The surgical works of the late John Jones, M.D.

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THE SURGICAL WORKS

OF THE LATE

JOHN JONES, M. D.

FORMERLY PROFESSOR OF SURGERY IN THE COLLEGE OF NEW-YORK:
FELLOW OF THE AMERICAN PHILOSOPHICAL SOCIETY:
PRESIDENT OF THE HUMANE SOCIETY, AND VICE-PRESIDENT OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA:
PHYSICIAN TO THE PENNSYLVANIA HOSPITAL, AND PHILADELPHIA DISPENSARY.

The Third Edition.

TO WHICH ARE ADDED,

A Short Account of the Life of the Author,

WITH

OCCASIONAL NOTES AND OBSERVATIONS.

BY JAMES MEASE, M. D.

RESIDENT PHYSICIAN OF THE PORT OF PHILADELPHIA.

PHILADELPHIA:

PRINTED BY WRIGLEY AND BERRIMAN,
N°. 149, Chesnut Street.

1795.

TO

PHILEMON DICKINSON, Esquire.

SIR,

THE two first editions of the following work, were dedicated by the author, to his worthy preceptor, and your near relation. There are two reasons, which induce me to inscribe the present one to you. You Sir, were held most dear to the author, my valued friend: and I with pleasure take this method to convey my acknowledgment of personal esteem for you.

Accept therefore, of this volume, as a mark of respect, from

Your obliged friend
And sincere well wisher,
JAMES MEASE.

Philadelphia, February 23, 1795.

PREFACE.

THE following work was originally publiſhed in the autumn of the year 1775 in New-York, and addreſſed to the ſurgeons of the army, and navy of the United States, to whom it was intended to afford a knowledge of the improved practice of treating ſome of the moſt common ſurgical complaints; and thereby to leſſen the unavoidable misfortunes, attendant upon the ſtruggle about to be made, for the liberties and independence of this country. A ſecond, and much larger impreſſion was ſtruck off, the enſuing year at Philadelphia, which is again out of print; ſince that period, the world have been favoured by ſeveral more ſyſtematic treatiſes, as thoſe of Mr. Pott, and Mr. Bell, which form very valuable additions to our ſtock of ſurgical knowledge; they have not however ſuperceded the neceſſity of the preſent work: for the lengthy accounts which are in many inſtances given of complaints, that ſeldom or never fall under the notice of the practitioner in this country, added to their extreme bulk and high price;

render them more proper books for the proficient in ſurgery; whereas the familiar manner in which thoſe operations that daily occur, are treated in the following ſmall volume, point it out as the proper companion for the ſtudent in the art. I am of opinion therefore, that it will continue to be held in eſtimation, by thoſe who do not neglect a good thing, tho' it be not the production of the day, and are content to derive information from that which commanded attention a few years ſince.

To the preſent edition, I have prefixed ſome account of the author's life, and added a number of notes and obſervations chiefly taken from the beſt ſurgical authors, ſerving to confirm, and eſtabliſh the doctrines advanced; and alſo ſome caſes that happened under my own inſpection during the period of my ſurgical purſuits with Dr. Jones, all of which it has been an object to render as brief as was conſiſtent with perſpicuity: I have likewiſe ſubjoined a caſe of *anthrax*, and the hiſtory of a remarkable *hydrocele*, both ſucceſfully treated; the firſt extracted from the tranſactions of the college of phyſicians of Philadelphia; the latter from the ſurgical lectures of the author, in my poſſeſſion.

I have much to regret, that it was not in my power to give a more full and ſatisfactory account of my deceaſed friend; as the various important occurrences of his intereſting life, could they have been accurately aſcertained, and properly diſplayed; would have formed an entertaining and inſtructive hiſtory. No pains were ſpared to obtain the fulleſt information, and ſome difficulty was experienced in procuring the few particulars I have noted. To Dr. Thomas Jones, and Mr. James Jones of New-York, my thanks are due for ſundry facts; but it would be doing an act of injuſtice, did I not with gratitude notice, the kindneſs and attention of the late Mr. Owen Jones of Philadelphia, to whom I am indebted for all the important information, reſpecting the family of Dr. Jones. For theſe, and for the zeal he evinced in forwarding my intention, of giving theſe memoirs of his illuſtrious friend and relation; the memory of this venerable citizen, is entitled to that warm and moſt fervent reſpect, which it will ever receive from me.

We love to perpetuate the memory of thoſe deceaſed perſons, who during their continuance among us, deſerved and obtained our eſ-

teem, by poſſeſſing as near as poſſible their reſemblance; for this reaſon I much wiſhed to obtain the loan of amoſt ſtriking likeneſs from one of his relations, in order to have a print taken therefrom to be prefixed to this work; but not having been gratified with it though the publication was kept back in expectation thereof, I reſolved not to delay it any further upon that account, and endeavoured to ſupply its place by a juſt delineation of the mind of the author.

J. M.

A

SHORT ACCOUNT

OF THE

L I F E

OF

DOCTOR JOHN JONES.

A

SHORT ACCOUNT

OF THE LATE

JOHN JONES, M. D. &c.

IT has generally been the cuſtom among biographers, to premiſe the hiſtory of the predeceſſors of thoſe, who have ſignalized themſelves by their talents or ſervices to their country; and of whoſe lives and actions they are about to give ſome account; and notwithſtanding the little need of reverting to the honourable ſtation of the anceſtors of a man, to increaſe that reſpect for his memory, which, while living, his own worth procured; yet I am induced ſo far to comply with cuſtom, as to give a ſhort hiſtory of the family of my deceaſed friend, previouſly to delivering any memoirs of himſelf.

The family of Dr. Jones, was of Welſh extraction, and of the religious ſociety of Friends. His grandfather, Edward Jones, who was a phyſician of eminence in his native country; married Mary, the eldeſt daughter of Thomas Wynne, who was likewiſe a phyſician, and one of the original ſettlers in Pennſylvania: where, ſhortly after his arrival, he was choſen a repreſentative of the people, and elected ſpeaker of the firſt provincial aſſembly held in Philadelphia, in the month of December, 1682.

Sometime after Dr. Wynne's removal from Wales; his ſon-in-law and family alſo embarked for this country, and arrived on the 13th June, 1682; they ſettled in Merion townſhip, county of Philadelphia, on a tract of land, which is ſtill in poſſeſſion of the family, where they reſided the remainder of their days, and both died at very advanced ages. After their arrival in this country, they had the following children; Edward, Evan, John, Thomas, Elizabeth, and Mary.

Evan, the father of the ſubject of theſe memoirs, ſtudied medecine with his father, and practiſed it many years; but the thinly ſettled ſtate of the country, and the great fatigue at-

tendant upon extenſive country practice; induced him to remove to a more populous place, where that inconvenience would not exiſt, and where there would be a greater opportunity for the exertion of his talents. He accordingly removed to the city of New-York, and afterwards to Long-Iſland, and there married Mary, the daughter of Mr. —— Stephenſon, by whom he had four ſons: John, Thomas, Evan and James. He finally ſettled in the highlands of New-York, where he died many years ſince.* In theſe different places, he practiſed medicine with great ſucceſs; and was among the firſt introducers of inoculation in the ſtate of New-York; although from ignorance and prejudice, the practice was much oppoſed by the generality of people; and by none more than the phyſicians themſelves.

JOHN JONES, of whom I am now to give ſome account; was born in the town of Jamaica, Long-Iſland, in the year 1729; and recieved his education partly from his excellent parents, but chiefly at a private ſchool in

* Dr. Evan Jones was twice married; his ſecond wife was the daughter of Colonel Mathews, many years commandant of the fort at Albany, and member of the legiſlature of New-York. By this lady, who was lately ſtill living; he alſo had ſeveral children.

the city of New-York. He was early led, both by the advice of his father, and his own inclination to the ſtudy of medicine, and was placed under the care of the late Dr. Thomas Cadwalader, with whom he continued during the period of his ſtudies in this country.

The bent of genius or diſpoſition ſhewn by different perſons, to a particular calling, is extremely diverſified. Some have paſſed through a long life, without ever ſhewing a ſpecific bias to any profeſſion; and have acted with indifference and mediocrity, in whatever ſtation they may happen to be placed; while there are others, who ſeemed deſigned by nature to act in a particular capacity; and who, from the period at which they were capable of judging for themſelves, have evinced a ſteady and uniform attachment to certain employments, which they have afterwards proſecuted with advantage to themſelves, and benefit to the public. Among the latter claſs was Dr. Jones; he early indicated an attachment for that profeſſion which at a ſubſequent period he cultivated with ſo much ardour; by his fondneſs for anatomical reſearches; and though as it may be readily ſuppoſed, theſe could only be of the compa-

ritive kind; yet it is a remarkable fact, that this love for purſuits of the ſame nature, has been noticed in the youth of ſome of the moſt diſtinguiſhed anatomiſts that ever lived.

At the age of eighteen years, he began to ſtudy medicine under the above mentioned phyſician, and he always acknowledged with pleaſure, and gratitude, the important inſtructions both in phyſic and morals, which he derived, during the proſecution of his ſtudies with that amiable man. † This country then af-

* This eminent phyſician was born in Philadelphia, and was the ſon of JOHN CADWALADER; and Martha, the aunt of Dr. Jones. After finiſhing his ſtudies in this country, which were conducted under the father of Dr. Jones; he completed his medical education in Europe, and ſettled in Philadelphia, where he practiſed medicine many years, with the moſt diſtinguiſhed reputation. Upon the eſtabliſhment of the Pennſylvania hoſpital in the year 1752; he was elected one of its phyſicians, and was honored by an annual reelection, until the time of his death, which was more than thirty years after the erection of that benevolent inſtitution. As a phyſician, he was uncommonly attentive and humane; and as a man, he was as remarkable for the tenderneſs, and benevolence of his diſpoſition. Conſtantly bleſt with a ſerene mind, it was as rare to ſee him too much caſt down by bad; as unuſually elated by good fortune. So diſtinguiſhed a trait, was this cheerful diſpoſition in his character; that it was once the means of ſaving his life, on an occaſion ſo extraordinary

forded ſcarce any oportunity by means of public inſtitutions, for increaſing the knowledge of the ſtudent; as none of thoſe numerous eſtabliſhments for the relief of the indigent ſick

as deſerves to be mentioned; for while it ſerves to point out the importance of good humour, more than the peruſual of volumes on the ſubject; it alſo tends to ſhew, that an amiable behaviour, and politeneſs of manner, are not only pleaſing, but uſeful in our intercourſe with the world.

A Provincial officer before the independence of this country, ſoured by ſome diſguſt, became weary of life, and reſolved to deprive himſelf of an exiſtence which was no longer a pleaſure, but a burthen to him; with this view he walked out early one morning, with a fuſil in his hand, determining to ſhoot the firſt perſon he ſhould meet. He had not gone far, before he met a very pretty girl, whoſe beauty diſarmed him. The next that preſented was Dr. Cadwalader; the doctor bowed politely to the officer, (who, though unknown to him had the appearence of a gentleman,) and accoſted him with, "*Good morning Sir, what ſport?*" The officer anſwered the doctor civilly, and as he afterwards declared; was ſo ſtruck by his pleaſing manner and addreſs; that he had not reſolution to execute his deſperate intention. Impelled however, by the ſame gloomy diſpoſition, that actuated him when he ſet out; he repaired to an adjoining tavern, and ſhot Mr. Scull, author of the map of Pennſylvania; and thereby obtained his wiſhed for end; being afterwards hung in ſight of the very houſe where he committed the premeditated act.

then exiſted, which now do honor to a young, but enlightened country. The private practice of phyſicians, was almoſt the only ſource from whence the ſtudent could derive any practical information; to this Dr. Jones paid the greateſt attention, and I have heard, that his preceptor bore teſtimony of the aſſiduity, and marks of early genius in his pupil; and predicted from them, his future eminence in his profeſſion.

After completing his ſtudies in this country, Dr. Jones viſited Europe, in order to improve himſelf ſtill further in his profeſſion. He firſt went to London, and there attended the lectures of the celebrated Hunter, M'Kenſie and others, who then ſhone eminent in the ſeveral branches which the taught; and the practice of the different hoſpitals, particularly that of St. Bartholemew, of which Mr. Pott was ſenior ſurgeon, and in the height of reputation. From London he went to France, where he arrived in May 1751; and obtained the degree of doctor in medicine, from the univerſity of Rheims: he then proceeded to Paris, where he remained until the month of April in the following year; and attended the anatomical lectures of Mr. Petit and the practice of the Hotel de Dieu,

of which well known inſtitution, Meſſrs. Le Cat, and Le Dran, were then ſurgeons. He afterwards ſpent ſome time at the univerſity of Leyden, and finally viſited Edinburgh, which completed his medical tour.

Under maſters like theſe, and enjoying ſuch opportunities; he could not fail, with the aſſiduity which he employed, of acquiring all the knowledge at that time to be obtained: in conſequence of the zeal which he ſhewed in the acquiſition of every ſpecies of uſeful knowledge; he attracted the notice of the above celebrated ſurgeons, which was of eſſential benefit to him, in the proſecution of his ſtudies: to Mr. Pott in particular, he conſidered himſelf under peculiar obligations, for the marks of friendſhip he experienced from him; and which could not fail to inſpire him with a love of his profeſſion; for in this, as in every other inſtance; the politeneſs of the man, ſo far from leſſening the dignity of ſcience; ſerved to increaſe that reſpect, which the contemplation of real abilities will always inſpire.

During the proſecution of his ſtudies in Europe; Dr. Jones was induſtrious in collecting all the uſeful information in his power, eſpecially upon thoſe branches of ſcience

more immediately connected with his profeſſion. To anatomy, as the hand-maid of ſurgery, and the baſis of medical ſcience; he paid the greateſt attention, but he did not ſuffer this to engroſs the whole of his time: convinced of the intimate connexion between the different branches of the profeſſion; he conſidered the ſeparation of them, not only as contrary to nature; but as highly detrimental to the progreſs of the ſcience; and therefore believed, that a knowledge of the one part, was indiſpenſably requiſite to a right underſtanding of the other. But induſtrious as he was, in acquiring all the uſeful information in his power, and ſuch as might prove advantageous to him in his profeſſion, or future intercourſe with mankind; he with equal care avoided incumbering his mind with that which was ſpeculative, and no way calculated to admit of practical application. Too well aſſured of the ſhortneſs of human life, he did not waſte the time that ſhould be devoted to rational improvement, in obtaining uſeleſs knowledge, or in neglecting that important part which the longeſt life is barely ſhort enough to acquire. Thus it is however, that many ſtudents are frequently led away by ſtu-

dies that are attracting, but which are ultimately of little importance; they are not only attended by bad conſequences in a negative manner, by conſuming the time that might be more profitably employed; but frequently act poſitively, by giving a wrong direction to the active powers of the mind, and by exciting a reliſh for unprofitable acquirements in other branches of ſcience. The general diſpoſition of man, and his natural dependant condition; create a deſire, and point out the neceſſity for ſociety; his happineſs therefore in this world, muſt be intimately connected with the good diffuſed around him, and that knowledge, which is not ſome way ſubſervient to the welfare of mankind, may juſtly be ſtiled the rubbiſh of literature.

Upon the return of Dr. Jones to this country, he ſettled in New-York; where his abilities ſoon procured him extenſive practice. To the profeſſion of ſurgery in particular, he devoted much attention: he was the firſt who performed the operation of lithotomy in that city, and ſucceeded ſo well in ſeveral caſes that offered ſhortly after his return; that his fame as an operator, became generally known, throughout the middle and eaſtern ſtates of

America. The operation had likewiſe been frequently attempted in the other ſtates; but the want of ſucceſs attending it, was generally ſo great, as to prevent it from being performed in future: the fortunate manner however, in which thoſe caſes under his care ſucceeded, fully proved; that it was no longer the dangerous operation many had been made to apprehend, and which induced them rather to ſubmit to a miſerable life, than ſuffer the riſque of falling a ſacrifice to the means inſtituted for their relief.

About the year 1758, during the exiſtence of a war, between France and the then colonies, as a partof the Britiſh dominions; a conſiderable alarm was occaſioned by the report of an intended attack of the enemy upon the frontiers of the ſtate; and Dr. Jones, among others, entered as a volunteer ſurgeon to the troops raiſed upon the occaſion, in which capacity he ſerved with diſtinguiſhed reputation, until the cloſe of the campaign. It appeared, that even the enemies of his country, were acquainted with his abilities; for in a ſevere repulſe which they ſuffered, from the American and Britiſh troops under Sir William Johnſon; General D'Eſcaux, commander of the French, was dan-

gerouſly wounded, and being taken priſoner; immediately placed himſelf under the care of Dr. Jones, who looſing his principles as a ſoldier, in his humanity as man; carefully attended him for a conſiderable time in New-York. At the cloſe of the campaign he again returned to private practice with increaſed reputation; and ſome years after, upon the eſtabliſhment of the philoſophical ſociety of Philadelphia, was elected one of its firſt members; and he likewiſe had the honour to ſerve it, in capacity of *curator* in the year 1786, after his removal from the former to the latter city.

Upon the inſtitution of medical ſchools, in the college of New-York, Dr. Jones was appointed profeſſor of ſurgery, upon which branch he gave ſeveral courſes of lectures, and thereby diffuſed a taſte for it among the ſtudents, and made known the improved modes of practice, lately adopted in Europe, of which moſt of the practitioners in this country were entirely unacquainted. He likewiſe endeavoured to inſtill into the minds of his pupils, the ſame juſt principles, that guided his conduct, when proſecuting his own ſtudies, and, (melancholy experience proving the

neceſſity of the caution) pointed out the neceſſity of conducting their conduct as individuals, ſo as not to detract from their merit as profeſſional men. Viewing the ſcience in an enlarged and honourable light, as comprehending the moſt extenſive view of our nature, and as tending to the alleviation and abridgment of human miſery; he taught his pupils to deſpiſe the ſervile conduct of thoſe, who conſider the profeſſion as worthy of cultivation, only in proportion to the emoluments which it yields; and to rely upon the ſolidity of their own endowments, as the beſt ſecurity of general eſteem, and for acquiſition of buſineſs. He could with propriety, recommend the purſuit of this conduct to others, having in his own perſon furniſhed an inſtance of its ſucceſs, and on an occaſion alſo, which though trifling in itſelf, deſerves to be recorded as a proof of the triumph of abilities over ignorance and pride.

At an early period of Dr. Jone's ſettlement in New-York, ſome of the phyſicians entered into a reſolution, to diſtinguiſh themſelves from the reſt of their fellow citizens, by a particular mode of wearing their hair; and among the reſt, it was propoſed to Dr.

Jones; but inſtead of receiving his aſſent, the general principles of it were ſtrongly oppoſed by him. His prudence and reflection, led him to diſcover, that the propoſed alteration muſt not only neceſſarily attract much perſonal notice, which, even as a modeſt man he wiſhed to avoid; but that like the full bottomed wig, the gold headed cane, and brilliant on the finger; which the force of ridicule had baniſhed from the appendages of phyſicians; it would likewiſe ſubject him to the ſarcaſtic obſervations of the witty and malevolent. Perſuaded of the dignity of the medical character in itſelf, he ſaw no need to call in artificial aid to increaſe it, and therefore refuſed to conſent to the plan, and inſiſted upon the great impropriety of eſtabliſhing any external mark to diſtinguiſh them from the reſt of mankind; he declared at the ſame time, that he conſidered *that* and every *ſimilar* means to impoſe upon the weakneſs or crudulity of others, as unworthy the members of a liberal profeſſion; and intended to enforce that attention, and reſpect, which their own conduct and abilities ſhould always command. While the reſt of the practitioners therefore, were ſeen ſtruting

about in their new faſhioned bob; Dr. Jones could not be diſtinguiſhed from any well bred gentleman of another profeſſion. It might be naturally ſuppoſed, that the perſons who were weak enough to enter into the reſolution, would likewiſe be capable of the low paſſion of envy, and ſeek for a proper occaſion of revenge, upon thoſe who would diſſent. This was actually the caſe in the preſent inſtance; for the conſequence of Dr. Jones's refuſal to adopt the plan, was an agreement among the reſt, not to conſult with him. This reſolution however, was of but little avail; for one of the aſſociates on expreſſing this determination to a reſpectable citizen, in whoſe ſick room they happened to meet; was to his great mortification, unexpectedly diſmiſſed, and Dr. Jones retained. Such a compliment, paid to the abilities of a young man, muſt have been flattering in the extreme; and ſo effectually did the diſcloſure of the ſcene operate, with the general ridicule which followed; that the object of the aſſociation was entirely defeated; and the members were under the neceſſity of wearing their hair like the reſt of their fellow citizens.

I ſhould not have inſerted the relation of the above affair, in the preſent account, did it not, in my opinion, afford a uſeful leſſon of inſtruction. In the firſt place, it proves the truth of the old proverb, that "*honeſty is the beſt policy*." Thoſe weak minds, who without poſſeſſing the requiſite endowments to entitle them to reſpect, ſtill aim at diſtinction among mankind, and endeavour by ſpecious arts to inſure that attention, which ſhould originate from ſuperior merit alone; generally fail in the object of their wiſhes; the thin diſguiſe is ſoon ſeen through; and tho' for a ſhort time, they may impoſe upon a few, who are unable to diſtinguiſh real characters, from thoſe that are aſſumed; it for the moſt part happens, that their ſubſequent and final debaſement, is proportioned to their previous and temporary elevation. Like thoſe faint luminaries which ceaſe to ſhine when their borrowed light is withdrawn: they looſe their conſequence the moment the maſk is thrown off. While upon this ſubject, it may be proper to mention, that the ſame principle which actuated Dr. Jones in the trifling circumſtance of refuſing to diſtinguiſhing himſelf from the reſt of his fellow citizens, by any

peculiar ſelf-created badge; actuated him, in matters upon a larger ſcale. Pure in his principles as a republican, he conſidered *titles* as the pageantry of coxcombs, and like the royal ſtamp ſet upon falſe coin; by covering much baſe metal, inſtead of creating reſpect, ſerve to detract from the little honor to which their poſſeſſors might otherwiſe be entitled.

For a conſiderable part of the previous life of Dr. Jones, he had been afflicted by the aſthma, and for a long time, had ſtruggled to overcome that painful diſeaſe; but the exertions of both his own ſkill, and of the reſt of his medical brethren, in moſt parts of the continent, had hitherto proved ineffectual towards even his relief. He determined therefore to take a voyage to Europe, and accordingly ſailed for London. Here, in a thick ſmoke, and an atmoſphere impregnated with every ſpecies of animal putrefaction and effluvia, where ſo many aſthmatics have found ſuch remarkable benefit; he alſo experienced a conſiderable alleviation of his complaint; and it is not improbable, but that the permament alteration in his health which he afterwards enjoyed; may in ſome meaſure be at-

tributed to the effects of his reſidence in London.* He alſo employed himſelf during his continuance in the metropolis, in collecting ſubſcriptions for a hoſpital in New-York, which he had been chiefly inſtrumental in eſtabliſhing and which for convenience of ſtructure and accommodation of the patients, was inferior to none in this country; all his trouble however, was of little avail, for ſhortly after its erection, it was entirely conſumed by fire.

