended to, would clearly point out to us the nature and remedy of the complaint. Hence, the records of former caſes are of much leſs value, as the ſymptoms about which we are now anxious to inquire, have in them been entirely overlooked.

I was led to this remark by reading the Works of Hildanus, Wepfer, Du Queſnay, and others, wherein are to be found a number of intereſting caſes, which I have been precluded from mentioning, as the nature of them cannot be exactly aſcertained in conſequence of this deficiency.

Although I have been for many years attentive to the treatment of perſons who had ſuffered injuries of the head, and alſo to the examination of the parts after death, where the caſe has terminated fatally; I ſtill perceive

ſo many circumſtances which require inveſtigation, that I entertain no hope of ever being able to obtain, from my own experience, all the information which is wanted. I hope, however, that the hints offered in this Eſſay may have the effect of inducing ſurgeons to pay a cloſer attention to caſes of this kind, and that thus, by their united obſervations, the public may at length become poſſeſſed of that knowledge, which the labours of an individual could never ſupply.

In the accounts which we have of the former practice in France, it is related, that ſurgeons made numerous perforations along the whole track of a fracture of the cranium; and, as far as I am able to judge, without any very clear deſign. Mr. Pott alſo adviſes ſuch an operation, even with a view to prevent the inflammation and ſuppuration of the *dura mater*, which he ſo much apprehended. But many caſes have occurred of late, where, even in fractures with depreſſion, the patients have done well without an operation.

tion. To confirm the accounts that have been given of ſuch caſes, and by this means to counteract, in ſome degree, the bias which long accuſtomed modes of thinking and acting are apt to impreſs on the minds of practitioners, I ſhall relate the hiſtories of five caſes, that occurred at St. Bartholomew's Hoſpital in the ſpace of twelve months; and afterwards offer a few remarks upon the ſubject. The principal circumſtances only of each caſe are related; for, as many examples of the ſame kind are to be found in various ſurgical books, a minute detail of particulars ſeem to be unneceſſary.

Caſes of Fracture of the Cranium with Depreſſion, which terminated favourably, although no Operation was performed.

CASE I.

A woman, about forty years of age, was admitted into the hoſpital for a wound on her head. About a week before ſhe applied for advice her huſband had knocked her down with a braſs candleſtick. She was ſtunned by

the blow, and lay for ſome time ſenſeleſs; but, on recovering, ſhe felt no other inconvenience than the ſoreneſs occaſioned by the wounded integuments. She had ſuffered ſome ſlight indiſpoſition ſince the accident.

On examining the head, the right parietal bone was found denuded about two inches in extent; a fracture of the ſame length was alſo to be felt; and the bone on one ſide of the fracture was depreſſed about the eighth of an inch. — She remained in the hoſpital a fortnight, without any bad ſymptom occurring, and was then, at her own deſire, diſcharged, although the wound was not perfectly healed.

CASE II.

A boy, about twelve years old, received a kick from a horſe in Smithfield, which ſtunned him; and he was immediately brought to the hoſpital. The integuments of the forehead were divided by the injury, and the lower part of the os frontis, and ſuperciliary ridge of the frontal bone depreſſed at leaſt a quarter of an inch below its original level;

level; the depreſſed portion meaſuring about an inch and a half in length.

It is obvious that the bone could not be thus depreſſed without a fracture of ſome part of the baſis of the ſkull occurring at the ſame time, on which account the caſe might be conſidered as more dangerous. — In leſs than two hours he had recovered from the immediate effect of the blow, being at that time perfectly ſenſible. Fourteen ounces of blood were taken from his arm; his bowels were emptied by a purge; and ſaline medicines, with antimonials, were directed to be given. He went on tolerably well for two days, at the end of which time, evident ſymptoms of conſiderable irritation of the brain took place. He now complained of pain in his head; ſlept little; and, when dozing, often ſtarted, or was convulſed in a ſlight degree. To remove theſe ſymptoms, he was bled twice, took opening medicines occaſionally, was kept quiet, and without light, and was allowed only a ſpare diet. By continuing this plan for about three weeks, he perfectly recovered.

CASE III.

A man between thirty and forty years of age, received a blow on the forehead from a brick thrown at him, by which the frontal bone was fractured about half an inch above the orbit: the fracture meaſured two inches in length, and the upper portion of the bone was depreſſed about the eighth of an inch. He was not even ſtunned by the blow, and walked to the hoſpital without aſſiſtance, complaining only of ſoreneſs in the wounded integuments. Sixteen ounces of blood were immediately taken from his arm; he was confined (much againſt his inclination) to a ſcanty and liquid diet, and was purged every ſecond day. — This patient did not experience any illneſs; and the wound ſoon healed.

CASE IV.

A boy, about thirteen years old, had a fracture, with depreſſion, of part of the temporal and parietal bones. By ſimilar treatment, he alſo eſcaped without any material ill conſequences; but in this caſe, part of the injured bone exfoliated.

CASE

CASE V.

A girl, thirteen years old, had a conſiderable fracture, with depreſſion, of the left parietal bone. She was not brought to the hoſpital until ten days after the accident. When admitted, ſhe was feveriſh, had pain in her head, and the little ſleep ſhe got was very much diſturbed: but, by the uſe of bleeding, with antiphlogiſtic medicines and regimen, ſhe ſoon got perfectly well.

The caſes above related are not offered to notice on account of any ſtriking peculiarity attending them, but merely to ſhew that ſuch are not unfrequent, as they all occurred within the courſe of a year. From amongſt a great number of ſimilar caſes, I ſhall ſelect the two following, as the ſymptoms attending them were more violent than ordinary.

CASE VI.

A lad, ſeventeen years of age, had his head preſſed between a cart-wheel and a poſt; by which accident the ſcalp on both ſides was turned downwards, ſo as to expoſe the lower half

half of the parietal bones, the ſquamous part of the temporal, and alſo part of the frontal and occipital bones; about a quarter of the cranium being thus completely denuded. The perioſteum was in ſeveral places ſtript off from the ſkull, the ſcalp much bruiſed, and the poſterior and inferior angle of the left parietal bone was beaten in. The viſible part of the depreſſed portion was an inch in length, and more than an eighth of an inch below the level of the cranium; but the fracture extended along the ſquamous part of the temporal bone towards the baſis of the ſkull: it could not, however, be traced, as the temporal muſcle had not been removed from that part by the injury.—The ſcalp being cleanſed was replaced, retained in its ſituation by ſlips of ſticking-plaſter, and a ſlight preſſure by bandage was applied. The boy was perfectly ſenſible, his pulſe regular, and not quickened. He had bled conſiderably from the temporal artery, which had been divided by the accident: eight ounces of blood were, however, taken from his arm; and ſome purging medicine was adminiſtered next morning, which procured three or four ſtools.

ſtools. — The next day (*Friday*), his pulſe beat nearly 120 in a minute; his ſkin was hot and dry; and he complained of pain in his forehead. Twelve ounces of blood were taken away, and four grains of pulvis antimonialis ordered to be given three times a day. On *Saturday*, the former ſymptoms ſtill continued, and were rather increaſed. The antimonial powder made him ſick, or at leaſt increaſed his diſpoſition to be ſo. Fourteen ounces more of blood were taken from him; the vibratory feel of his pulſe not being altered until that quantity was taken away: the blood, on ſtanding, appeared very buffy. His ſkin, notwithſtanding all this, ſtill remained extremely dry; ſome antimonial wine was given, which produced vomiting. On *Sunday*, his pulſe was evidently lowered by the evacuations he had undergone, but it was ſtill quick, and ſufficiently ſtrong. The pain of the head remained as before. Having a ſufficient number of ſtools, and the ſickneſs ſtill continuing, the antimonial powder was omitted. He was bled, however, in the vena ſaphena, and his feet and legs were afterwards immerſed in warm water; during which,

which, he, for the firſt time, perſpired copiouſly. A bliſter was alſo applied to his neck. — The ſcalp united, with only a trifling ſuppuration over the fractured part of the bone; and to this ready union, the lowering plan, by preventing inflammation, ſeems very materially to have contributed. The matter collected over the fracture was diſcharged by a puncture, and the boy got well.

CASE VII.

A lad, eighteen years of age, had the ſquamous part of the temporal bone beaten in; the fracture ran horizontally, about a quarter of an inch above the zygoma, and could be diſtinctly traced with the finger, introduced through the torn ſcalp and temporal muſcle, for two inches. The upper part of the bone was depreſſed about one-eighth of an inch; and it was impoſſible to trephine below the fracture in order to elevate the depreſſed portion. The lad had recovered from the immediate ſtunning occaſioned by the injury; nor was there any ſymptom that indicated material derangement of the functions of the brain from the preſſure which it ſuſtained.

He

He was bled largely, and took a purging medicine, and was moderately well on the following day. On the ſecond morning he was again purged; and when I ſaw him at noon nothing materially wrong appeared; but when I came to the hoſpital at eight in the evening I found he had gradually become delirious, and that he then could ſcarcely be kept in bed. His ſkin was hot, and his pulſe frequent and ſtrong. Theſe ſymptoms could be attributed to nothing but inflammation of the brain; he was therefore immediately and largely bled. He now became quiet and manageable; but the next morning his replies to all queſtions were incoherent, his pulſe frequent, his ſkin hot, and his tongue dry. The bleeding and purging were repeated, and at night a bliſter was applied to his neck. On the following morning he was ſleeping and feeble, but his anſwers were rational; as the frequency and fulneſs of his pulſe increaſed in the evening, he was again bled. The inflammation of the brain was now ſubdued, and the patient gradually recovered. The wound healed without any exfoliation of bone, and when he was diſcharged

charged from the hoſpital there was not the moſt trivial circumſtance which could induce us to ſuſpect that the brain had ſuſtained any injury from the accident. His ſleep was ſound and undiſturbed, and the ſudden motion of his head in any direction occaſioned no giddineſs or inconvenience.

It appears very clearly, I think, from theſe caſes, as well as from a great number of others to be found in books, that a ſlight degree of preſſure does not derange the functions of the brain, for a limited time after its application. That it does not do ſo at firſt is very obvious; as perſons are often perfectly ſenſible, and free from head-ach and giddineſs immediately after the injury. Whether it may not produce ſuch an effect at ſome remote period, is not ſo eaſily determined, ſince this cannot be aſcertained but by a continued acquaintance with the perſons who had received the injuries. All, however, whom I have had an opportunity of knowing for any length of time after the accident, continued as well as if nothing of the kind had ever happened to them.

In Mr. Hill's Caſes in Surgery, two inſtances of this ſort are related; and Mr. Hill knew both the patients for many years afterwards, yet did not perceive any inconvenience to to ariſe. It deſerves to be mentioned too, that one of the patients was a ſailor, and therefore, probably, led a life of irregularity as well as of exertion. The reſult of caſes of this kind, which I have met with in authors, does not lead to the apprehenſion of any future miſchief: nor is it eaſy to conceive that the preſſure, which cauſed no ill effects at a time when the contents of the cranium filled its cavity completely, ſhould afterwards prove injurious when they have adapted themſelves to its altered ſize and ſhape. Severe illneſs, indeed, does often intervene between the receipt of the injury and the time of its recovery; and many ſurgeons might be inclined to attribute this to preſſure; but it equally occurs where the depreſſed portion is elevated; ſeveral inſtances of which I ſhall have occaſion to relate, and many others are to be met with in authors. This is a circumſtance which nothing but very extenſive experience can ſhew in a true light.

If,

If, for inſtance, a ſurgeon who was prepoſſeſſed with the opinion that elevation of the bone is neceſſary in every inſtance of depreſſed cranium, ſhould have acted upon this opinion in the firſt, third, fourth, and fifth caſes, and afterwards have employed proper evacuations, his patients might, perhaps, have had no bad ſymptoms, and he would naturally have attributed their well-doing to the mode of treatment which he had purſued: yet theſe caſes did equally well without an operation. If the ſame ſurgeon had been witneſs to the diſturbance which aroſe in the ſecond, ſixth, and ſeventh caſes, he would, without doubt, have attributed them to the continuance of preſſure made by the bone; yet theſe caſes alſo did well by medical treatment only: and when the ſymptoms which come on thus, are of the inflammatory kind, they may generally be removed by the ſame means. Many caſes alſo are to be met with in books, and ſome are related in the ſubſequent part of this Eſſay, where not only great but even fatal miſchief enſued, notwithſtanding the brain had been relieved from preſſure at an early period. Another ſurgeon,

prejudiced againſt the uſe of the trephine, might, with equal injuſtice, conſider the miſchief, which enſues in certain caſes, as entirely owing to the operation.

The degree of preſſure, which the brain can ſuſtain without great injury to the ſyſtem, may probably vary according to the diſpoſition of that organ to be affected by it, the ſuddenneſs of its application, and the direction in which it is made: and although it muſt be very difficult to obtain any preciſe knowledge on this ſubject, yet there is great reaſon to believe that the brain can bear more preſſure without injury to it, than was formerly ſuppoſed. The firſt of theſe circumſtances ſeems evident; for in ſome perſons a ſlight preſſure produces ſevere ſymptoms; whilſt, in others, a much greater degree is borne without inconvenience. We can rarely judge of the effects of preſſure when any part of the cranium is beaten in by a blow; for in that caſe the ſhock generally occaſions ſtupefaction. Internal hæmorrhages, perhaps, afford us the beſt criterion whereby to determine the effects of preſſure on the brain. The

eighth caſe will ſerve as an illuſtration of this remark, where it appears that a conſiderable hæmorrhage muſt have taken place before it deprived the patient of his faculties; for he walked home, undreſſed himſelf, and went to bed, after the trunk of the middle artery of the dura mater had been ruptured. In caſes of apoplexy alſo, the hæmorrhage is generally very large before it produces thoſe conſequences which deſtroy life.

The authorities quoted by Morgagni, as well as his own obſervations, ſhew that people may recover from apoplexy even after a conſiderable effuſion of blood has taken place. But as the records of ſuch caſes are not common, and as it appears to me that further confirmation of them would be highly uſeful, I have obtained permiſſion of Mr. Wilſon to mention a remarkable caſe of this kind, which occurred to his notice. — A gentleman fell down ſuddenly, and remained for ſome time in that lethargic ſtate which is uſual in apoplectic caſes; but afterwards gradually recovered his faculties both of mind and body, and continued to exerciſe them

them very perfectly for two years, when a ſecond attack of the ſame kind took place, and deſtroyed him. Upon opening the head, the cauſe of his death became evident; for a large quantity of blood was found in the ventricles, and at the baſis of the cranium. But what ſeemed particularly worthy of attention, was a cavity in the right hemiſphere of the brain, extending from the front to the back part of the cerebrum, being more than four inches in length, and more than an inch in breadth, Within this cavity were contained flakes of coagulated lymph, and a bloody-coloured fluid, which Mr. Wilſon, whoſe abilities and accuracy of obſervation entitle his opinion to the fulleſt credit, was convinced were the remains of the blood extravaſated at the firſt attack.

I alſo examined the brain of a gentleman, with whom, for the laſt five years of his life, I was intimately acquainted. When I firſt knew him, he was ſlowly recovering from a ſevere fit of apoplexy, which had paralyſed the left ſide of his body. Though he could not raiſe his left arm to his head, nor move his left thigh and leg with free-

dom, yet he walked about moderately well, and could work in his garden. Every winter he was ſubject to fits of the gout, and every ſummer to ſuch a plethoric and inflammatory ſtate of the veſſels of the head as to threaten another apoplexy. He was once immediately and moſt completely relieved from very diſtreſſing feelings from the latter cauſe, by the abſtraction of ten ounces of blood from the temporal artery. The laſt fit of apoplexy, which I have mentioned, was the third, with which he had been afflicted. The firſt affected his ſpeech, the ſecond his right arm, and the third produced the effects which I have related. His bodily and mental powers remained however very vigorous, even during the five laſt years of his life. On diſſection three apoplectic cells were found. One was ſituated ſuperficially in the left lobe of the cerebellum, one in the left hemiſphere of the cerebrum, and one, which had probably been the cauſe of the laſt and greateſt degree of paralyſis, in the middle of the right hemiſphere of the brain. Nothing but the membranes, which immediately inveſt the brain, covered the effuſed ſubſtance, which had

had become of a gelatinous nature. I do not exaggerate, when I ſay, that this cavity was large enough to have held ſix ounces of blood.

Though a ſlight degree of preſſure does not immediately affect the functions of the brain, yet it may act in another way; — it may excite inflammation of that organ, as it does of other parts of the body. Its power in this reſpect, however, will probably leſſen by the part becoming accuſtomed to it; and the caſes on record, where fractures with depreſſion have done well, as well as thoſe of recovery from apoplexy, are proofs, that the cauſe which in the firſt inſtance was injurious by its preſſure, may continue to exiſt without inconvenience. Such caſes ought ſurely to deter ſurgeons from elevating the bone in every inſtance of ſlight depreſſion, ſince, by the operation, they muſt inflict a further injury upon their patients, the conſequence of which it is impoſſible to eſtimate. — From all, therefore, that I have learned from books, as well as from the obſervations I have made in practice, and from reaſoning upon the

ſubject, I am diſpoſed to join in opinion with thoſe ſurgeons, who are againſt trephining in ſlight depreſſions of the ſkull, or ſmall extravaſations on the dura mater. In the latter, it is probable the compreſſing cauſe will ſoon be removed by abſorption; and in the former, according to the obſervations of Mr. Hill * and Mr. Latta †, the bone will regain its natural level if the ſubject be young. In adults, however, and eſpecially in perſons of advanced life, this circumſtance cannot be expected; ſo that in them the accommodation of the parts to each other, neceſſary for preventing future miſchief, muſt be effected by a correſponding alteration in the form of the brain.

A circumſtance, however, frequently occurs, that may render the ſurgeon doubtful as to what courſe he ought to purſue; this happens when, at the ſame time that the ſkull is ſlightly depreſſed, the patient labours under the effects of concuſſion. The circumſtances, which generally ſerve to diſtinguiſh

* Caſes in Surgery, p. 113.

† Pract. Syſt. of Surgery, vol. ii. p. 172.

thoſe

thoſe two injuries, will be noticed hereafter. At preſent it is only neceſſary to obſerve, that, as the effects of the latter gradually abate, a little delay will enable the ſurgeon to decide upon the nature of the miſchief, and take his meaſures accordingly. Where the patient retains his faculties, nothing farther is neceſſary than a continuance of the antiphlogiſtic plan; and ſhould any inflammation afterwards take place, the ſame means, employed in a degree proportioned to the urgency of the ſymptoms, will in moſt inſtances be ſucceſsful without elevating the bone. This happened in four of the ſix foregoing caſes, which are related without any view to this particular point. — But if, from a peculiar diſpoſition of the brain to be affected by preſſure, the torpor of that organ ſhould continue; or if, after inflammation of the brain has taken place, the preſſure ſhould then appear to be particularly injurious, the elevation of the bone ought not, I think, to be deferred. And from ſome of the caſes related by Mr. O'Halloran, in the fourth volume of the Tranſactions of the Royal Iriſh Academy, it appears that this operation, if

not too long delayed, will give effectual relief under ſuch circumſtances.

The older ſurgeons certainly trephined unneceſſarily, in conſequence of their belief, that the brain was an organ of ſo delicate a ſtructure, that the leaſt degree of preſſure would be highly injurious; whilſt others, from having witneſſed the frequent ill ſucceſs attending the operation, and from having obſerved that many patients had recovered unexpectedly when it was omitted, ſeem inclined, too generally, to reprobate the practice. Under theſe circumſtances, it appeared proper, by the recital of inſtances to ſhew, what kind of caſes would probably do well without having recourſe to it. With this view I have laid before the public the preceding caſes; and I wiſh, in concluſion, to offer in this edition, a few additional Remarks on the circumſtances which would influence my conduct with regard to the immediate performance, poſtponement, or omiſſion of the operation.

The preceding caſes ſhew, that in general there is no neceſſity for trephining in ſuch fractures of the ſkull as occurred in them.

It

It may further be ſtated as an argument againſt the haſty performance of this operation, that it is likely to aggravate the inflammation of the brain, which in the majority of caſes comes on in conſequence of the injury.

If it can be ſhewn, that injury done to the ſcalp and bone, where there is no fracture or concuſſion may ſometimes be productive of inflammation of the brain, it would then follow, that the injury inflicted on theſe parts in the operation of trephining would probably aggravate the inflammatory ſymptoms, which are to be expected to ſucceed to all violent blows on the head. To ſhew that diſorder of the brain is likely to take place from its ſympathy with the parts which contain that organ, I relate the following caſes.

CASE VIII.

A coachman ſtanding on a ſmall ladder to clean the top of a carriage, ſlipt and fell, with his head againſt the window, which was drawn up at the time. The window being thus broken, the ſharp edge of the glaſs

glaſs divided and turned down the ſcalp to a conſiderable extent from off the parietal and frontal bones. In this ſtate he came to my houſe, with the arteries bleeding profuſely. I tied two of them, replaced the ſcalp, and ſent him to the hoſpital: the next day he did not appear much indiſpoſed; but after another day or two had elapſed, he ſuffered much from inflammation of the ſcalp, part of which was even in a ſloughy ſtate. The patient had, at the ſame time, violent fever, and great diſorder of his ſtomach and bowels. Small doſes of calomel and gentle aperients were given for the latter affections; and he alſo took ſaline, and other febrifuge medicines. After about a week had elapſed, the ſcalp aſſumed a much better appearance, the inflammation having ſubſided, and the ſloughs being detached. Nevertheleſs, his febrile ſtate became aggravated, and a kind of delirium and ſymptoms indicating inflammation of the brain, came on, which venæſection did not ſubdue. The patient died, and his head being examined, it was found, that the brain and its membranes had undergone conſiderable inflammation, which, from

the degree of effuſion between the tunica arachnoidea and dura mater, and between it and the pia mater, appeared to have laſted for a conſiderable time.

CASE IX.

A man had the ſcalp bruiſed and torn down from off the frontal bone by the wheel of a cart. He was not ſtunned at all by the accident. The bruiſed ſcalp mortified and the bone was left bare. He remained in the hoſpital waiting for exfoliation, and as he had no illneſs, but little attention was paid to him. After about two months, however, he became weak, and ultimately delirious, and died; on examination an abſceſs containing about one ounce and a half of pus was found in the front lobe of the cerebrum, beneath the dead bone, and full half an inch from the ſurface.

If then irritation and inflammation of the ſcalp and bone may ſometimes produce ſimilar affections of the brain and its membranes, this very circumſtance affords an argument for performing the operation in a certain

certain deſcription of caſes, in which, indeed, its neceſſity may not be immediately apparent. I allude to thoſe caſes in which, though the bone be but ſlightly depreſſed, and may not occaſion deciſive ſymptoms of preſſure, yet it may be broken into many pieces, and the ſcalp be ſo bruiſed, or otherwiſe injured, as not to be likely to unite by adheſion. Inflammation and ſuppuration muſt now enſue in the ſcalp, and ſome of the pieces of the bone will probably periſh, and muſt be detached by tedious proceſſes, which may induce diſeaſe in the ſubjacent membranes of the brain, as well as in that portion of the organ which they inveſt. I have therefore deemed it neceſſary to trephine in ſome caſes of this deſcription; and I think it will be uſeful to relate briefly one caſe of this kind. It will alſo ſerve as a contraſt to to that which immediately ſucceeds to it.

CASE X.

A drunken woman was knocked down on Blackfriars Bridge, by a blow with a cane, which had a round leaden head, about an inch in diameter. A circular piece of bone was beaten

beaten in to the depth of a quarter of an inch, and ſtarred or broken into many fragments. By dividing the ſcalp, I had the power of reflecting a portion of the integuments, ſo that I could trephine the bone, and remove the ſhattered and depreſſed pieces. I alſo took out a clot of coagulated blood as large as a walnut. The wound was cloſed by ſticking plaſter, a compreſs laid over the part, and bound on by ſticking-plaſter. The patient was largely bled, and a doſe of purgative medicine was given.

It was difficult to determine whether the ſleepy and ſtupid ſtate of the patient was chiefly the effect of the injury or inebriety. She complained loudly during the operation. The next day, when the ſtudents of the hoſpital wiſhed to examine whether the dreſſings were diſplaced or not, ſhe refuſed to permit them; but on my entering the ward, ſhe ſaid, aye, now he is come, you may examine if you pleaſe. I need only add further, that a treatment calculated to prevent and controll inflammation was ſtrictly perſevered in, and that the patient ſhortly became perfectly well.

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CASE XI.

June 3, 1802. A coachman, twenty-three years of age, was thrown from his box. The middle of the anterior edge of the right parietal bone was fractured, and a piece about the size of a sixpence was slightly depressed. He soon recovered from the stunning occasioned by the fall, and did not come to the hospital till the succeeding day. As he was perfectly well, he was but slightly bled, and no bad consequences of this injury appeared for two months. At this time he came again to the hospital, complaining of spasms in his left arm. The wound, which was not yet healed being examined, the depressed bone was found to be loose, and was removed, which alleviated the spasms. Soon afterwards a portion of the external table of the skull also came away. In the middle of September his health seemed much deranged, and he continued to get weaker till the middle of October. The dura mater had gradually become protuberant, and covered with a fungus; it at last gave way, and coagulated blood was discharged, mixed with detached pieces

pieces of the ſubſtance of the brain. The left arm had now loſt its ſenſation, though the patient could feebly direct its motions. On the 17th of October the patient became very ill, and much bloody ſerum was diſcharged from the wound. He was delirious during the night, but on the next day underſtood all queſtions propoſed to him; blood and brain were diſcharged through the wound. On the evening of the 19th he died. There was found a vacancy in the membranes of the brain, oppoſite to the deficiency in the bone, through which the effuſed blood and injured brain had been diſcharged. In other reſpects theſe membranes were perfectly ſound. The whole right hemiſphere of the brain ſeemed to be reduced into a pulpy and fetid maſs, compoſed of a mixture of blood and brain; except that the cortical ſubſtance, to the depth of about half an inch, remained ſound. This large cavity communicated with the left ventricle under the fornix.

It may be further ſtated as an argument againſt the immediate performance of the operation

operation of trephining, in caſes where its neceſſity is dubious, that it deprives the brain and its membranes of that natural ſupport which they receive from the bone. Under theſe circumſtances, when inflammation comes on, the volume of the parts contained in the cranium, will be ſo conſiderably augmented by the præternatural diſtention of their veſſels, and ſubſequent effuſion of fluids, as to be protruded up into one aperture. The dura mater is likely to give way, and the pia mater becoming expoſed, will be more ſubject to inflammation. It now ſuſtains the preſſure which was formerly ſupported by the dura mater, and in its turn ulcerates, and the brain will protrude and produce fungous excreſcences. Theſe circumſtances are more particularly likely to happen in children; in them, indeed, the dura mater is ſo firmly connected with the bone, that it is rarely ſeparated by accidental violence, and it is even difficult to tear off the bone, when it has been perforated by the trephine. The argument againſt immediately trephining the cranium, unleſs urged to it by great neceſſity, applies, therefore, more ſtrongly

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to caſes of children than to ſimilar accidents occurring in adults. Theſe remarks ſhew the neceſſity for the moſt copious evacuations after the operation of the trephine, in order to prevent as much as poſſible the augmentation of the bulk of the contents of the cranium by ſubſequent inflammation and effuſion, and which is productive of the prejudicial effects above ſtated.

With a view to obviate theſe, the plan of treatment inſtituted by Mr. Mynors of Birmingham, highly deſerves imitation. Having, by a ſimple diviſion of the ſcalp, gained room for the application of the trephine, and removal of the depreſſed bone, he cloſed the wound attentively, and the ſcalp united by adheſion to the dura mater on which it lay. A gentle preſſure, ſuch as would give to the membranes of the brain that ſupport which they were wont to receive from the bone, ſeems alſo likely to be uſeful.

There are, doubtleſs, ſome depreſſions of the ſkull that it would be abſurd not to elevate by an immediate operation, for in

them the preſſure on the brain would of itſelf be productive of fatal conſequences. The arguments which I have ſtated againſt the immediate performance of the operation, apply therefore, in my opinion, only to dubious caſes to thoſe in which, perchance, upon the ſubſidence of the inflammatory ſymptoms, the preſſure may be found not to be ſo great, but that it may be borne without detriment, though there is a riſque that it may be detrimental.

Under theſe circumſtances, by poſtponing the operation, we avoid the aggravation of the inflammatory ſymptoms which immediately ſucceed to the injury, and thoſe conſequences which ariſe from leaving an aperture in the cranium into which the contained parts are likely to be protruded. I ſay, by poſtponing the operation, becauſe, if upon the ſubſidence of the inflammatory ſymptoms, the preſſure by itſelf is found to produce prejudicial effects, we are ſtill at liberty to perform it, nor is it likely to be attended with that violent inflammation which ariſes from the injury and operation conjointly.

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There muſt be dubious caſes, for a degree of preſſure which might be borne in one perſon without inconvenience, may, in another, occaſion a torpid ſtate of the brain, or other ſymptoms requiring its removal. Mr. O'Halloran's caſes appear, therefore, to me very valuable, becauſe they ſhew that the operation of trephining will ſucceed under theſe circumſtances; and, I know, that it has been twice performed of late in London with perfect relief of thoſe ſymptoms for which it was required, and without being followed by any inflammation which was not readily controlled.