In London he again had an opportunity of ſeeing his friend Mr. Pott, at the head of his profeſſion, and of renewing that attachment

* Probably the amendment in his health may have ariſen alſo in part, from the effects of the voyage, and ſea air, which have been known to do good in ſome caſes of this diſeaſe. But it is nevertheleſs a remarkable fact in the hiſtory of the aſthma, that many perſons, who have been unable to breathe in the air of the country, revived upon returning into one leſs pure; and that the thick atmoſphere of a city ſhould create no diſturbance to an irritable lung, while the delightful odour of a flower, ſhould create an immediate return of the diſorder. A peculiarity was in this reſpect obſervable in Dr. Jones, who found his lungs expanded in the ſmoke of London, yet by merely coming into the room where a tube-roſe had filled the air with its fragrance, he experienced the moſt diſagreeable ſenſations; and ſometimes even a ſpaſmodic difficulty of breathing came on.

which had been previouſly commenced between them. He had now been for ſome years left to the guidance of his own judgment, but unlike many, who ſuppoſe all knowledge to become ſtationary, at the time of their leaving the college; he was ſtill willing to be taught by thoſe who had formely been his inſtructors; and who, from the greater opportunities they enjoyed, would be enabled to afford him much information. Eager for the acquiſition of knowledge, whenever, and wherever it was to be obtained; he again attended the lectures of his old maſter Dr. Hunter, and thoſe of his friend, Mr. Pott, who loſt no opportunity of ſhewing the conſiſtency between his profeſſions and proofs of reſpect: during his ſhort ſtay there, he paid Dr. Jones, the moſt particular attention, and preſented him with a complete copy of his lectures, juſt before his departure from London. His kindneſs however did not end here; for in the frequent applications which he received for advice from all parts of this country, in difficult and important caſes; he never failed to recommend his old pupil, as capable of affording any relief to be derived from ſurgical aſſiſtance. In conſequence of this; his atten-

dance was frequently desired in the different states; and while he shewed by his skill and success, that the opinion which had been formed of him was just; his fame became thereby diffused throughout the continent of America.

The following year he returned to his native country, whose political situation at that time, called loudly for the exertions of all her citizens. He again resumed his lectures, and delivered several courses, and in the autumn of the next year (1775,) published his "*plain remarks upon wounds and fractures*," which he inscribed to his old preceptor Dr. Cadwalader in so handsome a dedication, that I have preserved it with pleasure as an example of grateful remembrance from an affectionate pupil. A work of this kind which would give the young practitioner clear notions of the improved mode of treating diseases, without embarrassing him with refined speculations, or useless disquisitions, was much wanted. He attempted no systematic arrangment, but simply treated of those subjects, to which the attention of the surgeons of the army and navy would be most continually directed. No present could have been more acceptable to his country,

nor no gift more opportunely made; for, in the ſituation of American affiairs, many perſons were choſen to act as ſurgeons, who from their few opportunities, and their ignorance of the improvements, that had lately been made in practice, were but ill qualified for the office. His well meant endeavours were not loſt; for the improvements which he made known, though new to moſt practitioners and ſurgeons, were readily adopted when recommended by ſuch authority; and of whoſe ſucceſs they were aſſured by the moſt convincing and daily proffs. This work, though written, and publiſhed as it was; amidſt the hurry of extenſive buſineſs and bad health, (circumſtances unfavourable to literary compoſition) yet was not of ſo temporary a nature, as only to triumph in a tranſient uſefulneſs, and be forgotten, when the ſpur of the occaſion which called it forth had paſſed. Notwithſtanding the publication of more ſyſtematic works, it will ſtill inſtruct, and afford valuable information to the ſtudent of medicine. This was the only work ever publiſhed by Dr. Jones; it might have indeed been readily ſuppoſed, that more would have came from his pen, conſidering how

well qualified he was to make obſervations, and to impart to others, ſome portion of that knowledge of which he himſelf poſſeſſed ſo great a ſhare. Such was actually his intention; and he had prepared another work for the preſs, but was prevented by the moſt baſe treachery from giving it to the world. This was a complete collection of meteorological obſervations, made for ten ſucceſſive years, in New-York; with an account of the reigning diſeaſes during that period; which as he has often informed me, was ready for the preſs at the time of his departure from New-York; when he placed it, together with all his valuable manuſcripts, and the anatomical preparations, he had collected during his two voyages to Europe, in a place of apparent ſafety in a neighbouring ſtate; and in ſafety they might have remained, had not a brother profeſſor, who became acquainted with the circumſtance, and knowing the value of the depoſit; perfidiouſly ſeized on it, with a view of converting it to his own profit; by whom the whole were loſt to the world and himſelf. Notwithſtanding however, the little that came from his pen; yet, if every member of the profeſſion was as willing as he may be able,

to communicate as much uſeful matter; medicine would no longer be conſidered as an uncertain art, but would arrive, by a gradual and progreſſive ſtate of improvment to that happy period, when diſeaſes ſhall no longer baffle the efforts of the phyſician, and when old age and caſualties will become the only outlets of human life. He contributed his mite, and therefore deſerves the thanks of poſterity, let others follow his example and receive the like reward.

The buſineſs of teaching, as well as of private practice, was ſoon after interrupted by the commotions of his country; and by the actual exiſtence of the ſtorm, which had for ſometime before, been collecting in its political horiſon. War was already declared, and the blood of hundreds had been ſhed in the cauſe of freedom. The Britiſh army having taken poſſeſſion of New-York, and the adjacent country becoming the ſeat of war, Dr. Jones with all the friends to the American cauſe, had previouſly left the city; and retired to ſome diſtance into the country. Many of his friends, who were attached to the Britiſh intereſt, proteſted againſt this meaſure, with all the warmth that a ſincere eſteem, and

diſintereſted friendſhip could inſpire; and tho' he received the moſt poſitive aſſurances of not being diſturbed on acount of his political principles, if he remained in the city; but of having full liberty to follow the extenſive and very lucrative buſineſs in which he was engaged; he refuſed to accept the offer of protection, that he might be under the painful neceſſity of witneſſing, much leſs countenancing the devaſtations committed by the enemy. At the deſire of his friends, the Britiſh commandant likewiſe made the moſt flattering offers of protection, in caſe he ſhould think proper to return; but notwithſtanding the loſſes he ſuſtained in the deſtruction of his property, and from the interruption of his practice, he deelined the offer, and rather choſe to riſque the whole; than accumulate wealth among the ravagers of his country. He conſidered negative virtues as entitled to but little praiſe, and that he ſhould deſerve but a ſmall ſhare of regard from his country, for reſting ſatisfied with doing no evil: when he had it in his power to do much good. Fully convinced of the danger, with which the liberties of America were threatened; he conceived it criminal even to be a ſilent ſpectator of a con-

teſt carried on againſt a country that gave him birth, and to which he was attached by all the ties of veneration; and love and therefore accepted of a ſeat in the ſenate of New-York, for the ſouthern diſtrict, to which he was appointed by the convention choſen for the organization of the ſtate government, in conjunction with other fellow citizens. When he could no longer be uſeful in his legiſlative capacity, he exerted his profeſſional abilities, by entering the medical department of the army, where he rendered important ſervices to his ſuffering fellow ſoldiers, by healing thoſe wounds which they had received in the cauſe of liberty; but this highly ſatisfactory employment was of a ſhort duration; for the natural delicacy of his conſtitution, illy comporting with the hardſhips of a military life, and the manifeſt injury his health had already received; rendered it neceſſary for him to return again to private practice; accordingly on the evacuation of the city of Philadelphia by the Britiſh troops, he went thither in the ſummer of 1778; and found that during a ſhort ſtay there, he enjoyed ſo much freedom from the aſtmah, with which diſtreſſing complaint he had been long afflicted; that he determined to

take up his future reſidence in that city. In the latter end therefore, of the following year, or beginning of 1780, he removed to Philadelphia. This ſeparation from his former friends and acquaintances, was, as might be naturally expected, ſevere in the extreme. In few, or no inſtances are particular attachments more juſt, or of a more durable nature; than thoſe which exiſt between a patient and a phyſician. They are founded on the tried ſkill and integrity of the one, and that unlimited confidence of the other, which greatly contribute to eſtabliſh and continue eſteem. Accuſtomed to enjoy the confidence and friendſhip of his fellow-citizens, many of whom he had obſerved gradually to riſe, from being the companions of his youth, to eminence in life; he could not fail to look forward to the period of ſeparation from them, without ſincere regret. The great alteration however, in the ſtate of his health, which he had obſerved ſince his change of ſituation, was ſufficient to overbalance every other conſideration, and determined him in his choice. The citizens of Philadelphia were not inſenſible of of his merits; for the ſame ſucceſs in practice as a profeſſional man; and the ſame agreeable

manners as a gentleman, which placed him ſo high in the eſteem of his fellow-citizens at New-York; could not fail of attracting thoſe of his new place of reſidence.

On the reſignation of Dr. John Redman, as one of the phyſicians of the Pennſylvania hoſpital, in the year 1780; Dr. Jones was unanimouſly elected by the managers to fill the vacancy, and was continued therein, until the time of his death. In his attendance upon this inſtitution, he was as remarkable for his regularity, as for the ſucceſs of his practice; and the plain tho' honourable mention made of him by the managers in their minutes; ſufficiently teſtifies the ſenſe they entertained of his ſervices in the cauſe of ſuffering humanity. The ſame year, he was elected firſt preſident of the humane ſociety.

In the year 1786 the attention of the citizens of Philadelphia was called to the poor of the place, who at that time were in a peculiar and diſtreſſing ſituation from the want of proper medical aſſiſtance when ſick. The Pennſylvania hoſpital which previouſly to the late revolution, uſed to contain a great number of patients at a time, was prevented from extending its charity, in conſequence of the loſs it ſuſ-

tained by the removal of many who were indebted to it, and by the depreciation of the paper bills of credit in which others paid the ſums due by them to the inſtitution. In conſequence of this, the managers were under the neceſſity of confining within narrow limits, that charity which was formerly ſo liberally diſpenſed, and many poor people being thus precluded from proper medical attendance, often ſuffered very materially, both in health and property by the pretenſions of ignorant impoſters. A deſign was therefore formed of eſtabliſhing a diſpenſary, by ſubſcription, from which the poor might be furniſhed with medicines, at their own houſes, and attended by eminent phyſicians. This humane plan met with all the encouragement which it deſerved, and the inſtitution was in a ſhort time duly organiſed. A number of phyſicians and ſurgeons were appointed conſtantly to attend the patients, and others of longer ſtanding in the profeſſion, to conſult occaſionally with the former in extraordinary and difficult caſes. Among the latter number Dr. Jones was elected, and annually re-choſen until the time of his death; and whenever called on, freely imparted that advice which he was ſo well qualified to give.

The ſucceſs attending this inſtitution, has greatly exceeded the expectations of its benevolent founders. It would be digreſſing too far, to enter into its particular hiſtory, but it is proper to obſerve, that ſince its eſtabliſhment it has diſpenſed health, and removed diſeaſe from thouſands. In ſhort, ſo important are the advantages which have, and ſtill are derived from it, that it has been happily ſaid † "to exhibit ſomething like the application of the mechanical powers to the purpoſes of benevolence, for in what other charitable inſtitution do we perceive ſo great a quantity of diſtreſs relieved by ſo ſmall an expence."

In the ſucceeding year, the phyſicians of Philadelphia, influenced by the many advantages which have ariſen in every country, from well conducted literary inſtitutions; agreed to eſtabliſh a college among themſelves, for the advancement of the intereſts of medicine in general, but eſpecially of this country; and elected Dr. Jones vice preſident; the chair of the college having been conferred upon Dr. Redman. But a part of the firſt volume of this ſociety is publiſhed, and to this he has communicated one of the moſt intereſting papers, up-

† By Dr. Ruſh.

on *Anthrax*, which is annexed to the preſent edition of his tracts. To the ſeveral offices above mentioned, Dr. Jones was honored by an annual re-election until the time of his death; a full proof of the ſentiments entertained of the care, and zeal with which he attended to the advancement of their ſeveral objects.

Dr. Jones was not only the intimate friend, but alſo phyſician to Dr. Franklin, and attended him in the laſt illneſs, which deprived the world and his country of that philoſopher. As it may not be unſatisfactory, to know ſomething of the manner, in which ſo great a man conducted himſelf, when about to cloſe his earthly ſcene, and enter upon another, of the exiſtence of which, he was falſely reported to have diſbelieved: I have preſerved the following ſhort account of his laſt illneſs, drawn up by Dr. Jones, and publiſhed at the time.

"The ſtone with which he had been afflicted for ſeveral years, had for the laſt twelve months of his life, confined him chiefly to his bed: and during the extremely painful paroxyſms, he was obliged to take large doſes of laudanum to mitigate his tortures; ſtill, in the intervals of pain, he not only amuſed himſelf

by reading and converſing cheerfully with his family, and a few friends who viſited him: but was often employed in doing buſineſs of a public, as well as of a private nature, with various perſons who waited upon him for that purpoſe; and in every inſtance, diſplayed not only the readineſs and diſpoſition to do good, which were the diſtinguiſhing characteriſtics of his life: but the fulleſt, and cleareſt poſſeſſion of his uncommon abilities. He alſo not unfrequently indulged in thoſe *jeux d'eſprit*, and entertaining anecdotes, which were the delight of all who heard them.

About ſixteen days before his death, he was ſeized with a feveriſh diſpoſition, without any particular ſymptoms attending it, till the third or fourth day, when he complained of a pain in his left breaſt, which increaſed till it became extremely acute, attended by a cough and laborious breathing. During this ſtate, when the ſeverity of his pains, drew forth a groan of complaint; he would obſerve, that he was afraid he did not bear them as he ought; acknowledging his grateful ſenſe of the many bleſſings he had received from the Supreme Being, who had raiſed him from ſmall and low beginnings, to ſuch high rank and conſidera-

tion among men: and made no doubt but that his preſent afflictions were kindly intended to wean him from a world in which he was no longer fit to act the part aſſigned him. In this frame of body and mind, he continued until five days before his death, when the pain and difficulty of breathing entirely left him; and his family were flattering themſelves with the hopes of his recovery; but an impoſthume which had formed in his lungs, ſuddenly burſt, and diſcharged a quantity of matter, which he continued to throw up while he had power, but as that failed, the organs of reſpiration became gradually oppreſſed; a calm lethargic ſtate ſucceeded; and on the 17th inſtant *(April* 1790) about eleven o'clck at night, he quietly expired, cloſing a long and uſeful life of eighty four years and three months.

It may not be amiſs to add to the above account, that Dr. Franklin, in the year 1735, had a fevere pleuriſy, which terminated in an abſceſs of his lungs; and he was then almoſt ſuffocated, by the quantity and ſuddenneſs of the diſcharge. A ſecond attack of a ſimilar nature, happened ſome years after, from which he ſoon recovered; and did not appear to ſuffer any inconvenience in his reſpiration from theſe diſeaſes."

In the ſummer of the year 1790; the Preſident of the United States then at New-York; after having been for ſome days indiſpoſed, became ſo ill, that other aſſiſtance in addition to that of his attending phyſician became neceſſary. An expreſs arrived for Dr. Jones, and notwithſtanding he was then much engaged in private practice at Philadelphia; he loſt no time in flying at the call of a man, in whoſe welfare ſo many millions of FREEMEN were intereſted. Upon his arrival at New-York; he found that the diſeaſe from being of an inflammatory nature, had terminated in an alarming ſtate of debility, and violent ſpaſmodic difficulty of breathing, which threatened the greateſt danger. An unacquaintance with the particular circumſtances of the caſe prevents me from aſſerting poſitively, to whoſe fortunate advice the happy recovery is to be attributed; but the fact is, that in a few hours after the firſt viſit, a manifeſt alteration for the better was perceived, and in a few days the Preſident was out of danger. The importance of the ſervice rendered, was not forgotten by a man, who has not only ſhewn himſelf capable of preſiding with dignity at the head of our go-

vernment, which by his labours in the field he contributed ſo much to render independent; but has alſo uniformly evinced, that he is not inattentive to private worth. On the removal of the Federal Government to Philadelphia, the Preſident choſe him phyſician to his family; and he continued in that honorable ſtation until the time of his death.

But true, as well as trite, is that obſervation; that ſhort and unſteady are all ſublunary enjoyments. At the very time, when he was reaping the benefits of a long and ſteady purſuit of his profeſſion; and happy in the poſſeſſion of the higheſt confidence of his fellow citizens; death put a ſtop to his earthly career. In the month of June, 1791, Dr. Jones rode out on horſeback ſome miles from town to viſit his friend Mr. Charles Thompſon, Secretary to Congreſs during the late war; the day was warm, and he was ſo fatigued by his excurſion; that he did not entirely recover himſelf for ſeveral days. On the evening of the 17th he paid a viſit to to the Preſident of the United States; and previouſly to his return home, from being a very ſultry day, the air became remarkably cool; he was dreſſed in a light manner

ſuitable to the weather when he ſet out; but it was not ſufficiently warm for the remarkable and ſudden alteration in the temperature of the air that ſucceeded. Having ſome patients who required his attendance; he viſited them before his return home, where he had no ſooner arrived, than he felt himſelf much indiſpoſed: the next morning he awoke with a ſmart fever, attended by a diarrhœa, and great proſtration of ſtrength. He continued for four days in this ſituation, with but little alteration, paſſing almoſt ſleepleſs nights. Upon the fifth day, he became conſiderably better; was able to ſit up, and the moſt flattering proſpects were entertained of a quick recovery; exhauſted however by the violence of the diſeaſe, the want of ſleep and the converſation of his numerous friends, who had that day viſited him; he retired early to bed in the evening, with a view by the help of an anodyne, to procure ſome reſt. This however was denied him, and he continued in a very reſtleſs, and uneaſy ſtate the whole night, during which time he had a violent return of his aſthma. Early in the morning of the 23d he felt ſome inclination

to ſleep and deſired to be left alone. His orders were perhaps too punctually obeyed; at eight o'clock his ſervant entered his room, and obſerved him in a calm ſlumber; he again viſited him two hours after, when he found him in the ſame poſition with his hand under his head; to all appearance in a profound ſleep, but on approaching the bed he perceived that he breathed no more. The quiet and eaſy manner of his death, and the apparent ſtrength of body exhibited the preceding day; induced ſome of his brethren to hope that a ſuſpenſion of animation only, had taken place; the uſual means of recovery were accordingly tried for ſome time but all in vain: the ſcene was finally cloſed. He died in the ſixty-third year of his age. His remains were depoſited in the Friend's burial ground, Arch-ſtreet; and his funeral was conducted agreeably to a deſire he often expreſſed; without the ridiculous pomp of a ceremonious interment, but in a plain manner, and ſtrictly ſuitable to the excellent regulations of that religious ſociety. It was attended by the members of the Philoſophical ſociety, his medical brethren of the col-

lege, and thoſe numerous citizens who knew his worth, and will long regret his death.*

The perſon of Dr. Jones, was about the middle ſize; his cheſt was moderate, but perfectly well formed; his habit was thin, owing to his conſtant affliction with the aſthma. His eye was quick and penetrating, his countenance cheerful but ſedate, and his whole deportment was eaſy, tho' polite. Far from imitating thoſe little minds, who attempt to acquire the confidence and reſpect of their fellow citizens, by a pompous conduct, and affected

* I cannot refrain inſerting here the notice of the Pennſylvania hoſpital, above referred to; as conveying the ſenſe they entertained of his upright conduct in the diſcharge of his profeſſional duty to the inſtitution.

" *Pennſylvania hoſpital, 27th June*, 1791.

" AT A MEETING OF THE MANAGERS.

" Report is now made of the death of our valuable " friend the late Dr. John Jones, who died the 23d. inſt. " after a few days illneſs.

" The managers ſincerely regret, the loſs which the " public ſuſtains by the removal of this able, and emi- " nent phyſician; in a particular manner, they lament its " effects on the intereſts of this inſtitution, wherein they " have had opportunities of obſerving, that during his " attendance for about eleven years; by a cheerful exer- " tion of his uncommon abilities, through the bleſſing " of Providence, he hath ſaved the lives of a number " of patients in the moſt difficult and intricate caſes."

diſtance, he was free and eaſy of acceſs; for as he owed his fame and reputation neither to powerful friends or connexions; nor any of thoſe lucky circumſtances, which excluſively of abilities ſo frequently determine the fortune of phyſicians in ſatiaties; but roſe into the eſteem of his fellow citizens, ſolely by merit, ſo he depended upon this alone, for the continuance of that intereſt and ſupport in the profeſſion by which he lived. There was notwithſtanding, ſuch a gravity of appearance, and dignity of manners, (the outward image of his elevated mind,) which never failed to command reſpect and eſteem. Few perſons have died more ſincerely regretted; for few perſons poſſeſſed more of thoſe engaging qualities, which render a man eſtimable, either in his profeſſional character, or private capacity, than Dr. Jones. His converſation was of the moſt pleaſing and intereſting kind; while his language flowed in that eaſy ſpontaneous manner, which evinced at once how little it was ſtudied; he at the ſame time enlivened it, by a ſprightly vein of wit which delighted as well as commanded the attention of the hearer. He was however never known to make uſe of it, to the injury or even embaraſſment of another, as is

frequently done by thoſe who poſſeſs that power, and who would rather ſuffer the riſque of hurting the feelings of their friend, than looſe the mirth that was raiſed at his expence. He was fond of the *belles lettres*, and read much poetry of the beſt authors, whoſe happy expreſſions he had the utmoſt readineſs in introducing, and applying to proper and ſeaſonable parts of a converſation. He had ſeen much of life, and his memory ſuffered few things to eſcape, which his obſervation or judgment induced him to think worthy of retaining. Theſe accompliſhments rendered him a moſt agreeable, as well as entertaining and inſtructing companion; and being joined to profeſſional merit, ſerved to fix and ſecure the regard of his friends in a moſt powerful and remarkable manner.

As a ſurgeon, Dr. Jones ſtood at the head of the profeſſion in this country; and he may be deſervedly conſidered, as the chief inſtrument in effecting the remarkable revolution in that branch of the healing art, which is now ſo apparent; by lying aſide the former complicated modes of practice, and ſubſtituting thoſe which are plain and ſimple. The operation to which he principally confined himſelf for many of the laſt years of his life

was that of *lithotomy*; and his ſucceſs in this difficult and important object of a ſurgeon's duty, was great indeed. In ſeveral caſes, in which I had an opportunity of ſeeing him operate, and the honor of being one of his aſſiſtants, during the period of my ſurgical purſuits under his direction, I was ſtruck with the calm, and firm manner, in which he proceeded in the moſt difficult caſes; and the regularity, and eaſe with which he finiſhed the operation, when the moſt untoward circumſtances took place. Even in the month before his death, in a moſt capital and nice operation, there did not appear to be any diminution of that dexterity and ſteadineſs of hand, for which he had always been ſo remarkable; and of which thoſe not half his age might have boaſted. From long practice alſo; and from that readineſs which appeared to be conſtitutional; he had acquired a facility in operating, to which few ſurgeons have arrived; I have ſeldom known him longer than three minutes in lithotomy, and he has ſometimes finiſhed the whole in one minute and a half! Happy however, as he was, both as to the manner, and fortunate as to the event of the operation; he was not ſo anxious about the ſhortneſs of the time in

which it was performed as to the certainty of its ſucceſs. Like his great maſter POTT, he reprobated the practice frequently purſued, of counting the motions of a ſurgeons hand by a ſtop watch, like a jockey does thoſe of his horſe's feet; from a conviction that ſurgeons, and particularly young ones, on their firſt outſet, have ſometimes injudiciouſly haſtened an operation, with a view of ſhewing their dexterity to by-ſtanders, who often judge of merit by the circumſtance; and have thereby materially injured their patients. '*Reſpice finem*,' was the rule of *his* conduct, as it ought to be of *every* ſurgeon and phyſician; and as much as he attended to the ſhortneſs of the operation, as connected with the important conſideration of alleviating pain; he nevertheleſs conſidered it of ſecondary conſequence, and rather wiſhed to accompliſh that well, in a little longer time; than ſlight his work by a ſtudied diſpatch.

Connected with this part of his profeſſional character; was his merit as an accoucheur; and in this difficult and important branch, his ſucceſs was great. During the proſecution of his ſtudies in Europe, he paid particular attention to this ſubject; and availed himſelf of

every opportunity, to become qualified to practise it; both by a ſtrict attendance upon the various hoſpitals founded for this particular purpoſe; and upon the private practice of the different profeſſors. In the lectures which he himſelf delivered in the college of New-York; he dwelt much upon this ſubject, and he may juſtly be conſidered as the firſt, who gave the medical ſtudents of that ſtate, a proper and rational notion of the art. Convinced that nature, or more properly ſpeaking, the EXERTIONS of the SYSTEM, were in the greateſt number of inſtances ſufficient for its own neceſſities; he ſeldom had recourſe to thoſe artificial aids, by the frequent uſe of which, the lives of the ſubjects were formerly often endangered; and whoſe general neglect, now marks ſuch an æra in the hiſtory of the art. In caſes however, of abſolute neceſſity, which ſometimes though fortunately ſeldom occur; he never failed to derive from them every poſſible aid; and while on the one hand, his becoming modeſty, and delicacy of deportment not only marked the gentleman, but held him doubly dear to the female ſex; his expertneſs in operating notwithſtanding his averſion from

foreign aſſiſtance, ſufficiently teſtified his knowledge of its uſe.

The merit of Dr. Jones as a phyſician, was likewiſe conſiderable. Though educated in the ſchool of Boerhaave; he never profeſſed an implicit faith on that, or any other ſyſtematic: he was guided by juſt general principles, and he varied his practice like every judicious phyſician, with the varying circumſtances of the caſe. The works of the great Cullen did not make their appearance, until ſome years after he had been in practice; and though more free from error than thoſe of the former; yet the modes of practice often neceſſary to follow in this country; differed ſo widely from thoſe laid down by this eminent profeſſor; convinced him of the impoſſibility of its univerſal eſtabliſhment or even general application to a people; whoſe conſtitutions, ſtate of ſociety, and manners were as widely different, as their reſpective countries were diſtant. The ſucceſs of his practice, was the beſt proof of the truth of his principles, and of the judgment which directed their application. He lamented the imperfection of the ſcience, and never refuſed the adoption of any rational means of increaſing its cer-

tainty, or the uſe of any remedy becauſe it was new, which had been ſanctioned by experience; and had reaſon and probability to recommend it; on the other hand, the caution with which he gave way to many much famed antidotes whoſe ſhort lived reputation proved their merit; marked him the ſafe and prudent practioner.

There was one particular trait in the character of Dr. Jones, which as affording a very uſeful leſſon of inſtruction, deſerves to be mentioned. This was the uncommon caution which he obſerved in giving advice in the concerns of others. It has been very properly obſerved, that advice to moſt perſons, is diſagreeable for two reaſons; firſt, becauſe it implies a ſuperiority in the counſellor which few perſons can brook, and ſecondly becauſe it indicates a certain degree of wiſdom, in which the perſon to whom the advice is given, is ſuppoſed to be deficient. Thoſe likewiſe, who on all occaſions are moſt ready to give advice, it is well known, are not always the moſt acceptable adviſers: even in caſes where it may be apparently aſked in ſincerity, it may frequently never be intended to be followed, and probably was only obtained with a view of

hearing diverſity of opinions upon the ſame ſubject. Fully perſuaded of this truth, Dr. Jones made it a rule, never to offer advice, and ſeldom to give it, except he had well grounded aſſurance that it was aſked in ſincerity; and in this caſe, when demanded upon a ſubject, concerning which he thought himſelf capable of informing; he ſeldom ſcrupled to give it, obſerving at the ſame time, never to make uſe of any perſuaſion to induce it to be followed, but left the party to decide for themſelves. A conduct highly meritorious and worthy of imitation by all men in ſuperior ſtations of life; to whom recourſe is frequently had in caſes of difficulty. But contrary to this, how frequently do we obſerve advice given, and the greateſt perſuaſion made uſe of to inforce it, even where it never was required: the conſequence of which is, that the plan originally formed is laid aſide, and the new one propoſed, adopted in its room; and as ſucceſs does not always coincide with our expectation, however flattering the proſpect, may at firſt appeared; the perſon, in caſe of failure who was ſo ready with his advice, juſtly obtains the reproach of thoſe who were ſo unfortunate, as to be governed by his counſel.

Upon the extenſive theatre of human events, this ſcene frequently takes place, and affords room for very important deductions to thoſe who can grow wiſe by example, and profit by precept. For my own part, his conduct, to me, upon propoſing to him a favorite plan, which at firſt promiſed much profit, but eventually verified his prediction, by turning out a ruinous project; will forever leave an indelible impreſſion on my mind; and it was in obedience to his happy counſel, that I may in all probability aſcribe the continuation of my exiſtence, which enables me thus to record the hiſtory of my preſervation.

The ſame prudential motives, which influenced Dr. Jones, in the above particular, likewiſe ſhewed themſelves, in the caution with which he contracted friendſhips. The beſt knowledge, and that which is of the greateſt advantage to mankind, is what we derive from from experience. In the early part of his life, he had ſuffered as I was informed by the villainy of a man, in whoſe honor he had the greateſt reaſon to confide; and dear as the price was, at which this ſpecimen of human nature was afforded, it was not purchaſed in vain: it taught him a leſſon by which he profited

during the remainder of his life; and pointed out the neceſſity of not placing ſuch implicit confidence in men, who though they ſhew a ſpecious outſide garb of friendſhip, are actuated ſolely by ſelf-intereſt in their apparently diſintereſted conduct. Thus cautious however in contracting friendſhips, yet when tried worth had induced him to form an attachment, he was ſincere and firm. His friendſhip did not ſhew itſelf by thoſe convulſive acts of generoſity, which ſometimes are performed; but in a conſtant and uniform diſpoſition, which was ready to aſſiſt in the hour when moſt needed: not like the burſting of a ſcorching ſun from behind a cloud, which brings on diſeaſe while it flatters with health; but like the moderate and gentle ſunſhine which imparts health to the body and ſerenity to the mind.

He is now gone to that "country from whoſe bourn no traveller returns;" and while we mourn his loſs, let us if poſſible derive inſtruction from the record of his life. To my fellow members of the profeſſion, and eſpecially to thoſe, who are about to commence their medical career, I would ſet him as a pattern every way worthy of imitation. He was their friend while living, and he contri-

buted much to their improvement by his labours. Like him, let them entertain a juſt ſenſe of the dignity of the medical profeſſion; let them rely upon actual merit, and real worth for their advancement, and deſpiſe every art that would tend to raiſe them in the eſteem among mankind, upon any other, than this ſolid and ſubſtantial baſis. May the bright pattern he exhibited ſtimulate them and EVERY member of the profeſſion to the attainment of ſimilar excellencies, and may the recollection of his virtues ſo operate, that while we lament the loſs which the profeſſion has ſuffered, we may endeavour, like him, to deſerve equally well of ſociety.

THE

SURGICAL WORKS

OF THE LATE

JOHN JONES, M. D.

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TO

DOCTOR THOMAS CADWALADER,

PHYSICIAN IN PHILADELPHIA,

SIR,

WHILE ſpeculative philoſophers are diſputing about the origin of evil, and foundation of morals; and furious bigots, contending for different modes of faith, the practical good man, will endeavour to employ himſelf in alleviating thoſe evils which he finds incident to human nature, without too vain and curious an inquiry into cauſes, the nature and operation of which, lie far beyond the narrow limits of human underſtanding.

The preſent calamitous ſituation of this once happy country, in a peculiar manner, demands the aid and aſſiſtance of every virtuous citizen: and though few men are poſſeſſed of thoſe ſuperior talents, which are requiſite to heal ſuch mighty evils, as now threaten

the whole body politic with ruin and deſolation; yet, every man has it in his power to contribute ſomething towards ſo deſirable an end; and if he cannot cure the fatal diſeaſes of his unfortunate country; it will, at leaſt, afford him ſome conſolation, to have poured a little balm into her bleeding wounds.

Influenced by theſe motives, I have endeavoured to ſelect the ſentiments of the beſt modern ſurgeons upon the treatment of thoſe accidents, which are moſt likely to attend our preſent unnatural conteſt; and as many of the gentlemen engaged in that ſervice are young men whoſe opportunities of inſtruction or practice, have been confined within narrow limits; I flatter myſelf, that ſuch of them, at leaſt, as are conſcious of their own defects, will find in the piece, no unuſeful guide. To you, whoſe whole life has been one continued ſcene of benevolence and humanity; the moſt feeble efforts to ſoften human miſery, and ſmooth the bed of death; will, I know, be an acceptable preſent, however ſhort the well meant zeal of the author, may fall of his purpoſe. Nor will you ſuſpect me of the vanity of ſuppoſing, I ſhall convey any thing new or inſtructive to men of knowledge and experi-

ence in their profeſſion, much leſs to yourſelf; to whoſe excellent precepts, both in phyſic and morals, I owe the beſt and earlieſt leſſons of my life; and if I have attained to any degree of eſtimation with my fellow citizens, it is with the moſt ſincere and heartfelt pleaſure, that I publickly acknowledge the happy ſource.—That your virtuous life may be long continued as a bleſſing to yourſelf, your friends and your country, is the ardent wiſh, of your

Moſt obliged friend,
and affectionate kinſman,
JOHN JONES.

NEW-YORK, 12th OCTOBER, 1775.

INTRODUCTION.

TO THE

STUDENTS AND YOUNG PRACTITIONERS IN SURGERY, TROUGHOUT AMERICA.

GENTLEMEN.

THE following remarks and obſervations, were thrown together, under the diſadvantageous circumſtances of ill health, and a variety of occupations, which allowed little leiſure for compoſition; and I flatter myſelf the apparent neceſſity for ſome immediate production of this nature, will apologize for thoſe defects which a diſcerning reader will readily diſcover. If any of you, by obſerving the following rules, ſhould ſave the life, or even limb of but one citizen, who has bravely expoſed himſelf in defence of his country, I ſhall think myſelf richly rewarded for my labour. In the mean time, inſtead of attempting an idle panegyric upon the moſt uſeful of all arts, per-

mit me to point out to you ſome of the moſt eſſential duties and qualifications of a good ſurgeon; the proper requiſites of which reſpectable character, are only to be found in a liberal education; which furniſhes every means of acquiring the knowledge, that muſt be ripened by experience, and graced by the conſtant practice of attention, tenderneſs, and humanity. A judicious ſurgeon will always find his powers and abilities of aſſiſting the wretched proportionable to the time he has ſpent, and the pains he has beſtowed, in acquiring the proper knowledge of his profeſſion.

In moſt European countries, an invidious diſtinction has prevailed, between phyſic and ſurgery; but in this part of the world the two profeſſions are generally united; indeed both theſe branches of medicine, are, in the very nature of things ſo intimately connected; as not to admit of abſolute ſeparation, without manifeſt injury to each. As a curious and intereſting fact in the hiſtory of ſurgery, may ſerve to illuſtrate this opinion; I hope a ſhort digreſſion will not be deemed wholly uninſtructive, or foreign to the preſent purpoſe.

At the revival of letters in Europe; when a cultivation of the languages had opened the treaſures of the Greek and Latin writers, there

aroſe a number of great men, in all the different branches of ſcience: but what was very peculiar to the ſtate of ſurgery, particularly in Italy and Germany, is, that this ſcience was cultivated and practiſed by the ſame men who ſtudied and practiſed phyſic; ſo that the ſame perſons were at once admirable ſurgeons, and excellent phyſicians; and it is preciſely at this æra, that a crowd of celebrated men aroſe, whoſe works will forever do honour to themſelves and their profeſſion.

But it was not long before the operation of ſome of thoſe paſſions, which have ſo much influence in the affairs of mankind; occaſioned the decline, and almoſt total extinction of ſurgery. The exterior of this ſcience, has nothing pleaſing or attractive in it, but is rather diſguſting to nice, timid, and delicate perſons: its objects too; except in time of war, lying chiefly among the poor and lower claſs of mankind; do not excite the induſtry of the ambitious or avaricious, who find their beſt account among the rich and great; for this reaſon thoſe illuſtrious men who were at once great phyſicians and ſurgeons, abandoned the moſt diſagreeable and unprofitable part of their profeſſion, to follow that branch alone,

which at once gratified their eaſe, their avarice, and their ambition. This regulation gave riſe to the ſecond ſtate of ſurgery. The medical ſurgeons, in quitting the exerciſe of the art, retained the right of directing the barbers, to whom the operations and external applications of ſurgery were committed: from this ſeparation, the ſurgeon was no longer one and the ſame individual, but a monſtrous and unnatural compoſition of two perſons; of a phyſician who arrogated to himſelf an excluſive knowledge of ſcience, (and conſequently the right of directing,) and a ſurgeon operator, to whom the mere manual part was committed.

The danger of this ſeparation of the ſcience of ſurgery from the art of operating was not at firſt percieved. The great maſters who had exerciſed ſurgery as well as phyſic, were ſtill alive; and the dexterity they had acquired, was ſufficient to direct and aſſiſt the automaton, or mere operator; but as ſoon as this Hippocratic race of men, as Fallopius juſtly ſtiles them, were no more, the progreſs of ſurgery was not only retarded, but the art itſelf was almoſt extinguiſhed, little more than the bare name remaining: hence that animated and affecting picture, which Cæſar Magatus, the Ve-

nitian phyſician, drew, of the miſery of thoſe unfortunate citizens who languiſhed without reſource, under the moſt cruel and painful diſeaſes, which were formerly cured with certainty; but the patients were then abandoned to their wretched fate, as the moſt favourable alternative; for they could but periſh by the ſeverity of the diſeaſe, and they were ſure to die, by the ignorance of their operator.

The fatal conſequences of a total ſeparation of phyſic and ſurgery, are ſo ſtrikingly exemplified in this remarkable epocha of the ſcience; that I think it may ſerve as a ſufficient proof, of the erroneous concluſions of a late celebrated profeſſor of phyſic at Edinburgh: who in an excellent diſcourſe upon the duties and offices of a phyſician, is of opinion, that the art of ſurgery would be more advanced, by confining the profeſſors of it to mere manual operation, under the direction of an able phyſician, than it could be by thoſe who practiſe promiſcuouſly the different branches of medicine. It is with the utmoſt diffidence and reluctance, that I preſume to differ with ſo truly liberal a character as that of Dr. Gregory, but as truth is the grand object of our mutual enquiries, and that

upon a ſubject the moſt uſeful and intereſting to mankind, no names however great or reſpectable, ſhould implicitly influence our reſearches.

For this reaſon, though I readily grant that a diviſion of the practical part of medicine, into two different branches, may, by confining each to a more frequent attention to the ſame objects produce a degree of perfection which a more promiſcuous practice could never arrive at; yet I muſt at the ſame time declare, that I can almoſt as readily conceive the poſſibility of ſeeing a good play performed by Punch's company of comedians, actuated by their director, as to ſee a number of ſurgeon machines, perform difficult and delicate operations, under the directions of their medical maſters.

In ſhort, the variety of difficult operations, performed with ſuch ſuperior ſucceſs and ſafety, by the preſent race of ſurgeons, who are diſtinguiſhed for their knowledge in every branch of medical learning, is an evident proof of the benefit reſulting to operators from a more liberal mode of education; and I think it can no longer remain a doubt with any unprejudiced perſon, that an enlightened mind, united to the perſon of the operator, muſt and

will conſtitute the moſt accompliſhed and ſucceſsful ſurgeon.

For theſe reaſons, ſurgery may, with great propriety, be divided into medical and manual ;—the firſt comprehends an infinite variety of diſeaſes, which require the aſſiſtance of both internal and external applications ; the laſt is confined to thoſe caſes which admit of relief from the hand alone, or aſſiſted by inſtruments.

Hence it will appear very evident, how neceſſary it is for a ſtudent in ſurgery, to make himſelf thoroughly acquainted with moſt of the branches of medicine, which are requiſite to form an accompliſhed phyſician.

Beſides a competent acquaintance with the learned languages, which are to lay the foundation of every other acquiſition ; he muſt poſſeſs an accurate knowledge of the ſtructure of the human body, acquired not only by attending anatomical lectures, but by frequent diſſections of dead bodies with his own hands.

This practice cannot be too warmly recommended to the ſtudents in ſurgery : It is from this ſource that they muſt derive any adequate notions of the animal œconomy or phyſiology. Chemiſtry, and materia medica are, alſo very

neceſſary to a right underſtanding of pharmacy or compoſition.

To theſe ſhould be added ſome progreſs in the mathematics and mechanics, which I will venture to aſſert may be applied with much more utility and ſafety to the ſcience of ſurgery, than phyſic. But there muſt be a happineſs, as well as art, to complete the character of the great ſurgeon. He ought to have firm ſteady hands, and be able to uſe both alike; a ſtrong clear ſight, and above all, a mind calm and intrepid, yet humane and compaſſionate, avoiding every appearance of terror and cruelty to his patients, amidſt the moſt ſevere operations.

From this ſhort view of the nature and extent of the art of ſurgery; it will evidently appear, how neceſſary an early and diligent purſuit of thoſe branches of knowledge, which are to lay the foundation of future eminence, is to the young ſtudent, who will not find it ſo eaſily attainable as the generality of pupils are apt to imagine. To be proficients in an art which requires reiterated experiment; and whoſe ſubject is liable to ſo much variation, not only requires a good deal of time, but much ſagacity and judgment. The great variety of habits and conſtitutions, and the fre-

quent complications of diſeaſes with each other, conſtitutes an ample field for contemplation; and he who runs haſtily through, will not be likely to reap much benefit from ſcampering round the wards of an hoſpital, and reading a general ſyſtem of ſurgery, which are too often the beſt foundation for practice, that many gentlemen can boaſt: But if a man duly reflects upon the importance of that art, in the exerciſe of which, health and life, the greateſt of human bleſſings are concerned; he will deem himſelf accountable for all errors, into which ignorance or inattention muſt infallibly betray him.

In new ſettled countries however; where opportunities of improvement are not within the reach of every ſtudent; many gentlemen are obliged to ſet out in practice, with ſuch a ſtock of knowledge as they are able to acquire under the tuition of a ſingle maſter, who may, himſelf alſo often ſtand in need of inſtruction. To ſuch gentlemen I would earneſtly recommend a diligent, attentive, and repeated peruſal of the beſt Engliſh practical writers, among whom Mr. Pott, in my humble opinion, claims the firſt and moſt diſtinguiſhed rank. Mr. Bromfield's chirurgical remarks, contain a great deal of uſeful inſtruction upon

ſome of the intereſting and difficult diſeaſes in ſurgery.—The writings of Mr. Sharp, Mr. Gooch, and Mr. White of Mancheſter, alſo merit a very attentive peruſal; and the Medical Obſervations of London and Edinburgh, abound with a great variety of uſeful and inſtructive caſes, both in phyſic and ſurgery—Monſieur Le Dran, whoſe works are well tranſlated into Engliſh, is the moſt celebrated writer amongſt the French: his obſervations are the reſult of ſound learning, and a prodigious experience of ſixty years, both in the army, as well as capital of the kingdom; his laſt work entitled "*conſultations*," is peculiarly deſigned for the aſſiſtance, and inſtruction of young practitioners in ſurgery. As to thoſe gentlemen, who will neither read nor reaſon, but practiſe at a venture, and ſport with the lives and limbs of their fellow-creatures, I can only with Dr. Huxham, adviſe them ſeriouſly to peruſe the ſixth commandment, which is, "*Thou ſhalt not kill.*"

CHAPTER I.

OF WOUNDS IN GENERAL.

A WOUND is very accurately defined by the great Boerhaave, to be a " recent and bloody ſolution of the union of a ſoft part, by a hard and ſharp body in motion, preſſed againſt it, or reſiſting it." It is obvious from this definition, that the ſubject of a wound is a ſoft part, and we learn from modern anatomy, that the ſoft parts of a human body are a congeries of veſſels of different kinds; and hence there can be no wound without a diviſion of veſſels of many different ſeries: No ſanguiferous artery can be divided, without the veſſels of almoſt every different kind being wounded; for the coats of this artery being made up of other ſmaller veſſels, and theſe again of a ſtill finer texture, till we come to the ſmalleſt; it is evident by a ſimple wound of a ſanguiferous artery, the ſerous and lym-

phatic veſſels are divided, with the membranes and muſcular fibres which conſtitute the muſcular coat of the artery; hence it is obvious, that a very ſlight wound may injure all the congeries of veſſels of which the ſoft parts are compoſed.

Thoſe wounds therefore are mortal, which are inflicted in thoſe parts, whoſe cohæſion is inſeparable from life; every wound therefore, which deſtroys the free influx of the blood into the heart, and its expulſion from it, muſt be inevitably mortal. For this reaſon, every wound of the aorta muſt be attended with certain death, as no aſſiſtance of art, can poſſibly be applied to ſtop the hæmorrhage; other wounds may, if left to themſelves become mortal; but by the timely help of art, the danger of death may be removed, as in wounds of the arteries of the limbs, where the tourniquet may be applied till the bleeding veſſel can be taken up by a ligature; and in the reports given in by ſurgeons to judges of courts, theſe circumſtances ought carefully to be adverted to, and diſtinguiſhed. Many wounds alſo in themſelves not mortal, may be rendered ſo by neglect or erroneous treatment; this frequently happens to ſoldiers and ſeamen in

the day of battle, when the multiplicity of caſes prevents the ſurgeons from paying a proper attention to all, hence many die of hæmorrhages which might have been ſtopped, and extravaſations under the cranium, which the application of the trepan might have relieved. Errors in practice have the ſame fatal conſequence; perſons falling into a deliquium, from a great loſs of blood, who by proper nouriſhing broths, might have been recovered; have loſt their lives by an injudicious exhibition of ſpirituous liquors, which by their ſtimulus upon the veſſels, produce freſh hæmorrhages. The effects too of wounds, are various, according to the variety of actions exerciſed while the wounded part was entire, nor is there a leſs variety of names, forms and effects in wounds, ariſing from the diverſity of the wounding cauſe, and hence the inciſed, the contuſed, the lacerated, and the punctured wound.

If in a healthy and robuſt body, a wound be made in a viſible place, not nouriſhed by any large artery; the following phœnomena ariſe; provided the orifice of the wound be defended from the cold, from air, and exſiccation.

Firſt, the parts between which the wounding cauſe is forced, recede from each other more and more, though the cauſe be removed, unleſs in punctured wounds, which are very ſmall. 2dly. The blood flows with more or leſs impetuoſity according to the ſize of the wounded veſſels; but by degrees ſtops ſpontaneouſly, the elaſticity of the arteries contracting their bleeding orifices. 3dly. A ſanguineous cruſt is formed in the cavity of the wound, the blood naturally coagulating when extravaſated, and acquiring a degree of dryneſs from the contiguous air. 4thly. A diluted reddiſh thin liquor flows from it, reſembling the waſhings of new killed fleſh; this happens from the contraction of the larger veſſels, while the ſerous and lymphatic diſcharge their contents. 5thly. The lips of the wound begin to look red, become præternaturally hot, painful, tumid, and retorted, while the bottom becomes more prominent, the fat riſing into the apperture of the wound, and there degenerating. 6thly. A ſlight fever, accompanied with thirſt is excited; theſe latter ſymptoms happen only in pretty large wounds, but the former occur in all, where there is a proper degree of vital force; and hence Hippocrates tells us, that

when ſevere wounds are inflicted, if a tumor does not ſucceed, it is a very bad ſign, and the ſame admirable old ſurgeon as well as phyſician very juſtly lays it down as one of moſt important rules in ſurgery, "that on the third and fourth days, wounds are by no means to be diſturbed; and that we are at this time to abſtain from all ſearches with the probe, and every thing that may irritate them."

7thly. About the fourth day, ſooner or later, according to the age of the patient and heat of the weather, a white, pinguious, equal matter, called pus, is generated in the wound; and this produces very happy effects, by ſeparating the lacerated veſſels and extravaſated fluids from the ſound parts which then grow up a-freſh. Hence laudable pus is eſteemed by ſurgeons one of the beſt ſigns. 8thly. At this time the redneſs, heat, tumor, pain, retorſion of the lips, and fever, ceaſe, or are greatly diminiſhed; for all theſe ſymptoms ariſe in conſequence of an obſtruction in the circulation, from a contraction of the orifices of the wounded veſſels, which a proper ſupuration removes; and this ſtage of the diſeaſe is called by ſurgeons, the time of digeſtion.