SECTION II.

Injuries of the Head attended with Extravaſation of Blood upon the Dura Mater.

In the three following caſes the ſkull was broken, and depreſſed at the part which covers the middle artery of the dura mater, by which means that veſſel was lacerated. The attention of ſurgeons has not been ſufficiently directed to this event, although it is of the utmoſt importance; for the life of the patient might often be ſaved, if the nature of the accident were known, and the bone ſpeedily perforated. — Theſe caſes likewiſe diſplay, in a very ſtriking manner, ſome of the effects cauſed by great preſſure on the brain.

CASE XII.

A man was knocked down by the iron hooks of a crane, which fell upon his head from a conſiderable height. He was ſtunned at firſt, but ſoon recovered his powers of mind and body ſo far as to walk home, undreſs himſelf, and go to bed. A ſurgeon

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was ſent for, who, on his arrival, found the man ſenſeleſs, and in a deeply apoplectic ſtate. The patient was immediately brought to St. Bartholomew's Hoſpital, when the functions of life ſeemed nearly ſuſpended, as he was almoſt without ſenſation, his breathing being ſlow, irregular, and ſtertorous, with an unequal, intermitting pulſe, and cold extremities. — The ſcalp covering the right parietal bone was wounded; and on dividing it more extenſively, a fracture with depreſſion was diſcovered, running obliquely acroſs the anterior and inferior angle of the parietal bone, over the temporal bone, and extending to the baſis of the cranium, before the maſtoid proceſs. Several perforations with the trephine were made along the courſe of the fracture, and the depreſſed portion taken away. A ſurpriſing quantity of congealed blood was found upon the dura mater; the coagulum being not leſs than an inch and half in thickneſs, and ſix or ſeven inches in circumference. On the removal of this coagulum, the brain, which had been indented by its preſſure, remained in the ſame ſtate as before, nor did it ever regain its ori-

ginal level; ſo that the patient experienced but little benefit from the operation, and he died about twelve hours after receiving the blow.

The dura mater, in this caſe, was not torn through in any part; ſo that the blood could not have come from any veſſel within that membrane. The ſource of ſuch a profuſe hæmorrhage, however, could not be doubtful, when it was known that the fracture croſſed, and had probably wounded, the principal artery of the dura mater; yet that veſſel did not bleed after it was expoſed.

CASE XIII.

A boy, about fourteen years of age, fell from a ſcaffold near two ſtories high, and pitched on his head. When brought from Iſlington to the hoſpital, he appeared to be almoſt in a dying ſtate. The anterior inferior angle of the parietal, and part of the frontal bones, were found depreſſed. A piece of the cranium being taken out with the trephine, I diſcovered beneath it a large quantity of coagulated blood; I therefore made the next perfora-

perforation nearer to the trunk of the principal artery of the dura mater, from which I concluded that this hæmorrhage had taken place. Having gently removed ſome of the coagulum, and introduced my finger into the aperture which had been made, I paſſed it as far as the ſecond joint, before I could touch the dura mater. Fluid arterial blood now guſhed out in ſuch quantities as to keep the bone covered on which I was next to trephine. I ran no riſque, however, in performing the operation; for the dura mater was depreſſed ſo much that it could not be injured. But to guard againſt even the poſſibility of ſuch an accident, I introduced my finger between the dura mater and ſkull, and then perforated the bone with the trephine. Having thus removed a third piece, which was directly over the principal artery, I took out about four ounces of coagulated blood; upon which the dura mater quickly roſe to its original level, and the hæmorrhage from the wounded artery ceaſed. I now entirely removed the depreſſed portion of bone, and thus uncovered all the dura mater which had been detached; ſo that I could diſtinctly feel

its connection with the cranium all round. This ſatisfied me that no more extravaſated blood was left behind. — The lad, who at the beginning lay quite inſenſible, with a feeble, intermitting pulſe, and laborious interrupted reſpiration, became reſtleſs, and expreſſed ſenſations of pain towards the latter part of the operation. Being now aſked, how he found himſelf? he replied, very well; Whether his head ached? he anſwered, no; If he was ſure that he felt no pain? he ſaid he was ſure, and wiſhed we would leave him alone. — I now took twelve ounces of blood from his arm, and he was put to bed, where he paſſed the night quietly. The next morning his bowels were completely emptied by a purge; and ſaline medicines, with antimony, were given, ſo as to keep the ſkin in a gentle ſtate of perſpiration. During the day he was ſleepy, and lay quiet; anſwered queſtions very rationally, and complained of pain and giddineſs in his head. — The third day he was diſturbed, and leſs rational. Eight ounces of blood were taken from him, and a bliſter was applied to his neck. Theſe means relieved him greatly, and he became quite

tranquil

tranquil and collected. — On the ſixth day, ſymptoms of irritation again took place, and were again relieved by ſimilar treatment. The dura mater had granulated, and the whole wound looked healthy. Every thing went on remarkably well until the fifteenth day, when the patient was ſeized with rigor and pain in his head, and the healthy aſpect of the wound was alſo changed. The following day, there was perceived, in the middle of the expoſed dura mater, an aperture through which a protruſion of the brain aroſe, covered by the pia mater, which retained its natural appearance. In leſs than twenty-four hours this tumor increaſed to the ſize of an orange; its ſurface was dark-coloured, and irregular, and the pia mater no longer diſtinguiſhable. The following morning the boy died; and his friends had removed the body from the hoſpital before I knew of his deceaſe.

I regretted very much that I could not examine the nature of this fungus or hernia cerebri, as it was a phænomenon which I had more than once contemplated with ſurpriſe, and

and the nature of which I was afterwards fortunately enabled to aſcertain.

CASE XIV.

A man was knocked down in Smithfield by a brick-bat, thrown at him by ſome villians againſt whom he had appeared as evidence upon a trial. He was immediately brought to the hoſpital; but in a ſtate of profound apoplexy. — The right ſide of the frontal bone, and the lower part of the parietal, were beaten in; the area of the depreſſed piece being two inches in diameter. After making three perforations in the circumference, I was enabled to remove the depreſſed portion. I then took out a large handful of coagulated blood, which lay upon the orbitary proceſs of the frontal bone, and had ſo preſſed back the anterior lobe of the brain, that I could, with my finger, touch the tranſverſe ſpinous proceſs of the ſphenoid bone. The brain now roſe ſlowly, in conſequence, I ſuppoſe, of the blood gradually finding its way through the compreſſed veſſels; and the man began to ſhew ſigns of returning ſenſe. — He was bled, and his bowels were emptied by a purge.

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The next day he was ſo far recovered as to give an imperfect account of the accident; but on the third day, he died convulſed.

On diſſection, ſome blood was found between the dura and pia mater, and traces of inflammation appeared on the latter membrane.

Mr. Hill, of Dumfries, relates a caſe (the fifth), where the artery of the dura mater was ruptured without either fracture or depreſſion of the ſkull; and when he trephined a ſecond time, four days after the accident, he found ſo large a coagulum of blood lying upon that membrane, as to make him afraid of removing it all at once: but on taking out a few ounces of it, the patient, who had hitherto lain in a ſtate of apoplexy, looked up, on being ſpoken to, like one awakened from ſleep, — knew, and named every body, and raiſed the arm belonging to the oppoſite ſide, which had been paralytic from the time of the accident.

In Mr. Latta's Surgery alſo, a ſimilar caſe (as ſhewn on diſſection) is related, in which an

an uncommon ſlowneſs of the pulſe, and coma without ſtertor, were the ſymptoms produced.

Theſe caſes ſhew that a fracture of the ſkull is not likely to be followed by an equal degree of extravaſation in every part, as the veſſels connecting the dura mater to the cranium are, in moſt parts of that membrane, of a ſmall ſize. If theſe are accidentally ruptured, a ſlight hæmorrhage enſues, which ſoon ſtops, and only a thin ſtratum of coagulated blood is found when the bone is removed. But if the fracture happens in the track of the principal artery of the dura mater; if the trunk, or even a conſiderable branch of that veſſel be torn, the hæmorrhage will be profuſe, and the operation of the trephine become immediately neceſſary to preſerve the life of the patient. In the three caſes that I have related, the operation was done very ſhortly after the accident: in the firſt caſe, the brain was ſo compreſſed that it did not regain its level; in the third, it roſe ſlowly

as the blood found its way through the veſſels; and in the ſecond, it roſe quickly, and the functions of the brain were as quickly reſtored. It can ſcarcely be doubted, then, that if the operation had been performed in theſe caſes as ſoon as it became neceſſary, when, perhaps, only one inſtead of many ounces of blood were poured forth from the torn veſſel, the lives of the patients might have been preſerved.

It is of great importance to diſtinguiſh accurately the nature of ſuch caſes; and the diſtinction is not difficult when there is an interval of ſenſe between the blow and the ſtupor occaſioned by the effuſed blood. In the firſt related caſe, for inſtance, the nature of the accident was made ſufficiently evident by this circumſtance. But though we are aſſured that the patient labours under the effects of compreſſion, we cannot, in many inſtances, know the ſituation of the compreſſing cauſe. In other caſes, again, where there is no interval of ſenſe after the accident, we are at a loſs to determine whether the ſenſeleſs ſtate be the effect of compreſſion or

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of concuſſion. Every ſurgeon muſt acknowledge that it would be a very deſirable thing to aſcertain when blood is effuſed between the dura mater and the ſkull; for if the extravaſation has happened in the more interior parts, a ſurgical operation is not likely to afford relief *. Now, if the extravaſation which compreſſes the brain, be ſituated immediately beneath the bone, I think there are ſigns by which it will be diſcloſed; and as ſufficient notice has not been taken of theſe, I wiſh particularly to call the attention of ſurgeons to them.

* In thoſe caſes, which I have ſeen, where blood was extravaſated between the dura and pia mater, and a diviſion of the former membrane was made for its diſcharge, in ſome inſtances the ſerous part of it only could be evacuated; for the coagulum was ſpread over the hemiſphere of the brain, and had deſcended as low as poſſible towards its inferior part; in others, though a portion of the effuſed blood was diſcharged in a fluid or grumous ſtate, a conſiderable quantity which was coagulated remained behind, ſo that very little relief was obtained by the operation. It ſeems then, that extravaſation between the dura mater and the cranium is almoſt the only caſe which admits of being remedied by the uſe of the trephine.

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I have already ſaid, that, unleſs one of the large arteries of the dura mater be wounded, the quantity of blood poured out will probably be inconſiderable; and the ſlight compreſſion of the brain which this occaſions, may not be attended with any peculiar ſymptoms; or perhaps it may occaſion ſome ſtupor, or excite an irritation diſpoſing the ſubjacent parts to become inflamed: but both theſe effects will gradually abate, nor will any inflammation enſue, if proper means are taken to prevent it. It is indeed highly probable, that, in many caſes which have done well without an operation, ſuch an extravaſation has exiſted. But if there be ſo much blood on the dura mater as materially to derange the functions of the brain, the bone, to a certain extent, will no longer receive blood from within; and by the operation performed for its expoſure, the pericranium muſt have been ſeparated from its outſide. I believe that a bone ſo circumſtanced will not be found to bleed; and I am, at leaſt, certain, it cannot, with the ſame freedom and celerity as it does when the dura mater remains connected with it internally. I

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need hardly ſay, that, in the caſes which I have related, there was not the leaſt hæmorrhage. But it is right to mention, that I have alſo twice been able, by attending to the want of hæmorrhage from the outſide of the cranium, to aſcertain the extent to which the dura mater was detached within; and very frequently, when ſymptoms appeared to demand a perforation of the ſkull, I have ſeen it contra-indicated by the hæmorrhage from the bone, and, as the event has proved, rightly.

When the bone has remained long bare, the caſe may become perplexing. I once ſcraped a portion of the cranium which had been ſome time denuded, and found that it bled in ſuch a manner, as, in my opinion, ſufficiently to point out the adheſion of the dura mater, and of courſe the inutility of employing the trephine *.

* In aged perſons, and in thoſe in whom the circulation has been rendered languid by the accident, the mode of diſtinction which I have pointed out, may indeed be leſs concluſive.

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Where the extravaſation on the dura mater is but ſmall, it will probably not require any operation. A ſlight hæmorrhage from the bone, which may happen from the anaſtomoſing of the veſſels within its ſubſtance, will not, in this caſe, lead to any injurious error. But from what I have obſerved, I am inclined to believe, that even a ſmall effuſion of blood will diminiſh the hæmorrhage from the ſuperincumbent bone.

Mr. Pott had an idea, that the bone would periſh when the dura mater was detached for a conſiderable ſpace from its inſide; and ſome caſes which he has related, ſeem to favour this opinion: but many other caſes to be met with in authors, and many which have occurred to my obſervation, prove that the opinion was not well founded. Indeed we cannot ſuppoſe that the bone would periſh from this cauſe; for it ſtill receives blood, not only from the anaſtomoſing of veſſels within its ſubſtance, but alſo from the pericranium externally; and the ſucceſs which has of late attended the operations for aneuriſm in the lower limbs, ſhews that parts of great bulk

and vaſcularity will continue to live when their uſual ſupply of blood is very much diminiſhed. If, however, the dura mater ſhould be detached for a conſiderable extent from the inſide of the ſkull, at the ſame time that the pericranium ſhould alſo be ſtripped from its outſide, I am inclined to believe that a portion of the bone would, in that caſe, die and exfoliate.

SECTION III.

Caſes of Fungus, or Hernia Cerebri.

CASE XV.

A MAN, about forty years of age, was knocked down, and had a conſiderable part of the parietal bone, near the coronal ſuture, depreſſed, by a ſtone falling on his head from a high building. A portion of bone was taken out, and the depreſſed piece elevated. The patient, after this, ſeemed to obtain great relief from the ſtupor under which he had till then laboured. But the next day, he became very reſtleſs and delirious, and frequently endeavoured to get out of bed. Evacuations were preſcribed, and a bliſter applied to his head, by which means the ſymptoms were leſſened, but did not entirely go off; they continued near ſix days, only varying ſomewhat in degree. His ſtrength was now very much reduced; and though he became more tranquil, he was ſtill delirious, and a coma ſupervened, which

increaſed daily. — On the tenth day, upon uncovering the wound in order to dreſs it, a hernia cerebri appeared, riſing through an ulcerated opening in the dura mater. The tumour at this time was not larger than a pigeon's egg; the pia mater, ſtretched over its ſurface, was inflamed; and a turbid ſerum oozed at its ſide from beneath the dura mater. On the following day, the tumour had acquired the ſize of a hen's egg, was ſtill ſmooth on its ſurface, and apparently ready to burſt. On the day after, before the time of dreſſing, the man died. — Upon examining the tumour now, it was found larger than before, and of a dark colour, with an irregular granulated ſurface; which appearance ſeemed owing to coagulated blood which adhered to its ſurface, as the part had bled ſo much, that one half the cap which the man had worn, was rendered quite ſtiff by it. In raiſing the top of the ſkull to inſpect the contained parts, the tumour was in ſome degree torn from its baſis. The pia mater was in general much inflamed, and, as well as the dura mater, was deficient at the place where the tumour protruded. A part of this tumour being

being cut off where it was lacerated, appeared to conſiſt of coagulated blood of a fibrous texture. The brain was now taken out, and the tumour carefully examined, when it was found to be of the ſame nature throughout, and to have originated within the ſubſtance of the brain, about an inch below the ſurface; but I could not diſcover the open veſſel from which the hæmorrhage had proceeded.

The appearances, on diſſection, clearly explained the cauſe of the ſymptoms which had taken place, and rendered it evident, that the diſeaſe under which this man had chiefly laboured, was inflammation of the pia mater. The nature of the tumour, alſo, was not leſs ſatisfactorily pointed out. It was plain, that, in conſequence of the brain being injured to ſome depth beneath the ſurface, diſeaſe of the veſſels, and conſequent effuſion of blood, had enſued; that the effuſion was for a time reſtrained by the ſuperincumbent brain and its membranes; but theſe gradually yielded to the expanſive force exerted from within, and at laſt giving way altogether, the fluid blood oozed out and

congealed upon the ſurface of the tumour. It appears very probable, that the diſeaſe frequently deſcribed by the term *hernia cerebri*, conſiſts, as in this inſtance, of a tumour formed by coagulated blood; for an organized fungus could hardly be produced in ſo ſhort a time as that in which theſe tumours are uſually formed.

CASE XVI.

A carpenter, while at work in a newly-built houſe, was cruſhed by a part of the wall falling in upon him. His abdomen was bruiſed, his clavicle broken, and his head wounded. Beneath the wounded ſcalp, the right parietal bone was found fractured and depreſſed. He was ſlightly comatoſe for many hours after being brought to the hoſpital, yet anſwered rationally to thoſe queſtions that were put to him. As the coma, however, remained, and his pulſe did not beat with the freedom that is uſual, the ſurgeon under whoſe care he was admitted, thought it right to trephine him. Accordingly, one perforation being made, the depreſſed bone was elevated. No blood was found upon

upon the dura mater, nor did any thing indicate the propriety of uſing the trephine a ſecond time. The patient was largely bled; and ſaline medicines, with antimony and opium, were given. As he complained much of pain in his belly, fomentations were applied to this part, and clyſters adminiſtered occaſionally. He was again bled on the ſecond and fourth days after the operation. At the end of a week the antimony was omitted, on account of his weakneſs; and he ſeemed to get rather better, until December 7, twelve days after the accident, when a hernia cerebri appeared, riſing through an aperture in the dura mater, oppoſite to the perforation in the ſkull. It increaſed rapidly in ſize, and exhibited the ſame appearance deſcribed in the foregoing caſe. — Two days after this, the patient died.

On examining the head, the dura mater was found every where adherent to the ſkull; but on its inner layer there was a ſecretion of pus. The hernia cerebri, which had puſhed up through an ulcerated opening in the dura mater, was of a fibrous texture, and evidently

formed of congealed blood depoſited in the medullary part of the cerebrum; the containing cavity being about an inch diameter, and its parietes appearing to be the ſubſtance of the brain condenſed by preſſure. I was equally unſucceſsful here in my ſearch after the veſſel, whence the blood had iſſued. The ventricles of the brain were full of a ſerous fluid mixed with blood, and a large abſceſs was alſo found in the ſpleen. — In this caſe, the mental faculties were not deranged as in the former. Both the ſymptoms and diſſection ſhew the diſeaſe to have conſiſted in the effects of concuſſion, with inflammation of the dura mater, and ſubſequent effuſion into the ventricles of the brain.

The opinion I had formed reſpecting the nature of hernia cerebri was now confirmed; and I think it received additional illuſtration from the following caſe, although the diſeaſe was in a different part of the body. — A patient in the hoſpital had a diſeaſe in the head of the tibia, from whence there aroſe an an unhealthy fungus, which Mr. Blicke removed; and afterwards, the bone was kept bare

bare by cauſtic applications, in hopes that a ſeparation of the diſeaſed parts would take place. The patient, however, became feveriſh, and his health was much impaired. On the ceſſation of the fever, there ſuddenly aroſe, within the wound, a fungus-like ſubſtance, about the ſize of a large apple, which ſeemed to ſprout from the bone; it was of a livid colour, and its ſurface appeared as if covered with ſloughs. I took off the tumour, which was nothing but coagulated blood, with the knife; and ſome blood oozed from its baſis, but the hæmorrhage was ſtopped by the application of lint. In a few hours, however, a ſimilar fungus-like tumour aroſe. As both the ſize and ſituation of the open veſſel were unknown, and as the patient could neither ſupport the loſs of much blood, nor the irritation which an extenſive wound, made in ſearch of the artery, together with that ariſing from the diſeaſed bone, would infallibly produce, it was judged beſt to remove the limb. This was accordingly done; and upon injecting water into the popliteal artery, it was found to be a branch of that veſſel which had given way.

It ſeems that Paré, and the ſurgeons who lived about his time, often miſtook the tumours that aroſe out of the cranium, for aneuriſms, on account of their pulſatory motion. M. Louis, in the *Mem. de l'Acad. de Chirurgie*, tom. V. has well diſtinguiſhed the nature and treatment of thoſe proceeding from diſeaſes of the dura mater or bone. There may, perhaps, be tumours of various kinds ariſing from the pia mater and brain; but if there are ſuch, I believe they have not been diſcriminated; and the accounts given of many of them by authors, are ſimilar to thoſe juſt recited. They have generally been treated of under the name of fungus or hernia cerebri; and if the effuſed blood of which they conſiſt, ever acquired vaſcularity, they might then deſerve that title: but none of thoſe that I have juſt noticed were of an organized ſtructure. — Their formation ſeems to proceed from an injury done to a part of the brain by concuſſion or contuſion, which has terminated in a diſeaſed ſtate of the veſſels, ſimilar to what occurs in apoplexy. The morbid ſtate increaſing, one or more veſſels give way, and an effuſion of blood into the

ſubſtance of the brain enſues, which, if the ſkull were entire, would probably occaſion apoplexy, but, where there is a deficiency of bone that allows it to expand, preſſes the ſurface of the brain and its meninges through the vacant ſpace. The dura mater ſoon ulcerates, and the tumour puſhing through the openings, now increaſes with a rapidity proportioned to that with which the hæmorrhage takes place within. At laſt, the pia mater, and the ſtratum of the brain which cover the effuſed blood, are ſo extended as to give way, and the blood oozes out and coagulates. — Thus, the quick growth, and all the other phænomena obſervable in theſe tumours, are ſatisfactorily accounted for.

The plan of treatment to be adopted with tumours of the kind which I have deſcribed, is next to be conſidered; but as I have had no opportunities of acquiring knowledge as to the treatment of theſe diſeaſes, ſince I became acquainted with the nature of them, I can only offer a few general remarks on this ſubject.

Where

Where no bad ſymptoms precede the appearance of the tumour, or where they go entirely away upon its being freed from the confinement of the dura mater, it may, perhaps, be moſt prudent not to interfere in the treatment of the complaint: for probably the hæmorrhage will ceaſe, and the coagulum will drop off in pieces *, or gradually waſte away, and be no more renewed †. All that appears neceſſary, then under ſuch circumſtances, is to cover the tumour and ſore with ſome mild dreſſing, carefully avoiding all preſſure, which both reaſon and experience ſhew is likely to be attended with bad conſequences. Should the bulk of the tumour, however, become inconvenient, or render preſſure from the dreſſings unavoidable, the practice which preſent experience has ſhewn

* See a caſe in the Edinburgh Medical Commentaries, vol. i. p. 98, where the tumour continued to increaſe for fourteen days, and had acquired the ſize of a gooſe's egg, when it dropped off in pretty large pieces. A ſimilar caſe is related in the Medical Muſeum, vol. iv. p. 463.

† Fabricius Hildanus relates a caſe in his Fifteenth Obſervation, where the tumour ariſing from the brain became, in 24 hours, as large as a hen's egg, and afterwards gradually diſappeared.

to

to be moſt ſucceſsful, conſiſts in occaſionally paring off the tumour with a knife. In this manner Mr. Hill treated ſeveral caſes with ſucceſs.

But if the tumour continues to increaſe, and if the patient ſuffers a train of bad ſymptoms, apparently ariſing from irritation and preſſure made on the brain, ſome further attempt to relieve him ſeems to be required. Under theſe circumſtances, we have reaſon to ſuſpect that the coagulum, from want of room to protrude, is enlarged internally; or that by plugging up the orifice in the bone, it prevents the eſcape of ſome fluid collected within the cranium *. The obvious mode of

* Mr. Hill, in relating a caſe of this kind, ſays, that he "was obliged to ſhave away the tumour, and puſh a lancet into its root as often as the ſtupor and other ſymptoms ſhewed that matter was lodged there, by which the patient was uniformly relieved, and afterwards recovered." — (See his Caſes in Surgery, p. 91-2.) But very different was the event in two ſimilar caſes (one is recorded by Scultetus, in his Armamentarium Chirurgicum, Obſ. XIX.; the other in the Lond. Med. Journal, vol. x. p. 277.), in which repeated attempts were made to prevent the

of relief here appears to be, to enlarge the opening in the bone in proportion to the extent and increaſe of the tumour. Many ſurgeons have objected to the removal of much of the cranium, leſt protuſions of this kind ſhould enſue; but it is evident that theſe tumours ariſe from an injury and conſequent diſeaſe of a part of the brain, the event of which muſt be more fatal if the bone were entire. A large removal of bone was formerly a frequent event; but a protruſion of this kind very ſeldom took place.

But although, by thus allowing a free eſcape to the effuſed blood, we may prevent the injurious effects of its preſſure on the brain, yet the degree of hæmorrhage may endanger the life of the patient.

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the growth of the tumour by compreſſion: one patient died at the end of a month; the other not until nearly ſix months after the accident. In the brain of each there was found, upon diſſection, a large cavity, which had been formed by the accumulation of a fluid that could not eſcape, on account of the aperture in the bone being cloſed by the tumour.

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The quantity of blood effuſed will depend on the magnitude of the veſſels, or on their diſpoſition to bleed. As the diſeaſe is generally ſituated not far beneath the ſurface of the brain, there is leſs riſque of its proceeding from the former cauſe. If it ariſes from the latter, it is very likely that the diſtention cauſed by the confinement of the effuſed blood would irritate the veſſels, and keep up their diſpoſition to hæmorrhage; therefore the treatment already recommended is likely to diminiſh it. But ſhould the quantity of the hæmorrhage ſeem to threaten the life of the patient, I ſhould think it moſt proper to take away the coagulum, and to expoſe the cavity in the brain, in order to learn whether ſuffering ſome ſudden loſs of blood to take place, together with the expoſure of the bleeding veſſels, might not produce a beneficial change, and a ceſſation of the hæmorrhage. I am induced to propoſe this mode of conduct, from reaſoning founded on analogy: for in other parts of the body a hæmorrhage will ſometimes continue, notwithſtanding a conſiderable preſſure made by a large quantity of coagulum, together with

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that which the reſiſtance ariſing from the cloſure of the external opening, and that which is occaſioned by the dreſſings, conjointly produce. Yet, upon expoſing the bleeding ſurface, the hæmorrhage will ceaſe, and never afterwards be renewed.

I am ſtill further induced to propoſe this plan of treatment, becauſe I do not perceive any other which carries with it a probability of ſucceſs. The impropriety of attempting to reſtrain the hæmorrhage by preſſure has been ſhewn; ligatures cannot be applied, and ſtyptics are known, by experience, to be dangerous.

I ſhall extract one caſe from the firſt volume of the *Memoires de l'Academie de Chirurgie* *, to ſhew that the removal of the coagulum is not likely to be attended with any alarming conſequences. — A young man received a blow on the right parietal bone, which occaſioned a fracture; ſome bone was

* See the Memoire of Mr. Du Queſnay, 10th Obſervation.

removed

removed, and a hernia cerebri was afterwards produced, which was repeatedly pared down with the knife. On the thirty-fifth day from the accident, the patient having intoxicated himſelf, while in this ſtate, ſlipt his hand under the dreſſings, and laying hold of the protruding coagulum, tore it away with violence. The next day the ſurgeon found, that almoſt the whole of what he conſidered as corrupted brain, was removed, and a vacancy left, ſo deep, that he could ſee nearly to the corpus calloſum. From this time forward the parts went on healing, until they got quite well; but the patient continued to labour under a paralyſis of the left ſide, which had ſupervened the day after he received the blow.

It is obvious, from the nature of the ſubſtance of which the tumour is compoſed, that ſtyptic remedies applied to its ſurface can have ſcarcely any effect in leſſening its bulk, and none at all in putting a ſtop to its growth; and experience ſhews, that the more active of them are not only ineffectual, but highly dangerous. Hildanus, in his Fourteenth

Obſ. relates the caſe of a man who died in conſequence of an empiric having dreſſed a tumour of this kind with alum and calcined vitriol. And Mr. Hill tells us (p. 198), that, after ſhaving off the protruding part, he once ſprinkled the baſis with ſome blue vitriol, and another time with red precipitate; but found that "his patient had a very bad day after each of theſe;" no doubt, in conſequence of their being diſſolved by the diſcharge, and inſinuating themſelves between the tumour and the edges of the ſkull, ſo as to get into contact with the ſenſible parts within; for, that it was not owing to their effect upon the tumour, is evident from its indolence when he had removed it with the knife *.

* The foregoing caſes explain a particular kind of protruſion, which ſeems to me to have been frequently deſcribed by authors, and of which they ſerve as ſpecimens. Such occurrences cannot be obſerved without ſurprize; the ſuddenneſs of the protruſion ſcarcely admits the ſuppoſition of the protruded part being organized. It was never meant by the recital of theſe caſes to deny, that the ſurface of the brain, when expoſed and irritated would throw out a vaſcular fungus; it was only intended to deſcribe a ſpecies of thoſe appearances which had been denominated

SECTION IV.

Concuſſion of the Brain.