9thly. The cavity of the wound is generally filled up with new fleſh; and the margins becoming white, bluiſh, ſoft and equal are united. Laſtly, the wound becomes dry, and is covered with a cicatrix or ſcar."

From the preceding account* of the progreſs of nature, in the healing of wounds in healthy bodies; it may eaſily be perceived, how ſmall a ſhare art can juſtly boaſt in this very extenſive branch of the diſeaſes in ſurgery. And yet, how many infallible, healing balſams, and wonderful noſtrums have been, and ſtill are impoſed upon the world, not only by quacks and empiricks; but by too many, whoſe education and knowledge of the animal œconomy, ſhould render them incapable of low artifice, or ignorance of nature's admirable efforts for her own relief. It was this ſenſible and attentive obſervation of nature's operations, which rendered Hippocrates ſo judicious a ſurgeon, without thoſe helps which we derive from the great modern diſcoveries in anatomy and phyſiology; and the ſame good ſenſe and obſervation, renders the practice of the preſent Engliſh ſurgeons, particularly in

* Which is taken from Boerhaave.

wounds, ſo much more ſimple and plain, than that of the ſurgeons of other nations.

Mr. Sharp, in his excellent introduction to the operations of ſurgery, recommends nothing but dry, ſoft lint, to recent wounds, which is generally the beſt application through the whole courſe of the cure. At firſt, it reſtrains the hæmorrhage with leſs injury than any ſtyptic medicines; and afterwards, by abſorbing the matter, which is at firſt thin and acrimonious, it becomes, in effect, the beſt digeſtive: during incarnation, it is the ſofteſt medium that can be applied between the roller and tender granulations; and at the ſame time, an eaſy compreſs on the ſprouting fungus.

For theſe reaſons I ſhall not recommend any ointments for recent wounds, unleſs ſome mild, ſoft one, to ſpread on a pledget of tow, to cover the lint.

When a wound degenerates into ſo bad a ſtate as to reſiſt this ſimple method of treatment; and loſes that healthy, florid appearance which characterizes a recent wound; it is then denominated an ulcer, which is diſtinguiſhed by various names, according to the different appearances of the ſore, the peculiar habit of body, or particular diſeaſe attending the

patient. But as this branch of ſurgery does not come within my preſent plan, I ſhall proceed to give a ſhort account of the uſual diviſion of wounds. Previouſly to this however, I beg leave to offer a few remarks upon the doctrine of inflammation; a ſubject of which every perſon, who intends to practiſe ſurgery, ſhould endeavour to acquire juſt and accurate ideas; for from this cauſe a great many diſeaſes ariſe, which require the aſſiſtance of chirurgical operations; and it is always more or leſs, the conſequence of operations themſelves, as well as of wounds, fractures, diſlocations, and other accidents.

CHAPTER II.

OF INFLAMMATION.

WITHOUT entering into any minute phyſiological inveſtigation of the theory of inflammation, which would be inconſiſtent with my preſent plan; I ſhall content myſelf with ſaying, that irritation, and pain, however they may be occaſioned; are at all times its immediate or proximate cauſes; and that, in moſt caſes, if we can prevent theſe, we ſhall proportionably prevent, or at leaſt leſſen the ſucceeding ſymptoms of inflammation. This is to be done only by the immediate exhibition of anodynes, proportioned to the age and ſtrength of the patient, and the ſeverity of the complaint. Bleeding, gentle laxatives, warm baths, and ſoft cataplaſms to the parts af-

fected, will all contribute towards this moſt deſirable purpoſe, and ſhould never be omitted; yet without premiſing opium, they will ſeldom avail in preventing inflammation. Let it be carefully obſerved however, that I here ſuppoſe the ſurgeon to be preſent in the firſt ſtate of the diſeaſe, where prevention may be happily ſubſtituted for a cure. In other caſes, as frequently happens in the day of battle, when this timely application cannot be made; and when pain, continued for ſome hours, has already induced a degree of heat, tenſion, redneſs and ſwelling, a different mode of treatment becomes neceſſary; for although anodyne medicines may leſſen the violence of the pain, they will not remove the ſymptoms already occaſioned by it: in this caſe, more copious evacuations, cooling medicines, a moſt exact diluting diet, and perfect quiet of body muſt be inſiſted on.

A ſtill different, and more difficult taſk preſents itſelf to the ſurgeon, when any of the tendinous and membranous parts are injured; for though theſe ſubſtances have little or no feeling in a ſound ſtate, yet when they are diſeaſed, they acquire a moſt exquiſite degree of ſenſibility; and if to this third ſtate

of the nature of inflammation, we add a fourth; attended by a fracture of the bones, it will compriſe almoſt every circumſtance relative to the ſubject in queſtion. Here, all the ſkill and attention of the ſurgeon, will be neceſſary, to prevent, or alleviate the dangerous and too frequently fatal ſymptoms of convulſion, abſceſs, and gangrene; which a more violent inflammation induces in this ſpecies of wounds; where bleeding, joined to the general antiphlogiſtic method muſt be more rigidly inſiſted on:—all ſtimulating foreign bodies muſt alſo be removed; anodynes exhibited according to the violence of the pain and urgency of the ſymptoms. Abſceſſes ſhould be opened, and the firſt appearance of gangrene obviated, by a more cordial nouriſhing diet, ſpirituous fomentations, and a liberal uſe of the bark. The application of all which remedies however, will be particularly pointed out, in treating of compound fractures diſtinctly. In the mean time, I ſhall proceed to take ſome notice of the uſual diviſion of wounds.

CHAPTER III.

OF THE DIVISION OF WOUNDS.

WOUNDS have been generally divided into four different ſpecies; the *inciſed*, the *punctured*, the *lacerated*, and the *contuſed*; each of which, although they are all attended with a greater or leſs degree of the ſame ſymptoms; and require the ſame general treatment; have ſome peculiarities, which render this diſtinction both uſeful and neceſſary.

The ſimple inciſed wound, when unattended with any conſiderable hæmorrhage, or great loſs of ſubſtance: is always to be healed by what ſurgeons call the firſt intention; which conſiſts in approaching the lips of the wound, until they come into the moſt exact

contact, and preſerving them in that ſituation, by ſuture or bandage, until the union is accompliſhed.

Whenever a wound will admit of this contact, by means of a ſticking plaſter, aſſiſted by the uniting bandage; the uſe of a ſuture is unneceſſary, and this is generally the caſe in ſuperficial wounds, and even pretty deep ones of the limbs, when made in a longitudinal direction, where the uniting bandage can be aſſiſted with proper compreſſes. But many oblique wounds, of the body and face, particularly, will not admit of this mode of union; and the uſe of the ſuture becomes abſolutely neceſſary. That ſpecies of it uſually employed in the union of common inciſed wounds, is called the interrupted, and is to be performed in the following manner*.

* This is the common method of performing the interrupted ſuture, but Mr. Bell objects to it, and propoſes the following. He directs that a thread be armed upon each end, with a needle, and each needle being inſerted at the bottom of the wound, is to be puſhed *outwards*, ſo as to paſs at a proper diſtance from the edge of the wound, when the needles are to be taken off, and the threads allowed to remain, until all the legatures are paſſed, which the extent of the ſore requires. If the pain attending the infliction of a wound be very violent, and does not abate by

After cleanſing the wound from coagulated blood, and all foreign bodies; let an aſſiſtant approach the lips towards each other, and having meaſured the depth of the wound with the eye, paſs the needle, previouſly dipt in oil, at ſuch a diſtance from the edge of the lip, as will make it equal to the depth of the wound, and carry it out at the ſame diſtance on the oppoſite ſide; then draw the ligature cloſe enough to bring both lips into immediate contact, without wrinkling or puckering the parts, and make a double knot: the number of ſtitches muſt be proportioned to the length of the wound. A good general rule will be, to uſe no more than are juſt neceſſary to bring the lips into exact contact, and this mode of paſſing the ligatures by deſcribing a kind of ſemicircle, will anſwer that intention perfectly, by approaching the lips from the bottom of the wound to its external ſurface. A piece of adheſive plaſter, embrac-

relaxing the muſcles of the part affected; by the exhibition of an anodyne; or by the uſe of ſuch internal or other remedies, as the *ſtate* of the ſyſtem may require, and where no extraneous body can be diſcovered as the cauſe of the pain; it may probably ariſe from a half divided nerve or tendon; the cure in this caſe, is to cut through them, and then to uſe the meaas above mentioned. M.

ing a large portion of the external integuments on each ſide, will contribute to preſerve the parts in their proper ſituation. The ligatures ſhould be removed as ſoon as the union is compleated, which generally happens either the ſecond, or third day, often in twenty-four hours.

Punctured wounds, which do not penetrate into either cavity of the body, require no particular mode of treatment, unleſs they are deep and winding, in which caſe ſome dilatation of the external orifice becomes neceſſary, in order to diſcharge more freely any extravaſated fluids, which might otherwiſe occaſion troubleſome and diſagreeable abſceſſes*.

* When the punctures do not extend to any great depth; foreign ſubſtances which may be introduced, can eaſily be extracted; and where no great inflammation ſucceeds, the wound may for the moſt part be healed by compreſſion properly applied. But in deep wounds which cannot be healed by the above treatment; the only certain means of obtaining a cure, is a free dilatation from one end to the other; as thereby all the extraneous bodies may be readily brought into view, and extracted, and thoſe ſpaſmodic ſymptoms, that follow the puncture of the tendon or nerve, may be removed; whenever therefore there is no danger from hæmorrhage, and no other cauſe exiſts, which in the judgement of the ſurgeon, may prevent the operation; it ſhould always be performed. The *probe pointed biſtoury*, or ſcalpel and diſca-

Surgeons are not entirely agreed in the method of treating lacerated wounds; ſome adviſing a removal of the lips, particularly, when large, while others contend for their

tor have generally been uſed for this purpoſe; the former is certainly the preferable inſtrument, in all ſinuous wounds and ulcers, which do not extend far; yet as they are frequently of conſiderable depth or length; I would recommend to ſurgeons, the uſe of the *lithotome caché* of Frere Cosme, as very convenient to open at once thoſe deep ſinuſſes, that are attended with ſuch great ſenſibility as not to allow the patient to bear the protracted torture from repeated cuttings of the ſcalpel. I was witneſs to its uſe in a very deep ſinus, (the conſequence of a large abſceſs,) which extended from the *ſpine* of the *of ileum*, to the lower part of the belly; and the operator, Dr. Foulke, employed it with ſuch advantage, as to quickneſs and ſaving of pain; that I determined to uſe it in the firſt ſimilar occaſion that I ſhould meet with. A plate of the inſtrument, together with the manner of uſing it, may be ſeen in Bell's ſurgery, Vol. II.

The moſt alarming ſymptoms conſequent on punctured wounds, are thoſe of *tetanus*, or *lock jaw*; the cure of which dreadful diſeaſe, however important, cannot be inſerted here; I would therefore refer the reader to Med. Inq. and Obſ. by Dr. Benjamin Ruſh Vol. I; to the Memoirs of Med. Soc. of Lond; and to the Tranſactions of College of Phyſ. of Philad; where he will find ſeveral caſes of the efficacy of the tonic mode of treatment, as recommended by the above phyſician. In the Obſ. on the weather, and diſeaſes of Philad; for June 1791, inſerted in the Amer. Muſeum; I have alſo related two caſes of the ſucceſsful uſe of

preſervation: but as the ſkin, or common integument, is a moſt uſeful, as well as ornamental part of the human body, I believe it may be laid down as a very juſt and general rule, to preſerve as much of it as the nature of the caſe will admit; we all know how readily, raw tender parts will unite; and wherever moderate bandage can be applied, there is a good proſpect of ſucceſs from the attempt, which ſhould always therefore be made. If the torn lips are very unequal, they may be reduced nearly to the ſtate of a ſimple inciſed wound, by the aſſiſtance of the knife; and a ſuture will then not only forward the cure, but prevent deformity; which every good ſurgeon will always endeavour to avoid.

Severe contuſed wounds have this peculiar circumſtance attending them; that the veſſels having intirely loſt their tone, are no longer able to circulate the contained fluids, or take up what are extravaſated, by abſorption, for which reaſon, ſuppuration muſt inevitably fol-

the ſame excellent method, and in the number of the ſame work, for the ſucceeding Auguſt, I have publiſhed another caſe of the diſeaſe, which was cured by the late Dr. Hanbaum, of Charleſton, South-Carolina, with the ſame remedy after the ineffectul adminiſtration of the old and oppoſite mode. M.

low; and when an opening has not been made by the accident, it is the ſurgeon's duty at the proper time, to do it in the moſt advantageous manner, by making a large depending orifice; and by the uſe of warm diſcutient fomentations, and ſpirituous embrocations, which are very uſeful, and in common contuſions, will be ſufficient to anſwer every intention, without any opening. It is very evident, that contuſed wounds, under the preceding circumſtances, will not admit of the ſuture with any degree of propriety, or proſpect of ſucceſs.

I ſcarcely need obſerve, that moderate evacuation, by bleeding, and gentle purging, together with a low diet, are, in theſe caſes abſolutely neceſſary.

Wounds of the tendons, with a cutting inſtrument, are now treated like other ſimple inciſed wounds; provided the extremities of the divided tendon can be brought into contact, and be preſerved by means of a proper bandage in that ſituation; no ſuture is ever made uſe of. The tendo Achillis when ruptured is often united in this way, by bending the knee, and relaxing the flexor muſcles of the leg, while the foot is extended and pre-

ſerved in this ſituation, by a proper bandage.—Monſieur Le Dran*, recommends for this purpoſe, a leather knee piece, to the poſterior, and inferior part of which, a ſtrap, of a foot in length, is faſtened; then a piece of thin wood being fixed to the ſole of an old ſlipper, and one end of it projecting near three inches beyond the heel, with a ſhort ſtrap and buckle, to which that from the knee reaches, and admits of being drawn up ſufficiently to bring the extremities of the divided tendon into perfect contact. The external wound is to be defended with an adheſive plaiſter, and abſolute reſt injoined, till the parts are united, which does not happen ſometimes for ſeveral weeks, particularly, if any inflammation attends the wound.

* A plate of a ſimilar machine, invented by the late Dr. Monro for himſelf, with the manner of applying it, may be ſeen in Bell's Surgery, Vol. V. plate 68. M.

CHAPTER IV.

OF WOUNDS PENETRATING THE THORAX AND ABDOMEN.

WOUNDS which enter either cavity, may be divided into three general claſſes; ſuch as are mortal: ſuch as are neceſſarily hazardous: and thoſe which are accidently ſo. Theſe diſtinctions are founded in the ſtructure and office of the wounded parts, combined with the natural conſequent ſymtoms, and the treatment of the ſurgeon.

All wounds of the heart, aorta, cerebellum, medulla oblongata, and receptaculum chyli, are juſtly deemed mortal, becauſe thoſe parts are immediately ſubſervient to life; but thoſe of the lungs, liver, inteſtines, kidneys, pancreas, gall bladder, large veſſels, ſpleen, me-

ſentery, bladder and ſtomach, are only hazardous in proportion to the nature of the offices they perform in the animal œconomy, and the degree of injury they have received; to which may be added, errors committed by the patient, or his phyſician, by which a greater degree of fever, inflammation, and diſcharge are excited.

A ſhort view of the nature and ſituation of wounded viſcera, will ſhew us how little we are to expect from any external applications, unleſs when ſome particular viſcus is protruded, through a large wound of the abdomen, and of which proper notice will be taken hereafter. The great and principal attention of the ſurgeon ſhould be directed to the prevention or dimunition of inflammation; therefore after a proper dilatation of the external orifice, which in punctured penetrating wounds, is almoſt always neceſſary, the patient ſhould immediately loſe as much blood as his ſtrength will bear, and this from a large orifice, by which means the hæmorrhage, if conſiderable, will be moſt effectually reſtrained. The bleedings ſhould be repeated at ſhort intervals, according to the nature and urgency of the ſymptoms; emollient glyſters, cooling nitrous drinks, ano-

dynes to aſſuage pain, a moſt rigid exact diet, conſiſting ſolely of thin diluting drinks, perfect quiet, and a poſture which at once contributes to the patient's eaſe, and the diſcharge of any extravaſated matter, conſtitute the other moſt eſſential aids, which we can call in to aſſiſt nature to whoſe admirable reſources we muſt chiefly truſt the reſt of the cure.

Should any portion of the inteſtines or omentum, the uſual parts protruded, be forced out, they ought as early as poſſible to be reduced, by placing the patient on his back, with his hips a little elevated, and then with the fore finger of each hand, gently and alternately preſſing the protruded part into its proper place, but if ſuch a degree of ſtrangulation ſhould attend, as to prevent this eaſy reduction, a ſufficient dilatation muſt immediately be made, by introducing a director, on which Mr. Pott's curved biſtoury with a button point, may be conveyed, and the enlargement performed without any difficulty or danger, unleſs from wounding ſome blood veſſels, which a tolerable knowledge of anatomy will teach us to avoid.

A mortification of the omentum is ſometimes the conſequence of a long ſtrangulation,

in which caſe the mortified part may be removed with the knife, and the reſt returned without making any ligature upon it; the external wound may be united by means of the interrupted ſuture, aſſiſted by compreſs, bandage, and a ſuitable poſture*.

Penetrating wounds of the thorax, are in general pretty eaſily diſtinguiſhed from the peculiar ſymptoms which attend them. The moſt remarkable of theſe, are the paſſage of air through the wound in reſpiration, and the expectoration of frothy blood from the lungs when they are wounded. If the wound be made with a bayonet or ſmall ſword, the external orifice muſt be immediately enlarged, in order to give a free diſcharge of the blood lodged in the cavity. The bleedings muſt be proportioned to the degree of hæmorrhage, which, if

* Several of the viſcera of the abdomen, from wounds in its cavity; have at various times protruded, and been cut off; particularly the *liver*, in ſuppurations of that viſcus. In one of the notes which Dr. Jones added to the abridgment of Bell's Surgery, by Dr. Waters; he mentions the caſe of a man, who received a wound in his belly with a ſhoemakers paring knife, by which he had a portion of the *Pancreas* protruded at the orifice which was cut off cloſe to the integuments; and the reſt being returned into the cavity, the man recovered. M.

violent, can only be reſtained by large, and repeated veneſections, frequent doſes of nitre in barley water, or flaxſeed tea; and an extreme cool regimen and perfect reſt; even ſpeaking ſhould be abſolutely forbidden*.

* In wounds of the lungs, repeated bleedings, in conjunction with the means above recommended, are the chief remedies to be relied on for a cure. It is aſtoniſhing what a quantity of blood a perſon who is wounded in his lungs, will bear to looſe without injury. Of this, the following is a remarkable caſe. During the late war, a Scotch captain, by the name of M'Pherſon, was wounded in his lungs at the battle of Princeton, and taken priſoner. Dr. Rush who was then phyſician general to the American army, was called to him; and in the courſe of ſix weeks was obliged to take from him upwards of 140oz. of blood; and ſo highly irritable was his whole ſyſtem, that it was neceſſary to confine him to a dark room, and the moſt abſtemious diet. Even gruel, or panada, never failed to bring on a violent fever and cough. By this treatment he recovered, and was two years ſince alive and well. Dr. May, in his treatiſe on conſumptions; mentions the caſe of an officer, who in a duel received a ball in his breaſt, which paſſed through the right lobe of his lungs, and yet recovered by a ſtrict adherence to the antiphlogiſtic plan of treatment; and an aſſiduous uſe of every means to abate inflammation. It is fortunate that the mortality attending wounds in the lungs is not near ſo great as it might be naturally ſuppoſed it would be, from the ſituation, and importance of the organ in the animal œconomy. Beſides the above remarkable inſtance, we are alſo informed, that out of twenty-four caſes of wounds in the lungs, which

An emphyſematous tumour, ariſing from the inſinuation of air into the cellular membrane, ſometimes attends penetrating wounds of the thorax, and occaſions very painful and troubleſome ſymptoms, the proper treatment of which I ſhall refer to the chapter on gun ſhot wounds, in which a fracture of the ribs has induced this particular complaint.

But in caſe of a wound in the inteſtines, the divided lips muſt be united by means of the glover's ſtitch*, then brought in contact with

occured during the campaign of 1776, twenty-three recovered, Ruſh's Med. Inq. vol. 2. Another caſe equally extraordinary, I deliver on the ſame authority, to whom it was communicated by a Ruſſian gentleman, a witneſs to the fact. A gentleman in London, ſome years ſince had a pleuriſy, which terminated in an abſceſs in his lungs; and while on a journey in France to recover his health recieved a challenge, his antagoniſt in a violent paſs, thruſt the point of a ſmall ſword into his breaſt, and punctured the abſceſs, which diſcharged a quantity of pus, and he recovered. The great principle, that ought to be attended to, in wounds of the lungs, is to conſider them, and the conſequent ſymptoms, as a *pneumonia*, and to treat them accordingly, regarding the external wound, as only liable to let in air, and thereby cauſing inflammation. M.

* In making this ſuture, the common practice of perforating both ſides of the gut at the ſame time ought to be avoided, according to Mr. Bell, who directs, in order to prevent the

the bottom of the wound, and kept there by means of the ligature, the two extremities of which are to be placed on the external integuments, and retained there by an adhesive plaister, until the union of the intestine be compleated. The ligature may then be withdrawn, and the wound healed in the usual way.—The necessity of exact regimen, and extreme quiet, are too obvious to need a repeated injunction.*

Wounds of the containing parts about the breast and belly, which do not penetrate the cavities, are often attended with severe, and sometimes dangerous symptoms. Bleeding and the general antiphlogistic method, will gener-

cavity of the intestine being lessened, that a small, fine and round needle, armed with silk, and a knot at each end, should be inserted from within, and the stiches made in a connected series, at the distance of two tenths of an inch from each other; and the needle entered in opposite places of the lips of the wound, by which it will go in a diagonal line from one side of the wound to the other. M.

* In the former edition of this work, this last paragraph was omitted to all appearance by mistake; as in the original manuscript now in my possession, no mark or erasure on it is to be seen, and as it is of importance, I deemed its insertion necessary in the present edition. M.

ally ſucceed in removing them. But the ſurgeon is often puzzled to know whether a wound in the abdomen has penetrated the cavity, or not; for if none of the contained parts are injured, the ſymptoms may be ſo equivocal, as to render it very uncertain; nor is it of any great conſequenee to aſcertain this matter, as the method of treatment in either caſe, is pretty much the ſame. It is even very difficult in many caſes, to determine preciſely which of the viſcera are wounded, unleſs in ſome of the principal organs, ſuch as the liver, ſtomach, or inteſtines, whoſe injured functions pretty plainly indicate the part affected; but the ſpleen, pancreas, and meſentry, may be very conſiderably injured, without exciting any other than the general ſymptoms of pain and inflammation; and indeed it is of leſs conſequence, with reſpect to the patient's treatment, than the ſurgeon's prognoſtic, to find the exact ſeat of a wounded viſcus. But as the reputation of a ſurgeon depends greatly on a juſt prognoſtic, he cannot be too attentive in diſcovering the true ſeat of the injury, which alone can determine the degree of danger. For this purpoſe the patient during examination, ſhould be placed as nearly as poſſible, in the

ſame ſituation he was in at receiving the wound; every evacuation muſt be carefully examined, and the utmoſt regard paid to the peculiar ſymptoms, which attend the injured functions of the different organs.

CHAPTER V.

ON SIMPLE FRACTURES OF THE LIMBS.

IT might reaſonably be ſuppoſed, that a branch of ſurgery, which has been conſtantly practiſed by the ableſt maſters of the art, both ancient and modern; for above two thouſand years, ſhould be well underſtood, and long ſince brought to its utmoſt degree of perfection. This opinion, indeed has ſo univerſally prevailed, that the moſt ordinary country ſurgeon has thought himſelf as well qualified to reduce a ſimple fracture

as the firſt man in the profeſſion; even the moſt illiterate mechanics, who make no other pretenſion to knowledge in ſurgery, than what they aſſume from their pretended ſkill in bone ſetting, put themſelves on a footing with the moſt regular ſurgeons in the reduction of fractures, and often obtain a higher degree of reputation in the art, not only from the vulgar, but even among the more enlightened and ſenſible part of mankind.