As I am of opinion that the effects of concuſſion have not been juſtly deſcribed by authors, and as the ſymptoms related by them are not, according to my experience, thoſe which uſually occur, I have therefore ſelected two caſes out of a great number that I have ſeen, in order to ſhew what have ap-

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denominated fungus or hernia cerebri. In all the caſes of true fungus cerebri which I had ſeen when I firſt wrote the foregoing account, the fungus grew ſo ſlowly that it could not be miſtaken or confounded with the appearances which took place in the caſes I have cited. Since that period, I have ſeen caſes in which the fungus grew much more rapidly, yet none in that degree which would make it liable to be confounded with the appearances deſcribed in the preſent ſection. The curative indications in the true fungus cerebri ſeem to be, to diminiſh thoſe cauſes which occaſion the brain to be thruſt upwards againſt the bone, and to apply gentle preſſure from without, ſo as to give that degree of ſupport which the part ought naturally to receive from the dura mater and bone.

peared to me the common conſequences of this injury; and I ſhall afterwards offer ſome remarks reſpecting the treatment of this affection.

CASE XVII.

Harriet Silverthorn, aged twenty-three years, ſlipped down ſtairs, and ſtruck her occiput againſt ſome of the lower ſteps, by which the integuments were divided about half an inch in length, but the wound was not deep, nor were the ſurrounding parts much bruiſed. She was taken up ſenſeleſs, was bled, and the next morning conveyed to St. Bartholomew's Hoſpital. When brought in, ſhe was comatoſe; could not be made to anſwer any queſtions; yet ſhe drew back her arm when pinched, and ſeemed very uneaſy when the wounded parts were preſſed upon. Her breathing was without ſtertor, but performed at ſome interval, as if ſhe did not wiſh to inſpire until obliged by neceſſity. The pulſe, which was full and labouring, intermitted every fourth or fifth ſtroke.—Eight ounces of blood were immediately taken away, and an opening medicine given, which procured

procured three ſtools, after which ſhe was ordered a mixture, containing aqua ammoniæ acetatæ, and antimonial wine. — The next day (*Friday*), ſhe was rational, put out her tongue when deſired, and ſaid ſhe had no pain in her head; her breathing was more regular, and her pulſe free from intermiſſion. (*Saturday*,) ſhe was ſtill more ſenſible, and gave ſome account of herſelf; complaining now of head-ach, and general uneaſineſs. The mixture was continued, the purging medicine given again, and a bliſter laid on between her ſhoulders. — (*Sunday*,) her pulſe was harder; ſhe was ſenſible, but reſtleſs; complained of pain in her forehead, ſat up in bed, and wanted to go home. Six or eight ounces of blood were taken from her temples, and the mixture ordered to be continued as before. — (*Monday*,) ſhe was much more compoſed; but as ſhe had ſtill ſome pain in her head, a bliſter was applied to it. — (*Tueſday*,) ſhe had ſlept quietly during the night, anſwered rationally, but with quickneſs, and eagerly deſired to go home. As the bliſters appeared to have been ſerviceable, that on her neck was renewed. — (*Wedneſday*,) ſhe

was perfectly quiet, and in every reſpect better; nor had ſhe, after this, any complaint worth mentioning.

CASE XVIII.

A Frenchman, twenty-ſeven years of age, who had been many years in England, and (as it afterwards appeared) ſpoke our language perfectly, had met with ſome accident (but in what manner, I know not), in conſequence of which he was brought to the hoſpital. He was then very comatoſe, and expreſſed much uneaſineſs at being rouſed from that ſtate; yet he put out his tongue when bid, but did not give a rational anſwer to queſtions put to him, and his replies were made in his native language. His pulſe was regular, ſtrong, and about 96 in a minute. Ten ounces of blood were taken from his arm; and after being purged, the common ſaline mixture, with antimonial powder, was ordered to be given. In the night he grew delirious, got out of bed, and tore the bandage from his arm; in conſequence of which he loſt a good deal of blood before it was perceived. This, however, ſeemed of uſe

to

to him; for he became more tranquil after it, and lay quietly dozing till morning. Next day, he was more rational, and complained of pain in his head. When I told him that if he kept quiet, he would ſoon be well, he ſaid, he hoped ſo; and appeared ſolicitous to know what ſhould be done to him. His pulſe was only 80, and not ſtrong. A gentle laxative was given, and a bliſter applied to his head. — On the third day, he was much more ſenſible, ſpoke with clearneſs, and mentioned the pain being in the fore-part of his head; yet, when I aſked his age, he told me he was but ſixteen years old. — *Tueſday* (fourth day), he appeared more excited and wild; his tongue was dry, but his pulſe only 75. Nine ounces of blood were taken from the temporal artery. — Fifth day, his pulſe was only 70, and perfectly natural; yet he had pulled off the dreſſing from his bliſters, and ſeemed to be very irritable. — Sixth day, ſtill pain in his forehead, pulſe rather quicker, but tongue not furred. After this he gradually recovered, without any particular ſymptom occurring, and without any other medical treatment.

It is not likely that, in either of these cases, extravasation, at least to any considerable degree, had taken place within the head, since in neither of them was there stertor, dilatation of the pupils, or insensibility. They may, therefore, I think, be considered as exhibiting the symptoms which attend simple concussion. The foregoing cases were indeed instances of but slight concussion to what the brain sometimes suffers, and which proves fatal. To display the symptoms which occur in the worst cases, I relate the following instance.

CASE XIX.

W. Thomas, about thirty years of age, fell from the top of a brew-house, a height of at least 80 feet. His hand being stretched out, first sustained the shock, by which the carpal bones were separated, and driven upwards, some before, and others behind the ends of the radius and ulna, the articular surfaces and periosteum being at the same time forced off the latter bones. I mention these particulars to shew the great violence of the fall. The man's head afterwards struck the ground,

as

as appeared by a bruiſe on his face; but the cranium was not injured. When brought to the hoſpital, he appeared almoſt deprived of life, his body being cold, and his pulſe ſcarcely to be felt. The gentlemen then attending, put his feet into warm water, and gave him an opiate.

After this he gradually became warmer, and it was obſerved that there was not much dilatation of the pupils, and but little ſtertor in reſpiration. I ſaw the patient next morning, at which time his ſkin was very hot, and he perſpired copiouſly. His breathing was repeated at regular intervals, but the expirations were made with unuſual force. The pulſe was extremely irregular, both in frequency and in ſtrength; generally about 140 in a minute. His pupils were moderately contracted, his eye-brows drawn into a frown as if he ſuffered pain. When I ſpoke to him ſoftly, he did not anſwer. I pinched his hand ſlightly, but he did not move; but when I repeated this a little harder, he drew it away with ſeeming vexation. He diſliked that his eyes ſhould be examined. When by

ſpeaking loud, I rouſed him, and inquired if his head ached, he anſwered, Yes. I got him to ſwallow ſome opening medicine, which emptied his bowels; and four leeches were applied to his temples; but they extracted very little blood, and I thought his pulſe countermanded any further evacuations.

In the afternoon, he appeared better. His pulſe was more regular, and his ſkin of a more natural temperature; his pupils, however, were more contracted, and his ſenſibility increaſed. I tried the effect of giving him forty drops of tinct. opii, thinking it might diminiſh ſenſibility, and keep him quiet for ſome time, during which the vaſcular ſyſtem (which ſeemed to be particularly deranged) might perhaps regain its powers. The opiate increaſed his diſpoſition to ſleep, and he appeared to ſuffer leſs pain; but in the evening, his pulſe was more feeble and frequent, and his ſkin hotter, and quite wet with perſpiration. Wine was now given to him, but without any apparent benefit; the powers and actions of life gradually diminiſhed, and before morning he died.

On

On diſſection, there appeared every mark denoting violent inflammation of the brain and pia mater, of ſhort duration. The minute arteries of the pia mater were turgid with blood; in many places there was the appearance called blood-ſhot, which was alſo to be ſeen in the lining of the ventricles. Dark-coloured, and in ſome places, bloody, coagulable lymph filled all the receſſes between the tunica arachnoidea and pia mater. On dividing the ſubſtance of the brain, all its veſſels appeared as if injected with blood.

I am inclined to believe that the medical treatment of this patient did him neither much good nor harm. The means employed ſeem to have acted on him as on a perſon in health. The opening medicine rendered him cooler, and quieted a little the diſturbed actions of the ſyſtem. The opiate made him more ſtill, and diſpoſed him to ſleep.

I leave it to practitioners to conſider, whether cordials would have been of any ſervice in this caſe. Would they not rather, by ſtimulating the nervous ſyſtem, have increaſed the

the diſturbance of the ſenſorium, and, by exciting the heart and arteries, have tended to aggravate the inflammation of the brain.

I add another caſe, becauſe it is remarkable for the violence of the ſubſequent inflammatory ſymptoms. The caſe was attended by Mr. Sheppard of Chew Magna, who was, at the time it happened, dreſſing pupil to Sir Charles Blicke at St. Bartholomew's hoſpital. To his judicious and unremitting attention I cannot but attribute in a great degree the ultimate welfare of the patient. The account which I have drawn up, is taken from Mr. Sheppard's notes.

CASE XX.

David Davis, a robuſt man, thirty-five years of age, was admitted into St. Bartholomew's hoſpital on the 21ſt of November 1799. He had fallen from a conſiderable height on his head, and had bruiſed and wounded the ſcalp, but without fracturing the bone. He was, when brought to the hoſpital, ſo far inſenſible, as not to be affected by ſlight impreſſions, and his extremities

mities were cold. His feet were put into hot water, and, after ſome time, he became warm and more ſenſible, and the pupils of his eyes contracted as in common. Twelve ounces of blood were taken from the temporal artery, and a purging medicine given. On the following day, the pulſe being full and hard, ſixteen ounces more of blood were taken away, and the purging medicine repeated, which procured ſeveral ſtools, and a bliſter was alſo applied to the nape of the neck. Notwithſtanding theſe meaſures, however, he became delirious, and his ſkin felt hot, and he complained of pain in his head. Twelve ounces more of blood were therefore taken, and three grains of pulvis antimonialis given every fourth hour.

November 24. The delirium ſtill continued, but the patient lay more quiet: his pulſe was 120, and full, therefore twelve ounces of blood were taken, and as the delirium and ſtrength of the pulſe ſtill continued, in the evening the bleeding was repeated to the extent of twelve ounces. His bowels were alſo emptied by magneſia vitriolata

olata and ſenna. Afterwards he had thirty drops of Tinct. Opii given him at night. He ſlept ſome hours in the night, and next morning his pulſe was leſs hard, and only 96 in a minute; his anſwers to queſtions were alſo much more rational, and delivered in a leſs loud and quick tone of voice than before. For during the greater part of the delirium he had been very unmanageable, rolling about in bed and endeavouring to get up, and ſpeaking in a loud and fierce manner. Towards the evening the ſymptoms again increaſed; his pulſe was 120, and harder and fuller than in the morning; his ſkin was hot, and he complained of thirſt. He had taken purging medicine in the morning, which had operated. Three grains of antimonial powder were now given every fourth hour, and his feet put into warm water, in hopes of procuring perſpiration: ten ounces of blood were taken from the temporal artery, and the opiate repeated at night.

25th. The patient had ſlept during great part of the night; his pulſe 100; he complained of cold, though his ſkin was hot; and

of

of great pain in his head. More ſtools were procured, and twelve ounces of blood were taken from the temporal artery. He now took ſix grains of pulv. ipecac. comp. every four hours.

26th. He had been delirious during the former part of the night, but had ſlept towards the morning; in other reſpects he was much as before. In the evening, as his pulſe would bear it, twelve ounces of blood were again taken away.

27th. Pulſe ſofter and frequent. He had three ſtools from medicine in the evening. The delirium ſeemed to have a little ſubſided, and he was much inclined to ſleep, ſo that it was difficult to obtain an anſwer from him.

28th. A bliſter was applied to his head, and in the evening his pulſe becoming full, ten ounces of blood were taken from him. Two grains of opium were given him at night.

29th. He had ſlept well but complained of his head, and of difficulty in ſwallowing,

and in the evening had hemiplegia of the right ſide of his body.

30th. He had ſlept but little, the bowels lax, the pulſe ſmall and frequent, the hemiplegia continues.

We had thus far been endeavouring, by the moſt powerful means, to ſubdue a violent inflammation of the brain, and could ſcarcely have be ſaid to have accompliſhed our deſign, when a new affection called for attention. I think it can ſcarcely be doubted, that the hemiplegia was the effect of preſſure made by an effuſion of fluids, in conſequence of inflammation, operating probably chiefly on the left hemiſphere of the brain, ſo as to paralyze the oppoſite ſide of the body. Under this perſuaſion, and without expectation of ſucceſs, I directed that two drachms, by meaſure, of ſtrong mercurial ointment ſhould be rubbed in on his arms and legs night and morning, and that five grains of the pil. hydrarg. with one grain of opium, ſhould be given three times a day. Theſe means were continued for three days without any ſtrik-

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ing amendment being perceived, but on the fourth (Dec. 4.) he ſtretched out his right arm when required, and he was able to ſwallow without difficulty. As he was getting better, the ſame plan was perſevered in till the 9th, when the mercury had affected his mouth, and produced a diarrhœa. He now knew all thoſe perſons who attended him, and his ſtate was ſurpriſingly altered. During the inflammation of the brain he had been very unmanageable, and his replies and expreſſions were fierce and loud. Now he was extremely tractable, and wept whenever he was ſpoken to. His pulſe was very feeble, and beat but 90 in a minute. It ſeems right to mention that a few days afterwards, when he was ſlowly recovering, one of the wounds of the temporal artery gave way, and he loſt perhaps fourteen ounces of blood before it was perceived. This circumſtance of courſe made him weaker, and increaſed the frequency of his pulſe, but it did not much impede his recovery, which, though very ſlow, was very perfect. Extenſive ſloughing of the integuments of the nates had taken place, which it does not ſeem re-

quiſite to mention, but inaſmuch as it tends to ſhew the reduced ſtate to which he had been brought. Indeed if this patient had not poſſeſſed a vigorous conſtitution, it ſeemed ſcarcely poſſible that he could have ſurvived the debility which this diſeaſe and the treatment conjointly produced.

The extent of the evacuations, that ſurgeons are obliged to make in inflammations of vital organs, is ſuch, as would deter the unexperienced from purſuing them, and muſt aſtoniſh thoſe who have employed them with ſucceſs, that they could be borne with ſo little apparent injury. It can only be accounted for by conſidering the diſeaſe as the ſtimulus which keeps up the actions of the conſtitution under ſuch exhauſting meaſures, as would occaſion them to ſink but for this excitement.

The opinions, that prevail amongſt ſurgeons reſpecting the treatment of concuſſion, are very different. Many late writers adviſe ſtimulating cordials, ſuch as wine, and volatile alkali, to be given; while others purſue a directly

directly oppoſite conduct. Nor do they agree in the account of the ſymptoms, which they conſider as depending on this ſpecies of injury. Moſt writers repreſent the ſubject, as if the deranged ſtate of the brain, which is the immediate conſequence of the ſhock, continued to the termination of the patient's illneſs or of life; while, in the caſes given by Mr. Pott, the ſymptoms appear to proceed more from the inflammation which enſues, than from the concuſſion.

The whole train of ſymptoms following a concuſſion of the brain, may, I think, be properly divided into three ſtages. The *firſt* is that ſtate of inſenſibility and derangement of the bodily powers, which immediately ſucceed the accident. While it laſts, the patient ſcarcely feels any injury that may be inflicted on him. His breathing is difficult, but in general without ſtertor; his pulſe intermitting, and his extremities cold. But ſuch a ſtate cannot laſt long; it goes off gradually, and is ſucceeded by another, which I conſider as the *ſecond* ſtage of concuſſion. In this, the pulſe and reſpiration become better,

and though not regularly performed, are ſufficient to maintain life, and to diffuſe warmth over the extreme parts of the body. The feeling of the patient is now ſo far reſtored, that he is ſenſible if his ſkin be pinched; but he lies ſtupid, and inattentive to ſlight external impreſſions. As the effects of concuſſion diminiſh, he becomes capable of replying to queſtions put to him in a loud tone of voice, eſpecially when they refer to his chief ſuffering at the time, as pain in the head, &c.; otherwiſe, he anſwers incoherently, and as if his attention could not be excited, or was occupied by ſomething elſe; he is, in ſhort, like a man in a heavy ſleep. The concuſſion of the brain, laſtly, produces a ſtate of inflammation of the organ, and this conſtitutes the *third* ſtage, which is the moſt important of the ſeries of effects proceeding from this cauſe.

Theſe ſeveral ſtages vary conſiderably in their degree and duration; but more or leſs of each will be found to take place in every inſtance where the brain has been violently ſhaken. Whether they bear any certain proportion

portion to each other or not, I do not know. Indeed this will depend upon ſuch a variety of circumſtances in the conſtitution, the injury, and the after-treatment, that it muſt be difficult to determine.

With regard to the treatment of concuſſion, it would appear, that in the firſt ſtage very little can be done. From a looſe, and, I think, a fallacious analogy between the inſenſibility in fainting, and that which occurs in concuſſion, the more powerful ſtimulants, ſuch as wine, brandy, and volatile alkali, are commonly had recourſe to, as ſoon as the patient can be made to ſwallow. The ſame reaſoning which led to the employment of theſe remedies in the firſt ſtage, in order to recall ſenſibility, has given a kind of ſanction to their repetition in the ſecond, with a view to continue and increaſe it.

But here the practice becomes more evidently pernicious. The circumſtance of the brain having ſo far recovered its powers, as to carry on the animal functions in a degree ſufficient to maintain life, is

ſurely a ſtrong argument that it will continue to do ſo, without the aid of ſuch means; which tend to exhauſt parts already weakened, by the violent action they induce.

It ſeems probable that theſe ſtimulating liquors will aggravate that inflammation which muſt enſue ſooner or later. The acceſs of it, in the caſes which I have related, is ſufficiently evident; and its cure is to be effected by the common methods. The great benefit of evacuations was, in thoſe caſes, very evident. Indeed, it appears to me, that there is no complaint which requires ſuch means to be more rigorouſly proſecuted, than an inflammation of the brain or its membranes.

In addition to the reaſoning which I have offered here, I would obſerve, that ſurgical books abound with caſes in which ſuitable evacuations have been freely employed in concuſſion, with the beſt effects; while the advocates for a contrary practice have reſted their arguments upon vague theory, and communicate no particulars of their ſucceſs.

If the foregoing caſes exhibit the genuine marks of concuſſion, the adminiſtration of cordial medicines, which has been ſo much recommended, appears to be very ill adapted to the relief of ſuch an injury.

I have ſeen ſo many additional caſes of concuſſion, ſo exactly correſponding to thoſe formerly related, that I am more fully ſatiſfied of the truth of the repreſentation which has been given of them. I have in conſequence been led more and more to wonder, that a contrary plan of treatment to that which has been ſo uniformly ſucceſsful, could ever have been recommended, and to conjecture what caſes could have occurred, in which ſuch oppoſite practice muſt not have been ſtrikingly prejudicial. Probably I may point out ſuch caſes; and as I do not find them deſcribed in books of ſurgery, becauſe they have not been deemed ſufficiently important, it may not be improper briefly to mention them.

A young lady was ſtooping in a cloſet, and riſing up ſuddenly and forcibly ſhe ſtruck her

head againſt a ſhelf. The blow occaſioned extreme pain, but did not ſtun her. She went down ſtairs without mentioning the accident, and after ſitting with her friends for a ſhort time ſhe fainted. As it was in the evening ſhe went to bed, but could not ſleep for pain in her head, and the next day her pulſe was very languid, and her extremities cold; ſhe complained of great pain when the ſcalp was ſlightly touched, and ſaid there was a ſenſation as if cold water was dropping on it. She took ſome gentle opening medicine, which relieved theſe ſymptoms, but ſhe could not ſit up for many days, and it was a conſiderable time before ſhe recovered from the languor, which the blow had occaſioned: but neither fever, nor failure of ſenſation, or of intellect, took place in the ſlighteſt degree. I have ſeen many ſimilar caſes, and in one the patient ſaid his ſenſations were ſuch as would induce him to believe that his brain was looſe, and moving on the inſide of the ſkull. All theſe caſes were relieved by ſlight evacuations, as gently opening medicines, leeches, or cupping, though I am inclined to believe that a contrary plan

of

of treatment, which has been recommended in concuſſion, might have been purſued without material detriment. Caſes of this deſcription are to be conſidered as ariſing from nervous ſymptoms, attendant upon ſlight injuries, rather than as effects of ſerious concuſſion. Mr. Pott, in ſpeaking of concuſſion, ſays, that he never knew patients recover from the immediate conſequences of it, without an imperfection in ſome ſenſe, or part of the body, remaining. The reſult of my own experience has been very different; and yet I am ready to believe that ſuch events may not unfrequently take place, as I know from examination, that the ſubſtance of the brain is ſometimes lacerated and diſorganized in violent concuſſions. I have, however, examined other caſes of fatal concuſſions, without obſerving any ſuch leſion of the ſubſtance of the brain.

It has hitherto been conſidered as a deſirable object, to point out any marks by which we might diſtinguiſh between compreſſion and concuſſion of the brain; but I believe

no

no ſuch criteria have yet been communicated to the public. If we judge of the ſymptoms of compreſſion from what occurs in caſes of apoplexy, or from caſes like thoſe which have been related of the rupture of the middle artery of the dura mater, (in one of which caſes it was evident, that concuſſions had no ſhare in producing the ſymptoms,) we muſt, I think, be of opinion, that preſſure on the brain occaſions inſenſibility partially, or generally, and in a degree proportionate to its quantity. In extreme caſes, ſuch as I have cited, the inſenſibility is manifeſted by every circumſtance. The pupil of the eye is dilated, and cannot be made to contract even by a ſtrong light. The reſpiration is ſlow and ſtertorous, and the pulſe proportionately ſlow and labouring. There is no vomiting, which would indeed indicate ſenſibility of ſtomach. The limbs are relaxed, as in a perſon juſt dead. No ſtruggles take place, nor ſigns of ſenſation appear during the operation; but on the preſſure being removed, ſenſation and intelligence are immediately reſtored.

In

In concuſſion, the inſenſible ſtate is of ſhort duration, and during its continuance the body is generally cold, and the pulſe feeble and intermitting. Afterwards the ſkin is hotter than uſual, the pulſe and reſpiration more frequent; the former often intermits, and the latter has not the ſtertor of apoplexy *. The pupil of the eye is not dilated, but rather contracted. The countenance expreſſes pain or uneaſineſs; and vomiting occaſionally takes place. The ſtate of the patient is like that of a heavy and uncomfortable ſleep; yet, being rouſed, ſigns, even of intelligence, appear.

In fractures of the baſis of the ſkull, however, it muſt be acknowledged, that the ſymptoms are often deceptive. In general the ſymptoms reſemble thoſe of concuſſion, yet ſometimes a degree of inſenſibility

* But the abſence of ſtertor muſt not be relied on as a proof that there is no compreſſion; for Morgagni relates diſſections of apoplectic perſons, where the effuſion was conſiderable, yet no ſtertor had occurred; and I have ſeen caſes where it took place only in a very ſlight degree.

may

may be obſerved like that produced by preſſure, when no preſſure has really taken place.

I cannot better repreſent to the reader what I conceive of the value of the diſtinctions which I have made, between the ſymptoms of compreſſion and concuſſion of the brain, in ordinary caſes, than by relating briefly ſome of the particulars of a caſe ſent me by Mr. Davies, ſurgeon of Tetbury, who was formerly an induſtrious and intelligent ſtudent at St. Bartholomew's hoſpital. The caſe alſo, in my opinion, deſerves to be recorded for other reaſons, which I ſhall afterwards mention.

A young woman was knocked down by a blow on her head, and the place where the blow had been received was denoted by a ſoft ſwelling of the ſcalp. She lay in a ſtate of apoplexy, and appeared like a corpſe. The pupils of her eyes could not be made to contract by the approach of a ſtrong light; her olfactory nerves were unaffected by the moſt pungent odour; her ears were equally inſenſible to ſound; ſhe manifeſted no uneaſineſs upon

upon being ſharply pinched; her pulſe was ſmall and intermitting, and her breathing ſcarcely perceptible; and a cold and clammy moiſture covered her ſkin.

Mr. Davies immediately divided the ſcalp, and finding the bone fractured, he trephined it. There was no blood upon the dura mater, but that membrane was thruſt up into the aperture made by the trephine. The dura mater being divided, about five ounces of blood was ſuddenly diſcharged, and the patient roſe up in bed, as if waking with affright. Her pulſe and reſpiration were ſoon relieved, and became natural. A plan of treatment calculated to prevent and ſubdue inflammation was ſtrictly purſued, and the patient did well without any remarkable occurrence taking place.

From what has been already ſaid it may be inferred, that I do not conſider the diviſion of the dura mater as a ſlight evil. It is, doubtleſs, the duty of a ſurgeon, when he has been urged to trephine, on account of ſtrong ſymptoms of preſſure, to divide that membrane, if it be thruſt upwards into the

aperture which he has made. I have ſaid that frequently the blood is coagulated, or ſo thickly grumous, that the whole of it cannot be diſcharged. In the preſent caſe, however, the promptitude of the ſurgeon's conduct enabled him happily to diſcharge the effuſed blood whilſt it remained fluid.

SECTION V.

Inflammation of the Pia Mater *.

THE inflammation of the dura mater, which occaſionally ſucceeds to injuries of the head, has been well deſcribed by Mr. Pott. Patients labouring under this complaint are feveriſh, have a conſtrictive pain in the head, but continue rational, and give a clear account of their ſymptoms, until matter forms, or inflammation of the internal parts enſues. This is what we might naturally expect from the ſtructure of the dura mater, the manner in which it is ſupplied with blood, and its veſſels having little connection with the brain. When the pia mater becomes in-

* In the former edition, I related in this ſection caſes of inflammation of the pia mater, in which this diſeaſe occurred diſtinctly, and terminated fatally, in order to authenticate the ſpecific ſymptoms attendant on it. As many of the foregoing caſes, however, are inſtances of this diſeaſe coming on after concuſſion or fracture, and yet occurring as a diſtinct diſeaſe, and uncombined with ſymptoms ariſing from the peculiar nature of the injury, I think a further narrative of caſes ſuperfluous.

flamed,

flamed, as the brain derives a conſiderable portion of its blood through the veſſels of that membrane, the diſeaſe is inſtantly communicated to the cerebrum, and deranges its functions. This derangement varies in its nature and degree, accordingly as the inflammation of the pia mater is more or leſs violent; as it is confined to the ſurface, or extends to the internal parts; as it produces a greater or ſmaller ſecretion of fluid which compreſſes the brain; or as it is more or leſs blended with the effects of concuſſion. The ſtate of the patient will vary conſiderably under theſe different circumſtances. If the inflammation be violent and general, the patient will be irrational and diſturbed, having his mind ſtrongly affected by wrong ideas, and endeavouring to act in conſequence of them. If the inflammation be moderate, and affect the ſurface only, he will be irrational, uneaſy, reſtleſs, and perhaps endeavour to get out of bed, but without the violence of mania. Should a moderate inflammation be blended with the effects of concuſſion, he will have leſs appearance of irrationality, will lie pretty quiet, and inattentive to ſlight impreſſions, as

appeared

appeared in ſome of the caſes related.—I am not able to particularize every variety that may occur in the ſymptoms; but in all, there muſt be more or leſs derangement of the powers, both mental and corporeal, depending upon the degree of inflammation, &c.* — The ſymptoms, which chiefly characterize the complaint, are thoſe of an increaſe of ſenſibility; the pupils of the eyes are contracted; the patient often withdraws his arm on being touched, and his pulſe and tongue denote general as well as local inflammation. It ſeems of the utmoſt importance, that thoſe means which in general cure inflammation, ſhould be proſecuted very vigorouſly at the commencement of this complaint; ſince otherwiſe, although they may check, they will not overcome it. Large blood-lettings, briſk purging, and extenſive counter-irritation by bliſters, ought to be

* An unuſual infirmity of the bodily powers is ſometimes obſerved, accompanied with tremors, low delirium, and exceedingly rapid pulſe; yet, on diſſection, a ſlight inflammatory appearance of the pia mater and brain is all that can be diſcovered. Such a ſtate ſometimes occurs after an abſceſs has formed in the brain.

employed at the very commencement; for, if omitted, the diſeaſe will then become eſtabliſhed, and the powers of the body will ſoon be too much ſunk to admit of the ſame active treatment at a later period.

I have here repreſented the general effects of inflammation of the pia mater when it ariſes from external violence. In other caſes, indeed, where it comes on, as it were, ſpontaneouſly, or without any powerfully exciting cauſe (in which caſe it generally falls under the care of the phyſician), it has appeared to have affected the brain but little, and to have been very ſlow in its progreſs, and inactive in its nature. In ſuch caſes it has produced a depoſition between the tunica arachnoidea and the pia mater, or a collection of ſerum between the former membrane and the dura mater. Under theſe circumſtances, I have learned that the rationality of the patient has been ſcarcely deranged. And as ſuch a ſtate of diſeaſe may occur after an accident, I have thought it right to mention it in this place.

In

In the generality of caſes of injury done to the head, the ſymptoms of concuſſion, compreſſion, and inflammation are ſo combined as to appear inexplicable. It is only by an attention to thoſe rare caſes, in which the ſymptoms of each appear diſtinctly, that we are likely to increaſe our knowledge of their ſpecific effects. I conclude this review of the effect of injuries done to the head, by obſerving, that whatever may be the nature of the injury which the brain may have ſuſtained, ſtill the diſorder induced in that organ muſt produce a proportionate diſorder in the functions of the digeſtive organs, and the reaction of the latter affection muſt aggravate the former. Some remarks on this ſubject are inſerted in the firſt volume of theſe obſervations. To corroborate further the ſtatement there given, and to bring this ſubject before the reader's mind on the preſent occaſion, I relate the following caſe, which occurred about two years ago.

CASE XXI.

A young gentleman received a ſevere wound on the forehead, which laid bare the

bone, and ſtunned him. By venæſection and the uſual treatment, the immediate ill conſequences of the injury were mitigated and ſubdued; ſo that the wound healed, and he was conſidered to be convaleſcent. He was not, however, well; he had ſtrange nervous feelings about his head; and after three months he became very much diſordered. Calling at a friend's houſe, he diſcourſed wildly, and became ſo delirious, that they were obliged to confine him in bed by means of a ſtrait waiſtcoat. Ten ounces of blood were taken from him, and I was deſired to viſit him. His pulſe beat more than 100 in a minute; his ſkin was hot and dry; his tongue was furred, but it could not be diſtinctly ſeen; he ſhewed no ſigns of underſtanding to any queſtions that were put to him; he rolled his head about; and breathed altogether by means of the ribs, without moving the diaphragm. When I preſſed even ſlightly beneath the enſiform cartilage, he ſeemed to ſuffer greatly, and became ſlightly convulſed. The blood which had been taken from the arm did not indicate inflammation, and I was therefore induced to conſider the ſymptoms

toms as ariſing from nervous irritation, cauſed, or aggravated, by diſorder of the digeſtive organs. As it was impoſſible to get the patient to ſwallow, we formed two grains of calomel and 10 of jalap into an electuary, by means of a little honey, and beſmeared the back part of the tongue with it. The ſame medicine was repeated after ſix hours. The ſecond doſe produced two copious diſcharges from the bowels, after which his head was ſo much relieved, that when I called on him the following morning, he was perfectly rational, and his pulſe was tranquil. I then queſtioned him particularly reſpecting the kind of pain in his head; and, he told me, that it was not ſevere, nor accompanied with throbbing; that it was confined to the part which had been wounded, and it was conſtant. As the purgative medicines had not begun to operate till towards the morning, I thought that their effects might continue, and therefore only adviſed, that he ſhould take ſaline draughts in a ſtate of efferveſcence, during the day; and food of an unſtimulating quality. No more

evacuations however took place from the bowels, and in the afternoon the patient again became delirious, ſo that when I ſaw him in the evening he did not ſeem to underſtand any thing that was ſaid to him. He lay, however, much more quietly than he had done on the preceding evening, only occaſionally moving his head to one ſide or the other, and then ſeeming as if he was looking for ſome object by the ſide of the bed. The jalap was now again given him, with the addition of one grain of calomel. The medicine operated twice in the night, and next morning he was again perfectly rational. We now inſured the continuance of diſcharges from the bowels, by directing him to take ſome common purging mixtures, if his bowels did not act in ſix hours. The delirium did not return, and the patient ſoon became as well as he had ever been ſince the accident. Yet ſtill his digeſtive organs were not in a healthy ſtate. His tongue was much furred; his bowels either coſtive or purged, and generally in the latter ſtate; and the ſecretion of bile was either deficient in quantity, or faulty

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in quality. He remained in this way for many months, though various kinds of medicines were given for his relief. At laſt a ſpontaneous diarrhœa occurred, and as I was informed by his phyſician, his bowels afterwards regained their natural tranquillity and functions.

SECTION VI.

Caſes of Diſeaſe of the Bone and Dura Mater.

THE diſeaſes of the cranium, and conſequent affections of the dura mater, have been well deſcribed by ſome French and German ſurgeons *. But as they have not, I believe, been explained by Engliſh writers, I ſhall confirm the accounts which we have received of them by additional caſes; and afterwards ſhall offer ſome remarks on this ſubject.

CASE XXII.

A man, between thirty and forty years of age, was ſalivated for complaints in his head, ſuppoſed to be venereal. There were two tumours of the ſcalp; one a little before the coronal ſuture, and the other a little above the poſterior ſuperior angle of the left parietal bone. The man's health was greatly reduced by the courſe of medicine he had undergone,

* Vide Monſ. Louis' Memoire, in the fifth volume of the Mem. de l'Acad. de Chirurgie, and Haller's Diſputationes Chirurgicæ.

as well as by the diſeaſe, which had conſiderably increaſed during the uſe of mercury. The integuments covering the poſterior tumour had ulcerated; and a probe could be paſſed under them, ſo as to diſcover a conſiderable extent of bare and carious bone. The ſurgeon, under whoſe care he was admitted into the hoſpital, divided the integuments, and perforated the diſeaſed bone, which was found ſeparated from the dura mater. That membrane alſo had a very morbid appearance, being covered with a ſoft ſubſtance of a dirty reddiſh colour. On preſſing down the dura mater with a probe, to ſee if it was detached to any extent, nearly a table-ſpoonful of healthy pus iſſued from beneath the bone, about an inch behind the part perforated. The ſurgeon thought this might be ſufficient to relieve, and therefore deferred making another perforation. But the man, who had lain ſtupid, though not irrational, and had ſubſultus tendinum accompanied with great debility, grew ſhortly after delirious; in which ſtate he continued about two days, when he became convulſed, and died.

On

On diſſection, purulent matter was found on the dura mater, beneath both the carious portions of bone. The membrane alſo, which was detached, was much thickened, ſo as in ſome degree to indent the ſurface of the brain. The pia mater was generally inflamed; and a larger quantity of fluid than uſual was found in the ventricles.

CASE XXIII.

An old man was admitted into the hoſpital for a complaint of giddineſs and pain in his head. Upon examination, a tumour was perceived over the left parietal bone, into which an inciſion was made, and a good deal of matter diſcharged. The pericranium was found to be detached for three inches in length, and two in breadth. In the middle of the bare bone, which ſeemed to be dead, and really was ſo, granulations of a healthy appearance had ſprouted out. Theſe aroſe from the dura mater, and had made their way through the bone. The patient's health, which was moderately good at the time of his admiſſion into the hoſpital, gradually declined; and, after about ſix weeks, the pain

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in his head became particularly ſevere. From this time he became gradually comatoſe, took no food, and ſoon died.

On diſſection, the dura mater, beneath the carious bone, was found detached, and had granulated. Much pus lay between the left hemiſphere of the brain and the falx; and the whole of the dura mater covering the right hemiſphere was lined with healthy pus, which adhered to its ſurface, and appeared to have been ſecreted by that membrane.

The caſes of diſeaſed bone, which require perforation of the cranium, have not been ſufficiently treated of by any Engliſh writer. Mr. Pott has, indeed, noticed the diſeaſe and death of portions of the ſkull, that ſucceed to contuſions; but he has not ſufficiently explained the affections of the membranes of the brain, which even theſe diſeaſes ſometimes occaſion. The circumſtance, which ſeems particularly to have attracted his attention, is the inflammation and ſuppuration in the diploë, which proceed from injury done

done to the bone. The exiſtence of that complaint, however, is eaſily known; for while there is a fixed pain in that part of the bone, there is no general inflammation, or but very little, of the dura mater. The diſeaſe continues, too, a much longer time without producing any ſeriouſly bad ſymptoms, than any diſorder of the internal parts could do. When matter is formed in the diploë, the pericranium will certainly ſeparate from the bone, and the external table of the ſkull will undoubtedly periſh. In a caſe ſo clearly marked, the conduct to be purſued is obvious, which is, to remove a portion of the external table with the trephine, ſo as to diſcharge the matter collected in the diploë, without which no relief can be obtained. I have ſeen, in ſeveral caſes where the operation was performed early, that the external table came away within the circle of the trephine, the matter was diſcharged from the medullary part of the bone, and the internal table remained ſound and entire, covering the dura mater. Granulations ſoon aroſe, and the patients got well, with the exfoliation only of a portion of the outer

outer table. The miſchievous conſequences of delaying the operation, when once the diſeaſe is known, muſt be evident; for the matter collected within the bone, having no natural outlet, will preſs on every ſide, firſt gradually deſtroying the diploë, ſometimes extending itſelf over almoſt the whole of the cranium, and at laſt occaſioning the partial abſorption of both tables, ſo that the ſkull after death ſhall be found perforated with a number of holes, like a piece of worm-eaten wood. Theſe holes afford a diſcharge to the matter, which not only oozes out beneath the pericranium, but alſo inſinuates itſelf between the ſkull and dura mater; till at length the patient ſinks, worn out by the irritation and fever which this painful and extenſive diſeaſe creates; unleſs, as it ſometimes happens, he is previouſly deſtroyed by inflammation attacking the membranes of the brain.

Suppuration of the diploë, and the death of a portion of the bone, are the common effects of injury done to the cranium; and ſuch a morbid ſtate may indeed occur at ſome diſtance

diſtance of time from the receipt of the injury. But the diſeaſe, which the caſes repreſent, generally ariſes without an obvious cauſe. An affection of the dura mater is almoſt the neceſſary conſequence of ſuch a diſeaſe in the bone. In ſyphilis it probably takes place later than in any other inſtance; for that diſorder attacks the outſide of the ſkull, which it gradually deſtroys; the inner table and the dura mater remain ſound till the laſt. But when, as in the complaint I am now conſidering, the whole bone is involved in diſeaſe, we can no more expect that the dura mater ſhould remain unaffected within, than that the pericranium ſhould continue ſound and attached without; for that membrane may be regarded as the perioſteum to the internal table of the ſkull. It is well known that, in general, the dura mater ſeparates, and becomes thickened from a depoſition and ſubſequent organization of coagulable lymph between its layers. This thickening is ſometimes conſiderable, ſo as to form a tumour which cauſes an indentation in the cerebrum; as happened in a very remarkable degree in the caſe of the Sieur le Gallois,

related by M. Louis*. Sometimes the dura mater ſecretes pus, which being confined within the cranium, produces inflammation of the brain, &c. At others, granulations ariſe from the irritated membrane, and, making their way through the bone, form thoſe tumours ſo well deſcribed in the Memoir juſt referred to. This took place in one of the caſes I have related; and is a remarkable inſtance of the power which granulations poſſeſs of removing bone. The diſeaſe, however, does not confine itſelf to the part firſt attacked; for if the irritated ſtate of the dura mater be not appeaſed, thickenings will take place in other parts of that membrane; or the inflammation becoming more extended, ſuppuration may be produced even over the oppoſite hemiſphere of the brain, as happened in both the caſes which I have related.

I do not mean to ſay, that in every caſe of diſeaſed cranium, even where both tables of the ſkull are equally affected, the perforation

* See Mem. de l'Acad. de Chirurg. tom. v. It alſo took place more ſlightly in one of the caſes which I have related.

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of the bone is indiſpenſably required. I know it often happens that the bone exfoliates, without any bad effects having been produced.

But ſurely no ſurgeon, who perceives the danger of delay, would heſitate to remove all the dead portion of bone, if ſymptoms denoting general irritation of the dura mater take place. The beſt event that can be expected, is, that the bone will at length exfoliate without much pain to the patient, or injury to his conſtitution. By removing the dead bone, and giving an early and free diſcharge to any matter collected beneath it, the irritation which it occaſioned will be taken away, the diſeaſed ſtate of the dura mater will gradually ſubſide, and healthy granulations ariſe from its ſurface; nor will any further diſeaſe occur in other parts of that membrane. M. Louis tells us, at the concluſion of the Memoir already quoted, in what manner experience had taught him to treat fungi of the dura mater. He ſays that "the whole of the tumour ſhould be expoſed, "which cannot happen till the bony circle

which

" which conceals its baſis, is removed; and " that afterwards means ſhould be employed " to deſtroy the fleſhy excreſcence *." Although the deſtruction of the fungus might be proper for the ſake of expedition, and although it can perhaps be attended with no harm, by whatever means effected; yet it may not be neceſſary. Like other animal fungi, it will probably ceaſe to grow, and ſoon diſappear, when the irritation which occaſioned it has been removed.

In caſes of tumours riſing from within the ſkull, it is of conſequence to determine from what part they proceed. In general, they will be found to ſpring from the dura mater, and to be the effect of diſeaſe in that membrane, induced and kept up by irritation. Surgeons have endeavoured either to reduce them by cauſtic; to reſtrain them by preſ-

* The excellent effects of ſuch bold but judicious practice are well ſhewn in a caſe related in the 9th Paper of Haller's Diſputationes Chirurgicæ, vol. i. in which a piece of diſeaſed bone, ſix inches and a half in circumference, was removed.

ſure; or to take them off by a ligature or the knife: and the excreſcences have either ceaſed or continued to grow, according as the irritation which gave riſe to them has been removed or not. If the former happened, the ſurgeon has ſometimes attributed undeſerved merit to the means he had employed for the cure.

Thoſe tumours which come from within the dura mater, may poſſibly differ in their kind in different diſeaſes; and of theſe I have ſpoken in a former part of this Eſſay.

What I have written muſt appear very defective, if it be conſidered as regarding the effects of injuries of the head in general. But my intention has been only to endeavour to illuſtrate particular points of practice, by a relation of caſes ſelected from a conſiderable number of each kind.

I ſhall next relate a caſe, in which, though the brain was not the immediate ſubject of the injury, yet it became affected in conſe-

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quence of it, and I think the caſe deſerves to be recorded, not only on account of ſeveral uſeful facts and hints relative to practice which it affords, but alſo becauſe it may eventually tend to throw light on the economy and diſeaſes of the brain.

CASE XXIV.

A man was gored in the neck by a cow. The horn entered by the left ſide of the cricoid cartilage, and penetrated as far as the vertebræ; it then paſſed upwards on the bodies of thoſe bones, nearly as high as the bottom of the ſkull; afterwards it came out behind the angle of the jaw, expoſing, and in ſome degree injuring the parotid gland in its paſſage, and lacerating the ſkin of the face as high as the middle of the ear. In its courſe it had paſſed beneath, and torn the internal carotid artery, and all the primary branches in front of the external carotid artery. The former veſſel was not, however, entirely rent aſunder, ſo that the general courſe of the artery, and its connection with the cranium remained in the uſual ſtate. Notwithſtanding the ſize of the veſſels which had

been torn, they did not immediately bleed; the wound was therefore cloſed and bound up. The blood was ſoon obſerved to flow in ſtreams down the neck, nor could any general preſſure upon the wound prevent hemorrhage. In this ſtate the man was conveyed to St. Bartholomew's hoſpital, but he had loſt a large quantity of blood before his arrival.

The patient was laid upon a bed, and before the wound was opened, one of the ſtudents firmly compreſſed the trunk of the carotid artery againſt the lower cervical vertebræ. We found upon the firſt inſpection of the wound, that this preſſure prevented any hemorrhage; yet upon the occaſional motions of the patient, and upon accidental variations in the preſſure made on the veſſel, the blood guſhed from the bottom of the wound ſo ſuddenly, and in ſuch quantities, as to prevent any accurate examination. The man was very unquiet; he complained much of the preſſure, and was greatly diſtreſſed by a ſenſation of ſuffocation, which compelled him conſtantly to attempt to expectorate. Under

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theſe circumſtances our firſt endeavours were to tie the more ſuperficial arteries; but the edges of the wound being lacerated, the firſt ligatures which we endeavoured to make tore away portions of the fleſh, and did not ſecure the veſſels.

The ſituation of the patient became every moment more deſperate, he really ſeemed choking, his extremities became cold, and his pulſe was ſcarcely to be felt: his ſtruggles alſo, which could not be controlled, made the preſſure on the trunk of the artery very precarious. It was deemed neceſſary to enlarge the wound to get at the trunk of the carotid artery, and an inciſion was made between that veſſel and the trachea, in a direction parallel to each of theſe parts. I had now the power of paſſing my finger beneath the trunk of the carotid artery; and of effectually compreſſing it between that finger and my thumb, which was placed oppoſite to it, upon the integuments of the neck.

I had now leiſure to examine the wound with my other hand, and felt that the pharynx

had been ſeparated from the vertebræ of the neck, and had fallen againſt the larynx: the irritation of the latter organ was probably the cauſe of the ſenſation of ſuffocation which the patient ſuffered. There did not appear any reaſon to believe that the pharynx was wounded; for though the patient was conſtantly ſpitting, the mucus was not mixed with blood. Finding that the moment I remitted the preſſure of the carotid, the blood guſhed out from ſo many orifices, and in ſuch a torrent from the bottom of the wound, I reſolved to paſs a ligature round the trunk of the carotid at the part where I had been compreſſing it, and which was about an inch below its diviſion. This ligature I thought might be made to ſerve as the tourniquet in amputation, for I could with it compreſs the artery ſo as to prevent the wounded parts becoming obſcured by blood, and by ſlackening it I might gain information with regard to the ſituation of the ruptured veſſels.

Should it become neceſſary at any time to tie the carotid artery, I am convinced that it may be done without much difficulty or danger,

ger, even without an accurate diſſection of the part. If the inciſion be made on that ſide of the artery which is next the trachea, where no important parts can be injured, as was done in the preſent inſtance, the finger can then be paſſed behind the artery ſo as to compreſs it. The veſſel being ſufficiently bulky and firm, to make its form and outline diſtinctly perceptible, a needle may then be paſſed behind the artery, as near as poſſible to that edge of it which is next to the internal jugular vein: there can be little riſk of wounding that veſſel, or of including in the ligature the 8th pair of nerves which lies between them. In attempting to ſecure the carotid artery, I paſſed behind it in the manner deſcribed, a blunt hook with an eye in the point, and having previouſly introduced a ligature into it, I drew back the inſtrument and thus encloſed the artery.

When I compreſſed the veſſel by tightening the knot of the ligature, I did it ſlowly, and with a watchful attention to the ſufferings of the patient; for I cannot but ſuppoſe that had the nerve of the 8th pair been in-

cluded, his complaints would have ſufficiently denoted that circumſtance. But the compreſſion of the ligature did not ſeem to make the leaſt difference in the general ſtate of the patient, whilſt it completely prevented the further effuſion of blood. With a knife and diſſecting forceps I then expoſed the lacerated veſſels, and found that the primary branches of the external carotid artery had been torn off from the trunk. By drawing upwards the ligature which encircled the trunk of the artery, I made the internal carotid tenſe, ſo that its courſe and ruptured ſtate could be diſtinctly felt. The ligature on the trunk was ſlackened, and the guſh of blood further confirmed the laceration of the internal carotid artery. I had now the alternative of ſecuring the ligature, which I had already made on the trunk of the veſſel, or of tying the branches ſeparately. I preferred the former, and it ſhould be obſerved, that the man had now lain ten minutes or more, without any blood being carried to the brain by the left carotid; and during that period he had recovered from his extreme faintneſs, appeared perfectly ſenſible, and as well as could

be expected, conſidering that the perſon had loſt ſo large a quantity of blood. The ligature being now made ſecure, the wound was brought together by ſtripes of plaiſter; and in this ſtate warm milk was given to the patient to drink, in order to learn what would be the effect of his efforts to ſwallow, and to aſcertain as far as poſſible, whether there was any wound in the pharynx or œſophagus. The patient ſwallowed about a quarter of a pint of this fluid with difficulty, and with the frequent excitement of coughing. No milk however came through the wound, and I concluded that all the difficulty of deglutition aroſe from the unnatural ſtate in which the muſcles of the pharynx were placed, in conſequence of their detachment from the vertebræ. Theſe circumſtances happened between 4 and 5 o'clock in the afternoon, and when I ſaw the patient again between 9 and 10, his ſtate ſeemed greatly amended. He had ſeveral times taken warm milk, and the difficulty of deglutition had abated. His pulſe was now moderately full and ſtrong, and not very frequent. It therefore appeared, that the apparently dying ſtate of the man,

which

which at one time had alarmed us, proceeded rather from the ſudden diſcharge of blood, than from the quantity, however conſiderable, which had been loſt. The patient alſo appeared tranquil, and perfectly rational, and though prevented from ſpeaking much, he expreſſed himſelf ſatisfied in this ſituation.

On the whole I was led to form a favourable expectation of the progreſs of the caſe, as far as related to the effects which a ligature on one carotid would have on the economy of the brain. I was next morning mortified to learn, that the patient had been unquiet and feveriſh during the night, that he had become delirious, that he had been ſeveral times affected by ſlight convulſions, which had increaſed; and that when liquids were now given to him, they paſſed through the wound, and he could ſcarcely ſwallow any thing. The pulſe of the patient was now about 130 in a minute, and hard, and his ſkin was hot. He lay inattentive to external objects, but probably not inſenſible, for the pupils of his eyes were contracted, and when the lids were opened in order to examine them,

them, he ſhut them quickly, and as it were, impatiently. It had been remarked, that the left ſide of the body was more convulſed than the right.

As we had it not in our power eaſily to give medicine, I introduced a ſmall hollow bougie through the right noſtril into the œſophagus, and immediately injected half a pint of milk and water, and 60 drops of tincture of opium; that I might learn the effects of that medicine under the preſent circumſtances. The patient ſhortly after broke out into a moſt profuſe ſweat, and the convulſions were quieted by the opium. The convulſions, when thus mitigated by opium, might be deſcribed as violent tremors of the left ſide of his body, but the right ſide remained motionleſs; to which curious fact I particularly attended. I placed his right arm acroſs his breaſt, from which ſituation it did not afterwards ſtir. I could not, however, perceive any diſtortion of the face to the oppoſite ſide, and the pupils of both eyes were equally contracted. When I ſaw the

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ſweat break out on the taking of opium, and the nervous irritation diminiſh by its operation, I was then more forcibly ſtruck than I had been before with the ſimilarity of this patient's ſituation, to that of a perſon ſuffering from the effects of concuſſion of the brain, ſome time after the accident, when the inflammation often ſucceeding to it had begun to take place.

I even queſtioned if it might not be right to take blood from the temporal artery, which was ſeen beating violently. I thought, however, the general opinion would be againſt ſuch practice, and I only applied a bliſter to the head. Twenty drops of tincture of opium were directed to be given to the patient every third or fourth hour, with a view to mitigate the convulſions, which it appeared to do. Milk and water was alſo occaſionally given, in proportion to the degree of perſpiration. No remarkable change of ſymptoms took place, but the ſtrength of the pulſe gradually declined, and at 10 o'clock at night he had a ſevere convulſion fit, and imme-

immediately after died. His death happened about thirty hours after the ligature had been made on the carotid artery.

The body was examined on the following day. The brain appeared to have ſuffered a conſiderable degree of inflammation. The veſſels of the pia mater appeared as if they were injected, and in many places upon the ſurface of the convolutions of the cerebrum, there even ſeemed an effuſion of blood producing that appearance uſually termed blood-ſhot. There was a very conſiderable depoſition of gelatinous ſubſtance between the tunica arachnoidea, and the pia mater. The veſſels paſſing through the ſubſtance of the brain, though fuller than common, were not particularly turgid. A conſiderable quantity of water of a light brown colour, and ſlightly turbid appearance, was found in the ventricles, whilſt the firmneſs of the ſides of thoſe cavities ſufficiently indicated that the collection had not preceded the accident. On examining the neck, the carotid artery was found to be the only part included in the ligature. The ſuperior thyroideal, lingual

gual and facial branches of the external carotid, were torn off from the trunk, and the internal carotid was rent acroſs, as has been already mentioned.

Neither the trunk of the 8th pair of nerves, nor the great ſympathetic, nor thoſe of the tongue, appeared to have ſuffered injury. The ſuperior laryngeal, and the deſcending branch of the 9th pair, were the chief nerves injured by the accident. Theſe circumſtances are mentioned to enable the reader to form his own judgment on the probability of the ſymptoms which occurred being produced by nervous injury or irritation.

That the diſorder and death of this man are not to be attributed to the quantity of blood which he had loſt, appears clearly to me, not only from the degree of plenitude and power of the vaſcular ſyſtem which remained, but becauſe I had ſeen many patients in the hoſpital, who had divided moſt of the primary branches of the external carotid artery in the attempt at ſuicide; and who,

after ſurviving a few days, periſhed in conſequence of the loſs of blood which they had ſuſtained, but with a train of ſymptoms very different from thoſe which occurred in the preſent inſtance.

Some perſons may, perhaps, be inclined to attribute inflammations of the brain to nervous injury or irritation. I have taken notice of all the injury diſcoverable by diſſection, and have further to obſerve, that we frequently ſee larger nerves lacerated in wounds without the production of ſuch ſymptoms, and the tranquil ſtate of the patient, till the inflammation of the brain came on, oppoſes ſuch an idea. Upon reflection, I can form no other opinion of the caſe than that which firſt ſtruck me, which is, that though the ſtopping the ſupply of blood to the brain did not for ſeveral hours produce any apparent derangement in the functions of that organ, yet ſuch a ſtate was gradually occaſioned by it, and which was attended like the effects of concuſſion of the brain, with inflammation. It further appeared, that when the combined effects reſulting from the derange-

derangement, and the inflammation were manifeſted together, the ſtate of the patient much reſembled that of a perſon who had ſuffered concuſſion. Miaſmata which impair and diſturb the energies of the brain, occaſion fever and inflammation of that organ, ſo that there appears to me nothing wonderful in the inflammation which occurred in the preſent inſtance. It is right, however, to mention, that the carotid artery has been ſince tied in this city, by Mr. Travers, without ſuch effects as I have deſcribed taking place.

Mr. Travers has obligingly communicated to me the following particulars of this caſe, which I here inſert:

" The caſe to which you refer, I conſider
" to be an example of the diſeaſe which
" Mr. J. Bell has denominated Aneuriſm by
" Anaſtamoſis. It was a tumour, reſem-
" bling the Nævus, of a livid colour, and
" compreſſible, projecting from the orbit,
" pulſating formidably, and gradually work-
" ing the eye out of its ſocket. Preſſure

aggravated

" aggravated the pulſe, and gave inſupport-
" able pain. In examining it, I put my
" thumb on the carotid of the ſame ſide,
" and the pulſe inſtantly ceaſed. Seeing
" that it grew faſt, I prevailed on the patient,
" a women of eight-and-thirty, to allow me
" to tie the common carotid artery, which
" I did laſt May twelvemonth. She ſuffered
" nothing more than I have uſually ſeen
" follow other operations for Aneuriſm, and
" was abroad at the end of a month. The
" tumour ceaſed to pulſate, but for ſome
" time retained a vibratory thrill, which it
" has ſince totally loſt. It likewiſe ſhrunk
" to about half its former ſize, and became
" ſolid and incompreſſible, in which ſtate
" it has ſince remained. I may alſo add,
" that the patient was greatly afflicted with
" pain in the head prior to the operation, and
" that it has completely removed that pain."

The different ſtates of the two ſides of the body, in the caſe which I have laſt related, ought not, I think, to paſs without further notice. Although the right ſide, could not be poſitively ſaid to be paraly-

tic, yet, in my opinion, it approached to that ſtate.

It has been already obſerved, that a double conſtruction might be put upon the ſymptoms; yet as the inflammation of the brain was equal on both ſides, we might naturally expect the whole body to ſuffer equally. Should the ſtate of the right ſide have been, as appears moſt probable, an approach to a ſtate of paralyſis, it muſt ſurely be conſidered as peculiarly curious. An effuſion of blood in the left hemiſphere of the brain would affect the oppoſite ſide of the body in the ſame manner, that cutting off the ſupply of blood to the left ſide appears in this inſtance to have done. I forbear to ſpeculate on this ſubject: the fact which I have mentioned ſeems to deſerve notice, and though at preſent it muſt ſtand alone, it may receive future confirmation, and when thus ſupported, be applied to the elucidation of phyſiology.

I have thought it right to record this caſe, not merely becauſe it is curious, but becauſe

becauſe it affords ſome uſeful practical hints, as to the conduct to be purſued when a perſon has divided the large primary branches of the carotid artery in an attempt at ſuicide. It may be allowable alſo to mention, in relation to this latter ſubject, the great advantages which appear to me to ariſe from the immediate introduction of a ſmall elaſtic catheter, paſſed through the right noſtril, down the œſophagus, nearly as far as the ſtomach, (in the manner practiſed by Deſſault, in the cure of a perſon wounded by a piſtol ball,) when the pharynx or larynx are injured.

A patient in ſuch a ſtate is not under the neceſſity of frequently ſwallowing nouriſhment, which act tears open the wounded parts, and cauſes inflammation in them, and produces ſuch a ſecretion of mucus as excites almoſt conſtant cough, increaſing the diſturbance of the wounded parts.

The introduction of a ſmall elaſtic catheter may be eaſily accompliſhed in the firſt inſtance, though not without difficulty, after

the ſenſibility of the parts has been increaſed by inflammation, and from the benefit I have ſeen derived from it I ſhould not heſitate to do it in all caſes of extenſive wounds of the throat.

SURGICAL OBSERVATIONS.

ON THE ILL CONSEQUENCES SOMETIMES SUCCEEDING TO VENÆSECTION.