This ſtrange infatuation is not altogether to be accounted for in the preſent caſe, from that ſtrong deſire of health and eaſe, which like the love of money, reduces all underſtandings to a level; but may in ſome meaſure be owing to that general error, which the regular profeſſors of the art, as well as the moſt ignorant practitioners, have hitherto laboured under, with reſpect to the moſt proper and ſucceſsful method of treating fractures of the limbs in general, and the larger ones in particular.

An implicit adherence to the opinions of others without exerciſing our own reaſon, has been the ſource of that blind attachment, which men in all ages have paid to the authority of names and characters, and the beſt un-

derſtandings have been ſo much fettered by theſe ſhackles, as to overlook the moſt obvious truths, and even when ſome enlightened and liberal minds, have dared to deviate from the beaten track, and boldly point out the abſurdity of antiquated errors: it is with no little difficulty, that men who have been long bigotted to forms, can be induced to adopt more juſt and rational modes of practice. It is however to be hoped; that the late improvements in this eſſential branch of ſurgery, for which we are principally indebted to Mr. Pott, will ſoon become general; and that the moſt obſtinate adherents to the old practice, will quit their error, the moment they are acquainted with a method, which is ſo demonſtratively founded in the ſtructure of the parts, the nature of the diſeaſe, and above all, in the inconteſtable evidence of the plaineſt facts.

The true curative indications in every ſimple fracture, are to reduce the broken extremities of the bones, as nearly as poſſible to their natural ſituation, and to retain them when there, by the moſt eaſy, ſimple and effectual means. How far the methods hitherto made uſe of, were calculated to anſwer

theſe deſirable purpoſes, will beſt appear from a fair and candid examination of them.

In the firſt place; an extenſion and counter extenſion, as it is called was made by two aſſiſtants, with more or leſs violence, according to the nature of the caſe, until the extremities of the broken bone were brought oppoſite to each other, when the ſurgeon with his fingers finiſhed the coaptation or ſetting, after which a long roller, making many turns both upon, as well as above and below the fractured part, was applied; upon this roller, ſplints of different kinds, armed with tow or linen compreſſes, to fill up the inequalities, were placed longitudinally, and ſecured with tapes or ſome kind of ligature, drawn pretty cloſe, to preſerve the fractured bones from ſlipping out of their place, and for greater ſecurity, the limb was fixed in a ſtrait direction fully extended, and reſting upon the calf and heel, in a fracture box, defended by a pillar or ſome ſoft ſubſtances.

This is, I think, the general method of reducing ſimple fractures, formerly followed by the ſurgeons of moſt countries; and which is purſued to this day, by a great majority of practitioners in Enrope, as well as America;

and many a painful tedious hour, has it coſt the unfortunate patient, as well as difficulty and ſolicitude to the ſurgeon, to prevent all the miſchiefs ariſing from this prepoſterous and irrational mode of reducing and treating ſimple fractures. I ſhall only mention ſome of the moſt uſual difficulties attending it.

In the firſt place, the violent extenſion frequently made uſe of by the aſſiſtants, often occaſioned ſo much pain, inflammation, and ſwelling; as obliged the ſurgeon to looſen or remove his bandage; which could only be done by cutting it at the extremities with a ſciſſars, or taking it entirely off. This neceſſarily occaſioned a removal and diſturbance of the limb, which ſhould always be avoided, as much as poſſible, in every fracture: but if theſe miſchievous conſequences did not follow the firſt reduction; others no leſs painful, though not ſo eaſy relieved, aroſe from the extended poſition of the limb. Beſides the ſtiffneſs of the knee, and ſkrinking of the calf of the leg; the moſt intolerable uneaſineſs was very ſoon created in the patient, from the conſtant and unavoidable preſſure of the heel, upon whatever ſubſtance it reſts. A long decumbiture will frequently produce a mortification of the

integument; and I have more than once or twice, ſeen the bone laid bare, by this abſurd and painful poſture.

To point out a more juſt, eaſy, and natural method of cure, ſhall be the remaining buſineſs of the preſent chapter.

To obtain any adequate ideas of the nature of diſeaſes, it is abſolutely neceſſary to have a competent knowledge of the ſtructure and offices of the parts affected; it is from this ſource alone, that we can lay any reaſonable foundation for a juſt method of cure; and even this neceſſary knowledge will be inſufficient, unleſs we are capable of thinking, examining, and acting for ourſelves. The general ſtructure and uſes of the bones and muſcles have been well underſtood for many centuries; yet nobody, until of late, has had ſagacity enough to apply this general knowledge, to the particular purpoſes of the diſeaſe in queſtion.

It is obvious to the moſt common underſtanding, that the bones conſidered abſtractedly in themſelves, are mere paſſive inactive bodies, without any locomotive faculties, but are moved by powers firmly attached to them; which powers are called by anatomiſts the muſcles, and theſe bodies have the ſingular pro-

perty of contracting, or lengthning themſelves, according as they are influenced by the mind, or the operation of external bodies ſtimulating them to action.

When a bone therefore is broken and ſeparated; it has no power of reſtoring itſelf to its natural ſituation; whatever change of place it receives, muſt be entirely owing to the action of the muſcles, which alone poſſeſs this aſtoniſhing power of contraction, and which is increaſed or diminiſhed more or leſs, according as they are placed, in a ſtate of tenſion or relaxation. Upon theſe ſelf-evident principles, the abſurdity of the old and general practice of reducing fractures, will appear in the moſt ſtriking light; every man who has had the leaſt experience in ſurgery, will eaſily recollect and acknowledge the appearances which are generally exhibited in fractures of the lower extremities, where the ends of the broken bone occaſion more or leſs deformity, according to the nature of the fracture, and the force of the ſurrounding muſcles. In oblique fractures of the thigh, this effect is very remarkable, the ends of the bones lap over each other to a conſiderable diſtance; and

produce a very apparent inequality in the appearance of the limb, often attended with much pain, from the ſharp points or edges of the broken extremities.

The poſition which the patient always endeavours to place himſelf in, under theſe circumſtances; will clearly point out the true ſtate of his caſe, as well as the moſt rational mode of relief. Far from ſtretching out his injured limb, or lying on his back, (the ſituation in which ſurgeons place him for his relief;) he naturally and inſtinctively ſeeks it, by gently turning himſelf upon the injured ſide, drawing up the thigh towards the body, and bending the knee, by which means the muſcles, or moving powers, are immediately put into a ſtate of the utmoſt relaxation, and their action upon the bones entirely removed, which reſtores the patient to a ſtate of eaſe and quiet.

What is the reaſon, ſays Mr. Pott, that a fracture of the os humeri is ſo eaſily reduced and maintained in its ſituation, with ſo little pain and difficulty? It is becauſe both the patient and operator, are obliged as it were, contrary to the mode of treatment in the lower limbs, to place the muſcles of the arm in a

ſtate of relaxation, by bending the elbow, ſupporting it in a ſling or ſcarf, and approaching it to the ſide of the body, where it reſts in a ſtate of eaſe and ſecurity.

Why is a fracture of the tibia, when the fibula remains unbroken attended by ſo little pain or deformity, and retained in its place with ſo much facility? The reaſon is moſt obvious, the contraction of the muſcles is prevented by the fibula, which keeps them in their natural ſtate.

From what has been ſaid, the true poſition of a fractured leg or thigh for reduction, appears to be the reverſe of that hitherto made uſe of. Inſtead of extending the leg in a right line, and attempting to replace the the broken bones, while the muſcles are in a ſtate of tenſion and contraction; the patient is to be placed on his ſide, with his knee half bent, one aſſiſtant taking hold of the lower extremity of the leg, juſt above the ancle, while the other embraces the ſuperior end juſt below the knee; both making at the ſame time ſuch gentle extenſion, and no more, as is neceſſary to bring the bones oppoſite to

each other; when the ſurgeon, with his own hands reduces them to the moſt exact appoſition in his power.

The relaxation of the muſcles of the thigh, muſt be made by drawing it gently towards the body, and whoever examines with the leaſt attention, the ſtructure of this bone, and its articulation with the hip, will readily diſcern how admirably this ſide poſition of the limb and body, is calculated to promote the patient's eaſe, as well as happy union of the bone.

Extenſion and appoſition of the fractured limb, having been made under the foregoing circumſtances; the next conſideration will be the application of proper medicaments to the part affected; a variety of compoſitions, conſiſting of adheſive plaiſters, cerecloths, the white of an egg with vinegar, or thin compreſſes dipped in Spirit; Vin. Camphor have been uſed for this purpoſe; many of them are well enough adapted to anſwer the intention, while others, particularly the adheſive plaiſter; by irritating and inflaming the ſkin, and exciting a tetterous eruption, becomes exceedingly troubleſome and injurious. The only rational view in any external application; is to keep

the ſkin lax, moiſt and perſpirable, and by ſuch means to repreſs or abate inflammation, and diſperſe extravaſation; while very gentle compreſſion ſerves to reſtrain the bones in ſome meaſure to their proper places; and theſe deſirable purpoſes are moſt effectually anſwered by a cerate with a ſolution of litharge in vinegar, to which ſuch a proportion of ſoap, oil, and wax is added, as will give a conſiſtence, that admits of being ſpread without warming.

But whatever be the form of the compoſition, it is of great conſequence to have it applied in ſuch a manner, as will admit the fractured part to be viewed occaſionally without diſturbing or removing the limb, and this is abſolutely impracticable where the roller is employed; for which reaſon the eighteen tailed bandage, which has been long uſed for compound fractures, is now with great propriety applied to ſimple ones, and the improvment made in the form of this bandage by Mr. Pott, renders it much more neat and commodious; for by given the flaps or tails an oblique direction, they lap over each other with the utmoſt exactneſs, and lie perfectly ſmooth and even. We can alſo give them as much tightneſs, as is ever neceſſary for any of the uſeful pur-

poſes of bandage in ſimple fractures; for the old notions of reſtraining a flux of humors, or preventing the luxuriant growth of callus have no foundation in reaſon, experience, or common ſenſe; the callus is a fluid, ſeparated by nature from the extremities of the broken bones, and its quantity is always in proportion to the nature of the fracture: if the bones can be brought into exact and even contact, a ſmall quantity of callus is ſufficient to unite them; but when they lap over each other, a large portion becomes neceſſary to conſtitute a firm and ſolid union.

The deformity which is frequently the conſequence of broken bones, is not owing to the exuberance of the uniting medium, but the ignorance or neglect of the ſurgeon, who is ever ready to conceal his want of knowledge or attention, under the cloak of luxuriant callus. I do not mean to inſinuate, that this is always the caſe. A ſurgeon may be called to a patient where the time elapſed ſince the fracture, as well as other circumſtances may render a perfect reduction utterly impracticable, in theſe caſes we muſt ſatisfy ourſelves with doing the beſt in our power.

The next part of the apparatus for a fractured limb are the ſplints, which are generally made of wood, or paſteboard, but ſo ſhort that they can only act as a compreſs, and that a very hard and uneaſy one, upon the ends of the fractured bones. But as the true uſe of ſplints is to preſerve the whole limb in a ſteady, firm poſition, without compreſſing the fracture at all, they ought to extend below the ancle and above the knee; and with this rational view, the ingenions Mr. Sharp, one of the ſurgeons of St. Bartholomew's hoſpital, has invented a ſet of ſplints both for the leg and thigh, which are admirably adapted to anſwer the foregoing intentions; thoſe for the leg are only two in number, they are made of ſtrong paſteboard, covered with thin leather, and fitted to the ſhape of the leg: the external or fibular ſplint, on which the leg is to reſt on its ſide, has a hole at its inferior extremity, to receive the prominent ancle, and thereby prevent the pain and other ill conſequences of hard preſſure; the tibial one has only a cavity adapted to the ſhape of the internal malleolus; they are ſecured by three leather ſtraps fixed to the outſide of the fibular ſplint, which

paſſing round the leg are faſtened by ſmall holes to little braſs ſtuds ſtuck on the back of the tibial, or what, according to the poſture in which the limb is placed in this method of treatment becomes the ſuperior ſplint.

But as the beſt diſcription I can give will fall ſhort of reality, and theſe ſplints are not alwasys to be had here, I have endeavoured to ſupply their place by wooden ones of the ſame ſhape, which when lined with compreſſes of linen or flannel, extending beyond their edges, and adapted to the inequalities of the parts, anſwer the purpoſes of Mr. Sharp's without the diſadvantages to which paſteboard is ſubject whenever you apply either cataplaſmsor embrocations, whichare often neceſſary on account of ſwelling andinflammation.

After the ſplints are applied, the leg is to be placed on a pillow with the knee half bent, the poſture in which the reduction was made, and as the potfiion of the body as well as limb is on its ſide, the patient may be removed from one part of the bed to another with great eaſe and ſafety, or even removed if neceſſary, to a diſtance from the place of accident, which are advantages not to be received in the old way, without difficulty or danger.

The principles and practice here recommended, for the treatment of ſimple fractures of the leg, are equally or more applicable to thoſe of the thigh, where the ſuperior ſtrength of the ſurrounding muſcels are more diſpoſed to produce an irregularity of the bones, when kept in a ſtrait extended direction with the patient on his back. The ſplints for the thigh are three in number, of a ſtrait hollow form, the external or longeſt one extending from the hip to the knee on the outſide, is attached by a leather ſtrap to one paſſing round the body; the other two ſplints are placed at proper diſtances on the anterior and inſide of the limb; and the whole ſecured like thoſe of the leg, by leather ſtraps faſtened to braſs ſtuds on the back of the ſhort ſplints.

Before I quit this ſubject, it may not be improper to take notice of a cant phraſe made uſe of by many ſurgeons called *the riſing end of a bone*. This expreſſion, like many other abuſes of words, only ſerves to veil our ignorance, for it either conveys no idea at all, or a falſe one, as will plainly appear from a juſt examination of the fact which gave riſe to it. In every fracture of the limbs, ſurrounded by ſtrong muſcles, their contractile power forces

the inferior extremity of the fractured bone under the ſuperior one, which is incapable of motion, immediately exhibits that appearance of inequality, which has occaſioned the falſe idea of a *riſing bone*, and has put both ſurgeons and patient, to much uſeleſs trouble and pain in dreſſing. The only way to remedy the evil, is, by relaxing the muſcles of the limb, and raiſing the depreſſed end of the bone to an equality with the other. This obſervation is equally applicable to the clavicle as to the hip and thigh.

But here it will be aſked, probably by ſome perſons who have been long in practice, and acquired no inconſiderable degree of reputation; have not many good cures of ſimple fractures been performed by the old method, which in the preceeding pages is ſo much exploded? I anſwer undoubtedly yes. I have performed many myſelf, but it is equally true and certain, that many of them were obtained with prodigious trouble and difficulty to myſelf, as well as pain to the ſuffering patient; to ſay nothing of the deformities which too often aroſe in conſequence of the old method of reducing fractures when practiſed by the ableſt operators.

Fractures of the cubit or fore arm, particularly of the radius, are reduced upon the ſame general principles already recommended. The diſpoſition of the limb muſt favour the relaxation of the muſcles, and this is a kind of middle ſtate between pronation and ſupination. The palm of the hand ſhould be applied to the breaſt, the thumb ſuperior, with the fingers moderately bent; the whole ſecured by a couple of ſplints, of which the internal one ſhould be extended, and fitted to receive the hand and fingers in the poſition already deſcribed. Mr. Gooch, in his ſurgery, has given the draught of a very neat and ingenious contrivance for this purpoſe*.

There are two kinds of fractures, however, which do not admit of the bent poſture of the joint; theſe are the fractured patella, and *proceſſus olecranon* at the elbow. Here a ſtrait poſition of the limb becomes neceſſary for the ſame reaſon that a bent one is ſo, in other fractures, viz. the relaxation of the muſcles and tendons attached to the fractured bone.

Whenever the patella is fractured tranſverſely, the ſuperior fragment is drawn up-

* A machine for this purpoſe is repreſented in Bell's ſurgery, Vol. 6, plate 81. M.

wards, by the ſtrong action of the extenſor muſcles of the leg, while the lower part remains fixed by its ligament. Extending the leg puts theſe muſcles in a ſtate of relaxation, and enables the ſurgeon to approach the uppermoſt fragment pretty nearly to the loweſt, where i is eaſily retained by a moderate compreſs and bandage; and as ſoon as the ſwelling and inflammation are ſubſided, the knee ſhould be gently moved every day in order to prevent ſtiffneſs, and preſerve the motion of the joint*.

* The firſt object to be attended to in the treatment of a fractured patella, is the junction of the two pieces of the bone by relaxing the muſcles concerned in moving it. In order to effect this, the common practice is to extend the leg, and place it and the trunk of the body, in the ſame right line;—but Mr. Sheldon in his treatiſe upon this ſubject obſerves, that by this practice, the attainment of the very end wiſhed for is prevented: "for if the leg be extended ſo "much as to form a right line with the thigh, all thoſe *flexor* "muſcles which ariſe from the tuberoſity of the *iſchium*, "and which are inſerted into the lateral ſurfaces of the ſupe- "rior extremities of the *tibia*, and *fibula*, will be conſiderably "ſtretched, and render the poſture very inconvenient and pain- "ful to the patient;" and the two portions of the patella are thereby removed to a conſiderable diſtance from each other. The only way according to Mr. Sheldon, to relax the exterior muſcles of the thigh; is to bend the hip joint: by this means

As the leg in this ſpecies of fracture, is neceſſarily kept in an extended poſture; it ſhould be a little raiſed, and, at the ſame equally and exactly ſupported in its whole length, with pillows, to prevent too great preſſure upon the heel, which would otherwiſe unavoidably happen.

If much ſwelling and tenſion ſhould have come on before the ſurgeon is called; he ought

the two pieces of the fractured patella will be eaſily brought into contact, and may be ſo retained by a bandage.—He likewiſe directs the patient to be placed in bed, and to lay on either ſide. The degree of flexion in the hip joint, is to be equal to bringing down the ſuperior portion of the fractured patella, to unite with the inferior portion, and to be retained by the uſual bandage, for which ſee Bell's ſurgery, Vol. 6 plate 75. Mr. Sheldon thinks that the two broken pieces ought to be brought into exact contact, as the patient will be leſs liable to a ſtiff knee, and hence the reaſon why longitudinal fractures ſucceed better than thoſe that are tranſverſe. Mr. Bell however ſays, this is not an affair of great conſequence, as he has known perſons who had equally the uſe of the joint, after, as before the fracture, even although the ſeparated portions of the bone could not be brought within an inch of each other.—Great attention ought to be paid to the inflammation, which is ſo apt to enſue in a fracture of the patella, by general and local bloodletting; by ſedative applications to the part, and by the ſtricteſt attention to the antiphlogiſtic regimen. M.

to wait ſome days, until theſe ſymptoms are removed by proper means, before he applies his bandage.

This practice has been recommended and not without reaſon, under the ſame circumſtances of ſimple fractures of the leg and thigh, when treated in the old way; but few caſes will now occur, where the ſurgeon will not be able to make the reduction immediately, or in a very ſhort time, by placing the limb in a ſtate of flexion and relaxation, and preſerving it in that ſituation during the cure. However, after all general directions; the patient's feelings will conſtitute one of the beſt rules, with reſpect to the fitneſs of time for the reduction of fractures, attended with ſwelling and inflammation; for, whenever it can be done with tolerable eaſe to the patient, it will certainly be proper.

CHAPTER VI.

OF COMPOUND FRACTURES.

WHEN the bones are not only broken, but their extremities are forced through the muſcles, and external integuments; the accident is called a compound fracture, in oppoſition to a ſimple one; and theſe two general diſtinctions are all that are made uſe of by modern ſurgeons, and will comprize every eſſential difference in the nature of fractured bones.

The firſt object of conſideration in every compound fracture, is, whether the nature of the accident is ſuch as to admit of the preſervation of the limb, with probable ſafety to the patient's life; and this intereſting queſtion has given riſe to very oppoſite opinions, between ſeveral ſurgeons of the moſt diſtinguiſhed re-

putation; ſome of them, particularly Mr. Pott, adviſing immediate amputation in almoſt every bad compound fracture attended with comminution or ſplintering of the bones; while others, contend as ſtrenuouſly for its abſolute inutility, or at leaſt impropriety, in nineteen caſes out of twenty. As both ſides appeal to experience in ſupport of their aſſertions, it is no eaſy matter to reconcile ſuch oppoſite extremes. Truth perhaps may lie ſomewhere between both; and to hit this happy golden mean, conſtitutes the perfection of human judgment. A candid and impartial examination of the different ſentiments adopted by the oppoſite writers upon the preſent ſubject; will, in a great meaſure, account for the contrariety of their opinions, which ſeem to have ariſen more from the difference of ſituation and circumſtances in their patients; than any real diſparity in their ideas of the diſeaſe.

Mr. Pott, who is the principal advocate for amputation, has very probably formed his opinions upon the fatal conſequences which generally attend compound fractures in hoſpitals; while Dr. Kirkland, Mr. Gooch, and

ſome other gentlemen who live in the country, have drawn their concluſions from the great ſucceſs attending private practice; both parties may be right, and their difference of opinion very reconcileable to truth and experience.

If we reflect upon the ſtate of air in the crowded wards of large hoſpitals, in great cities, we ſhall eaſily account for the different ſucceſs which attends operations performed in ſuch ſituations; from that of private practice, particularly in the country.

In the firſt ſituation; the air is not only rendered leſs healthy to breath in, from great numbers of ſick perſons confined within a ſmall compaſs; but the putrid effluvia ariſing from wounds and ulcers, renders it highly pernicious. Every man who has attended hoſpital practice in London, muſt be ſenſible of the ill ſucceſs that attends the operation of trepanning, even in common caſes, and yet the ſame operation in the private practice of ſmall towns, and the country, generally ſucceeds very well.

For the ſame reaſon, compound fractures of the limbs will be attended with mnch more danger in a large hoſpital, than in private prac-

tice, and a ſurgeon might with equal propriety attempt to ſave a limb in the latter ſituation, or amputate it in the former.

In general, all fractures about the joints, where the capſular ligaments are torn, and the heads of the bones are injured, require amputation, and that ſhould be performed as ſoon as poſſible, before any ſymptoms of inflammation come on; the leaſt delay in ſuch caſes, often proves fatal; for having miſſed the firſt opportunity, a ſecond is often denied us, and when it is not, the chances of recovery are much leſs, than in the firſt inſtance.

When a limb is thought capable of preſervation, the next conſideration is the mode of reduction; and this muſt be determined by the particular nature and circumſtances of the fracture. If the bones have been broken in nearly a tranſverſe direction, and the protruded extremity, (which is always the upper bone,) can be nearly reſtored again to its proper place, both the reduction and cure will be very eaſy. But in caſe of an oblique fracture, a long ſharp point of bone is ſometimes thruſt out through a ſmall wound, which compreſſing, and as it were girding the bone, pre-

vents it return; and the more you extend the limb the ſtronger this compreſſion becomes. In this ſituation, many ſurgeons adviſe an immediate removal of ſuch a portion of the protruding bone, as will render the return of it eaſily practicable; however, before we proceed to this ſtep, it will be adviſeable to attempt the reduction, by relaxing the muſcles, and making a free dilatation, by which method there are few caſes, I believe, that will not admit of relief.

The advantages of making large dilatations are very obvious; they facilitate the reduction of the fractured bones, without any loſs in their length; and give the ſurgeon a fair opportunity of examining and extracting any detached ſplinters, and what is of great conſequence in the courſe of the cure; they afford a free paſſage to the diſcharge of any extravaſations or collections of matter; and as theſe dilatations are only through the integument, there is neither difficulty nor danger in making them*.