THE public is much indebted to Mr. Hunter for a judicious account of the appearance and effects of the inflammation of the vein, which ſometimes ſucceeds to venæſection. The ill conſequences which occaſionally follow that operation are numerous and diſſimilar; and they have never I believe been clearly and collectively ſtated and explained. The caſes recorded of ſuch complaints are diſperſed in various periodical publications; and frequently, the nature of the diſeaſe appears not to have been underſtood by the perſon who relates its hiſtory. In proportion as I have ſeen more varieties of theſe diſeaſes, my own knowlege of them has

become more clear and ſimple; and as I believe, I can communicate uſeful information, I have ventured to offer to the public the following obſervations and opinions. I have been alſo incited to this taſk, becauſe the account in his Syſtem of Surgery, which Mr. Benj. Bell has given of theſe complaints, appears to me confuſed; and the practice recommended improper. I am hurt to cenſure the works of any author, but this either muſt be done, or injurious error muſt remain uncontradicted.

When from want of attention, or from other cauſes, the wound inflicted in venæſection does not ſpeedily unite, the motions of the arm occaſion attrition of its ſides againſt each other, and inflammation of the wounded, or contiguous parts, is likely to enſue. I ſhall give a brief account of theſe different complaints, in the order in which I believe they moſt frequently happen.

Of Inflammation of the Integuments, and ſubjacent cellular Subſtances.

The inflammation and ſuppuration of the cellular ſubſtance in which the vein lies, is the

the moſt frequent occurrence. Of this every ſurgeon muſt have ſeen repeated inſtances; they may alſo have remarked, that on the ſubſidence of this inflammation, the tube of the vein is free from induration: neither does the ſtate of any of the ſurrounding parts indicate their previous participation in the diſeaſe. The nature of every excited inflammation will vary as the cauſe which produced it, and the conſtitution of the patient ſhall determine; it will therefore be unneceſſary to particularly notice the varieties of its appearance. Sometimes the inflammation will be more indolent, and will produce a circumſcribed and ſlowly ſuppurating tumour. Sometimes it will be more diffuſed, partaking more of the nature of eryſipelas: and ſometimes its violence, and rapid termination, will evidently diſtinguiſh it to be a phlegmon.

If the lancet with which the patient was bled ſhould have been bad; if it lacerated rather than cut the parts through which it paſſed; if the conſtitution of the patient be irritable; and more particularly, if ſufficient attention be not paid to procure the union of the divided parts, but the motion of the

arm be allowed: the irritation, which the friction of the oppoſite edges of the wound muſt occaſion, will moſt probably excite inflammation. The treatment proper to be purſued in this complaint is manifeſt, and diſtinguiſhed by no peculiarity; I ſhall therefore poſtpone what I have to ſay on that ſubject, until I have noticed the other varieties of theſe diſeaſes.

Of Inflammation of the abſorbing Veſſels.

The next frequent complaint which I have ſeen is inflammation of the abſorbents: it however ſometimes accidentally happens, that one ſurgeon meets with many caſes of a ſimilar nature, ſo that were he to judge merely from his own obſervation, he might conclude that diſeaſe to be common, when the collected experience of others would determine it to be a rare occurrence. I am inclined to ſuſpect, that my obſervation has been thus partial, ſince Mr. Hunter has not publicly noticed this complaint. I think I cannot give a better hiſtory of the commencemencement, appearances, and event of this diſeaſe, than by relating three caſes, of the circum-

circumſtances of which I took an account. It is right, however, to mention, that I have ſeen two others, of which I took no minutes; and which I am unwilling to relate only from recollection.

CASE.

A lady was bled in the vena mediana baſilica; the wound did not heal, nor was ſufficient attention paid to preſerve the arm quiet. Eight days afterwards, I was conſulted, in conſequence of the patient being alarmed, by the appearance of two ſwellings; one was ſituated about the middle of the arm, over the large veſſels, the other on the forearm, about the mid ſpace between the elbow and wriſt, in the integuments above the flexor muſcles. The upper ſwelling meaſured rather more in circumference than an egg, the other was of ſmaller dimenſions; they were not very painful, they were moderately firm in their texture, and ſo exactly reſembled thoſe tumours which form round irritated lymphatics, that no doubt could be entertained of their nature. The orifice made by the lancet was not healed, the integuments for about one-

fourth

fourth of an inch ſurrounding it, were in a ſlight degree inflamed, and thickened. No induration of the venous tube could be diſtinguiſhed, either at this time, or after the ſubſidence of inflammation.

The account which I obtained from the patient, of the attack of this complaint, was, that the wound inflamed, became painful, and diſcharged matter; that the gentleman by whom ſhe was bled had dreſſed it with ſalve, but did not reſtrain her from uſing her arm; that about five days after the operation, ſhe had felt pains ſhooting from the orifice, in lines, up and down her arm, and upon preſſing in the courſe of this pain, its degree was increaſed. This account induced me to examine the arm attentively, and I could plainly feel two indurated abſorbents, leading to the ſuperior tumour, but could not perceive any extending to the lower one. The wounded part was dreſſed with mild ſalve; a bread and milk poultice was applied to both tumours, and the arm was ſupported by a ſling, and retained without motion or exertion. The integuments ſurrounding the orifice loſt their diſpoſition

to

to inflame, and the wound gradually healed; during five days, the tumours underwent no evident alteration; the poultice was changed to one of bread, water, and a ſolution of acetate of lead, under which they quickly diminiſhed and diſperſed.

CASE.

A man about 35 years of age, was admitted into St. Bartholomew's Hoſpital, under the care of Mr. Pott: he had been bled in the country, about a fortnight before his admiſſion; ſince that time he had been extremely ill, and was with difficulty conveyed to London. The ſtate in which he was admitted, I ſhall deſcribe: His whole arm was greatly ſwollen, the wound made by the lancet was not united, the parts immediately ſurrounding it did not ſeem to be affected by diſtinct inflammation; but partook of the general tumefaction. Two large abſceſſes had formed, one ſituated near the inner edge of the biceps muſcle, about the middle of the arm; and the other, on the inſide of the fore-arm. The patient told us that he had been bled, on account of a pain in his ſide; that the orifice, inſtead

of

of healing had feſtered, that he had for a time purſued his daily employment, notwithſtanding the pain which he ſuffered; that this, however, ſoon became too violent to be endured; the ſwelling and pain extended towards the armpit, where the glands became enlarged. Inflammation next attacked the forearm, and after ſuffering extreme pain and fever, theſe abſceſſes had formed, and ſince that time his illneſs and pain had in ſome degree abated. Mr. Pott opened both abſceſſes, and directed his whole arm to be covered with a poultice. The patient was kept in bed, and medicines likely to alleviate inflammation were preſcribed. In about four weeks, the arm was reduced nearly to its natural dimenſions. The orifice, through which he was bled, had united, and the wounds by which abſceſſes had been opened were nearly healed. The parts ſurrounding them, however, ſtill remained thickened, and alſo all the integuments on the inſide of the arm. In theſe thickened integuments, three-chord-like ſubſtances, evidently abſorbents, were to be diſtinguiſhed; they extended from the punctured part to the ſuperior abſceſs,

and again above this, two were continued even to the axilla. Two other indurated abſorbents alſo were extended from the punctured part to the inferior abſceſs. The punctured vein being attentively examined, was found to be a little thickened, both above and below the orifice; it had, however, no connection with theſe chord-like ſubſtances, which were ſuperficial, and their appearance, courſe, and every other circumſtance, clearly ſhewed them to be indurated abſorbents. The hardneſs of theſe veſſels, and of the integuments had much diminiſhed, and the patient had regained the ſtrength of his arm, before he was diſcharged from the hoſpital.

CASE.

A poor man was bled, in one of the bleeding-ſhops of this city. His operator dipped ſome rag in the blood which he had taken, applied it to the orifice, and bound it on the arm with a tape. The patient felt much pain in the wound, even from the time of the operation, and experienced much difficulty in moving his arm. As the rag ſtuck cloſely to the orifice, he was unwilling to remove

move it; however, on the third day, the violence of the pain induced him to take it off: he then found the parts ſurrounding the puncture inflamed and hardened. The patient had alſo ſuffered much pain, which extended towards the axilla, and one of the glands there was ſwollen. He anointed the arm with ſome ointment, but the pain ſo increaſed, that he could ſcarcely bear it to touch his ſide. The integuments about the middle of the arm were elevated by a tumour, which was painful when preſſed; the baſe of it was not circumſcribed, but was gradually loſt in the ſurrounding parts. In this ſituation he requeſted my advice. I gave him ſome mild ſalve to dreſs the wounded part; I directed him to keep conſtantly applied to the integuments, covering the inflamed lymphatics, ſome cloths wetted with the cold ſolution of acetate of lead, to keep his arm completely ſupported by a ſling, and to take ſome gently purgative medicine.

This he did, the inflammation gradually ſubſided; and the wound made by the lancet healed.

It might be ſuſpected, that in the caſes which have been related, the lancet which was employed was envenomed; and that the abſorption of virulent matter was the exciting cauſe of inflammation: the deſcent of the diſeaſe to the inferior abſorbents, in the two firſt caſes, oppoſes that opinion; and it is further invalidated by the obſervations which I ſhall proceed to offer. Since the ſtructure and functions of the abſorbing veſſels have become ſo well known, the attention of medical practitioners has been directed to their diſeaſes, and much novel information has been acquired. That which relates to the preſent ſubject, I ſhall endeavour briefly to ſtate. Phyſiology ſhews to us, that the abſorbents poſſeſs much ſenſibility. Practical obſervation ſtrengthens this opinion: the celerity with which theſe veſſels inflame, when they have imbibed noxious matter, and the pain which is ſuffered in conſequence, ſufficiently prove this circumſtance. Their frequent inflammation, in conſequence of diſturbance of the general conſtitution, may be however regarded as an additional argument. A common cold pro-

duces

duces a painful tumefaction of the abſorbent glands; and in ſome fevers, theſe parts are particularly obnoxious to diſeaſe.

There is another circumſtance, which deſerves attention; when the abſorbents become inflamed, they quickly communicate this diſeaſe to the cellular ſubſtance, by which they are ſurrounded. Moſt ſurgeons have remarked theſe veſſels when indurated, to appear like ſmall chords, perhaps of one-eighth of an inch in diameter; this ſubſtance is ſurely not the ſlender ſides of the veſſel thus ſuddenly augmented in bulk, but an induration of the ſurrounding cellular ſubſtance, to which the irritated veſſel has communicated inflammation. The formation of a common bubo is another inſtance of the power, which theſe veſſels poſſeſs, of involving the ſurrounding parts in their diſeaſe; at firſt one or two glands are found to be inflamed, but they ſoon become undiſtinguiſhable, in the general inflammation of the ſurrounding ſubſtance. This inflammation either is diſperſed, or it terminates in ſuppuration: and on the ſubſidence of the general

general tumour, the originally diſeaſed glands again become diſtinguiſhable.

I now wiſh to ſhew, that their inflammation, in conſequence of local injury, is deducible from two cauſes: one, the abſorption of acrid matter; and the other, the effect of irritation of the divided tube. Of the inflammation ariſing from the abſorption of morbific matter, every one is apprized; but that which is the effect of irritation, has been leſs remarked.

When virulent matter is taken up by the abſorbents, it is generally conveyed to the next abſorbent gland; where, its progreſs being retarded, its ſtimulating properties induce inflammation; and frequently no evident diſeaſe of the veſſel through which it has paſſed can be diſtinguiſhed. The abſorption of ſyphilitic and cancerous matter affords frequent proofs of this aſſertion. There are, indeed, ſome poiſons ſo acrid, that the veſſel which admits them inflames throughout its whole extent; yet ſtill the glands are principally affected. When inflammation of

the abſorbents happens in conſequence of irritation, that part of the veſſel neareſt the irritating cauſe generally ſuffers moſt: whilſt the glands, being remotely ſituated, partake leſs of the inflammation. The inflammation is alſo of a different kind, and, I think, can be diſcriminated: when it ariſes from poiſon arreſted in the part, the gland is firſt indurated, and a phlegmonoid inflammation follows; but if irritation be the cauſe of its enlargement, the tumefaction more ſpeedily takes place, the gland is more painful in its early ſtate, but has leſs tendency to ſuppurate; the enlargement more reſembles that of the lymphatic glands of the neck, which is the conſequence of taking cold.

When the inflammation ariſes from irritation, it will be expected, and I believe it will be found, that the continuity of the veſſel will be apparent: but it does not follow, that the greateſt diſeaſe will be immediately adjoining that part which has ſuſtained the injury. The caſes which have been related ſhew that inflammatory tumours often form in the middle of the arm and forearm,

when the wound of the abſorbent is at the bend of the elbow. Were it neceſſary, I could relate ſeveral caſes where ſuch tumours were formed from injuries done to the fingers, or in conſequence of fretting ulcers of the leg. When they ariſe from the latter cauſe, it might be ſuppoſed that ſome acrid matter had been imbibed; yet, I think, in that caſe, we ſhould find the glands the principal ſeat of the diſeaſe. It has been proved, that the abſorbents frequently inflame far below the part where the veſſel has ſuſtained an injury, and where the inflammation could not be occaſioned by abſorption. Theſe obſervations I thought it right to inſert, to illuſtrate the caſes which have been related; and alſo to excite more general attention to the diſeaſes of theſe important veſſels.

Of Inflammation of the Vein.

After the account which Mr. Hunter has given of the inflammation of the vein, (in the Medical and Chirurgical Tranſactions) no additional information from me will be expected, nor is it perhaps required. If the wound of the vein does not unite, an inflam-

mation of that veſſel will probably follow; which will vary in its degree, in its extent, and in the courſe which it purſues. One degree of inflammation may occaſion only a ſlight thickening of the venous tube, and an adheſion of its ſides; more violent inflammation may be attended with the formation of more limited, or more extenſive abceſſes; the matter of which may ſometimes mix itſelf with the circulating fluids, and produce dangerous conſequences: or it may be circumſcribed by the thickening and adheſion of the ſurrounding parts, and then like a common abſceſs make its way to the ſurface. When the inflammation of the venous tube is extenſive, it is, indeed, very probable, that much ſympathetic fever will enſue; not merely from the excitement which inflammation uſually produces; but alſo, becauſe irritation will be continued along the membranous lining of the vein to the heart. If, however, the effect of the excited inflammation has luckily been to produce adheſion of the ſides of the vein, at ſome little diſtance from the wounded part, the inflammation will here ceaſe; its further tranſmiſſion will

by

by the adheſion be prevented. The effect of adheſion of membranes, in preventing the extenſion of inflammation along their ſurfaces, is frequently apparent, and has been well explained by Mr. Hunter on another occaſion. In one caſe, Mr. Hunter applied a compreſs on the inflamed vein, above the wounded part, and he thought that he ſucceeded in producing adheſion, for the inflammation extended no further. In thoſe caſes, where the inflammation does not continue equally in both directions, but deſcends along the courſe of the vein, it is probable that its extenſion in the other direction is prevented by adheſion.

I have thus briefly and imperfectly tranſcribed Mr. Hunter's opinion, that the preſent Eſſay might not be altogether deficient in information relative to this ſubject. I have ſeen but three caſes where an inflammation of the vein ſucceeded to venæſection; they, however, confirm the foregoing obſervations. The vein did not in either caſe evidently ſuppurate. In the firſt, about three inches of the tube inflamed both above and

below the orifice; it was accompanied with much tumour, redneſs, and pain of the covering integuments, and much fever, the pulſe was rapid, and the tongue furred. After the inflammation had terminated, and all tumour had ſubſided, the vein did not ſwell when compreſſion was made above the diſeaſed part. The ſecond caſe was of a ſimilar nature, but leſs in degree. In the third caſe, the inflammation was not continued in the courſe of the vein towards the heart, but extended as low as the wriſt. I have no doubt, but that adheſion of the ſides of the vein was the cauſe which prevented the extenſion of the diſeaſe, equally in both directions. The nature of a diſeaſe being known, the treatment is commonly evident. The diminution of inflammation in a vein is to be attempted by the ſame general means as in other parts. As the membranous lining of the vein is continued to the heart, and as inflammation very ſpeedily ſpreads along ſuch ſurfaces, unleſs prevented by adheſion; the application of a compreſs at ſome diſtance from the punctured part, in order to unite the inflamed ſides of

the

the vein, appears to be particularly judicious.

I am induced to ſuppoſe, a caſe may occur in which the vein may ſuppurate, and in which a total diviſion of the tube may be proper practice; not merely to obviate the extenſion of the local diſeaſe, but to prevent the collected pus from mixing with the circulating fluids.

Inflammation of the Faſcia of the Forearm.

As far as my obſervation has extended, the next frequent ill conſequence which ſucceeds to venæſection performed in the arm, is an inflammation of the ſubjacent faſcia. When this complaint occurs, it perhaps ariſes not merely from the contiguity of the faſcia to the punctured and irritated parts, but it is probable that it was wounded by the lancet in the operation. I hope that the caſes which I ſhall relate, and thoſe to which I can refer the reader, will convey ſufficient information of the ſymptoms and effects of this diſeaſe.

CASE.

A man, aged 40, was admitted into St. Bartholomew's Hoſpital, under the care of Mr. Pott: he had much pain and difficulty of moving his arm, in conſequence of inflammation ſucceeding to phlebotomy. The wound inflicted in the operation was not healed; the ſurrounding integuments were not much inflamed, but he could neither extend his forearm nor his fingers without great pain. The integuments of the forearm were affected with a kind of eryſipelas; when ſlightly touched, they were not very painful, but when more forcibly compreſſed, ſo as to affect the inferior parts, much pain was ſuffered. The patient complained of pain, extending towards the axilla, and alſo towards the acromion, but no tumour of the arm in either direction was perceptible. A poultice was applied to the arm, opium was given at night, and aperient medicines were occaſionally preſcribed. The pain in the arm increaſed, and it was attended by much fever. After a week had elapſed, a ſmall and ſuperficial collection of matter took

took place a little below the internal condyle; this being opened, but little pus was diſcharged, and ſcarcely any decreaſe of tumour or pain followed. About ten days afterwards, a fluctuation of matter was diſtinguiſhed below the external condyle; an inciſion was here alſo made, which penetrated the faſcia of the forearm. Much matter immediately guſhed from the wound, the ſwelling greatly ſubſided, and the future ſufferings of the patient were comparatively of little conſequence. This opening was, however, inadequate to the complete diſcharge of the matter, which had probably been originally formed beneath the faſcia in the courſe of the ulna; its pointing at the upper part of the arm, depended on the tenuity and comparative non-reſiſtance of the faſcia at that part. The collected pus deſcended to the lower part of the detached faſcia, a dependent opening for its diſcharge became neceſſary, after which the patient recovered, without any circumſtance being obſerved worth relating. The caſe which I have juſt related, and that in which two large abſceſſes had formed, attended with in-

durated abſorbents, occurred nearly at the ſame time at the hoſpital, and they both fell under the care of Mr. Pott. In the lectures of that eminent ſurgeon, I had heard dangerous and fatal conſequences attributed to the injury of a nerve in venæſection, but I learned no other diſtinction of caſes. Theſe caſes firſt excited my attention to this ſubject, and as far as I know, ſuch diſcrimination as that which I now offer to the public has not been attempted.

I have ſeen one other caſe of inflamed faſcia, but I neglected to take notes of the ſymptoms; I therefore can only ſay, that at the time they appeared ſo clearly to characterize it, that I entertain no doubt of its nature. No inflammation of the vein or abſorbents appeared, the integuments were not much affected, but the patient complained that his arm felt as if bound or compreſſed, and that he ſuffered much pain if he attempted to extend it. The inflammation ſubſided without the formation of matter; and after much time had elapſed, the pliability of the arm was gradually regained. I the leſs regret

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my deficiency of experience on this ſubject, as I can refer the reader to the ſecond volume of the Medical Communications; he will there meet with two caſes, which I believe he will acknowlege to be inflammations of the faſcia; attended, however, with ſome peculiarity of ſymptoms.

The firſt caſe is related by Mr. Colby of Dorrington, in Devonſhire; the other by Mr. Watſon. The inflammation of the faſcia, in the latter caſe, was followed by a permanent contraction of the forearm. From this caſe, I think we have acquired uſeful knowlege: ſhould a ſimilar contraction of the forearm from a tenſe ſtate of the faſcia in future occur, it ſeems reaſonable to ſuppoſe, that it may be completely relieved by detaching the faſcia from the tendon of the biceps, to which it is naturally connected. This, I conclude, was the cauſe of the perfect reſtoration of free motion, in the caſe firſt related by Mr. Watſon. On this ſubject I will not enlarge, but ſubmit the opinion to the judgment of the reader.

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The treatment of an inflamed faſcia, the conſequence of venæſection, has in it no peculiarity. Doubtleſs, thoſe general means which are reductive of inflammation ſhould be employed. Of local treatment, quietude of the limb, and a ſtate of relaxation of the inflamed part, will tend to leſſen diſeaſe; but as ſoon as ſome abatement of inflammation is procured, the extenſion of the forearm and fingers ought to be attempted, and daily performed, to obviate that contraction which might otherwiſe enſue.

Of the ill Conſequences ſucceeding to a wounded Nerve.

In order to complete, in ſome degree, this Eſſay, I have attempted to diſcuſs the preſent ſubject; though, I acknowlege, I have no practical information to communicate. I believe theſe accidents to be of rare occurrence, ſince thoſe of my medical friends, to whom I have applied for information, had never ſeen a caſe, the ſymptoms which they could deciſively pronounce to ariſe merely from an injured nerve. Mr. Pott in his lectures uſed

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to ſay, that he had ſeen two caſes in which the patients had ſuffered diſtracting pain, which was followed by convulſions, and other ſymptoms which could only be aſcribed to nervous irritation. He attributed theſe effects to a partial diviſion of the nerve, and recommended its total diviſion as a probable remedy. Dr. Monro, I am informed, relates ſimilar caſes, in which ſuch treatment has proved ſucceſsful. I rely on the diſcrimination of theſe eminent men, yet I feel convinced, that the greater number of ſurgeons have been deficient in diſtinguiſhing theſe diſeaſes. A wounded nerve, acting as a cauſe, muſt always produce ſpecific and characteriſtic ſymptoms and effects. I need not inſiſt on the neceſſity of diſcrimination in theſe complaints; thoſe who have deſcribed the ſymptoms reſulting from an injured nerve, have repreſented them as at all times imminently hazardous, and frequently fatal. An operation is here demanded; from it we have reaſon to expect immediate mitigation of the patient's ſufferings, and his future perfect reſtoration. Yet this operation in any other

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of the complaints before treated of would be unneceſſary, and perhaps detrimental.

I ſhall arrange what I have to ſay on this ſubject in the following manner: Firſt, I ſhall explain what nerves are ſubject to injury; ſecondly, I ſhall inveſtigate what are the effects likely to be produced by ſuch an accident; and thirdly, I ſhall enquire, what means are moſt likely to afford relief.

Firſt, The two cutaneous nerves are thoſe which are expoſed to injury. I diſſected them in ſeveral ſubjects with attention, and found ſome irregularity in their diſtribution; moſt frequently all their branches paſs beneath the veins, at the bend of the arm; but ſometimes, although the principal rami ſtill go beneath theſe veſſels, many ſmall filaments are detached before them, which it is impoſſible to avoid wounding in phlebotomy. As I believe many ſurgeons retain but an indiſtinct remembrance of theſe nerves, and as I have never ſeen them accurately depicted, in any anatomical book, I thought I ſhould

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do an acceptable ſervice, by giving an engraving of them. I therefore made two drawings of them: one exhibiting their moſt ſimple courſe; the other, their moſt complicated diſtribution. Theſe, I couclude, are the only nerves liable to injury: it may be ſuſpected, that the median nerve might occaſionally be wounded; but its ſituation, I think, makes this opinion improbable. If, however, a doubt ſhould be entertained on this ſubject, an attention to ſymptoms will ſoon diſpel it; when a nerve is irritated at any part between its origin and termination, a ſenſation is felt as if ſome injury were done to the parts which it ſupplies. If, therefore, the cutaneous nerves were injured, the integuments of the forearm would ſeem to ſuffer pain; but if the median nerve was wounded, the thumb and two next fingers would be affected with pain.

By referring to the plate, it will be ſeen, that if the patient be bled in the vena mediana baſilica, the branches of the internal cutaneous nerve are expoſed to injury; or, if the vena mediana cephalica be opened, the branches

branches of the external cutaneous nerve may be wounded.

Secondly, I wiſh to enquire what are the ills likely to ariſe from a wounded nerve. — Whoever reflects on the wonderful minuteneſs of the nervous fibrils, and conſiders their perfect diſtinctneſs from each other, although connected by a common covering of cellular ſubſtance, will ſcarcely imagine a partial diviſion of a nervous fibril. If I ſought to expreſs myſelf ſtrictly on this ſubject, I ſhould ſpeak of a partial diviſion of a packet of nerves. But I ſhall uſe the commonly adopted language, and call thoſe chords nerves, which are really compoſed of multitudes of ſeparate nerves. I firſt beg leave to examine the opinion which has prevailed, of a nerve being partially divided. Admitting that a nerve be partially divided, would it not, like a tendon, or any other ſubſtance, unite? I think there can be no doubt but that it would: I am induced to this opinion by conſidering, that nerves of equal ſize with the cutaneous nerves of the arm are diſtributed in conſiderable numbers throughout

out the body. In the many operations performed, and in the wounds daily occurring, I think it would be ſtrange if a partial diviſion of a nerve ſhould not happen, yet no peculiar ſymptoms are obſerved uſually to enſue. The pain which ſome people ſuffer from bleeding, in my opinion, indicates an injury done to a nerve. If the reader refers to the plate, he will perceive, that in ſome caſes it is impoſſible to avoid dividing branches of nerves in phlebotomy, as ſometimes they paſs before the vein. Theſe branches are ſo expoſed, that I ſhould be ſurpriſed if they did not many times ſuffer a partial diviſion. Surely, however, a half divided nerve would unite without cauſing a general derangement of the nervous ſyſtem. Yet it is poſſible that an inflammation of the nerve may accidentally enſue, which would be aggravated, if it were kept tenſe, in conſequence of imperfect diviſion. In the caſes related by Mr. Pott and Dr. Monro, I believe, that ſome days elapſed after the infliction of the injury, before any alarming derangement of the nervous ſyſtem enſued. Inflammation of

the ſurrounding parts alſo appeared. Theſe obſervations make it evident to me, that the diſeaſe conſiſts in inflammation of the injured nerve, in common with the other wounded parts; and this inflammation, I can conceive, to happen with or without a total diviſion of the nervous chord. I ſhould conſider a caſe of inflamed nerve as an object of great curioſity; every one, I think, will admit, that it is likely to communicate dreadful irritation to the ſenſorium; and every one will perceive, that a cure will probably ariſe from intercepting its communication with that important part.

Thirdly, I proceed to enquire what is the moſt probable method of relieving the effects ariſing from an inflamed nerve. The general opinion is, that the nerve is only partially divided, and that a total diviſion would free the patient from a continuance of his ſufferings. Mr. Pott ſuppoſed that the wounded nerve was ſituated at one or the other extremity of the wound which had been made in the vein; he therefore propoſed, to divide it totally, by enlarging a little the original orifice.

It

It is however poſſible, that the point of the lancet might injure a nerve lying beneath the vein. This will be eaſily underſtood by referring to the plate. Mr. Bell directs an extenſive tranſverſe inciſion, to be made through the original wound; but if the injured nerve be ſituated at the upper extremity of the orifice, it will remain unaffected by this operation. Mr. Bell alſo adviſes the inciſion to be continued to the bone; but this appears to me dangerous and unneceſſary.

If the injured nerve be inflamed, I think it doubtful, whether even a total diviſion of it, at the inflamed part, would effectually relieve the general nervous irritation which the diſeaſe has occaſioned. To intercept the communication of the inflamed nerve with the ſenſorium, does however promiſe perfect relief. This intention can only be accompliſhed, by making a tranſverſe inciſion above the orifice in the vein. The inciſion need not be very extenſive, for the injured nerve muſt lie within the limits of the original orifice, and it need only deſcend as low as the faſcia of the fore-arm; for all the fila-

ments of the cutaneous nerves lie above this fascia. The vein which had been opened, and some filaments of the cutaneous nerves, are all the parts of consequence which will be divided in this operation. The proximity of the division of the nerve to the vein, must be regulated by the supposed extent of the disease. However, as the extent of the inflammation of the nerve is uncertain, I submit it to the consideration of surgeons, whether it may not be advisable, in some cases, to divide either of the cutaneous nerves, still more remotely from the injured nerve.

I find little difficulty in detecting the trunks of these nerves in the dead subject, and I should suppose but little would occur in the living state; for the compression of the tourniquet, would prevent any obscurity which hæmorrhage might cause.