* Caſes ſometimes occur, where the end of a fractured and ſmall bone is protracted with great violence, and will not allow of a dilatation of the wound; which is alſo ſo ſmall as to render a reduction impoſſible. In this caſe, the only alter-

In the treatment of fractures, attended with much comminution: or many ſplintered fragments, and great laceration of the ſurrounding muſcles; the utmoſt ſkill and judgement is requiſite. As many of the looſe fragments as can be removed, without occaſioning much pain, or riſking a dangerous hæmorrhage, ſhould immediately be taken away, but no more. For as pain, irritation, and inflammation, are the grand objects of apprehenſion; it is of little conſequence to the pa-

native is to ſaw of the protruded part, by the common metacarpal ſaw; care being taken to defend the ſubjacent parts by the inſertion of a piece of thin ſhingle between the bone and the ſkin. A caſe of this kind occured to my notice while a pupil of Dr. Jones, in a boy who fell from an apple tree ſeven miles from Philadelphia, and fractured the radius at the wriſt in a tranſverſe direction; the bone protruded above an inch and various attempts were made in the uſual violent manner to reduce it, without ſucceſs, after ſeveral days had elapſed, the boy was brought to town, and placed under the care of Dr. Jones, who perceived that all endeavours at reduction would be fruitleſs, from the ſmall ſize of the wound and the large end of the bone, and therefore ſawed off the protruded part, when, by a gentle extenſion, he eaſily brought the other part of the bone within the wound, which in a few days was entirely healed. A ſlight degree of ſtiffneſs remained in the joint at the wriſt for ſome weeks, but this gradually diſappeared, and the boy had nearly the ſame uſe of the arm that was broken, as from the other ſound one. M.

tient, whether they are induced by the nature of the accident, or the ſurgeon's rough and abſurd treatment.

The neceſſary dilatations having been made, and all looſe bones, or the irritating points of fixed ones removed, the next conſideration is the reduction or ſetting; and here the ſame principles and rules recommended in the chapter upon ſimple fractures, are more than equally applicable; for if violent extenſion, and ſtrait poſition were improper, where the bones were only broken, without any external wound, and very little injury to the internal parts; they muſt be infinitely more ſo, where the muſcles and integuments are much lacerated. For theſe reaſons, after the moſt gentle and careful extenſion, and exact appoſition of the bones, the ſurgeon is next to conſider of the proper dreſſings, which are of two kinds; ſuch as are requiſite for the wound, and ſuch as are applicable to the limb. The former are intended to promote a free, eaſy diſcharge of any matter or extraneous bodies; the latter reſpects the prevention or removal of inflammation and its uſual conſequences, ſuppuration, gangrene and mortification.

Dry ſoft lint applied ſo lightly, and in ſuch ſmall quantities as not to obſtruct the free diſcharge of matter from the wound, will very well anſwer the firſt intention; while the cerate recommended in the chapter upon ſimple fractures, with diſcutient embrocations, or Goulard's aq. ſaturn. joined to moderate bleeding, and the general antiphlogiſtic regimen, perform the ſecond; and a happy cure is frequently obtained by what ſurgeons call the firſt intention, or at leaſt with very little inflammation or ſuppuration. But here it muſt be obſerved, that I ſuppoſe the muſcles have not been much torn or wounded, and no conſiderable degree of tenſion, pain or ſwelling have ariſen; for under ſuch circumſtances, the the wound ſhould be dreſſed directly with ſome mild digeſtive, and the whole limb enveloped with a ſoft relaxing cataplaſm, which joined to fomentations, are the moſt effectual means of promoting a kind ſpeedy ſuppuration, the next ſalutary intention of cure.

With reſpect to evacuations; bleeding muſt be always uſed, with diſcretion, for profuſe or repeated bloodletting, though it may take off inflammation ſooner, yet muſt inevitably weaken the patient too much. What purges are uſed, ſhould be of the gentle cooling kind,

with anodynes interpoſed to calm irritation and pain; and during the tenſe ſwollen ſtate of the wound, no heating tinctures of myrrh and aloes, or terebinthinate balſams ſhould be applied to it; but in the latter end of the cure, when the parts are become very lax and flabby, they may be uſed with ſome propriety. Scarifications, during the preceding ſtate, even when a gangrene is threatened, are very improper, as they ſtimulate the parts without procuring any diſcharge, for which alone they can be intended, by thoſe who have any rational views of relief in the cure of diſeaſes*.

* Although compound fractures are rarely healed without a large diſcharge of pus, yet it ſometimes happens, that by proper care, and by keeping the external air out, the wound unites by the firſt intention, and with very little trouble. Indeed I am convinced, that from whatever principle the air acts, it is from this cauſe chiefly, that compound fractures are attended with ſuch dangerous ſymptoms. Of the truth of this I was made fully ſenſible, by a caſe which fell under my notice in the month of May, 1790. The ſon of R. H. Eſqr. received an oblique compound fracture in his leg, by the paſſage of a fire engine over it, and was attended with a conſiderable loſs of blood. The accident happened about one o'clock in the day, and the leg was ſet by Drs. Jones and Foulk, as ſoon as the patient could be carried home, and medical aſſiſtance procured, which was in about two hours. In the night an alarming hæmorrhage took place, which fortunately ſtopped

Compound fractures require dreſſing at leaſt once a day, and in hot weather with large diſcharges, twice. For this reaſon, the eighteen tailed bandage becomes abſolutely neceſſary to prevent a frequent removal of the limb, which is extremely injurious, and ought to be avoided as much as poſſible; indeed without perfect reſt, and an eaſy poſture, no applications will ſucceed. The ſplints to be made uſe of here, are the ſame as directed in ſimple fractures.

As the large diſcharge of matter in bad compound fractures, renders a change of the

without aſſiſtance. By the following morning, the bandage had become ſo hard and firm, that it was thought adviſeable to ſuffer both to remain undiſturbed, until ſuppuration came on; this however did not appear at the uſual period, and for ſeveral days after; when it was ſtill thought proper not to remove the dreſſings unleſs ſome new ſymptom occured that ſhould induce the neceſſity of an examination. At the end of ten days, the ſplinters were taken off, for the firſt time, and the leg placed every day in the moſt relaxed poſition, from which he frequently altered it during his ſleep: the part was moiſtened with a mixture of brandy, vinegar, and oil, and in four weeks Dr. Jones ſlit open the bandage, when to his great ſatisfaction, the external wound was compleatly healed, and not the leaſt roughneſs was to be percieved on the bone; the bandage was again put on, and the ſplints replaced, and in a ſhort time the perfect uſe of the leg was obtained. M.

bandage too often neceſſary and thereby diſturbs the quiet of the limb; I generally apply a piece of fine oil cloth between Mr. Pott's bandage and the ſkin; this ſets ſmooth and eaſy on the part, and prevents the matter from ſoaking through to the bandage, which, by this means may be kept clean, during the greateſt part of the cure, particularly if we are careful to abſorb the diſcharge with ſmall bits of ſoft ſponge at every dreſſing; and when the ſwelling and inflammation are ſubſided, to moiſten the bandage with a little Spt. Vin. camphor, or plain ſpirit. During this ſtage of the diſeaſe, abſceſſes and lodgments of matter are frequently formed in various parts of the limb, either from the deep depending ſituation of the wound, or ſharp ſplinters of the bone, irritating the nervous and muſcular parts; and theſe accidents require the utmoſt ſkill and attention of the ſurgeon.

If the miſchief be occaſioned by a ſplinter, it ought, if practicable, to be extracted, as it will continue to excite new inflammations, attended with violent pricking pains; which generally diſtinguiſh theſe collections of matter, from thoſe ariſing in conſequence of unfavourable ſituation.

In the laſt caſe, counter-openings, in the moſt depending part, are the only effectual remedies, and I have ſometimes made them with great advantage on the inferior part of the leg, leaving the orifice without any other application to it than the oil cloth, rather than attempt to favour the diſcharge, by a more painful poſture of the limb.

Young ſurgeons from a principal of timidity are too apt to omit theſe openings, and attempt to preſs out the matter, and unite the ſinus by ſticking plaiſters, compreſs, and bandage; which beſides their inefficacy, are very injurious during a ſtate of tenſion and ſwelling. They have their uſes as preventatives, to reſiſt the diſtenſion of the veſſels, or to brace them up, when too much relaxed and weakened; but ſhould never be employed under the circumſtances above mentioned.

The relaxing cataplaſms and fomentations, ſhould be continued during the whole ſtate of inflammation and ſwelling, but no longer; for they afterwards tend to increaſe the diſcharge, and weaken the patient, whoſe ſtrength, at this time, requires to be ſupported by a more nouriſhing diet, and the uſe of the bark.

From what has been ſaid, it appears; that a compound fracture is healed as it were by the hand of nature, with little or no ſuppuration; or it may be attended with high inflammation, repeated abſceſſes, and a great diſcharge; demanding the utmoſt ſkill and attention of the ſurgeon, whoſe beſt efforts are ſometimes baffled, and the patient is obliged to compound for life with the loſs of his limb, in conſequence of the exceſſive drain and conſtant abſorption of matter;* which cauſes a

* No maxim in medicine has been more univerſally admitted by phyſicians, than the production of *hectic* from the abſorption of *pus*. Yet however reſpectable this opinion is for its antiquity, and for the names of thoſe who have adopted it; no theory which has ever been ſtarted of that diſeaſe, appears to me, more erroneous. The hectic that attends the conſumption of the lungs, as far as I know, was never attempted to be otherwiſe explained, than on the principle of abſorbed pus, from ulcers in the lungs, until Dr. Reid in his treatiſe on that diſeaſe, proved the falſity of this notion. His own explanation of the cauſe of hectic, is no leſs unſatisfactory. Dr. Ryan in his eſſay on the ſame ſubject, has indeed attempted to ſupport the old opinion; but his anſwers to the arguments of Dr. Reid are ſo trivial, that they ſerve as in every ſimilar inſtance, ſtrongly to confirm the opinion they oppoſe. The hectic that enſues from ulcers on the external parts of the body; is likewiſe ſtill aſſerted by many of the lateſt writers, to ariſe from the ſame cauſe, viz. abſorption of pus; but if a hectic

continual fever, and daily waſte of the patient's ſtrength. Under theſe circumſtances, there is no remedy left, but amputation; the propriety of which muſt be determined by the judgment of the attending ſurgeon, who ought always on theſe occaſions, to call in the beſt advice and aſſiſtance he can procure, both on ac-

aroſe from this cauſe, why does not this fever come on as ſoon as the pus is formed? This however is not the caſe; for very extenſive abſceſſes, or purulent collections, have occurred in various parts of the body; and a ſimple continued fever has only attended, of which the formation of *pus* was the conſequence. Abſceſſes and buboes that were ready to burſt, have frequently been diſcuſſed by emetics, and other remedies, and yet no hectic has followed, tho' the pus could not be otherwiſe than abſorbed into the ſyſtem. In the fever of the ſmall pox, which ariſes from the abſorption of the variolous infection; we do not obſerve any thing like a hectic; and in ſhort if we conſider the phænomena occurring in any diſeaſe, we cannot find a ſingle fact to ſupport the opinion, which it is aſtoniſhing ſhould have exiſted ſo long, under ſo many proofs to the contrary. The true cauſe of the hectic appears to be, the irritation produced on the ſyſtem by the ſore or ulcer, in conſequence of the admiſſion of air to it. This is ſhewn by the hectic coming on only, when the abſceſs or tubercle is opened or burſt, and when the general health is bad. In ſeveral caſes of the *pſoas* abſceſs that have fallen under my notice; the patient refuſed to have them opened, until the ſyſtem became much weakened, after which on the burſting of the abſceſſes and the conſequent admiſſion of air, a hectic quickly followed. M.

count of his own reputation and his patient's ſatisfaction. But here it may be right to obſerve; that amputation is rarely, if ever neceſſary, in conſequence of the drain, and where the bones are united; for wherever it is neceſſary, the fracture will be found in a looſe unconnected ſtate.

But it ſometimes happens, that all our endeavours to preſerve both life and limb, prove fruitleſs, from the beginning; a gangrene and mortification coming on immediately in conſequence of high inflammation, bad habit of body, or ignorance and inattention of the ſurgeon. In the firſt caſe the diſeaſe may be regarded as merely local, being occaſioned by ſuch a degree of injury done to the parts, as prevents the circulation through them, which muſt inevitably produce an early mortification, and render immediate amputation the moſt adviſeable remedy. Writers, however, are pretty much divided in their opinions upon this ſubject; nor is it an eaſy matter to define the preciſe degree of injury which renders immediate amputation abſolutely neceſſary; for after the beſt general directions, (and they are the moſt that can be given) the particular nature of the accident, and cir-

cumſtances of the patient muſt determine the ſurgeon's judgment. Mr. Pott is a warm advocate for early amputation; and thinks that even a very few hours, make all the difference between probable ſafety, and certain deſtruction. But here again it is very poſſible, that the ill effects of hoſpital air may have influenced his opinion; for it is certain that in private practice a mortification in conſequence of a local injury, is much leſs dangerous, than one produced by a corrupted diſpoſition of the fluids; and the ſymptoms attending the former, are by no means ſo frightful and alarming as thoſe which accompany the latter. For theſe reaſons, I would adviſe the young practitioner, to be governed in ſuch difficult caſes by the particular ſituation of his patient; if placed in a large or crowded hoſpital, ſpeedy amputation ſhould take place, but in private practice, and in a pure and healthy air, every effort ſhould be exerted to ſave the limb. The mortification too, under theſe circumſtances rarely extends beyond the limits of the injury; the patient preſerves his countenance ſerene, is attended with no more fever than is uſual in violent contuſions; there is little or no previous gangrene of the ſubcutaneous parts,

or emphyſema from confined putrid air; but the mortification takes poſſeſſion of the ſkin and fleſh at once, and if you make an inciſion through the ſkin, there is no feeling in it, and nothing but extravaſated blood is diſcharged.

On the contrary, when a mortification takes place in conſequence of a corrupted diſpoſition of the fluids; whether the injury be more or leſs ſevere, the muſcular and membranous parts are corroded by an acrid lymph; the membrana adipoſa is filled with air bubbles, producing an extenſive emphyſematous tumor in the ſkin, which is not yet apparently diſeaſed, though it plainly points out the tragedy which is acting underneath. At this period a fever, often accompanied with a delirium, great dejection of ſpitits, and particular wildneſs in the looks comes on; the pulſe is generally quick, low, fluttering, and unequal; according to the age and ſtrength of of the patient.

Inciſions now made through the ſkin, give pain, and its veſſels diſcharge a florid blood, which proves that the circulation is carried on during the gangrenous ſtate of the muſcles and adipoſe membrane, which are of a yellowiſh brown colour, and ſoon change for the worſe:

the ſkin becomes greatly inflated, and when pierced, diſcharges from beneath, a quantity of frothy matter with air: at laſt the ſkin itſelf turns livid, and general mortification cloſes the ſcene.

To oppoſe this frightful train of ſymptoms, and promote if poſſible, a ſeparation of the ſound from the mortified parts; will require all the aid of the chirurgic art*. Immediate recourſe muſt be had to the bark, which ought to be given in ſubſtance, and

* No ſymptom attending compound fractures, is more to be guarded againſt, than a mortification. When perceived early, timely applications ſhould be made, before the whole ſyſtem is too far reduced. Beſides the exhibition of the common remedies of bark and wine internally, a very important and no leſs ſucceſsful rule, is the application of theſe medecines to the wound itſelf. Of the efficacy of theſe remedies, thus uſed, I have ſeen ſeveral remarkable caſes, but one in particular under the care of Dr. Foulke of this city, which made an indelible impreſſion on my memory, I have related in a note to the chapter on gun ſhot wounds.—Mr. White of Mancheſter, recommends the *volatile alkali* and muſk, in very high terms, as a cure for mortifications ariſing from local injury; and relates ſeveral caſes of the efficacy of this medecine. He ſays, he has found it ſtop a gangrene, when the Peruvian bark has failed. He began with ten grains of each, and repeated it every three hours; until he ſometimes conſumed two ounces of muſk, and as much *ſalt* of *hartſhorn*. Obſ. on gangrene and mortification Lond. 1790. M.

in as large quantities, as the patient's ſtomach can bear. Inciſions ſhould be made down to the membrana adipoſa, in order to diſcharge the confined air and acrid matter, as well as to make room for the application of warm, ſpiritous fomentations, and proper digeſtive ointments; over which ſhould be applied double compreſſes, wrung out of common ſpirits, and renewed two or three times a day*. The diet ſhould be cordial and nouriſhing, and the patient's ſpirits ſupported by every attention and encouragement in the ſurgeon's power. By theſe means the progreſs of the mortification is ſometimes happily reſtrained, and a ſeparation of the ſound, from the mortified parts taking place, admits of a compoſition for life, with the loſs of the limb by amputation, the method of performing which operation, will be deſcribed in the following chapter.

* This application will anſwer the double and very important purpoſes, of giving vigour and tone to the parts; and correct the fætor, which in this country, during the warm weather is very great. M.

CHAPTER VII.

OF AMPUTATION.

AS every operation is neceſſarily attended with a certain degree of bodily pain, as well as terrible apprehenſion to the patient's mind; a good ſurgeon will in the firſt place be well aſſured of the neceſſity of an operation, before he proceeds to perform it; and ſecondly, he ought to conſider, whether the patient will in all probability be the better for it, or whether he may not be the worſe.

It will alſo be of ſingular advantage to young ſurgeons particularly, before they begin an operation, to go through every part of it attentively in their own minds; to conſider every poſſible accident which may happen; and to have the proper remedies at hand

in caſe they ſhould occur; and in all operations of delicacy and difficulty, to act with deliberation; and never affect great expedition, by which, very capital and even fatal errors have been committed. The maxim of "feſtina lente," is in no caſe more applicable than in theſe. It is alſo of no ſmall importance to ſupport the patient's ſpirits with a chearful aſſurance of ſucceſs, and the appearance of ſuch a degree of modeſt confidence as may ſerve to inſpire him with it, and by all means to avoid terrifying him with the appearance of the apparatus, or a vain and ridiculous parade of any kind.

The ſurgeon ſhould chooſe his own aſſiſtants, acquaint them with his intended mode of operating, and avoid a uſeleſs crowd of ſpectators.

With theſe prerequiſites, joined to thoſe qualifications, already mentioned in the introductory diſcourſe, as neceſſary to conſtitute a good operator; a ſurgeon will undertake moſt operations, with at leaſt a ſtrong probability of relieving his patient, which is performing one of the moſt eſſential offices of humanity.

When the amputation of a limb is determined on, the following apparatus ſhould be prepared in a different room. A large diſh, with a compreſs to be placed over the veſſels, made in the form of a roller, flattened and ſewed to the middle of a ſlip of linen, between two and three inches wide, and of ſufficient length, to paſs two or three times round the limb. The tourniquet or leather with a fillet and ſtick, a yard of tape rolled up, the amputating knife, catlen, ſaw, tenaculum, crooked needles armed, and ligatures of waxed thread looſe, a pair of ſtraight ſciſſars, and ſponges.

In another diſh ſhould be placed a ſufficient quantity of lint, ſome long pledgets of the ſame, ſpread with ſimple cerate or ſoft digeſtive. Oneor two large pledgets of tow, ſpread with the ſame cerate, and a few ſoft compreſſes of ſimple tow. Slips of linen about three inches wide, to croſs the ſtump, and retain the pledgets, &c. two rollers of different lengths, and a looſe knit woolen cap, to draw over the whole.

If the leg is to be removed, the moſt convenient poſture for the patient, is lying on a firm table of convenient height, covered with

blankets ſufficiently doubled, and pillows to ſupport the head. The operator, ſtanding on the inſide of the leg, held in a ſteady horizontal line by the aſſiſtants, firſt fixes his compreſs longitudinally, over the courſe of the artery in the ham; then bringing the two ends of the bandage to which it is fixed, towards each other, and paſſing one of them through a ſlit made in the oppoſite extremity, as in the uniting bandage; he makes two or three turns round thelimb, with the longeſt end, and drawing it pretty tight, faſtens it with a pin; over this is fixed the tourniquet, or leather, with the fillet and ſtick,* which ever of them are uſed, and having given it the neceſſary degree of tightneſs, he delivers it into the

* This is by many ſurgeons, in private practice, preferred to the ſcrew tourniquet; and conſiſts of a piece of ſtrong worſted binding, an inch broad, and five quarters long; which ſurrounding the circular band, its extremities are paſſed through two ſlits, cut tranſverſely, one inch from each end of a piece of firm ſole leather, about three inches long, and two and a half wide. The ends of the fillet are then tied in a ſtrong ſlip-knot, and a round ſtick, four or five inches long, and three quarters thick, being paſſed between the leather and fillet, the aſſiſtant, by turning the ſtick, makes what degree of compreſſion he pleaſes upon the artery.

hands of his aſſiſtant; then fixing upon that part where the firſt inciſion is to be made, which is about four fingers breadth below the patella, he paſſes the tape about half an inch below this part, and making a turn or two pretty cloſe, faſtens it with a pin. An aſſiſtant having drawn up the ſkin, as far as poſſible, the operator begining the firſt inciſion on the outſide of the leg, as high as he can carry the knife without conſtraint, divides the ſkin and *membrana adipoſa* down to the muſcles; and bringing his knife forwards, terminates his firſt ſtroke far enough on the inſide, to make one half of the circumference of the circle, which is finiſhed by another ſtroke carried from the place of the begining, to meet the oppoſite point. It is to be obſerved that this inciſion is to be made above the tape, which then falls below the wound, without embarraſſing the operator.

The firſt inciſion being completed, ſo as even to mark the muſcles, rather than ſuffer any adheſion of the adipoſe membrane, the aſſiſtants are ſtill to draw up the integuments as high as poſſible, when the muſcles are to be

divided by two ſemi-circular inciſions, quite down to the bones*.

The interoſeous ligament muſt then be ſeparated by the catline, or point of the amputating knife, puſhed between the bones, which are next to be carefully ſawed through†.

* An important improvement in this part of the operation, is, the diſſection of the cellular membrane connecting the integuments to the muſcles all around the bone; and folding the integuments back on the upper part of the thigh. A ſufficient quantity is thereby preſerved for covering the ſtump, which will not be otherwiſe obtained, as the cellular membrane is more condenſed on the fore part of the leg than on the thigh, in which a forcible retraction of the integuments is generally ſufficient. This part of the operation it is true, takes up a little time, but no additional pain is created; and the advantage derived ſufficiently compenſates for the protraction of the operation. The "*tuto*," is no leſs important than the "*cito*, or *jucunde*."

In ſawing the bones, the knee and foot ſhould be turned inwards, ſo as to raiſe the fibula, by which means, both bones will be ſawed through at the ſame time. M.

† Mr. Bromfield recommends a piece of ſoft leather about eighteen inches long, and of proportionable breadth, which being ſlit half way down the middle, is eaſily received between the divided fleſh, and one flap being lapped over the other, the aſſiſtants take hold of the two ends, and drawing them up; not only keep the muſcles out of the way of the ſaw, but by forcing them higher up, enable the operator to remove more of the bone, and by that means prevent a pointed ſtump.

The aſſiſtants ſhould hold the limb in the moſt exact horizontal line, leſt by raiſing the leg in the beginning, or middle of the operation the ſaw ſhould be compreſſed by the extremities of the bones; or towards the latter end of it, by letting the limb fall from the direct line, the tibia ſhould break off and form a ſharp point or ſplinter.

When the leg is removed, the principal arteries are to be ſecured either with the common crooked needles and thread, or the * tenaculum. It is ſeldom neceſſary to take

* The tenaculum is an inſtrument made in the ſhape of a large crooked needle, with a round point fixed in a ſmall wooden handle, and ſerves to pierce the end of the artery, and draw it out ſufficiently for the aſſiſtant to make a ligature upon it; by which method leſs pain is excited, and the ligature drops off much ſooner than in the common way. This mode however, though warmly recommended by Mr. Bromfield and Mr. White, is not generally adopted; and requires the ſanction of further experience, to give it the entire preference over the uſual method.