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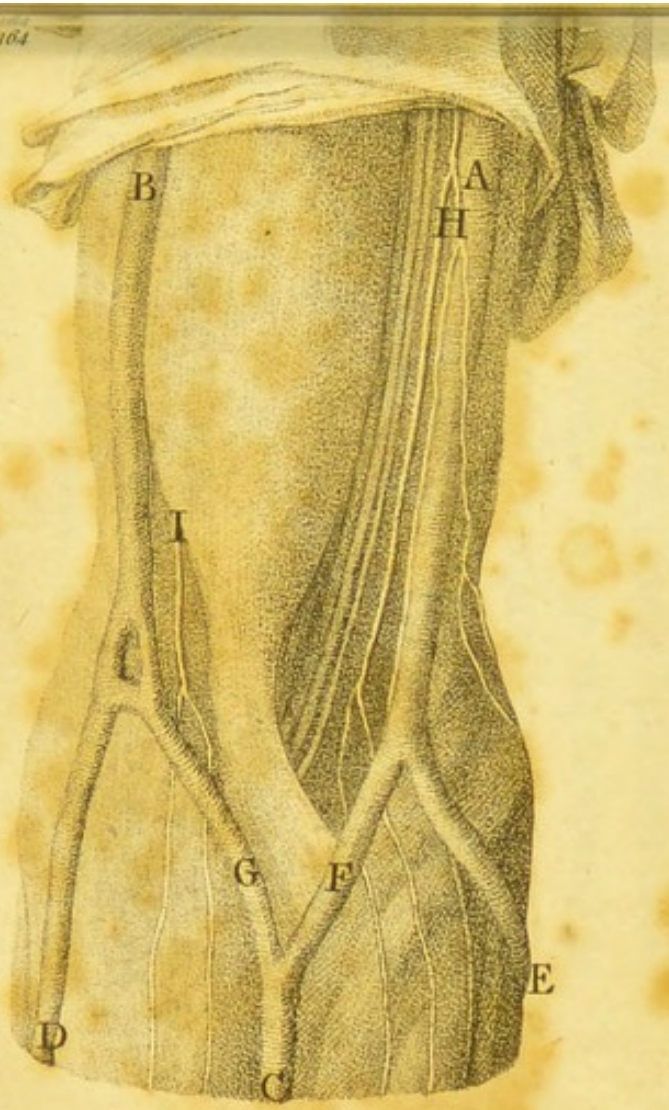

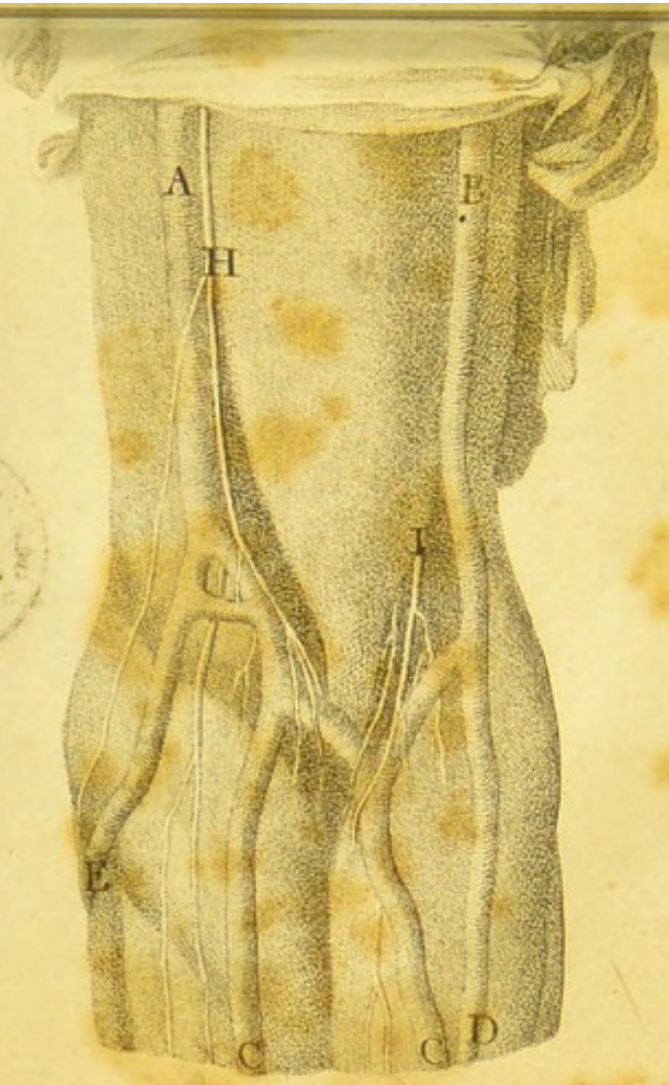

Explanation of the Plate.

A Vena basilica.
B Vena cephalica.
C Vena mediana.
D Vena radialis.
E Vena cubitalis.
F Vena mediana basilica.
G Vena mediana cephalica.
H Nervus cutaneus internus.
I Nervus cutaneus externus.

General Obſervations on the ill Conſequences ſometimes ſucceeding to Venæſection.

I think it very probable that theſe diſeaſes would leſs frequently happen, did not the ſituation of the veins uſually opened contribute to their occurrence. The common offices of life ſo conſtantly demand the employment of the arm, that its motion becomes almoſt inevitable. Unleſs the orifice made by the lancet has been attentively cloſed; the effect of this motion will be to ſeparate the edges of the wound from each other, and to prevent their union by the firſt intention. Some ſlight degree of inflammation will enſue; the continuance of motion of the arm cauſes a friction of the inflamed ſurfaces againſt each other, and thus the diſeaſe is increaſed. Under theſe circumſtances, if the conſtitution of the patient be irritable, the inflammation will extend itſelf, although it may ſtill be confined to the cellular ſubſtance, and integuments; or, perhaps, it may be tranſmitted to that part which has ſuſtained moſt injury in the

the operation. The vein, the abſorbents, the faſcia, or the nerve, may in that caſe ſuffer peculiar diſorder. Although the injury done by a bad lancet may contribute to the production of diſeaſe, yet I think it probable, that a patient improperly bled, would ſuſtain no injury, if the treatment of the wound was judicious; whilſt another, on whom the operation had been dexterouſly and well performed, would be liable to theſe ill conſequences, if the proper attention to unite the wound was neglected.

In the account given of theſe diſeaſes, they have been repreſented as they occurred ſeparately; doubtleſs, in ſome caſes, they may be combined.

The principal curative indications appear to be, to mitigate the inflammation about the orifice, and to preſerve the arm ſupported in a motionleſs ſtate. I need not enlarge this account, by deſcribing the modes of appeaſing inflammation and irritation, as they are well known to every ſurgeon.

SURGICAL OBSERVATIONS.

ON EMPHYSEMA.

MUCH praiſe is, in my opinion, due to Mr. John Bell, for the clear and ſpirited deſcription which he has given of the ſtate of the lungs in one kind of emphyſema. The following caſe is related, to corroborate his remarks, and alſo to lead to others which I am deſirous of offering to the public on the ſubject of emphyſema in general.

CASE.

A poor woman, about forty years of age, was run over by a mail-coach, one of the wheels of which paſſed lengthwiſe over her back, and fractured ſeveral of her ribs on the right ſide. When brought to the hoſpital, ſhe breathed with much difficulty, and an

emphyſema of the integuments had taken place. An opening was made through the ſkin to let out the air; and the emphyſema did not afterwards ſpread. The patient was bled largely; but the difficulty of breathing had increaſed to the third day, at which time I firſt ſaw her, in company with Mr. Harvey, under whoſe care ſhe was. She had paſſed the preceding night without the leaſt ſleep, and breathed at this time with extreme difficulty; indeed it ſeemed as if ſhe could not long continue the labour of ſuch imperfect and diſtreſsful reſpiration. It was ſuppoſed that one ſide of the thorax was filled with air; and as it was ſuſpected that the oppoſite lung might be oppreſſed by this cauſe, it was agreed to extract the air from the right ſide of the cheſt. With this view, Mr. Harvey made an opening into the thorax, in the following manner: He firſt made an inciſion about two inches in length, through the integuments, near the middle of the ſeventh rib, and oppoſite to its lower edge. He then drew the ſkin upwards, ſo as to expoſe the intercoſtal muſcles which connect the upper edge of this rib to the one above it. Theſe

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he cautiouſly divided, as he next did the pleura. At the time this was effected, I believe the patient was in the act of expiration; for a blaſt of air evidently iſſued from the thorax; and afterwards, whilſt the integuments were kept retracted, and the aperture in the pleura conſequently uncovered, the external air continued to ruſh in during the enlargement of the thorax, and to be forced out again during its contraction. But when the divided ſkin was allowed to deſcend to its natural ſituation, and thus the opening of the pleura was covered, no farther paſſage of air took place; and all that could then be perceived, was a depreſſion of the integuments oppoſite to the aperture in the thorax, occaſioned by the preſſure of the atmoſphere during the enlargement of that cavity. I had got ready a large injecting ſyringe, and introducing the pipe into the eavity of the cheſt, I drew up the piſton, and thus exhauſted the air, till I found I was ſtopped from proceeding by the lung which had riſen up and applied itſelf to the mouth of the ſyringe. The ſkin was then immediately brought down over the aperture in the thorax, and ſerved like a valve,

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to prevent the further ingreſs of air into that cavity. About ten ounces meaſure of air might probably have been extracted by the ſyringe. As this quantity of air could have occupied but a ſmall ſpace when compared with the ſize of the thorax, it was probable that the back part of that cavity was filled with fluids.—Nothing further, however, was done at this time; and ſhortly after the poor woman fell aſleep, and breathed with comparative eaſe for nearly ſix hours. But the difficulty of breathing again increaſed during the night, and at noon on the following day, was nearly as great as ever. Mr. Harvey and I agreed, however, that it would not be wrong to inſpect the thorax, to ſee if the lung had collapſed, or if we could by any means afford relief to the patient. Upon ſeparating the adheſion which had formed between the ſkin and ſubjacent parts, and introducing a finger through the aperture in the pleura, we found the lung adhering to the inſide of that membrane; but upon ſlightly varying the patient's poſture, ſome turbid bloody ſerum flowed from beneath the lung. When we had diſcharged as much of this fluid as

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we conveniently could, the external wound was closed; but the patient continued to breathe with increasing difficulty till about midnight, when she died.

Dissection.

On examining the body, no air was discovered in the cavity of the chest. The right lung was partially inflated, and the anterior part of it closely adhering to the pleura costalis, as far as the place where the opening had been made. About three pints of bloody fluid lay in the hollow of the ribs posteriorly, and about half filled the cavity of the chest on that side; the surface of it being nearly on a level with the opening which had been made to exhaust the air. Upon the surface of this fluid, the half-inflated lung seemed to float. — I looked for the place where the lung had been wounded by the injury; but cannot say that I could perceive it. It was, however, certainly healed; for the lung bore inflation without letting the air escape from it. The pleura was covered with coagulated lymph. The cells of the lung contained a quantity of fluid, and the whole substance of it was

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of a livid colour. — The cells of the lung of the oppoſite ſide of the cheſt alſo contained more than their ordinary quantity of fluid; its veſſels were turgid, and it was hard and thickened in ſeveral places; which was probably owing to former diſeaſe. There was likewiſe more than a uſual quantity of turbid ſerum in the left cavity of the thorax.

It ſeems to me highly probable, that there are two ſtates of the lungs in emphyſema, one of which, indeed, can rarely be proved by examination, ſince the patients in general do well. I have, however, met with inſtances in which patients affected with emphyſema from a wounded lung, died of other injury, and thus been able to aſcertain that the lung had not collapſed. I once alſo met with a proof of this fact in a patient who ſurvived, and I will relate the circumſtances of the caſe.

CASE.

Mr. Crowther requeſted me to ſee a poor man who was brought into a work-houſe with fractured ribs, accompanied with a

great degree of emphyſema. The integuments covering the upper part of the left ſide of the thorax and neck, were elevated to a great degree by air that ſeemed confined in one cavity, and not diffuſed in the interſtices of the cellular ſubſtance. The integuments of the face were alſo conſiderably inflated. The pulſe was very frequent and ſmall, and reſpiration quick and difficult. The extremities were cold. All theſe circumſtances had taken place ſo rapidly, and were apparently increaſing with ſo much celerity, that I thought it right, for reaſons which will be mentioned afterwards, to make an opening into the cavity of the thorax which I accordingly did, between the 7th and 8th ribs, where the digitations of the ſerratus anticus muſcle meet thoſe of the external oblique. The external wound was made in the manner deſcribed in the foregoing caſe. The lung was in contact with the ſides of the cheſt, nor did it recede when expoſed. Should ſuch an occurrence ever take place, a ſurgeon has the means of preventing its happening to any injurious degree, by inſtantly cloſing the wound. We next made a punc-

a puncture through the diſtended integuments on the front of the cheſt, about oppoſite to the collar-bone. A blaſt of air eſcaped, and they ſubſided to their original level. The diffuſed air was expreſſed in ſome degree from the integuments of the face and neck through the ſame wound. A bandage was now applied round the walls of the cheſt, ſo as to prevent their motion and the eſcape of air into the cellular ſubſtance, and the patient was afterwards bled. No more emphyſema occurred, and the patient did as well as in a caſe where the ribs are merely broken, and the lungs uninjured. I cannot ſatisfactorily account for the great quickneſs and difficulty of reſpiration that took place in this caſe, except by attributing it to the agitation of the patient's mind, alarmed by the inflation of his neck and face.

I have ſeen ſo many caſes of emphyſema, attended with very little difficulty of breathing, or other inconvenience, indeed, proceeding in a manner ſo like caſes of fractured ribs

ribs unaccompanied with wounds of the lungs, that I cannot ſuppoſe patients were in theſe caſes reduced to the neceſſity of breathing with one lung only. Theſe patients indeed were all treated in the manner recommended and practiſed by Sir William Blizard. Obſerving the great pain and irritation which the conſtant motion of the fractured ribs occaſioned, he was induced to diſregard the emphyſema, and to confine the motion of the ribs by a tight bandage, in the ſame manner as when the lungs are uninjured: afterwards the patients were largely bled, and other evacuations were freely made. This practice he has ſince continued with general ſucceſs. The preſſure of the bandage in general prevents the air from eſcaping out of the wounded lung, and pervading the cellular ſubſtance. It will, perhaps, appear probable to many ſurgeons, that, for this very reaſon, the air will be likely to inſinuate itſelf between the two pleuræ, and thus occaſion a collapſe of the lung. I do not, however, ſee any good reaſon for ſuch a ſuppoſition. The two pleuræ remain in their natural ſtate of contact; and there is no

ſpace for the air to paſs between them. So frequently alſo are there adheſions between the ſurface of the lung and the ſides of the thorax, that I think, in ſome of the caſes of emphyſema which I have ſeen, this circumſtance muſt have occurred, and that if the lungs had receded from the ſides of the thorax, the ſymptoms would have indicated the laceration or ſtretching of theſe adheſions.

An idea has generally prevailed among ſurgeons, that if the pleura coſtalis were divided in the living ſubject, the lung would immediately collapſe, as it is uſually found to do in the dead one. But M. Bremond * has ſhewn by experiments, that not only when an opening is made into the cavity of the thorax, but even when ſome of the ribs are removed, the lungs ſtill occupy their natural ſituation, and are even thruſt up into the opening during expiration. Mr. Norris has alſo lately ſhewn, by experiments undertaken for this purpoſe, as well as by obſervations on the effects of accidents, that frequently the lungs do not collapſe when

* Memoirs de l'Acad. des Sciences, 1739.

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the cavity of the cheſt is expoſed in the living animal *; and I have alſo had occaſion to obſerve, on dividing the pleura coſtalis in a caſe of ſuppoſed hydrothorax (in which, however, no water was found), that the expoſed lung did not collapſe; a circumſtance which, I think, ought to encourage us to a more frequent performance of ſuch an operation. In other experiments, however, the lungs have been known to collapſe; and the circumſtances, on which either of theſe effects depends, are not perhaps well underſtood.

For theſe reaſons, I believe, that in moſt caſes of emphyſema ſucceeding to broken ribs, preſſure by bandage not only hinders the air from diffuſing itſelf through the cellular ſubſtance, but ſerves to prevent it from eſcaping out of the wounded lung, and of courſe facilitates the healing of the wound, which would be prevented by the conſtant tranſmiſſion of air. Its early application, therefore, will often prevent a very troubleſome ſymptom, whilſt, at the ſame time,

* Memoirs of the Medical Society of London, vol. iv. p. 440.

by keeping the fractured bones from motion, it greatly leſſens the ſufferings of the patient.

In ſome caſes where the lungs are wounded by the ribs, the air does undoubtedly get into the cavity of the thorax, as happened in the caſe of the poor woman already mentioned, and as I have ſeen in other inſtances. When the air paſſes from the wounded lung into the cavity of the cheſt, and the lung becomes in conſequence collapſed, ſtill the ſymptoms and progreſs of the complaint will differ from the effect of circumſtances which have not been much attended to. When the wound in the ſides of the thorax allows of the expulſion of air from that cavity during expiration, and does not admit air during inſpiration, it is not to be ſuppoſed that the wound of the lung can heal; for the cavity of the thorax muſt, under theſe circumſtances, be filled from the wounded lung every time that it is enlarged during inſpiration.

But this ſtate of circumſtances, which is ſo particularly injurious, and which uſually takes place when the lung has collapſed in the

the manner deſcribed, it is the buſineſs of the ſurgeon to remedy: and it may be accompliſhed in two ways; Firſt, by preventing the eſcape of the air from the cavity of the cheſt, in which caſe the neceſſity of its being filled from the wounded lung will, in a great meaſure, be done away. And as I know ſurgeons have apprehended, that if an outlet was not given to air from the cavity of the cheſt, the oppoſite lung might become oppreſſed, I beg them to reflect a little on the ſtate of reſpiration under theſe circumſtances.

To examine this ſubject, let us ſuppoſe the thorax expanded, and one of its cavities filled with air, at which time the patient attempts to make an expiration; what will be the effect? The air cannot return through the wound in the lungs; and we have ſuppoſed that it cannot eſcape through that in the pleura coſtalis. The muſcles of reſpiration are unable then to produce any conſiderable change in the dimenſions of the cavity, without an exertion productive of pain, which it is not probable that they will make; the in-

active diaphragm will not be thruſt up into the hypochondrium as in natural expiration, and the ribs will remain nearly ſtationary; but in proportion to the degree of the expiratory effort that is made, the air may be condenſed, and the mediaſtinum thruſt to the oppoſite ſide of the cheſt. But no injury will ariſe from this preſſure, neither can it happen in any great degree; for both ſides of the cheſt being diminiſhed at the ſame time, a ſlight compreſſion of the oppoſite lung cannot be detrimental, ſince it helps to expreſs the air from it, — the very effect which is now required; and as that lung is preſſed inwards by the ſides of the thorax, it will counteract any great preſſure made on the mediaſtinum. Upon inſpiration taking place, the condenſed air will expand and fill the enlarged cavity, and the mediaſtinum will regain its natural ſituation; ſo that the function of the ſound lung is ſcarcely, if at all, impeded by the compreſſion which takes place on the oppoſite ſide of the cheſt.

In whatever ſtate the lungs happen to be when they are wounded, a bandage, if it can be

be borne, ſeems therefore to me extremely uſeful. By means of it, the pain and irritation, which the motion of the fractured ribs muſt otherwiſe occaſion, are, in a great meaſure, or entirely, prevented. In that ſtate of the lungs which I have firſt deſcribed, the preſſure of a bandage prevents emphyſema, and does no harm; in the other, it not only prevents emphyſema, but does good, by keeping the collapſed lung at reſt, and thereby free from the neceſſity of conſtantly tranſmitting air. Patients, however, will not always be able to wear a bandage when one lung is collapſed (particularly if any previous diſeaſe has exiſted in the other), as it equally confines the motion of the ribs on both ſides, and as every poſſible enlargement of the cheſt becomes neceſſary for the due admiſſion of air into the lung which ſtill executes its functions. Under theſe circumſtances, if the emphyſema continues (and its continuance muſt always denote that the wound in the lung is not cloſed), I ſhould eſteem it the beſt practice to make a ſmall opening into the cheſt, ſo that the external air might have free communication with that

cavity; and then the injured lung muſt remain motionleſs till its wound is healed, and the mediaſtinum will, in every ſtate of the thorax, preſerve its natural ſituation.

As almoſt all the circulating blood muſt, in ſuch caſes, be tranſmitted through the veſſels of one lung, if the quantity of that fluid be not greatly diminiſhed, the pulmonary veſſels will become turgid; a larger effuſion of fluids will therefore take place into the air-cells and cavity of the cheſt, and thus the function of the acting lung will be materially impaired. This reaſoning illuſtrates what experience has already determined, viz. that the preſervation of life in theſe caſes depends on the moſt copious blood-letting.

The caſe, which I have related, clearly ſhews, that the collapſed ſtate of the lung affords an opportunity for the wound of its ſurface to heal; and when this deſirable event is accompliſhed, the air which is at that time in the cavity of the thorax, will be ſpeedily abſorbed, and the lung will again acquire

acquire its former ſize and ſituation. But ſhould the function of it be more immediately neceſſary, from a diſeaſed ſtate of that on the oppoſite ſide, or from other circumſtances, it may be more quickly reſtored by exhauſting the air, in the manner deſcribed. If the cavity of the cheſt contain a quantity of fluids, and it is thought right to extract them, it cannot well be done by varying the poſture of the patient ſo as to let them run out of the opening that has been made: the difficulty with which reſpiration is performed, will render ſuch an attempt almoſt inſupportable to the patient. It would therefore be better to introduce a hollow bougie, or ſome ſuch inſtrument, into the poſterior part of the thorax, there connect it to the ſyringe, and thus extract the contained fluids. I need ſcarcely add, that the ſame method may be employed with advantage for the extraction of water from the cavity of the cheſt in hydrothorax.

The great advantage of retaining the lung in a collapſed ſtate is, if poſſible, more ſtrikingly ſhewn when thoſe bodies have ſuffered a greater

a greater degree of injury than can occur to them from the fracture of a rib. I have ſeen caſes in which bullets have paſſed through the lungs, near the root of thoſe bodies, and where many of the large veſſels were conſequently torn, in which the blood has been poured into the cavity of the cheſt, has condenſed the lung by its preſſure, and thus ſuppreſſed the hæmorrhage. The injured veſſels might, under theſe circumſtances, unite; and the blood being let out of the thorax, the lung might gradually be reſtored to its former function. Yet in the caſes which I was a witneſs to, the patients died of inflammation and fever; but the particular nature of the circumſtances was unknown during the life of the patient; and of courſe the conduct appropriated to them was not purſued. The fluid contained in the cavity of the thorax had in theſe caſes undergone a degree of putrefaction previous to the patient's death; which ſtate required its diſcharge.

But ſhould this be attempted in other caſes, it becomes very eſſential to keep the thorax

thorax filled with air, leſt the lungs ſhould become prematurely inflated, the newly-healed part lacerated, the hæmorrhage renewed, or inflammation induced; and the ſurgeon would be able, I believe, without much contrivance, to regulate the inflation of the lungs, as circumſtances ſeemed to indicate. Surgeons uſed formerly to keep canulæ in the thorax in theſe caſes, with a deſign to give an outlet to fluids; but ſuch means might have been beneficial by preſerving the lungs collapſed; and they might have been continued from being found ſerviceable, though the manner in which they became ſo was unknown.

SURGICAL OBSERVATIONS.

ON THE OPERATION OF PUNCTURING THE URINARY BLADDER.

MR. Home, to whom the profeſſion is much indebted for many important improvements in practice, has of late publiſhed ſome caſes of the puncture of the bladder from the rectum, which, in opinion, are of the greateſt importance. They not only exhibit that operation as more ſimple and ſucceſsful than perhaps was generally believed, but if the operation be as ſucceſsful in the hands of other ſurgeons, it preſents an eaſy mode of relief to a great number of unfortunate patients, who have generally been left to die in miſery. I mean thoſe who have ſtrictures impaſſable by bougies, and who are ſo irritable that they cannot bear

the application of cauſtic, on account of the retention of urine which it occaſions. In ſuch caſes the puncture from the rectum appears moſt eligible, becauſe the bladder is contracted, is in general irritable, and will not perhaps aſcend high enough to admit of being punctured above the pubes.

But there are caſes in which the operation by the rectum cannot be performed, and by frequently meeting with theſe I have been compelled to puncture the bladder above the os pubis, and the event of the operation has been ſuch as would have led me to prefer it to any other that I had ſeen practiſed. The chief caſes to which I allude are thoſe of enlarged proſtrates, where the catheter has been forced into the ſubſtance of the gland, and has torn it conſiderably; conſequently that inſtrument enters ſo eaſily into the falſe paſſage as to render it almoſt impoſſible to make it take the right one. Indeed in caſes of ſtricture, where falſe paſſages have been made, and the proſtate has been found, the perception of the bladder from the rectum has been ſo indiſtinct that I have been de-

terred from puncturing it; and in one caſe I made a diviſion in the perinæum, and having paſſed my finger beneath the arch of the os pubis a conſiderable way, I could obtain no ſuch diſtinct perception of the bladder as would authoriſe me to puſh in a trochar. But I punctured it above the os pubis, and drew off a conſiderable quantity of urine. I have therefore been led to conclude, that in ſome diſtended bladders, there is a kind of receſſion of them from the perinæum, and that when they become diſtended they aſcend proportionally higher into th abdomen.

In the greater number of caſes in which I have punctured the bladder above the os pubis, it has been on a ſudden call to the hoſpital, or ſome poor houſe; and I have had little further concern with the patient than what related to the performance of the operation.

Sometimes I have been in doubt if there was much urine in the bladder, and this circumſtance has deterred me from puncturing, except

except in that ſituation in which I could poſſeſs an aſſurance that I felt the bladder, and could puncture that viſcus: and theſe doubts cauſed me in ſome inſtances to puncture the bladder with a lancet; and in ſome caſes I have not left any canula in the bladder, in conſequence of the eſcape of the urine preventing me from readily finding the opening which I had made. Several of the patients died, but in every inſtance the operation relieved their ſufferings; and I have never ſeen any effuſion of urine into the cellular ſubſtance, or any other bad conſequence reſult from the operation; nor do I think that ſuch events are likely to happen, if it be rightly performed. The death of the patients was fairly to be imputed to the delay of the operation, or the degree of diſeaſe which previouſly exiſted in the urinary organs. In ſeveral patients who recovered, the progreſs of their amendment was ſimilar to that which took place in the caſe, which I am about to relate. I did not, however, preſerve any detailed account of them, for, as I have mentioned, the patients could ſcarcely be ſaid to be under my care. I have

requeſted

requeſted the laſt gentleman, with whom I attended a patient under theſe circumſtances, to give me a particular account of his caſe, and on the accuracy of his narrative I can place perfect reliance. This caſe I ſhall relate, in order to have an opportunity of commenting on the mode of puncturing the bladder above the os pubis.

CASE.

A gentleman, between ſixty and ſeventy years of age, had a retention of urine from an enlarged proſtate gland, which obliged his ſurgeon to draw off the urine night and morning. This was done during ten days, when the difficulty of introducing the catheter, which had gradually increaſed, became inſurmountable. I was therefore obliged to puncture the bladder, and the only place in which this operation could in the preſent inſtance be performed, was above the pubes. I therefore made an inciſion about two inches in length through the integuments, and between the muſculi pyramidales abdominis, ſo that the lower part of the wound laid bare the top of the ſymphiſis pubis. On intro-

ducing my finger into this vacancy I felt the diſtended bladder. The ſenſation produced by preſſing againſt the diſtended bladder is I think ſo peculiar, and ſo different from any thing elſe which could occur in this ſituation, that if an operator has once felt it, he will not heſitate in deciding that it is the bladder againſt which he preſſes. The thickneſs and tenſion of its coats, and its fluid contents are the chief circumſtances from which this peculiar feel ſeems to ariſe. When I firſt began to perform this operation, I was deterred from uſing a trochar by a fear of being miſled by my ſenſations. I cautiouſly punctured the bladder with a lancet, deſigning to introduce a catheter through the wound; but the urine guſhed out ſo violently, and the bladder became contracted ſo ſuddenly, that I could not diſcover the wound which I had made; yet under theſe circumſtances, the urine paſſed from the aperture in the bladder, through the external wound, and was not diffuſed into the cellular ſubſtance. Indeed neither obſervation nor reaſoning would induce me to ſuppoſe that ſuch an occurrence is probable, whilſt there

is a free external opening. The apprehenſion ſeems to have ariſen from the extenſive diffuſion of urine, in caſes where the urethra has given way. But in ſuch caſes, the urine is actually injected into the cellular ſubſtance, and with great force, by the bladder, in conſequence of the channel out of the body being cloſed up. If the external wound in this operation were to be cloſed, and the exit of urine prevented by this means, then it is probable that the urine would be forced to pervade the cellular ſubſtance. It may be aſked, if urine is in any way likely, according to the common phraſe, to inſinuate itſelf into the ſurrounding cellular ſubſtance? I ſhould think not. The operator ſhould be cautious not to make any ſeparation of the bladder from the back part of the ſymphiſis pubis, that there ſhould not be even a cavity into which the urine might gravitate. He ſhould alſo leave the external wound free and open. The firſt effect of the operation will be an inflammation, which will conſolidate the ſurrounding cellular ſubſtance, and prevent the ready impulſion of urine into it. The ſtimulating

qualities of the urine will augment this inflammation, and thereby increaſe the effect. Indeed the ſtimulus of the urine often occaſions a ſloughing of the ſurface of the wound, which however makes no alteration in the general circumſtances of the caſe. In later operations I acquired more confidence, and a belief that I could diſtinguiſh the bladder from any thing elſe by its feel; and one caſe which occurred tended further to embolden me in the performance of it. Being called on a ſudden to relieve a patient, who had had his urethra lacerated, and being urged to puncture the bladder by ſeveral gentlemen who were preſent, and who were certain that a conſiderable quantity of urine was detained: though I could not feel the bladder diſtended above the pubes, I conſented, as the patient was in imminent danger, to perform the operation, and having punctured the bladder with a trochar, four or five ounces only of urine were diſcharged. However a large quantity of urine gradually flowed through a canula which was introduced. The patient died, and was examined, when the cauſe of this occurrence

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became apparent. A large cyſt made by the protruſion of the internal coat of the bladder, had been formed between the bladder and the rectum, which contained the greateſt quantity of the retained urine. The orifice, by which this cyſt communicated with the bladder, did not exceed in dimenſions the barrel of a common quill. It alſo appeared that, though the bladder itſelf could not in this caſe be ſaid to have been diſtended, yet the front of it only was wounded by the trochar, and the back part was uninjured.