It is proper to add to this note, that though the uſe of the needles be directed above, in the taking up arteries, and the tenaculum ſlightly ſpoken of; yet Dr. JONES *for many years laid aſide the former, and preferred the latter, on account of the little pain attending its uſe, and the prevention of thoſe ſpaſmodic ſymptoms that commonly follow the incluſion of the*

up more than three or four veſſels, the mouths of which from their ſize are in general, readily enough diſtinguiſhed without looſening the tourniquet, which however ought to be quite ſlack, as ſoon as the principal veſſels are tied, that the circulation may be carried on more ſpeedily in the minute collateral branches of the ſtump, and diſcover ſuch as need to be ſecured. In taking up an artery, the needle muſt be paſſed on each ſide of the veſſel, but no deeper, nor more fleſh, incloſed, than will ſerve to prevent the * ligature from falling off. This laſt part of the operation being finiſhed; the tourniquet removed, and ſkin drawn down on the muſcles; the dreſſings are next to be applied in the following manner. Firſt, two round pledgets of lint upon the extremities of the bones, over which † a piece of fine old linen, exactly fitted to

nerve by the needle; which he never uſed, unleſs obliged by retraction of the artery within the muſcles; or by reaſon of its morbid ſtate, which would not ſuffer a ligature to be held. M.

* The ligatures ſhould be made of ſhoemakers thread, which compreſſes without cutting; and the ſize of the ligature muſt always be in proportion to that of the veſſel.

† The circular piece of linen applied immediately to the muſcular part of the ſtump, is preferred by Mr. Brom-

the muſcular part of the ſtump is to be laid; then doſſils of lint ſprinkled with flour, are to fill up the cavities, made by the circular edge of the ſkin and membrana adipoſa; upon which the armed pledgets of lint are to be applied, and over theſe, the large ones of tow; the long compreſſes or ſlips of linen are then to croſs each other at right angles, and paſs far enough on the ſides of the ſtump, to be retained by the firſt roller, a few turns of which, but not tightly drawn, are ſufficient for the purpoſe; the ſecond roller is employed in making ſeveral ſpiral turns from above the joint, down to the edge of the ſtump, where it is faſtened with a pin. Laſtly, the woolen cap is drawn over the whole leg, ſtretching it from top to bottom, with both hands, and ſlipping it gently on. The patient is then to be laid in his bed, his thigh a little elevated, and his knee gently bent and ſupported by a ſoft pillow; a ſudorific anodyne, to quiet pain, and diſpoſe him to a gentle dia-

field, to dry lint, as it comes off much ſooner and eaſier than lint, which adheres a long time, and very cloſely to the ſurface of large wounds. The application of ſponge is attended with the ſame or greater inconveniencies, from the granulations of fleſh inſinuating themſelves into the porous ſubſtance of the ſponge.

phoreſis, ſhould be immediately given, and perfect quiet enjoined, as an eſſential requiſite to his recovery.

The mode of operation in amputating the thigh, differs but in few particulars from that for taking off the leg. The compreſs and tourniquet are to be fixed higher upon the courſe of the artery, and the operator ſtands on the outſide of the limb, the patient being ſeated in a chair as more commodious for both. Before the bone is ſawed through, Mr Bromfield adviſes the operator to ſeperate the muſcles which adhere cloſely to the bone, with the catlin. This may be done about half an inch or ſomething more in length, and will allow a larger portion of the bone to be removed without tearing the muſcles, and conſequently a better ſtump to be made. The roller firſt applied ſhould be attached to a broad bandage ſurrounding the body, and deſcend by ſpiral turns around the thigh, until the edges of the laſt turn are exactly even with the edges of the ſtump. This mode of applying it, will prevent the lodgment of matter, which happens when the roller is carried beyond the edges of the wound; or that retortion of the lips occaſioned by the rollers falling ſhort

of them. As the principal uſes of bandage after an operation, are to reſtrain hæmorrhage, and retain the dreſſings, it ſhould never be tighter than to anſwer theſe purpoſes; for any thing beyond theſe, will, by obſtructing the freedom of the circulation, increaſe the ſwelling, pain and inflammation of the parts.

Surgeons are generally too ſolicitous about drawing down the ſkin, and retaining it by cloſe bandage immediately after the operation, in order to make a good ſtump; but this is done to much better advantage, when the tenſion and ſwelling are carried off by digeſtion, and the parts have acquired their natural tone.*

* On the 31ſt October, 1792, I amputated the thigh of Wm. Rankin, farmer in Montgomery county, for a white ſwelling in the knee, with which he had been afflicted for many years; and which threatened a ſpeedy diſſolution, from the carious ſtate of the bones, the hectic fever, and the great diſcharge of pus, from two large ulcers, on each ſide of his knee. The mode I employed, was nearly the ſame, as that recommended above, except that I did not uſe the tape as a guide to my knife, from a conviction that it would embarraſs me, and I am now convinced, that it will defeat in moſt caſes, the very end it was intended to anſwer; viz. to prevent an uneven inciſion, the conſequence of an unſteady hand. In making both my inciſions, firſt through the ſkin, and afterwards through the muſcles, down to the bone; I directed the edge of my knife, ob-

Should the ſurgeon, however, be threatened with a pointed ſtump, notwithſtanding the mode of operation and bandage already recommended; the following method of treatment, will contribute greatly towards preventing this troubleſome conſequence of amputation.

Having ſpread a large piece of ſkin with the adheſive plaiſter, let a ſufficient number of ſlips two inches wide and long enough to ſurround the thigh, be cut from it. The firſt ſlip is to be applied cloſe to the edge of the ſkin on the ſtump; the next about a quarter of an inch lapped over the firſt, and ſo continued till the laſt ſlip is applied near the top of the thigh; over theſe a roller ſprinkled with powdered roſin, is to be paſſed from above, downwaads, in the manner already

liquely upwards, and carried it round the limb in that direction in the manner adviſed by Mr. Minors of Birmingham. My aſſiſtant likewiſe diſſected the cellular membrane connecting the integuments to the muſcles, and folded them back, upon the upper part of the thigh, in order to ſerve as a covering for the ſtump, which was healed and the man able to walk, in a few weeks, a period much ſhorter than I expected; conſidering the patients previous ill health, and his diſtance from the city; which prevented me from ſeeing him as often as I could have wiſhed. M.

mentioned, and then wetted with ſpirit of wine, which ſoon grows dry; the aſſiſtants are then to draw down the ſkin and muſcles over the end of the bone, and the ſurgeon having applied his dreſſings, ſecures them on, by a number of ſlips of ſticking plaiſter, which are to croſs each other, and paſs high enough on the ſides of the ſtump, to retain the integuments and fleſh in their deſired ſituation. Theſe ſlips and roller form a caſe, which ſcarcely requires to be renewed during the greateſt part of the cure.

As a preſervation of the joint of the knee, to be uſed with the remaining part of the leg after amputation, is attended with great advantage to the patient, ſeveral ingenious ſurgeons have lately revived a method long ſince recommended, but never practiced with ſucceſs, until within a very few years. Inſtead of taking off the leg at the uſual place below the knee, the firſt inciſion is made about four inches above the ancle joint, and the remaining part of the operation finiſhed in the common way; the tendons which are here neceſſarily divided, are apt to protrude beyond the fleſh after the operation, but may, without any pain, be taken off with

the knife or ſciſſars, to a level with the reſt of the ſtump. One or two gentlemen of the profeſſion, particularly Mr. O'Halloran and Mr. White, adviſe a flap to be formed of the poſterior part of the fleſh and integument, which, as ſoon as the digeſtion comes on, and the ligatures can be removed, is to be turned over the end of the ſtump, and retained there either by future or compreſs and bandage, until the parts unite by the firſt * intention; but as Mr. Bromfield, and Mr. Wright very ingenious ſurgeons of Sheffield, have both performed the operation with the moſt deſirable ſucceſs, without the flap, it is certainly the moſt eaſy and ſimple mode of doing it.

It is to be obſerved that when the operation is to be performed in this way, the patient muſt have an artificial foot and leg, the hollow of which laſt ſhould be formed ſo as to ſupport the perſon's weight on its ſide, as much as on the the extremity of the ſtump,† which is thereby greatly relieved.

* The advantage propoſed by this flap, is to form a cuſhion for the bone of the ſtump to reſt upon, without danger of uneaſineſs or protruſion.

† Almoſt all ſurgical authors appear to believe, that the preſſure in the walking of thoſe perſons whoſe thighs

The ſuperior advantages attending this mode of amputating the leg, both in point of beauty, as well as utility; will, I imagine recommend it to general practice, as ſoon as its merits are ſufficiently known.

It is an eſtabliſhed maxim in ſurgery to take off the fore-arm as near the wriſt as poſſible, and no objections are made to the performance of it there, notwithſtanding its tendinous and ligamentous ſtructure. When the fingers and toes become carious, they are beſt taken off at the joint; and in order to ſave as much ſkin as poſſible, the circular inciſion ſhould be made on the extremity of the bone which is to be removed, but not ſo low as to embarraſs the operator in coming

have been amputated, is upon the ſtump, except Mr. Minors; who is the firſt that has controverted and proved the falſity of the notion. He alſo once entertained the common opinion, until he found by inquiring of ſeveral people who had loſt their thighs, that the weight of the body in walking, bears principally againſt the tuberoſity of the os iſchium, upon the outſide of the great trochanter, and upon the poſterior part of the glutæi muſcles. He therefore thinks, provided a ſufficient quantity of integuments be preſerved to cover the bone, that there is no ſuch occaſion as many ſuppoſe, to ſave ſo much muſcle as is commonly done, to act as a cuſhion, and which for obvious reaſons may be injurious. M.

at the articulation; the capſular ligament of which will be readily diſcovered, by bending the finger towards the palm of the hand, after the inciſion is made through the ſkin and tendons.

Mr. Bromfield adviſes a removal of the cartilaginous extremity of the bone with the knife, in order to promote a more ſpeedy growth of the granulations, which however, I have generally found covered before the cicatrization took place. If the fingers are to be taken of at the firſt joint, next to the metacarpal bones; it is neceſſary to divide the ſkin and fleſh between them, quite up to the joint, before you make the circular inciſion.

Dry lint with moderate compreſs and bandage, are generally ſufficient to reſtrain the bleeding; yet if an artery ſhould be troubleſome, it would be beſt to ſecure it with a ligature.

We are frequently in this country, obliged to remove large portions of the metatarſal bones in conſequence of mortifications from froſt; and here it is to be obſerved, that as much as poſſible of the bone as well as ſkin is to be ſaved, in order to afford the patient a better ſupport; though inſtances are not

wanting of men who have walked tolerably well upon the aſtragalus and os calcis alone. After dividing the fleſhy, and tendinous parts between the bones with the knife; and drawing up the ſkin as much as poſſible, before the circular inciſion is made; the bones are to be ſawed through with a ſmall ſpring ſaw; a bit of thin ſheet lead being placed between the bones, to defend the tendons and fleſh of the opoſite ſide, from being injured by the ſaw.

When anodyne, or antiphlogiſtic medicines become neceſſary, after any of the preceding operations; they are to be exhibited according to the nature and urgency of the ſymptoms, which are ſeldom exactly alike in any two caſes: for this reaſon, the young ſurgeon will eaſily perceive the neceſſity of acquiring ſome general principles in his profeſſion, the application of which, to particular caſes, muſt ever be left to his own judgment.

The principle of a relaxed and non-reſiſtent ſtate of the muſcles, as ariſing from the bended poſition of the limb ſo frequently recommended in the chapters upon ſimple and compound fractures; is equally applicable to

the reduction of diſlocations, which have hitherto been as little underſtood, if not leſs than thoſe of fractures: but unleſs the ſurgeon is very competently acquainted, not only with the ſtructure of the bones, but their connecting ligaments in a recent ſtate; together with the force, direction, and attachments of the different muſcles and tendons; he can derive little more than a negative kind of inſtruction, from the writings of the ableſt men upon the ſubject of diſlocations. All I ſhall venture to recommend to the young ſurgeon unacquainted with anatomy; is, cautiouſly to avoid thoſe miſchiefs which always ariſe from a violent exertion of ill directed force. Whatever extenſion is made, ſhould be done very gradually; by which means the muſcles and ligaments will not receive half the injury from a great degree of diſtention, which they would ſuſtain from even a moderate one very haſtily exerted. The hold which the aſſiſtants take, ſhould always be applied to the diſlocated bone; for inſtance, if the os humeri is diſlocated, the lower extremity of that bone, and not the fore-arm, is to be held by the perſon who aſſiſts in the reduction. The poſition of the limb below the luxated joint,

ſhould be ſuch, as to give the leaſt degree of reſiſtance to the muſcles above it; for this reaſon, in the reduction of a luxation of the os humeri, the fore-arm ſhould be bent; and whenever a ſufficient degree of extenſion is judged to be made; the ſurgeon ought to make uſe of the diſlocated bone as a lever to direct the head of it into the ſocket. Indeed when the head of a luxated bone is brought by proper extenſion, to a level with the edge of its ſocket; little or no external force is required, to replace it; as the ſurrounding muſcles of the joint perform that part of the operation, better than the ſurgeon himſelf*.

* Extreme difficulty is ſometimes experienced in the reduction of diſlocations, owing to rigidity of the parts, and inflammation of the muſcles; in this caſe bleeding, emetics, fomentations, &c. are generally directed to relax the parts, previouſly to attempting the reduction. But in a caſe, that lately occurred in the Pennſylvania hoſpital, as commonly employed; until Dr. PHYSICK thought upon the new, and ſucceſsful expedient of bleeding the patient, who was uncommonly robuſt, until he fainted, when the extenſion being ſtill continued, the head of the tumerus at once ſlipt into place. M.

CHAPTER VIII.

OF BLOWS ON THE HEAD.

TO give the young unexperienced ſurgeon, ſome general and clear ideas of the nature and treatment, of this difficult and dangerous branch of chirurgical diſeaſes; I ſhall conſider the ſubject under three ſeparate heads. The firſt will comprehend the injuries to which the ſcalp and inveſting membranes of the ſkull are liable. The ſecond, will treat of the ſymptoms ariſing from a commotion, or concuſſion of the brain: and the third, ſhall comprize thoſe complaints which are occaſioned by a fracture of the bones of the ſkull, and its effects on the parts beneath.

If the ſtructure of the ſcalp, did not differ from that of the common integument of the body; and wounds inflicted on it, were attended with no other conſequences, than thoſe of the common parts: a particular inveſtigation of its injuries, might be deemed a uſeleſs labour: but when we conſider, that this covering of the head, conſiſts not only of the ſkin and adipoſe membrane, but alſo of the expanded tendons of the frontal, occipital and temporal muſcles, beſides the pericranium: that it has a conſtant communication, by means of the blood veſſels, between the parts within and without the ſkull; the neceſſity of a particular attention will pretty evidently appear.

Although common inciſed wounds of the ſcalp, which penetrate no deeper than the cellular membrane, are not generally attended with any particular circumſtances: yet in certain conſtitutions of a peculiar habit and diſpoſition, they ſometimes produce very troubleſome, and even alarming ſymptoms. Perſons of a nervous and irritable ſyſtem, are ſubject to violent ſpaſmodic affections, accompanined with a low quick pulſe, frequent faintings, want of ſleep, and ſlight de-

lirium; and I have known intemperate perſons of this irritable claſs, who have ſuffered even a locked jaw, in conſequence of the removal of a ſmall incyſted tumor from the head, where nothing more than the cellular membrane was divided.

Anodynes, joined to ſome of the fœtid antiſpaſmodics, generally remove thoſe complaints in a few days; though to the young and unexperienced practitioner, they will appear very dangerous and alarming. Some have a ſlight fever, a general tumefaction of the ſcalp, extending to the eye-lids and ears; the ſwelling is of the œdematous kind, of a yellowiſh hue, and is frequently beſet with ſmall bliſters, filled with a ſerum of the ſame colour. In ſhort, the inflammation in this caſe appears evidently to be of the eryſipelatous claſs; though it is ſeldom attended with danger, and generally relieved by moderate bleeding, a few lenient purgatives, and febrifuge medicines of the neutral kind; the wound requiring no other than the uſual dreſſings, with a warm diſcutient fomentation. Sometimes the inflammation is ſo high, as to render the diſeaſe very

painful; in which circumſtances, the ſudorific anodynes may be given with advantage.*

Punctured wounds of the ſcalp, are generally more troubleſome than thoſe made with a cutting inſtrument; probably owing to a confinement of the extravaſated fluids; for which reaſon ſome dilatation will now and then be neceſſary; otherwiſe they require no other method of treatment, than what has been recommended for inciſed wounds.

When a large portion of the ſcalp has been ſeparated and detached from the pericranium, either by a lacerated or inciſed wound; the

* In thoſe caſes where no great tendency to inflammation appears, this method will generally be ſufficient; but when the wound extends to the aponeuroſis, and pericranium, the ſymptoms are more violent, and require a different mode of treatment. "The ſcalp," ſays Mr. Pott, "is ſo tenſe, the pain ſo great, and the ſymptoma-"tic fever ſo high, that by waiting for the ſlow effect "of ſuch means, the patient runs a riſque from the con-"tinuance of the fever; or elſe the injured aponeuroſis "and pericranium becoming ſloughy, produce an abſceſs, "and renders the caſe both tedious and troubleſome. A "diviſon of the wounded part, by a ſimple inciſion, down "to the bone, about half an inch, or an inch; will moſt "commonly remove all the bad ſymptoms; and if it be "done in time, will render every thing elſe unneceſ-"ſary." M.

parts ſo ſeparated, after being cleaned from dirt and coagulated blood; ought to be brought as nearly as poſſible into contact; and then ſecured by the interrupted ſuture, with proper compreſs and bandage. In caſe the lips of the wound are ſo ragged and uneven, as not to admit of an exact appoſition, they may be brought to approach ſo near each other with a ligature and ſlip knot, as to leſſen the deformity, and ſhorten the cure, advantages which a good ſurgeon ſhould ever have in view. Should the parts not univerſally unite, but form little abſceſſes in different places; theſe may eaſily be opened by the point of a lancet, and the matter diſcharged: and this mode of practice, may take place with propriety, where the pericranium itſelf is removed, and a ſlight exfoliation ſucceeds, without retarding or obſtructing the cure; even where the pericranium and aponeurotic expanſion are become ſloughy and inflamed. If the ſurgeon be not in too great haſte to cut, and will have patience to wait until a ſeparation and good digeſtion are come on, he will frequently ſucceed in preſerving the ſcalp, and avoiding

that deformity, which a large ſcar and the loſs of hair, muſt inevitably produce.* Here, how-

* This advice, to preſerve, if poſſible, the ſeparated portions of the ſcalp, in caſes where no injury is done to the brain or ſkull; cannot be too ſtrongly inculcated. The advantages derived from the practice, are, a ſpeedy cure, and the prevention of deformity. The ſcalp will not only adhere to the bone when merely ſeparated therefrom; but even when the pericranium is detached. In proof of this, Mr. POTT gives ſeveral ſtriking caſes, as alſo Mr. EARLE, the editor of the laſt edition of his works. The following caſe which came under my own obſervation is directly in point.

In the ſummer of 1790, I was ſent for to viſit a man, who had received a wound by a brick-bat in the ſcalp, covering the middle of the right parcital bone. A conſiderable diſcharge of blood followed the blow, ſo that when I was called, twelve hours after; the hair had become ſo matted, that I was obliged to ſhave off a conſiderable portion of it, before I could obtain a full view of the wound, which was three inches in length. Upon probing it, I found the pericranium detached all around, and the bone bare: fearing a future abſceſs, and exfoliation, I heſitated about the propriety of uniting the ſcalp with the denuded bone, and prepared for the exciſion of the ſeparated ſcalp; but the great fear which the man expreſſed, about my uſing the knife, induced me to attempt a re-union. Accordingly, after I had perfectly cleared the wound, and brought the edges of it cloſe together; I covered it with lint, ſpread with ſome ſimple cerate, and made uſe of an adheſive plaiſter to prevent a retraction of

ever, it muſt carefully be remembered, that the ſcalp is not abſolutely ſpoiled by contuſion, and that the injury extends no deeper than the external coverings of the cranium: when it does, a very different mode of treatment will be requiſite. For if, beſides the ſymptoms already enumerated, as attending inciſed and lacerated wounds of the ſcalp, and which generally come on within three or four days after the accident; the patient ſhould be ſeized, ſome time after this period, with a ſmart fever, ſevere pain in the head, great anxiety and reſtleſsneſs, frequent ſhiverings, a nauſea, delirium and convulſions, and the wound at the ſame time put on a ſpongy, glaſſy, unhealthy aſpect, with the pericranium looſened, and detached from the ſkull; there will be great reaſon to ſuſpect that the parts within the ſkull are affected, either by ſome extravaſated fluid, preſſing upon the brain, or from an inflammation and ſuppuration of the dura and pia mater. As none of theſe

the parts. I then applied a piece of ſheet lead over theſe, and ſecured the whole by compreſs, and the double-head roller. This mode was followed for about two weeks, when the wound was perfectly healed. Very little *pus* was formed, no abſceſs or troubleſome ſymptoms occurred; and the man now follows a laborious employment. M.

ſymptoms appear at firſt, or immediately after the accident, ſo they come on in a kind of ſucceſſive order; the firſt ſet ariſing from an extravaſation of blood or lymph, preſſing upon the brain, ſo as to impair or aboliſh voluntary motion, and the ſenſes, ſhew themſelves earlier; whereas the other, being cauſed by an inflamed and putrid ſtate of the membranes of the brane, ſeldom affects the organs of ſenſe, until late in the diſeaſe; when ſuch a quantity of mater is generated, as to occaſion the ſame ſymptoms of preſſure, with any other fluid.

Both theſe cauſes, with their effects, may happen to be combined in the ſame patient, and render the caſe a little more perplexed, and difficult; yet there are generally ſome characteriſtic marks, which ſerve at leaſt to diſtinguiſh the inflammatory effects of contuſion, from thoſe occaſioned by commotion and extravaſation.

In ſuch caſes, that is, where an inflammation of the membranes of the brain is the conſequence of contuſion, and where little or no mark of external injury appears; the miſchief is ſeldom diſcovered until ſeveral days, often ſeven or eight, after the acci-

dent*. A pain in the ſpot which received the blow, is generally the firſt ſymptom; this pain is ſoon extended over all the head, and is attended with a languor and dejection of ſpirits, followed by a vertigo, inclination to vomit, reſtleſsneſs and fever. A day or two after this, if no evacuations have been uſed, a puffy tumor of the ſcalp, not riſing very high, or exciting much pain generally appears: if this tumor is laid open, the pericranium will be found of a darkiſh hue, and either detached or eaſily ſeparable from the ſkull; between which, and the membrane, a ſmall quantity of a browniſh ichor is generally lodged; the cranium itſelf being altered in its colour. From this period, the ſymptoms are all haſtily exaſperated; the head-ach and thirſt becomes more intenſe, the ſtrength decreaſes, the rigors are more frequent, and at laſt convulſive motions, attended either with delirium, paralyſis or comatoſe ſtupidity, cloſe the ſcene.

* Mr Pott relates the caſe of a woman, in whom no ſymptom of an oppreſſed brain was perceived, until the *thirteenth* day after the injury had been recieved. Vol. 1ſt, p. 261. Edit. 1790. M.

If, under theſe circumſtances, the bone be perforated, matter will be found between it and the dura mater; and that, more or leſs in quantity, according to the violence of the injury, and the length of time ſince it was received. Sometimes, the matter lies between the dura, and pia mater, and even upon the ſurface of the brain.