To return from this digreſſion to the operation in the caſe which I was relating: after I had, by an inciſion between the pyramidales muſcles, enabled myſelf to paſs my finger along the upper part of the ſymphyſis pubis, ſo as to preſs againſt the diſtended bladder, I introduced a common trochar of the middle ſize, in a direction obliquely downwards. There is an advantage, as Sabatier, in his Medicine Operatoire, obſerves, in introducing an inſtrument in this direction, for it accords with the axis of the bladder, and is therefore not likely to injure the op-

poſite ſide of that organ. When I found that the inſtrument had penetrated the cavity, I withdrew the ſtilet within the canula, and then puſhed the canula obliquely downwards, ſo that about two inches of it were introduced into the bladder. On withdrawing the ſtilet of the trochar, the urine guſhed out with great force, but I prevented its eſcape, by placing the thumb of my left hand againſt the mouth of the canula, and then introduced through it in the ſame oblique direction, a middle ſized hollow elaſtic catheter, till it met with reſiſtance by touching the bottom of the bladder. After the urine was diſcharged, the canula of the trochar was withdrawn over the elaſtic catheter, which was left in its ſituation, and the end which came out of the wound was bent downwards towards the pubes, and attached, ſo as to be kept motionleſs, to a circular bandage put round the body of the patient. The wound, which was funnel-ſhaped, being wide externally, and gradually contracting to the bladder, was covered with linen, ſpread over with ſpermaceti ſalve. The urine flowed not only through the catheter,

catheter, but by the ſides of it. A ſlight inflammation occurred round the wound, ſuch as would doubtleſs tend to conſolidate the ſurrounding cellular ſubſtance. The ſurface of the wound in this caſe did not even ſlough, at leaſt in any evident degree. Four days after the operation the patient got up, and walked about his chamber, and feeling himſelf comfortable and well, he did not go to bed again till night. At the end of a week ſome few drops of urine came through the urethra, and the quantity thus diſcharged daily increaſed. At this time as the catheter ſeemed to be clogged up with mucus, it was withdrawn, and another was introduced with perfect facility. In about three weeks, as the urine came pretty freely through the urethra, the catheter was withdrawn, and the patient voided his urine by the natural channel. In ſix weeks the external wound was perfectly healed, and the patient was as well as before the retention of urine took place.

Since the publication of the preceding caſe, I have many times performed the ſame

operation, and without obſerving any thing contradictory to the ſtatement which I have given. I ſhall briefly relate the particulars of one of the caſes.

CASE.

A gentleman, who came from the country, was ſeized with retention of urine, and the medical man to whom he firſt applied for relief was unable to draw off that fluid. Before I made any attempt, I firſt introduced a bougie, which, I think, ought in all caſes to be done, in order to examine the ſtate of the parts prior to the introduction of more rigid and injurious inſtruments. It paſſed into the proſtate, but could not be made to proceed further. A ſmall ſized catheter much curved, or bent upwards towards the point, was next introduced, which entering the bladder, the urine diſcharged. Upon attempting to withdraw the catheter, I found that I could not do it without employing conſiderable force, ſo firmly was it compreſſed by the neck of the bladder. I examined the proſtate per anum, and did not find that gland materially enlarged, ſo that I conclude the difficulty

difficulty of introducing and withdrawing the inſtrument aroſe from an enlargement of what Mr. Hunter called the valvular part of the proſtate, and Mr. Home deſcribes as its third lobe. Being fully aware of the improbability of my being able to introduce a catheter night and morning to draw off the urine, in this caſe; I employed for that purpoſe, at my next viſit, a flexible varniſhed catheter, and left it in the bladder. This gave pain to the patient, and did not long remain in the cavity of the bladder; I was therefore under the neceſſity of attempting to draw off the urine twice a day with the common catheter. I ſucceeded in doing this for ſeveral days, each time encountering a difficulty in introducing the inſtrument, which was ſurmounted by keeping the point of the inſtrument cloſely in contact with the upper part of the canal; and I continued to experience conſiderable difficulty in withdrawing the inſtrument after the eſcape of the urine. One morning, however, I was unable to accompliſh the introduction of the catheter, and felt myſelf obliged to puncture the diſtended bladder. The operation was performed as

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in the preceding caſe. A month elapſed before the patient voided any urine by the natural channel. The quantity of that fluid which was diſcharged through the urethra when he wanted to make water was at firſt ſmall, and gradually increaſed in another fortnight to about four ounces. After this evacuation, the plug being removed from the tube inſerted at the pubes, ſix or eight ounces of urine were diſcharged from it; it therefore appeared, that the bladder had but very partially regained its power of expelling the urine. When this operation is performed, we can know with ſome degree of accuracy when the bladder has fully regained its powers; and, conſequently, when we ought to remove the tube. The patient was very anxious to return into the country, and I knowing the great impediment that exiſted to the expulſion of the urine in his caſe, dared not to remove the tube; nor has it appeared proper to do it ſince that time. He has now kept the tube in his bladder, I believe, more than two years. He has lately complained much of the badneſs of the varniſh with which the tubes are covered;

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and it is greatly to be regretted, that in this country, no one has the art, or takes the trouble, of varniſhing theſe catheters as they are done in France.

On the Tic Douloureux.

As the public attention has been of late excited to that painful affection of the nerves, called Tic Douloureux, I ſhall in the next place relate a caſe of that diſeaſe, which lately came under my care, becauſe it ſeems to me to elucidate the nature of the diſorder, to demonſtrate the degree and kind of advantage which is likely to reſult from the diviſion of the trunk of the nerve, and alſo to illuſtrate ſome circumſtances in the anatomy and phyſiology of the nervous ſyſtem, of which I have not as yet met with any ſatisfactory explanation.

CASE.

A lady became gradually affected with a painful ſtate of the integuments under and adjoining

adjoining to the inner edge of the nail of the ring finger of the left hand. No injury to the part was remembered which could have brought on this diſeaſe. The pain occurred at irregular intervals, and was extremely ſevere during the time of its continuance, which was for a day or two, when it uſually abated. Accidental ſlight injuries always occaſioned great pain, and frequently brought on thoſe paroxyſms, which however occaſionally occurred ſpontaneouſly, or without any evident exciting cauſe. In all theſe particulars the diſeaſe correctly reſembled the Tic Douloureux of the nerves of the face. As the pain increaſed the diſorder ſeemed to extend up the nerves of the arm. After the patient had endured this painful affection for ſeven years, ſhe ſubmitted to have the ſkin, which was the original ſeat of the diſorder, burned with cauſtic. This application gave her intenſe pain, and on the healing of the wound ſhe found her ſufferings rather augmented than diminiſhed by this experiment. After four more years of ſuffering ſhe conſulted me, when the circumſtances of the caſe were ſuch as to render

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an operation indiſpenſably neceſſary. The pain of the part was intolerable, and it extended all up the nerves of the arm; and this general pain was ſo conſtant during the night, as to deprive the patient of reſt. The muſcles of the back of the neck were occaſionally affected with ſpaſms. The integuments of the affected arm were much hotter than thoſe of the oppoſite ſide, and ſometimes the temperature was ſo increaſed as to cauſe a burning ſenſation in them. Under theſe circumſtances, I did not heſitate to divide the nerve of the finger, from which all this diſorder ſeemed to originate. I laid it bare by a longitudinal inciſion of about three quarters of an inch in length, from the ſecond joint of the finger, and divided it oppoſite to that joint, by a curved ſharp pointed biſtoury which was conveyed under it. I then took hold of the nerve with a pair of forceps, and reflecting it downwards, I removed a portion of it half an inch in length, that the poſſibility of a quick re-union might be prevented. The wound was brought together by ſticking plaſter, and it united by adheſion: but the upper part of the wound,

oppoſite

oppoſite to the upper end of the nerve, became ſlightly inflamed, and was very painful; however the appearance of inflammation gradually went off in the courſe of three weeks. After the operation I pinched the originally affected integuments ſharply with my nails, without cauſing any ſenſation; but if in ſo doing I moved the finger, then pain was felt. I found it difficult to convince the patient that the ſkin at that part was actually devoid of ſenſation, for ſhe ſtill continued to feel ſimilar ſenſations to thoſe which formerly occurred, though in a much diminiſhed degree: but ſhe became gradually as perfectly convinced as any medical man could be, that theſe ſenſations aroſe from the irritated ſtate of the end of the nerve, above the place where it was divided. The painful affection of the nerves of the arm ſtill continued, though conſiderably leſſened in violence; however, it was ſufficiently ſevere to make the patient apprehend that little permanent benefit would ariſe from the operation. This pain continued occaſionally about four months, with varying degrees of ſeverity, but the temperature of the ſkin was not

hotter than that of the oppoſite ſide, as it had been before the operation. At the expiration of three months, the patient aſcertained that the integuments at the end of the finger actually felt when any thing was applied to them, and this proved a new ſource of alarm. More than nine months have now elapſed ſince the performance of the operation, and the general pains in the nerves have become very trivial; but the ſenſation of the integuments at the end of the finger has during that time gradually increaſed, and the ſkin has now its natural ſenſibility, ſo as accurately to diſtinguiſh the tangible properties of any body applied to it. If alſo the originally affected part be compreſſed ſlightly, painful ſenſations reſembling thoſe which formerly occurred take place.

The obſervations of Dr. Darwin relative to ocular Spectra, and the experiments of Mr. Home on the contraction of divided nerves (contained in the Croonian Lecture, inſerted in the Philoſophical Tranſactions for the year 1801) have given a kind of demonſtration that there is a ſubtile and mobile matter

matter ſuperadded to the viſible fabric of nerves, and ſanction the uſe of the yet novel terms of the irritability and irritable actions of nerves, and I ſhall therefore employ them in the few ſubſequent remarks which I have to offer.

The caſe above related appeared to me to merit publication, becauſe I believe it is not a common occurrence for the tic douloureux to happen any where but in the face. In the inſtances related by Mr. Home in his Croonian lecture, the diſeaſe was the effect of an injury done to the thumb; and it is reaſonable to ſuppoſe that it would not have taken place without a prediſpoſition to it in the conſtitution of the patients. It is alſo not unfair to conclude that the diſeaſe thus occaſioned was of a more general nature, and leſs confined to the extreme branches of the nerves, and therefore leſs ſuſceptible of cure by an operation. The caſe, which I have related ſhews, as indeed might have been concluded à priori, that though the ſource of the irritable ſtate of the nerves in the tic douloureux may be cut off by an operation, yet that the general

general irritable actions of thoſe organs, which had been excited, and had continued for a long time, would not immediately ceaſe, though they might, as happened in this inſtance, gradually ſubſide.

The ſpeedy return of ſenſation, which is both accurate and acute in the preſent caſe, muſt ſurely be deemed a curious circumſtance. It cannot be attributed to a reunion of the divided nerve, ſince ſo large a portion of it was removed; for I believe in ſimple diviſions of the nerves by accident, ſenſation is ſlow in returning. It muſt, I think, be admitted, that ſenſation in the preſent inſtance took place through the medium of the communicating branches of thoſe organs, and probably its ſpeedy renovation was the effect of their unuſually active or irritable ſtate.

Nerves ſtrikingly reſemble arteries in their modes of communication; ſometimes they conjoin even by conſiderable branches, ſuch as muſt be manifeſt, in common diſſections; but they communicate in ſurprizing numbers

by their minute ramifications. This circumſtance is not perhaps ſo familiarly known to profeſſional men, ſince it cannot be perceived unleſs in the courſe of a very minute diſſection, and to underſtand how numerous theſe communications are, the repreſentations given by the German authors, of their delicate and laborious diſſections, may be advantageouſly conſulted *.

The communications of nerves ſeem alſo not to have excited much attention amongſt phyſiologiſts; at leaſt I have not met with any probable conjecture concerning their uſe. I ſhall therefore take the liberty of mentioning as briefly as poſſible, what has occurred to me on that ſubject.

The opinions of Mr. Hunter reſpecting a ſubtile matter inhering in the brain and nerves, and diffuſed throughout the body, are, I believe, generally admitted, though variouſly expreſſed. Now if the brain and

* See Meckel's Repreſentation of the Nerves of the Face, or Frotſcher's of the Cervical Nerves, in Ludwig's Opera Minora, or Walther's Plates.

nerves

nerves be ſuppoſed in thoſe animals who poſſeſs them, to be the chief if not the ſole organs for the preparation of this ſubtile matter, then it appears as neceſſary that the nerves ſhould communicate, as that the arteries ſhould do ſo. For if the continuity of the trunk of either of theſe organs were deſtroyed, the parts, which its branches ſupply, would periſh were it not for their communication with the minute branches of other adjacent trunks. It is probable that one of the advantages derived from important organs being ſupplied from plexuſes of nerves is, as has been ſuggeſted by Soemmerring, that ſuch eſſential organs ſhould never want that animation and influence, which they derive from the nerves, even ſhould caſual obſtruction take place in ſome of the trunks leading to ſuch a plexus. But parts leſs eſſential to life, equally require that ſuch interruption of the nervous energy ſhould be guarded againſt. Have we not a plexus formed in the axilla, prior to the diſtribution of nerves, to the upper extremities? do not the ſacral nerves form a plexus, in order to form the iſchiadic or poſterior crural nerve?

and may not the ſame circumſtance be affirmed with reſpect to the anterior crural, and obturator nerves, ſince they ariſe from the complicated union of the lumbar nerves, with a branch of the firſt ſacral nerve? The reticular communications of the minute nerves may not only ſerve the purpoſe which has been ſuggeſted, but, as appears from the preſent caſe, the actions which take place in the extremities of the nerves may, by them, be propagated to the ſenſorium, and thus produce ſenſation. Whether, in the preſent inſtance, the original painful actions of the extremities of the nerves may again recur, and be continued throughout the communicating branches to the ſenſorium, the future progreſs of the caſe will determine.

The Lady, whoſe caſe I have related, died about four years after the operation, of diſorder of the digeſtive organs, to which ſhe was habitually ſubject. Indeed, from what I have ſince ſeen of caſes of Tic Douloureux, I am induced to believe, that this diſorder is as much conſtitutional as either Gout or Rheumatiſm. I have known patients afflicted with

with it get well, either ſpontaneouſly, or in conſequence of the adminiſtration of medicines which were likely to relieve or counteract nervous irritability.

On the Removal of looſe Subſtances from the Knee Joint.

I ſhall next relate a caſe in which ſome of thoſe looſe ſubſtances that are frequently found in the knee-joint were removed by an operation; becauſe I think the caſe contains many intereſting particulars, and becauſe it will afford me an opportunity of offering a few obſervations on the neceſſity and mode of performing ſuch an operation. Mr. Hey has of late recommended a bandage to keep theſe bodies ſtationary, and has related ſeveral inſtances of its efficacy, and of courſe of its preventing the neceſſity of undertaking a ſerious and uncertain operation. When looſe ſubſtances exiſt in the knee-joint, and are lodged on either ſide of the patella, they produce but little inconvenience; but when

they ſlip under the ligament of the patella, and become interpoſed between the condyles of the os femoris and the tibia, they impede progreſſion, and cauſe pain, and ſo much injury as to bring on inflammation in the joint. If the extenſor tendons, the patella and its ligament, can, by Mr. Hey's bandage, be kept ſteadily preſſed againſt the correſponding parts of the joint, then theſe bodies muſt remain ſtationary on one or other ſide of the patella, and the patient will be exempted from the inconvenience and injury which their motion in the joint occaſions. Under theſe circumſtances the neceſſity for an operation is obviated; but in the caſe which I am about to relate the bandage was of no avail, for reaſons which will appear in the relation. It is not improbable alſo that though theſe bodies may occaſion much irritation at firſt, yet that the joint becoming accuſtomed to their ſtimulus may afterwards be leſs affected by their preſence, which circumſtance ought to be adverted to and aſcertained before an operation be undertaken.

CASE

CASE.

A man, about forty years of age, having fallen from a ladder, and injured his knee, ſuffered afterwards a good deal from inflammation in the joint. The joint became much better, but never perfectly recovered; and after a year had elapſed he ſlipped in walking, and again injured his knee. From this time he became ſenſible of the preſence of two moveable bodies in the joint, which incommoded him conſiderably. They frequently, in walking, got between the condyles of the os femoris, and the crucial ligaments, giving him great pain at the time, and produced heat and inflammation of the knee afterwards. He bore this inconvenience for ſeveral years, till at length, coming to London, he reſolved to ſubmit to the operation for their removal if it were recommended. When I ſaw him there was a conſiderable quantity of ſynovia in the joint, the knee was hotter than that of the oppoſite limb, and in this ſtate he ſaid it uſually was. There was no difficulty in bringing the two looſe ſubſtances to the

inner ſide of the joint; and it required only to put that part in a depending poſition, and thoſe bodies deſcended by their gravity through the fluid, and were eaſily fixed in the ſituation to which they had fallen. I could bring them on the inner ſurface of the internal condyle of the os femoris, which is of conſiderable extent, and by placing the points of my finger ſo as to deſcribe a portion of a circle, I could prevent them from paſſing again into the cavity of the joint although the limb might be moved, and the patient preſs firmly againſt them with his finger, as if he meant to puſh them into the joint. Yet when my fingers, which thus confined them were removed, the ſlighteſt touch cauſed them to diſappear, and to glide with velocity into the general cavity of the joint.

This is the ſituation, and the manner in which I think theſe bodies can be moſt conveniently and certainly fixed. The inner ſurface of the internal condyle of the os femoris preſents an extenſive and nearly plain ſurface, which terminates in front and at its upper

upper part by an edge which forms a portion of a circle. If the points of the finger be firmly preſſed upon this edge ſo as to form a kind of line of circumvallation round theſe bodies, they cannot paſs into the joint in this direction, nor can they recede in any other, on account of the tenſe ſtate of the internal lateral ligament. Here theſe ſubſtances are near the ſurface, and may be diſtinctly felt; and there is nothing to be divided in order to expoſe them, but the integuments, faſcia, and the capſule of the joint. Mr. Cruikſhank ſays, that Mr. Hunter preferred removing theſe looſe bodies at the upper part of the joint, as there, the bag which contains the ſynovia has leſs of the nature of a capſule. Mr. Ford, in a caſe which required the operation (and which is related in the Medical Obſervations and Inquiries), extracted the ſubſtance on the outer edge of the patella; and if the ſubſtance is large, it may undoubtedly be extracted in this ſituation. In the caſe, which I am going to relate, it would have been impoſſible to fix the looſe ſubſtances in any other ſituation than that which I have deſcribed, and in my opinion

opinion that ſituation muſt in moſt caſes be preferable to any other, for the reaſons which I have mentioned.

I did not heſitate to undertake the removal of the bodies in the preſent caſe, as they could be ſo ſecurely fixed. For the patient had tried bandages without any advantage, which perhaps was owing to the quantity of fluid in the joint preventing them from acting in the manner mentioned above. His ſufferings were very conſiderable, and the neceſſary reſtriction in exerciſe extremely inconvenient. I thought it right to reduce the inflammation of the joint as much as poſſible, prior to the operation, and with this view directed the application of leeches, and of linen kept conſtantly damp with Goulard's waſh: ſome aperient medicine was alſo given. By theſe means, in the courſe of three days, all the fluid was removed from the joint, and it was as cool, and free from pain and inflammation as the other knee; but when I endeavoured to get theſe bodies into the ſituations in which I had formerly fixed them, I found all my efforts were in vain.

There

There was no fluid for them to deſcend through, and though one of them could be got into the ſituation which we wiſhed, we could not, after trying nearly an hour and an half, ſucceed in getting both of them upon the condyle of the os femoris. I was therefore obliged to let the patient walk about a little, that ſome more fluid might be effuſed into the joint, and then I could bring them both into the ſame ſituation, and fix them as readily as before.

The operation was done in the following manner. Sir Charles Blicke, who aſſiſted me, preſſed the integuments of the knee gently towards the internal condyle, and then applied his finger in the manner I have deſcribed, round the circular edge of the bone. I alſo drew the integuments gently towards the inner ham-ſtring, and divided them longitudinally, immediately over the looſe ſubſtance, to the extent of an inch and an half. This withdrawing of the integuments from their natural ſituation was deſigned to prevent a direct correſpondence in the ſituation of the external wound, and that

of

of the capſule of the joint; for when the integuments were ſuffered to regain their natural poſition, the wound in them was nearer to the patella, than the wound which was made in the capſule. The faſcia which covers the joint being expoſed by the diviſion of the integuments, it was divided in a ſimilar direction, and nearly to the ſame extent. The capſule was now laid bare, and I gently divided it to the extent of half an inch, where it covered one of the hard ſubſtances, which ſuddenly ſlipped through the opening, and by preſſing gently upon the other, it alſo came through at the ſame part. The bodies, which were thus removed, were about three quarters of an inch in length, and half an inch in breadth. They had a highly poliſhed ſurface, and were hard like cartilage. The fluid contained in the joint was preſſed towards the wound, and about two ounces of ſynovia were diſcharged. I then drew the wound of the integument gently towards the patella, preſſed the two ſides together, and cloſed it accurately with ſticking plaſter, enjoining the patient to keep the limb as free from motion as poſſible.

No

No inflammation took place in the knee, either on that day, or the following; but on the ſecond night after the operation the patient ſuffered a good deal of pain, and in the morning the joint felt hot, and was diſtended with fluid as it had been before the operation. I now removed the dreſſings, and found the wound was cloſed; but I felt very apprehenſive leſt, the inflammation of the joint continuing, the collection of fluid ſhould alſo increaſe, and by diſtending the capſule, cauſe the wound to open. Having already ſeen in this caſe the beneficial effects of evaporating waſhes, which by diminiſhing the heat of a part check its tendency to inflammation, I was deſirous of re-applying them. In order to prevent theſe applications from looſening the ſticking-plaſter, and cauſing the expoſure of the wound, I made uſe of an expedient, which I have frequently employed, and which from its utility I think deſerves to be mentioned. After having ſupported the ſides of the wound in their ſituation by adheſive plaſters as at firſt, I put over them a piece of linen which extended beyond them in every direction. This linen was made to

adhere to the ſurrounding ſkin, by ſmearing over the edge with a ſolution of ſealing-wax in alcohol, and afterwards varniſhing the linen over with the ſame ſolution. The alcohol having evaporated, and the ſealing-wax remaining, no liquid could penetrate and detach the ſticking-plaſter. This is the ſame varniſh with which ſome parts of electrical machines are coated, and its power of remaining unaffected by moiſture and moderate warmth is well known.

Folded linen kept damp with laudanum and water was now applied, in the proportion of an ounce of the former to a quart of the latter. This waſh I prefer, for the purpoſe above mentioned, to Goulard's waſh; for the precipitated powder contained in the latter is apt to fill the interſtices of the linen, and prevent its imbibing the waſh, ſo that the requiſite evaporation does not go on. Theſe applications quickly diminiſhed the heat of the knee, and the quantity of fluid contained in the joint ſpeedily decreaſed. The wound was daily dreſſed, and in a week was firmly healed; and in a fortnight the

patient might be ſaid to be well. He has ſince the operation walked as much as he was accuſtomed to do, and has not found the leaſt inconvenience.

I have ſince the publication of the preceding caſe, ſeen one of the ſame kind, ſo curious on account of the number of looſe bodies contained in the capſule of the knee-joint, that it ſeems to deſerve being mentioned. I do not exaggerate, when I ſay, they muſt much exceed a hundred in number, and feel like ſhot of various ſizes, diſtending the capſule on either ſide of the patella. There is no fluid in the joint, nor do they prevent the patient from taking ordinary exerciſe.

On the Treatment of one Species of the Nævi Materni.

I ſhall relate two caſes, and ſay a few words on the treatment of this complaint, which is a congenital deformity, conſiſting of a cluſter of enlarged veſſels, filled, and occaſionally diſtended by the influx of blood from numerous ſurrounding arteries. The deformity to which I allude is ſo well known, and ſo frequent an occurrence, as to preclude the neceſſity of any deſcription. Mr. John Bell has of late propoſed an ingenious theory of its formation, and has denominated it an aneuryſmal enlargement of the veſſels, in conſequence of their anaſtomoſes. There can be no doubt that the repletion, diſtention, and conſequent enlargement of the dilated veſſels depends upon a kind of inflammatory action of the ſurrounding arteries; for, if that be wanting, the mark ceaſes to enlarge, and if preſent, it increaſes in ſize in proportion to the degree of inflammatory action. In many caſes theſe marks having increaſed to a certain degree, ceaſe

to

to enlarge; they then remain ſtationary, or gradually diminiſh, till they almoſt diſappear. This occurrence is not ſo frequent as to induce ſurgeons to expect ſuch an event, or to prohibit, in conſequence of ſuch expectation, their removal. For, if they continue to enlarge, the operation muſt be commenſurate to their ſize. The conſequences of their burſting are alarming and vexatious. It is not, however, my intention to ſpeak of theſe affections in general, but only to ſtate what, perhaps, may in ſome inſtances be done with ſucceſs, when the removal of the unnatural ſtructure cannot be accompliſhed. For this preternatural enlargement of veſſels is not always cutaneous. I have ſeen it occupying the whole ſubſtance of the cheek, neither appearing beneath the ſkin nor the membrane of the mouth: I have met with it in the orbit of the eye, and have found it covering the whole of an extremity, or nearly one half of the trunk of the body. If any means can be purſued, under ſuch circumſtances, to cheek the progreſs of the complaint, they ſurely deſerve attention. I was lately ſo fortunate as to ſucceed in

ſuch endeavours, in caſes, the relation of which is my chief object at preſent.

CASE.

A child about two months old was brought to St. Bartholomew's hoſpital, with this unnatural enlargement of veſſels, diſtributed every where beneath the fore-arm, from the wriſt to the elbow. In a ſhort time it had ſwollen to that degree, that the circumference of the affected fore-arm was twice the ſize of the other. The veſſels were large and contorted; and to give the reader an idea of their appearance, I may mention that the child's mother affirmed that they reſembled the entrails of a pig, with which ſhe had either been frightened or diſguſted during her pregnancy. The ſkin was of a duſky hue, and had not its natural ſmoothneſs of ſurface. The heat of this fore arm was much greater than that of the correſponding ſound one. Preſſure forced the blood out of the veſſels, and for the time diminiſhed the bulk of the limb, and made it of a paler colour. The child's mother lives at Turnham Green, where Mr. Graham, an ingenious ſurgeon, who

was

was for a long time a ſtudent at St. Bartholomew's Hoſpital, alſo reſides. I requeſted this gentleman to take charge of the caſe, and try the effect of the following plan of treatment, which it ſeemed to me right to inſtitute. Firſt, I was deſirous of aſcertaining whether a permanent and equal preſſure would not prevent the diſtenſion and conſequent enlargement of the turgid veſſels; ſecondly, whether reducing the temperature of the limb would not diminiſh the inflammatory action, upon which their repletion ſeemed to depend. Theſe two intentions admitted of being readily accompliſhed. A many-tailed bandage of ſticking plaſter ſeemed adequate to effect the firſt, and wetting the limb with water the latter. Theſe meaſures were judiciouſly carried into effect by Mr. Graham; the preſſure was firſt made ſlightly, and afterwards more forcibly, as the part ſeemed to bear it without inconvenience. A roller was applied over the plaſter, and kept wet, if the limb felt hotter than natural, ſo as to regulate its temperature. The ſucceſs of theſe meaſures exceeded our moſt ſanguine expectations. The ſize of the limb

gradually diminiſhed, and its temperature became natural. After ſix months, Mr. Graham removed the bandages, which it was not neceſſary to continue any longer. The limb was in ſome degree waſted, from preſſure and diſuſe, but it ſoon gradually reacquired its natural ſize. After the bandages had been left off for a month, I ſaw the child. The ſkin was pale, and had a ſlightly ſhrivelled appearance. The contorted veſſels felt like ſolid chords interpoſed between it and the faſcia of the fore-arm.

CASE.

A child had this unnatural ſtate of the veſſels in the orbit of the eye. They gradually increaſed in magnitude, and extended themſelves into the upper eye-lid, ſo as to keep it permanently cloſed. The cluſtered veſſels alſo projected out of the orbit, at the upper part, and made the integuments protrude, forming a tumour as large as a walnut. Of courſe, the removal of this diſeaſe did not appear practicable. I was conſulted on this caſe by Mr. Hurlock, to whom I related the ſucceſs of the former experiment.

Preſſure

Preſſure to any extent was here evidently impoſſible: but the abſtraction of heat, and conſequent diminution of inflammatory action might be attempted. I recommended that folded linen, wet with roſe water, ſaturated with alum, ſhould be bound on to the projected part, and kept conſtantly damp. Under this treatment the diſorder as regularly receded as it had before increaſed. After about three months it had gradually ſunk within the orbit, and the child could open its eye. Shortly afterwards all medical treatment was diſcontinued, and no appearance of this unnatural ſtructure remains.

A third caſe of a very extenſive mark of this deſcription, covering the back and ſhoulder, got well, as I am informed, by the ſame treatment. I have not, however, been able to learn the particulars. It appears to me probable, from the foregoing caſes, that if the preternatural diſtention of the veſſels could be prevented, the blood would coagulate in them; and thus this unnatural con-

texture of veſſels, being rendered impervious, might become obliterated.

Since the publication of theſe caſes, which is more than four years ago, I have ſeen many inſtances of ſuch affections, and they have ceaſed to grow, and afterwards ſhrunk, and been no longer objects of any conſequence when treated in the manner that I have deſcribed. I have only in one caſe been called upon to perform an operation for the removal of the ſwelling, which had attained a very conſiderable magnitude before I was conſulted reſpecting its treatment.

On Hæmorrhoidal Diſeaſes.

Mr. Hey of Leeds, in his highly valuable Obſervations, deſcribes his mode of treatment of the procidentia ani, and that chapter of his work appears to me to deſerve particular praiſe, becauſe I have not found the ſame treatment recommended by other writers; and becauſe, from the accounts of the patients themſelves, it has relieved them from very great inconvenience and ſuffering. Wiſhing to corroborate the ſtatement there given, and to add my mite of obſervation on the practice that is beſt adapted for the relief of ſuch diſeaſes, I may mention, in the firſt place, that my attention to this ſubject was particularly excited, even during my apprenticeſhip to ſurgery, from witneſſing the ſufferings of thoſe who underwent what I may call the natural cure of piles. When theſe organiſed bodies are large and numerous, they impede the expulſion of the fæces, and the ſtraining conſequent to this impediment everts the bowel. When, at

length the patient is unable to reſtore the parts to their natural ſituation, the piles mortify and drop off, and then the bowel retires, leaving the patient conſiderably relieved from the difficulty and pain attendant on the expulſion of the fæces. The editor of Mr. Pott's work ſays, that Mr. Pott was remarkably ſucceſsful in removing hæmorrhoidal excreſcences, by ligature *; in ſome caſes ſuch means may doubtleſs be proper; yet it has appeared to me, that tying hæmorrhoidal excreſcences is productive of all that temporary diſtreſs which is obſervable in what I have termed their natural cure; and as there is a general diſorder in the functions of the alimentary canal in all ſuch caſes, the irritation occaſioned by the ligature aggravates this habitual diſorder, and produces ſometimes very alarming ſymptoms.

With theſe facts before me, I was led to examine the ſtructure of thoſe piles which had been removed by a ligature, or which I

* See Sir James Earl's edition of Mr. Pott's Works vol. iii.

accidentally

accidentally met with in the dead ſubject; and I found them to be merely fleſhy ſubſtances, poſſeſſing no veſſels of conſiderable ſize, nor ſuch as ſhould deter us from cutting the excreſcences away. It is now twenty years ſince I firſt began to remove them freely with the knife or ſciſſars, and I have never met with any circumſtance to deter me, whilſt the relief of ſuffering, which the operation has afforded to ſome, and the ſcarcely to be expected, and complete cure which it has effected in many, has been highly gratifying. Piles have been ſuppoſed to be owing to a dilatation of the hæmorrhoidal veins, and that theſe veins are ſometimes enlarged, is evident from anatomical examination, and from caſes which occaſionally occur in practice. In a recent attack of an hæmorrhoidal affection, ſomething occaſionally protrudes from the anus, which when punctured emits a continued ſtream of blood, as a vein does when opened. When the blood ceaſes to flow the protruding part ſhould be replaced, and maintained in its natural ſituation.

The origin and formation of internal piles, is, I think, ſimilar to thoſe which are external. When from irritation about the rectum, an external pile forms, a ſwelling ſuddenly occurs beneath the thin ſkin, near the verge of the anus, and the part is heated and painful. If the ſkin be divided, the ſwelling is found to be cauſed by effuſed blood; and if the clot be removed, there is no ſtream of blood emitted as from a vein. If the wound be ſmall, blood again collects beneath the ſkin, and the ſwelling is reproduced. If the bowels be regulated, ſo that the ſtate of irritation, which is the cauſe of theſe productions, be mitigated or removed, and if the ſlightly painful and heated ſwelling be cooled by evaporating waſhes, the effuſed blood is frequently abſorbed, and the diſtended ſkin appears looſe and pendulous. On the contrary, if the irritation continues from there being ſome permanent diſeaſe on the inſide of the bowel, then the effuſed blood becomes an organized ſubſtance, and a permanent external pile is formed. The orifice of the anus is often ſurrounded by tumours of this kind, which, however, do

not

not require to be removed, and are only indicative of internal irritation. In like manner blood is effuſed beneath the bowel juſt above the ſphincter, and forms an internal pile. If it be divided, coagulated blood may be removed from beneath it, with the ſame events as occur in external piles. The effuſed blood is ſometimes abſorbed, and the pile diſappears; but, more generally, it becomes an organized ſubſtance, and increaſing in bulk, whilſt others alſo form, they are productive of thoſe inconveniences that have been repreſented.

Though the everſion of the bowel may, in many caſes, be attributed to the efforts made to overcome the mechanical reſiſtance, which theſe tumours oppoſe to the expulſion of the fæces; yet the everſion is not, in general, to be ſolely attributed to this cauſe. It ariſes alſo from an irritable and ſtriving action of the bowel, which produces a kind of intuſſuſception. Thus plaits of the bowel often deſcend in an irritable action of the part during the expulſion of the fæces. I have known many caſes of the following deſcription. A perſon having ſome diſorder

of

of the bowels, and having an urgent call to void the fæces, has ſuffered afterwards great pain for a number of hours. The next evacuation has been attended with ſimilar conſequences, and thus the patients have continued for a conſiderable time, ignorant of the cauſe of their ſufferings. On introducing the finger, I have diſtinctly felt, and fairly replaced a fold of the bowel, and the patient has been immediately relieved from all uneaſineſs; and by repeating the ſame act, when required, and keeping the bowels regular by a mixture of caſtor oil and mucilage, with cinnamon water, they have ſuffered no uneaſineſs ſubſequent to the alvine diſcharges, and in a ſhort time this faulty action of the bowel has entirely ceaſed, But if a patient remains ignorant of the cauſe of his ſufferings, and does not adopt this mode of relieving them, the fold of the bowel becomes irritated and thickened by the preſſure of the ſphincter muſcle; it enlarges and becomes in form adapted to this unnatural ſituation, and thus we often meet with folds of the bowel forming hæmorrhoidal tumours. When a pile, or any hæmorrhoi-

dal

dal tumour becomes inflamed and ſwollen, it has a tendency to draw down more of the bowel, and increaſe the diſeaſe.

The everſion of the bowel thus produced from hæmorrhoidal affections, muſt be conſidered as a different caſe from that procedentia or prolapſus ani, which takes place independently of ſuch affections, and it is to the treatment of the former only that this paper relates.

In the firſt volume of theſe obſervations, I have mentioned, that to me, all kinds of irritation inducing local diſeaſes in the lower parts of the bowel, appear to be the effects of a general diſorder in the functions of the alimentary canal; and that the correction of the general affection is eſſential to the cure of the local diſeaſe. If the bowels can be got to regularly carry down and diſcharge the reſidue of the food once in twenty-four hours, the ſtraining from coſtiveneſs, and that irritable and repeated action attendant on purging, both of which muſt be injurious to the local diſeaſe, will ceaſe to aggravate it. The patient

patient ſhould bathe and anoint the protruded parts with ointment, and carefully replace them above the gripe of the ſphincter. Under theſe circumſtances hæmorhoidal tumours, and the procidentia ani often become of ſo little inconvenience, as not to induce a patient to wiſh for a more radical relief.

But, if from the magnitude or number of theſe hæmorrhoidal tumours, ſuch an oppoſition ſhould be created to the expulſion of the fæces, that the bowel is forced down at every attempt to diſcharge them; if from the inflamed and ulcerated ſtate of hæmorrhoidal tumours, they keep up an irritable action of the parts tending to maintain and aggravate the diſeaſe, then an operation ſeems to be required.

I ſhall now deſcribe, in the briefeſt manner poſſible, the treatment and mode of operating which I have found moſt ſucceſsful in theſe diſeaſes. Firſt, it ſeems eſſential, prior to undertaking any operation, to get the bowels into the habit of regularly evacuating the refuſe matter of the food daily, and the liver

regularly ſecreting a due proportion of healthy bile. 2dly, The bowels ought to be perfectly cleared before the operation; and this may be accompliſhed, by giving to the patient ſuch a doſe of medicine as has been found, by experience, to be likely to anſwer this purpoſe without inducing a continuance of irritation and purging. The bowel being everted to the utmoſt by the efforts uſed in evacuating the fæces, and the parts cleanſed by bathing with tepid water, the piles ſhould be taken hold of by a double hook, of a breadth correſponding to the length of the pile, and when drawn upwards from the bowel, it may be removed by a pair of ſciſſars. A protruded and thickened plait of the bowel may be ſeized in the ſame way; but I think it is better to uſe the biſtoury in removing it, becauſe the depth to which the ſciſſars may cut is uncertain. The inciſion made by the knife reſembles two curved lines joined at each extremity. The length of the inciſion ſhould, both for the removal of piles and that of plaits in the bowel, be longitudinal, in the direction of the bowel.

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If, therefore, there be a tranſverſe fold of the bowel of conſiderable extent, I think it beſt to take away two elliptical portions in the long axis of the rectum, rather than attempt more completely to remove it by a wound made in another direction.

The hæmorrhoidal tumours being removed, the wounds ſhould be ſuffered to bleed as long as they are diſpoſed to do ſo, and afterwards the parts ſhould be completely replaced by means of the finger, previouſly anointed. As irritation is a principal cauſe of hæmorrhage from the ſmall veſſels, and as that is likely to be occaſioned by any part of the bowel being lodged within the gripe of the ſphincter, and compreſſed by that muſcle, this part of the operation ſhould be particularly attended to. The patient ſhould now be ſpeedily placed in an horizontal poſition, the nates ſhould be expoſed, and the parts ſurrounding the anus ſhould be frequently bathed with cold water, to check inflammation and conſequent hæmorrhage.

Frequently

Frequently from the apprehenſion of the vexation and trouble of a ſubſequent hæmorrhage, the ſurgeon is deſirous, after an operation, of tying every veſſel that could poſſibly pour forth blood; yet after the patient is put to bed, and becomes warm, particularly if there be any circumſtance cauſing local irritation in the wounded parts, hæmorrhage even to a conſiderable degree enſues. The wound is opened and bathed, and often no veſſel is diſcovered bleeding, or requiring a ligature. Diminiſhing the temperature of parts is one of the moſt potent means which we poſſeſs of leſſening inflammatory action, and this ſeems to be beſt accompliſhed by the continual evaporation which is going on when parts are frequently wetted. Formerly I met with much trouble from hæmorrhage, particularly on account of the blood effuſed into the rectum, creating an uncontroulable propenſity to diſcharge it per anum; and in this act the wounded parts became again protruded and injured. Since, however, I adopted the mode of treatment which I have deſcribed, I have witneſſed no inconvenience of this kind. In general, the patients feel

very comfortable, and the anus ſeems as if there were no diſeaſe. When the parts have been for ſome time tranquil, and the riſk of hæmorrhage has ceaſed, the parts need no longer to be bathed or expoſed.

The patient ſhould be reſtricted in his diet: the food ſhould be of the moſt nutritive quality, and ſuch as is likely to leave the leaſt reſidue, but the quantity ſhould be as ſmall as poſſible, becauſe it is an object to keep the reſtored parts undiſturbed for as long a time as poſſible. If the opening medicine, which has been given with a view to clear the bowels, before the operation, ſhould be likely to affect them afterwards, ſome opium may be adminiſtered to prevent it.

Under theſe circumſtances, I have known patients lie for eight or ten days undiſturbed, and during that time the wounds, it is probable, had nearly, if not entirely, healed, as the ſubſequent diſcharges from the bowels were effected without hæmorrhage, or the deſcent of any part. However, as theſe patients have a diſordered ſtate of the digeſtive organs,

organs, ſenſations ſeemingly requiring ſome alvine diſcharges for their relief, will induce us to give ſome opening medicine long before that period. Experience in the caſe of our patient ſhould have previouſly taught us, by what doſe of medicine we might calculate, with ſome degree of certainty, to procure one ſufficient and lax motion, which ſhould be parted with by the patient with as little effort as poſſible. It is better that the patient ſhould not attempt to evacuate the contents of his bowels till his ſenſations become urgent. When a ſufficient diſcharge has taken place, if any thing has deſcended, it ought to be carefully replaced as it was after the operation. A ſmall doſe of laudanum may be given to ſtop any further effect from the purgative medicine. Now, though ſuch operations, conducted on the plan which I have deſcribed, have been productive of the beneficial effects which I have repreſented in the beginning, it is wrong to promiſe too much to patients in general, becauſe the irritable and diſordered ſtate of the digeſtive organs, which is habitual, and which has produced the diſeaſe may keep up a diſor-

dered ſtate of rectum afterwards, and occaſion new diſeaſes to form of the ſame nature.

On Fiſtulæ in the Perinæum.

Towards the concluſion of the ſecond part or volume of theſe obſervations, when ſpeaking of the effects of diſeaſes of the urethra, I had deſigned to inſert a chapter explanatory of ſome circumſtances relative to thoſe abſceſſes and diſeaſes, which frequently take place, and lay the foundation for fiſtulæ in perinæo. In conſequence of my being much hurried by buſineſs at that time, it was omitted, yet thinking that its publication may be uſeful, I inſert it at the concluſion of the preſent volume.

It is well known, that abſceſſes form in the vicinity of the urethra, when it is in an irritable ſtate, but there are ſome circumſtances relative to their progreſs, which perhaps have not been generally or ſufficiently attended

attended to. When matter forms in the courſe of the membranous part of the urethra, or in the neighbourhood of the bulb, it does not produce inflammation of the ſkin, or break like a common abſceſs; on the contrary, the ſkin is but little affected, and as the matter increaſes in quantity, it appears kept down as if it were collected beneath a faſcia. Under theſe circumſtances it in general comes forwards, in the courſe of the ſpongy ſubſtance of the urethra, and bulges out in the middle of the ſcrotum, forming there a tenſe protuberant ſwelling. I have ſometimes known the matter make its way backwards, and preſent itſelf between the thigh and buttock, a little below the rectum. Theſe circumſtances indicate, that there is a faſcia ſpread beneath the ſkin of the perinæum, over the ſubjacent parts; yet, I think, the limits of this faſcia can ſcarcely be aſcertained by diſſection.

The knowledge of its exiſtence appears to me of importance in explaining many occurrences which take place about theſe parts, though its denſity and ſtrength varying

in different perſons, the facts which I am endeavouring to repreſent will vary in degree in different caſes.

The abſceſſes of which I am ſpeaking are often ſimple, no urine having eſcaped from the urethra to give riſe to them, though ſometimes after they have been opened, urine is found to paſs through the cavity of the abſceſs in a greater or leſs degree.

Theſe abſceſſes ought of courſe to be treated as collections of matter beneath faſciæ in general; they ſhould be opened at an early period, to prevent their enlargement. A free opening is proper, becauſe the ſkin being only ſlightly diſeaſed, and having a great propenſity to heal, will ſometimes prevent the free eſcape of any matter or urine, which may be in the cavity of the abſceſs. The cavity will then become diſtended and enlarged, perhaps in a direction between the rectum and the thigh, requiring another opening to be made in that ſituation: yet, in general, I have not found it neceſſary to divide the ſkin throughout the whole front of the abſceſs.

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The complicated ſinuſes, which form in ſome caſes of fiſtulæ in perinæo, do not appear to me to ariſe from ſuch ſimple caſes, but from the urethra ulcerating in many parts. Anatomical examination has ſhewn this to be fact in ſeveral caſes which I have inſpected.

The ulceration, or giving way of the urethra, is, I think, generally underſtood to be the conſequence of a ſtricture affording ſo complete an obſtacle to the paſſage of the urine, as to occaſion the canal to inflame, ulcerate, or ſlough above the impediment. It is very evident that this is not unfrequently the caſe, yet I do not believe that ſurgeons in general, are ſufficiently impreſſed with the knowledge of the following fact, that the urethra may ulcerate in various parts from irritation, even whilſt there is a ſufficient channel for the free exit of the urine. The following caſes are related in proof of this fact:

CASE.

A gentleman had been attended for a typhoid fever for between a fortnight and three

weeks. A clyſter was ordered for him; but the perſon who was deſired to adminiſter it, could not readily introduce the pipe; and, on examination, it was diſcovered that there was a conſiderable induration, diſcolouration, and ſwelling of one buttock, by the ſide of the anus. On this account I was deſired to ſee the patient, and the appearance of the part inſtantly induced me to ſay, that ſome urine had eſcaped from its natural channel, and cauſed the inflammation which had been productive of theſe peculiar appearances. The powers of the patient's mind were weak and wandering; yet, when I aſked him in a loud voice, whether he had any difficulty in voiding his urine? he replied, Oh, I told you, it was my firſt grievance. Yet I ſaw him void his urine freely, and in a moderate-ſized ſtream. Perceiving that there was fluid beneath the thickened and diſcoloured integuments, I divided them, and diſcharged a conſiderable quantity of putrid matter, urine, and ſloughs. The patient became, for a time, much better, and urine paſſed freely through the wound; yet he afterwards gradually ſunk, and died. In this

caſe

caſe, the urine muſt have eſcaped from its natural channel very high up, and have been forced into the cellular ſubſtance connecting the bladder and the rectum, producing that peculiar inflammation, which probably occaſioned the typhoid fever.

CASE.

A ſimilar occurrence happened to a patient whom I had previouſly attended on account of ſtrictures in his urethra, and which had been ſo far relieved, that a moderate-ſized bougie could be paſſed into the bladder, and he voided his urine freely in a moderate-ſized ſtream. He had for ſome months diſcontinued the uſe of bougies previouſly to the event which I am going to relate. He was ſeized with a kind of low fever, but his attention ſeemed to be directed to the ſeat of his diſeaſe, ſo that it became remarked at an early period, that the integuments of the buttock, by the ſide of the rectum were inflamed. The ſimilarity of this caſe to the preceding one induced me to make an inciſion through the ſkin and ſubjacent ſubſtance to ſome depth, when a conſiderable quantity of fœtid matter and urine guſhed

out. I ſaw this patient void his urine, which he did with apparent freedom, and in ſuch a ſtream as I have deſcribed. He was relieved by having an outlet given to the urine and matter, which continued to paſs freely through the wound; yet he afterwards gradually ſunk, and died. To my great regret, I was prevented from examining the parts after death, in both of theſe caſes.

CASE.

A patient who had ſuffered for more than a fortnight with ſlow fever, in which his intellects were ſo impaired, that he communicated no information to his medical attendant reſpecting the nature of his diſorder, was obſerved to have a ſwelling near his left groin, which was ſuppoſed to be a common abſceſs. This diſeaſe increaſing, and ſhewing no tendency to break, after a few days, I was deſired to ſee the patient. The ſwelling then was as large as an orange, but oblong, extending from the groin down the front of the ſcrotum. The colour and induration of the ſkin, in ſuch caſes, are in general ſo peculiar, as at once to impreſs the opinion, that effuſed urine has been the cauſe of the in-

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flammation and abſceſs. I without heſitation cut through the thickened integuments, and diſcharged about ſix ounces of putrid pus and urine. A quantity of ſloughy cellular ſubſtance ſoon afterwards protruded through the wound, which gradually ſeparated and came away. The patient's intellects ſoon became clear, all fever left him, and he ſoon regained his uſual ſtate of health. In this caſe, I conclude, that the urethra had given way on its left ſide, in front of the faſcia, which covers and binds down the parts beneath the ſkin of the perinæum, and in the vicinity of the abſceſs. I mention this opinion to lead us to form a probable conjecture as to the cauſe of the urine becoming diffuſed, in ſome caſes, beneath the integuments of the pubes and abdomen.

When circumſcribed abſceſſes form, it is probable, that the quantity of urine which eſcapes from the urethra is ſmall, and that by its irritation it occaſions adheſion of the ſurrounding cellular ſubſtance. In the caſe juſt related, the quantity muſt have been ſufficient to have occaſioned the death of a conſiderable quantity of cellular ſubſtance.

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When the urine is diffuſed, and injected into the cellular ſubſtance extenſively, ſcarifications afford but an ineffectual outlet to it. The practice moſt appropriate to theſe caſes would be, at as early a period as poſſible, to make a wound down to the aperture in the urethra, ſo that whatever urine may eſcape from the canal ſhould run freely out of the wound, and be no longer forced to pervade the cellular ſubſtance. Yet it is difficult, nay, perhaps in ſome caſes impoſſible, to know where the urethra has given way; and one object which I had in view in relating theſe caſes, was to induce others to reflect, and to endeavour to aſcertain, by experience, how and where we ought in different caſes, to make ſuch wounds as will afford free diſcharge to the urine, and prevent the horrible effects of its becoming extenſively diffuſed through the cellular ſubſtance. Our conjectures reſpecting the ſituation of the aperture, will be much aſſiſted by the hiſtory of the caſe. If the ſwelling and inflammation began at the top of the ſcrotum, near the pubes, it is probable, that the diſeaſed aperture of the urethra is in front of the perinæum; if it began

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on one ſide, it is probable, that the opening of the urethra is on that ſide. Were ſurgeons fully aware of the nature and urgency of the caſe, and bold enough to do what is required of them; that is, to cut through the ſwollen and inflamed parts, till they expoſed the tube of the urethra, I am convinced many lives might be ſaved. If the integuments of the perinæum be affected, it is probable, that the aperture in the urethra is as far, or farther back than that part; yet reſpecting this point we may err, it frequently happening that the aperture in the urethra is far back, and yet the integuments of the perinæum may contain no urine, the faſcia, which I have ſpoken of, preventing that fluid from affecting them.

I ſhall briefly relate two more caſes to exhibit other varieties of theſe diſeaſes.

CASE.

A gentleman, who was more than ſeventy years of age, but of a ſtrong conſtitution, who had never found any difficulty in voiding his urine till a few days before the occurrence, which I am about to relate, and who actually

actually did void it freely in a full ſtream, after his urethra had given way, ſo as to allow of the eſcape of a conſiderable portion of the urine, was ſuddenly ſeized with ſhivering and ſevere indiſpoſition. The patient did not complain of any thing being wrong about the ſcrotum, or urinary organs, till about two days, when he mentioned that his teſticles were ſwollen. When I ſaw him, the ſcrotum and integuments of the penis were much diſtended and mortified on the ſurface in ſeveral large irregular black patches. The diſtenſion of the ſcrotum was not merely occaſioned by urine, it was emphyſematous alſo from air extricated by putrefaction. The integuments of the perinæum were ſcarcely affected. The patient ſaid that the ſwelling had begun from behind, and on the left ſide. I concluded, that in this caſe, the urethra had given way in the perinæum, and that the urine had paſſed in the courſe of that canal, between it and the faſcia, which I have ſpoken of, till it arrived at the looſe cellular ſubſtance of the ſcrotum which it readily pervaded. I know this to have been the fact in ſome ſimilar caſes

which I examined after death; and I conclude it to be owing to the reſiſtance of a faſcia ſpread beneath the ſkin, that the integuments of the perinæum are not affected, even though the urethra has given way beneath them. As the object of ſurgery is to make an external wound oppoſite to the orifice in the urethra, I purſued a practice in this caſe which I had found ſucceſsful in ſeveral others of a ſimilar nature, and which I was led to adopt, from diſcovering that the aperture in the urethra was, in ſome caſes which I examined, much farther back than the part where the urine firſt appeared to have pervaded the cellular ſubſtance of the ſcrotum. I made a wound about two inches and a half in length, through the integuments and ſubjacent cellular ſubſtance of the perinæum and back part of the ſcrotum, in the direction of the urethra, but more to the left ſide. The wound need not extend farther back than the bulb, and ſhould, I think, come forwards ſo as to divide the integuments of the back part of the ſcrotum, where the ſwelling firſt takes place. The object of this wound is to lay bare the faſcia of the perinæum,

and

and the operator may now feel the groove which intervenes between the ſpongy ſubſtance of the urethra and the crus penis. Now, in caſes of this deſcription, I have proceeded to divide the faſcia, which is ſpread over theſe parts, ſo that I could more diſtinctly paſs my finger into the groove which is formed between them, and gently elevate the faſcia from off the ſpongy ſubſtance of the urethra. I did ſo in the preſent caſe, and was anxious that the patient ſhould void his urine, that I might ſee if it came through the wound which I had made, but he was unable at that time to diſcharge any. However, afterwards when he made water, it continued to paſs freely through the wound in the perinæum.

Having formerly been perplexed with regard to ſuch caſes as I have laſt deſcribed, and having now operated in many ſimilar inſtances, with the ſame event; that is, with a perfectly free diſcharge being afforded to the urine which eſcapes from its natural channel, I thought it might be uſeful to publiſh one of them, and I will add another of

of a different kind, to ſhew the neceſſity and propriety of our endeavouring at once to give a free diſcharge to the urine, by making an external wound, which communicates with the aperture in the urethra.

CASE.

A gentleman of ſeventy years of age, was affected with a kind of intermittent fever, for which he was attended by a phyſician, from whom he concealed that he had any diſeaſe of his urethra. After ſome weeks, however, the patient informed him one morning, that he had a ſlight ſwelling of one teſtis. On this account I was deſired to ſee the patient, who reſided a little way from London. The ſwelling of the ſcrotum at that time was not larger than a large apple; it was ſituated at the back part of the bag, and on the right ſide, and its appearance was very demonſtrative of its nature; I urged the patient, but in vain, to permit me to divide the ſkin, but he ſaid he would allow no operation to be done, unleſs in conſequence of the opinion of other ſurgeons in conſultation.

I found that he had for the greater part of his life been in the frequent habit of paſſing bougies for himſelf, and that he was uncertain of his ability to introduce even a very ſmall one. As no conſultation could be held on his caſe, till the following day, I called on the patient in the evening, taking with me an extremely ſmall flexible varniſhed catheter, hoping that I might be able to paſs it, or if I ſhould fail, that I might be allowed to give a free exit to the effuſed urine. At that time, however, I found the whole ſcrotum uniformly diſtended to a very great ſize, and the integuments of the penis ſo ſwollen and projecting, that it was impoſſible, without an operation, to diſcover the orifice of the urethra. The patient having appointed other ſurgeons to attend on the ſubſequent day, was reſolved to abide the reſult of their opinion, before he would ſubmit to any wound being made. On the enſuing day, ſeveral large irregular mortified patches had formed on the integuments of the ſcrotum and penis, and the patient was ſo ſunk and confuſed in his intellects, that an operation was, I believe, deemed uſeleſs by all preſent, except myſelf.

myſelf. I knew the patient was in other reſpects healthy, and I had many times ſeen the whole ſkin ſlough off from the genitals, and the patients ſurvive and do well. As, however, an operation was the only reſource, it was performed. We drew the patients legs and thighs out of bed, and turning him on his face, the perinæum preſented itſelf in ſuch a manner as to admit of my performing the operation. The integuments of the perinæum were now greatly ſwollen, which circumſtance I had not obſerved before. I made a wound in the direction of the one made in lithotomy, and cut through between two and three inches of cellular ſubſtance œdematous with urine, before I could touch the bulb of the urethra, or other parts ſituated beneath them. I raiſed the tumid integuments from off the ſubjacent parts with my finger, but ſtill no urine flowed. I then endeavoured to paſs my finger by the ſide of the bulb towards the proſtate, in the direction of the urethra; and in a few ſeconds, about three pints (as I ſhould gueſs) of highly putrid urine, mixed with purulent matter, was ſuddenly and forcibly projected. Being now

assured that the bladder could readily discharge the urine through the external wound, I cleansed and dressed the parts. The patient got into his bed without assistance, and expressed, with vivacity, all that comfort and relief which every one experiences from the evacuation of a much distended bladder. The mortified patches of skin separated, yet sufficient remained to give a covering to the genitals. Great quantities of mortified cellular substance came through the apertures left by separation of the superficial sloughs. I was able to introduce a very fine elastic catheter, and by enlarging its size, weekly, the urethra regained its natural calibre in all its parts; so that the patient voided his urine in a larger stream, and with more freedom and force than he had done for fifty preceding years. It seems right however to add, that after two years, the stream having again diminished he had recourse to bougies, and met with opposition from the strictures which had contracted again during that interval.

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