If the ſcalp be wounded at the time of the accident, or any portion of it removed to examine the ſtate of the ſkull, the wound will look perfectly well for ſome time; but after a few days it begins to loſe its florid complexion, turns pale and glaſſy, diſcharges a thin diſcoloured ichor, the lint ſticks cloſe to all parts of the ſore, and the pericranium, inſtead of adhering firmly to the bone, eaſily ſeparates all round, to ſome diſtance from its edges: the bone itſelf changing from its natural whiteneſs, to a kind of purulent hue, or yellowiſh caſt. All theſe changes in the appearance of the wound, indicate the diſeaſed ſtate of the parts beneath the cranium; which can only be relieved by perforating the bone,* and this

* Two caſes are related by Mr. Pott, of an oppreſſed brain, cured by a perforation made through the ſkull: in one, at the diſtance of four, the other at that of five days from the

operation ſhould never be delayed when the ſymptoms of an oppreſſed brain, or inflamed dura mater, are not ſpeedily removed by proper evacuations; which have frequently prevented the dangerous conſequences of violent blows on the head.

time the blow was received. The place for operating, was pointed out by the riſing of a puffy, indolent tumour, over the injured part; which ſymptom, joined to the ſpontaneous ſeparation of the pericranium, from the bone underneath: hardly ever failed with him, in pointing out the formation of matter between it and the ſkull. Vol. 3d. p. 43. M.

CHAPTER IX.

OF INJURIES ARISING FROM CONCUSSION OR COMMOTION.

ALTHOUGH the terms of commotion, or concuſſion of the brain, have been uſed by many writers in ſo looſe and vague a manner, as to convey very inadequate ideas of the nature of the diſeaſes; yet it is very certain, that the medullary part of the brain, receives ſuch a degree of injury or derangement from violent ſhocks, as ſenſibly to impair its ordinary functions; and this injury is produced, without any fracture or fiſſure of the bone, or even the head receiving any particular blow upon it; as frequently happens in falls from conſiderable heights where

the ſhoulders, breech, and ſometimes the feet, firſt ſtrike the ground; and that ſuch ſhocks are capable of producing, not only a diſorder in the ſubſtance of the brain, but an inflammation, and ſuppuration of its membranes, is evident from the hiſtory of ſome well atteſted facts.*

The ſymptoms, however, which attend injuries ariſing from mere concuſſion, and thoſe occaſioned by extravaſation, or inflammation of the dura mater; admit of a pretty clear diſtinction. In the firſt caſe, or that of commotion ſimply; there is generally an immediate ſuſpenſion of the common functions of the brain, to a certain degree; the patient has a vertigo or giddineſs, an inclination to vomit, upon ſwallowing any liquid; has a wildneſs in

* The late Mr. Hewſon uſed to mention in his lectures, the hiſtory of a lady who was ſeized with all the ſymptoms of an oppreſſed brain, ſome days after receiving a violent jolt in a poſt-chaiſe; but which was not ſuſpected as the cauſe of her complaints until after her death, when, on opening the head, he diſcovered an inflammation of the dura mater, with large ſuppuration.

A caſe likewiſe happened in Philadelphia, ſome years ſince in a ſoldier, who died in conſequence of an inflammation of his brain, from ſlipping down to the ground upon his feet; from the roof of a houſe. M.

his looks, talks incoherently, is reſtleſs and ſleepleſs, with little or no fever; or any of the other ſymptoms, already deſcribed as uſually attending an extravaſation or inflammation.

Gentle evacuations by bleeding, lenient purgatives and ſudorific anodynes, frequently remove moſt of the complaints occaſioned by concuſſion, in twenty-four hours, or two or three days at fartheſt: but if after this period, and the patient having been conſiderably relieved, the ſymptoms ſhould be again renewed, and neither accidental cold, or irregularity in diet have heen productive of their return; the ſurgeon ought, immediately to be upon his guard, as further miſchief, than a mere ſhock or derangement of the brain is to be ſuſpected. Under theſe circumſtances, the evacuations already mentioned, and particularly bleeding,* are to be repeated with more freedom, the head is to

* Bleeding largely is of great conſequence in injuries of the brain, eſpecially when proceeding from falls. The late duke Cumberland, when in Scotland, happened to fall from his horſe, and was cured by a country ſurgeon, by copious bloodletting, at the riſque of his reputation; but was afterwards rewarded, by being appointed ſurgeon general of the Britiſh troops in America, previous to the late revolution. M.

be ſhaved and carefully examined, in order to ſee, whether no marks of contuſion point out the ſeat of the complaint; for if they do not, we muſt truſt to evacuations and the general antiphlogiſtic regimen, for the relief of the patient, as the trephine cannot be applied with any tolerable propriety, unleſs we are guided by ſome external appearances, to the ſeat of the injury. Mr. Bromfield has lately recommended a liberal uſe of ſudorific anodynes, without bleeding; not only under the preceding circumſtances of concuſſion, but in fractures of the cranium, without applying the trephine: however, as he adduces no more than three or four caſes, and thoſe not very preciſe, in ſupport of a practice ſo oppoſite to that of the moſt eminent modern ſurgeons, I would adviſe the young practitioner, to be very cautious how far he adopts the opinions, even of ſo reſpectable a name as that of Mr. Bromfield, upon a ſubject which requires the united judgments of the ableſt men of the profeſſion, to aſcertain with preciſion.

As anodyne medicines are the moſt effectual preventatives of inflammation, after ſevere operations in general, I think they may,

with great propriety, be employed in fractures of the ſkull, as well as concuſſions of the brain; but as evacuations in general, and bleeding in particular, are univerſally allowed to promote the power of abſorbtion, as well as leſſen inflammation, they ſhould never be omitted in complaints ariſing from concuſſion of the brain, extravaſation of any kind of fluid, or inflammation of the dura mater; thoſe injuries, in particular, which ariſe from the preſſure of a lymphatic extravaſation, occaſioned by a rupture of the fineſt veſſels of the brain, can alone be relieved by abſorbtion alone, as there are no ſymptoms, in ſuch caſes, which clearly indicate the preciſe ſeat of the collection; and if there were, it would not be in our power to relieve them, by an operation.

I ſhall conclude this chapter, upon concuſſions of the brain, with the hiſtory of a caſe, which fell under my care many years ago, and which may ſerve to ſhew the perplexing obſcurity, ſometimes attending certain caſes of this nature, both with reſpect to the cauſes and cure of the diſeaſe.

A woman, about twenty years of age, in running haſtily out of a cellar, ſtruck the

crown of her head with great violence againſt a beam.

She was ſtunned by the blow, but after a few minutes, was able to go about her buſineſs, and continued apparently well for three or four days, when ſhe complained of a giddineſs and pain in her head, attended with a ſlight fever. Under theſe circumſtances, I was applied to for aſſiſtance; and, after enquiring into the hiſtory of her caſe, and examining her head, where no appearance of contuſion was obſervable, I took ſixteen ounces of blood from her arm, gave her a gentle purge, and ordered a low diluting diet, which ſoon removed all her complaints, and ſhe continued perfectly eaſy for ten or twelve days, when her former ſymptoms again returned, and were as ſpeedily relieved by the ſame remedies. In ſhort, ſhe continued to ſuffer periodical attacks of pain in her head with a fever, every twelve or fourteen days for near three months, and was as often relieved by gentle evacuations, until the eightieth day from the accident, when ſhe ſuddenly became perfectly frantic and delirious, and had a hard quick pulſe, and moſt of the ſymptoms uſually attendant on an inflammation of the dura ma-

ter. A copious bleeding, and ſeveral glyſters afforded very little relief, and as her ſituation was then to the laſt degree threatening, I was induced to examine the ſcalp with great attention, and thought I was ſenſible of ſome ſmall degree of thickening on the part, where ſhe firſt ſtruck her head, and which ſhe always pointed out, while ſenſible, as particularly painful. Upon this I made two ſemi-circular inciſions, and removed a ſufficient portion of the ſcalp, with the pericranium, which adhered pretty firmly; then perforating the bone, and taking out the circular piece, I was ſurprized to find only a ſlight degree of inflammation upon the dura mater, which I immediately divided with the point of a lancet, but without any diſcharge of blood or matter; all her dangerous ſymptoms diſappeared the next day, returned no more, and ſhe was cured in the uſual time, without any other remarkable circumſtance*.

* Mr. POTT relates the caſe of a woman, who was affected by nearly ſimilar ſymptoms to the above. The complaint proceeded from ſtriking the head againſt an iron hook, fixed to the top of a coach on the inſide. The blow gave exquiſite pain for the inſtant, but ſoon ceaſed, and nothing further appeared, until *two months* after the accident, when a pain in the head came on, but diſappeared in a week. A tumor

CHAPTER X.

OF INJURIES ARISING FROM A FRACTURE OF THE SKULL.

WHOEVER has read with attention, the two preceding chapters upon blows of the head and concuſſions of the brain will readily perceive; that a ſimple undepreſſed fracture of the ſkull, conſidered merely as ſolution of continuity of the bones, can never occaſion thoſe dangerous ſymptoms, which often

then aroſe over the ſagittal ſuture. On opening the tumor, a quantity of offenſive, and diſcoloured matter was diſcharged; and the dura mater, was bare in conſequence of a hole in the track of the ſuture wide enough to admit a finger. The bones on each ſide were carious to a conſiderable extent. Vol. 1. p. 115. Mr. Warner alſo relates the caſe of a boy

ten ariſe in conſequence of ſuch blows and concuſſions. It is the injury, which the brain and its inveſting membranes ſuſtain from extravaſation and inflammation, that conſtitute the whole danger of ſuch accidents, as is evident in many undepreſſed fractures of the ſkull, where no bad ſymptoms at all appear, and where the application of the trephine is ſometimes unneceſſary. Whereas the moſt dangerous and fatal caſes, are generally thoſe, in which there is not the leaſt fracture or fiſſure to be found.

who fell upon his head, and lacerated and contuſed the ſcalp, but did not injure the bone; in whom the ſymptoms having diſappeared by bleeding and purging, returned after an interval of *ten* days, with a pain in the part of his head, directly oppoſite to that, which received the injury. The trephine was applied to this part, without diſcovering any extravaſation, but on an examination after death, of the part originally hurt; there was found ſome matter between the *cranium* and *dura mater*, and a great quantity of that and extravaſated blood between the dura and pia mater. Mr. Warner therefore ſuggeſts the propriety of applying the trephine on the part originally injured, without paying any attention to the place where any ſubſequent pain may apparently ſeem, as in the above caſe, to call for an operation. M.

For theſe reaſons the operation of trepanning in undepreſſed fractures of the cranium, may be performed with three different intentions. Either to relieve the complaints ariſing from the preſſure of an extravaſated fluid: to give a diſcharge to matter formed in conſequence of an inflammation of the dura mater: or it may be uſed as a preventative of future miſchief. In the firſt caſe, the relief from perforation, is not only ſometimes immediate, but frequently is not attainable by any other means.—In the ſecond, it is the only chance for life; as there is no natural outlet for the diſcharge of matter formed in conſequence of inflammation.—In the third, or preventative intention, it is a matter of choice, more than immediate neceſſity.

Few perſons, I believe, will heſitate to perform the operation under the two firſt circumſtances, of extravaſation and inflammation; and with reſpect to the third or preventative means, ſome doubts may ariſe with the young practitioner, about the propriety of performing the operation, while no bad ſymptoms ap-

pear; particularly as ſome writers adviſe us to wait until its neceſſity is indicated by ſuch complaints as may both acquire and vindicate it.

To afcertain as nearly as poſſible, the true line of conduct, in ſo intereſting a matter, it will not be amiſs to compare the dangers reſulting from the operation, conſidered in itſelf, with thoſe conſequences, which we may reaſonably expect from an omiſſion of the performance of it.

As to the operation itſelf, and particularly that part of it, which conſiſts in perforating the bone, there is neither pain, difficulty, nor danger in it: the loſs of ſubſtance in the bone does not long retard the cure, and as to the admiſſion of air upon the dura mater; it will in a great meaſure produce its effects through the fracture, where the perforation is not made.

The danger of omitting the operation, ariſes in conſeqnence of the preſſure upon the brain, and the inflammation of its membranes, ſo often repeated in the preceding pages; and as the moſt dangerous ſymptoms occaſioned by theſe cauſes, do not come on immediately;

frequently not until many days after the injury: it is impoſſible for the ſurgeon to aſcertain the miſchiefs which may be occaſioned by it; and when thoſe miſchiefs are indicated by the ſymptoms, the operation is the principal remedy we have in our power, and that is too frequently, under ſuch circumſtances, unſucceſsful.

In ſhort, if we compare the numbers of perſons who die from collections of matter formed within the cranium, where the perforation has been neglected; with thoſe who ſurvive, under an early application of the trephine: the proportional ſucceſs of the latter will be found ſo much greater, as to render the operation adviſeable, in almoſt every caſe of a ſimple undepreſſed fracture of the cranium.

When a fracture of the ſkull is attended with a depreſſion of the bone, the neceſſity of elevating the depreſſed part, in order to take off the preſſure upon the brain is univerſally acknowledged; and when the injury, which the brain receives, is no more than what ariſes from that compreſſion, the mere elevation of the bone, will procure effectual relief. But as preſſure, from this cauſe, may be, and moſt frequently is, combined with that ariſing from

extravaſation; the ſurgeon is by no means to conſide in the favourable appearances, with which we are often flattered after raiſing a depreſſed bone; but ſhould purſue ſuch methods as are moſt likely to prevent the more remote conſequences of injury done to the brain and its membranes; and theſe means have been already pointed out ſufficiently, in the two preceding chapters.

A ſingle perforation may ſuffice in ſmall fractures with little depreſſion, but when the force producing them was great, the depreſſion conſiderable, and the fracture extenſive, winding into a circular form; with the depreſſed part, cracked and ſplintered; the beſt and ſafeſt way is to remove the whole, or at leaſt the greater portion of the bone ſo depreſſed and injured; for whatever ill conſequences may ariſe from denuding ſo large a ſpace of the dura mater, much greater miſchief is to be apprehended, from the confinement of that matter, which may of courſe be generated throughout the whole extent of the fracture and depreſſion.

As the rules laid down by the ableſt writers, upon ſuch a ſubject, can only be general, the peculiar circumſtances of each individual,

muſt furniſh directions to the ſurgeon, for his particular conduct. All depreſſed parts muſt be elevated; looſe, ſplintered, and irritating ones removed; and at all events, a free diſcharge afforded to whatever extravaſated fluids may be formed, ſooner or later, in conſequence of the injury. The earlieſt and moſt careful attention ſhould be paid to every ſymptom and appearance, in order to obviate them in due ſeaſon, for the proper opportunity once loſt, is ſeldom to be regained by any future management.

There are certain parts of the cranium, where on account of the ſtructure; the application of the trephine has been uſually forbidden, by moſt writers; theſe are the ſutures, the inferior part of the occipital bone, that part of the frontal bone where the ſinus is ſituated; and the temporal bones. The ſtrong adheſion of the dura mater, and the courſe of the ſinuſes under the ſutures, have been deemed ſufficient objections to the operation on thoſe parts; but experience has taught us, that the dura mater may be ſeparated without laceration; and that in caſe the ſinuſes are wounded, the hæmorrhage does not prove dangerous. The occipital bone is rarely fractured

without immediate death being the conſequence; yet the ſuperior part of it has been fractured, and the trephine applied with ſucceſs. In caſe of a fracture in the frontal ſinus, particularly from a muſket ball ſhattering the poſterior part of the ſinus, Mr. Le Dran adviſes the application of the trephine, to relieve the injury of the dura mater. As to the temporal bones, they may be perforated any where above the ears; as the hæmorrhage from the artery is eaſily reſtrained by ligature, where preſſure does not ſucceed; and and that convulſion called the jaw-lock, as frequently attends wounds made in other parts of the body, as thoſe of the temporal muſcles; the tendinous expanſion of which, covers a large portion of the parietal bones, where the trephine is daily applied without any apprehenſion. In ſhort the danger incurred from an application of the trephine to any of the afore-mentioned parts, is by no means equal to the miſchief ariſing from its neglect; for though many of theſe operations do not ſucceed, the failure is to be attributed much more to the nature of the injury, than the violence occaſioned by the application of the inſtrument.

When the operation is determined on, it is generally performed in the following manner. The patient being conveniently ſeated on a low chair, or lying on a bed, with his head firmly fixed and ſupported by the aſſiſtants; the operator, with a ſtrong ſcalpel, is to divide the ſcalp with the pericranium, quite down to the bone; and having diſcovered the fracture, is to trace it to its utmoſt extent, in order to fix upon the moſt advantageous ſpot, for making the perforation, and theſe being done, ſuch a portion of the ſcalp and pericranium is to be removed, as will admit of ſufficient room for the application of the trephine. If any veſſels ſhould be divided, the bleeding of which cannot eaſily be reſtrained with dry lint and moderate preſſure, they muſt be taken up with the needle and ligature: the crown of the trephine is then to be applied, ſo as to embrace an equal portion of the bone on each ſide of the fracture; if it be ſmall and undepreſſed, the operator works his ſaw, until he has made a furrow in the bone ſufficiently deep to prevent it from ſlipping; then removing the pin, he continues the operation pretty briſkly, taking up the crown every now and then to clear

the teeth with a ſmall bruſh, and wipe the duſt with a pointed probe and lint from the circular furrow, as well as to examine whether the ſaw works equally, or the bone begins to be looſe.* The appearance of the diploe is not to be depended on, as a guide to aſcertain the thickneſs of the ſkull, as in very thin ones, there is often none at all; and in old perſons,

* In uſing the common trephine, a very conſiderable interruption of the operation takes place from the ſurgeon being obliged to ſtop and clean the inſtrument from duſt that collects between the teeth; and alſo in taking out the pin in the center of the trephine. In order to remove theſe inconveniences, Mr. Cruickſhank of London, has improved on the former inſtrument, by having a *ſlit* made in the perpendicular ſupporter of the handle, in which there is a nut of a ſcrew fixed to the upper part of the moveable pin which is in the center of the trephine, and which projects beyond the teeth of the ſaw. As ſoon therefore as the ſaw has ſo far penetrated the bone as to be firmly fixed; the operator has only to ſlide the nut to the upper part of the ſlit, and there to fix it by turning the ſcrew. In the courſe of the ſaw, there are three vacuities each about as wide as the ſpace occupied by two teeth, in order to let out the duſt of the bone as faſt as it collects. The trephine inſtead of being *conical*, is perfectly cylindrical, which is of conſiderable advantage; as the common one is ſo ſmall at the bottom, that it is frequently neceſſary to make two perforations, where one would have ſufficed; if the diameter of the inſtrument were a little greater. M.

it is generally obliterated; for which reaſon, if a ſurgeon was implicitly to rely on the appearance of the diploe as a criterion of the ſkull's thickneſs; he might fatally plunge the crown of the trephine into the patient's brain; an accident which has happened to ſome incautious operators. When the bone is ſo nearly divided in the circumference of the circle as only to adhere, in one ſmall part, it may eaſily be taken out with the forceps; and if any little ſharp points ſhould remain at the broken part, they muſt be removed with the lenticular.

Should any extravaſated blood now appear between the dura mater and the cranium, and the patient in a few hours be relieved of his complaints, there will be no neceſſity for puncturing the dura mater: but if on the other hand, the ſymptoms of an oppreſſed brain ſhould continue after the bone is perforated, and no extravaſation appears on the dura mater, it ought to be divided with the point of a lancet, in order to dicharge whatever collection may be formed beneath. The part where the perforation of the bone was made, muſt be lightly filled with dry lint, and the whole wound dreſſed in the uſual way, with no other

bandage than a handkerchief, folded in a triangular form and paſſed round the head, ſo as ſimply to retain the dreſſing.

In fractures with depreſſion; the crown of the trephine muſt be applied on the ſound part of the bone, but ſo near the fracture, that one ſide of the crown may make part of the circumference of the circle, and by that means form the moſt convenient introduction to the elevator. With reſpect to the number of perforations, they muſt depend entirely on the nature of the injury, and conſequently the the ſurgeon's judgment can alone direct his particular conduct. Whoever has acquired JUST and GENERAL IDEAS of the nature of a diſeaſe, will ſeldom be at a loſs how to apply them, on particular occaſions; and to him, WHO WANTS THOSE IDEAS, no rules or directions will be of much conſequence.

In the courſe of the cure, a troubleſome fungus ſometimes riſes up from the dura mater through the perforations, or from thoſe ſpaces where large portions of the bone have been removed. A variety of remedies have been recommended to repreſs this fungus, which, if not kept down in the beginning, grows very faſt, and reſiſts every attempt to check it. The

moſt uſeful application I have ever tried, is the prepared ſponge, cut into ſlices, and laid immediately on the fungus; or with very thin pledgets of lint between the ſponge and fungus; which laſt is very apt to inſinuate itſelf into the porous ſubſtance of the ſponge, and render its removal troubleſome and difficult; a moderate preſſure may be made on the dreſſings, by drawing the handkerchief ſomething tighter than uſual. In theſe caſes, the diſcharge is generally very conſiderable, for which reaſon, as well as to prevent the adheſion of the ſponge; the dreſſings ought to be renewed twice a-day, and the patient kept to a ſtrict regimen, with a free uſe of the bark. Indeed there are no caſes in ſurgery which require an exact diet and pure air in order to obtain a cure, more than thoſe of fractures of the cranium.

As the following caſe was attended with ſome ſingular circumſtances, I ſhall cloſe this ſubject with a ſhort account of it.

A boy, about fourteen years of age, by a fall from a window, fractured the left parietal bone, and was trepanned two days after the accident: the trephine was applied twice, and ſome extravaſated blood diſcharged from

between the dura mater and ſkull; no unuſual ſymptoms appeared for ſeveral days after the operation, when a fungus ſuddenly ſprouted up through the perforations, which no applications could reſtrain; the trephine was applied a third a time between the two firſt apertures, in order to relieve the ſtricture formed by the edges of the bone, and to view the ſtate of the dura mater at the baſe of the fungus, where we found an opening, from which ſome matter was diſcharged from the brain. The ſame dreſſings were continued, with moderate compreſſion, but without any effect; for the fungus in a few days increaſed to the ſize of a large orange, and as the weather was hot, became ſo extremely offenſive and troubleſome, we had no other way to get rid of it, but by making a ligature around the baſe; and in two or three days it dropped off. A new one however ſoon aroſe, and in a ſhort time ſoon exceeded the firſt i n ſize, diſcharging vaſt quantities of a fœtid matter. The boy was now feveriſh, and often had a ſlight delirium; waſting faſt in his fleſh and ſtrength, but preſerving his ſenſes perfectly well in general: we were now reduced to the neceſſity of removing the fungus by another ligature, which

ſoon produced the ſame effect, but in three days after it dropped off, the patient died. Upon opening the head, which was done by Doctor Middleton* and myſelf, we found the left lobe of the cerebrum entirely deſtroyed, and more than half of the right lobe converted into pus: yet the patient retained his underſtanding and ſenſes very accurately, to the laſt hour of his life.

* Late profeſſor of medicine, in New-York college. M.

CHAPTER XI.

OF GUN-SHOT WOUNDS.

THE firſt intention, with regard to wounds made by a muſket or piſtol ball, is, if poſſible, to extract the ball; or any other extraneous bodies lodged in the wounded part. The next object of attention, is the hæmorrhage, which muſt be reſtrained, if practicable, by tying up the veſſel with a proper ligature; as no ſtyptic is to be relied on, excluſive of the miſchief they otherwiſe occaſion.*

* However different gun-ſhot wounds were formerly conſidered, both as to their nature and method of cure, on account of the poiſon, which was ſuppoſed to accompany the ball, it is now aſcertained, that they only differ from other wounds, as their ſymptoms are more violent, from the

In order to extract the ball, or foreign body, Mr. Ranby, and Mr. Le Dran, whose judgment and experience in these cases are certainly superior to most men's, advise as lit-

great contusion that attends them. As in other contused wounds therefore, the principal symptoms to be guarded against, are *inflammation* and *gangrene*. In order to prevent these occurrences, as the one most commonly succeeds the other, blood should be taken from the arm of the patient, who ought to be kept cool and quiet, and gentle evacuations of the bowels produced every day. In case a mortification comes on, recourse should be had to wine, opium, and the bark; which Mr. Ranby extols so highly, and with so much propriety. The same medecine should be applied externally to the mortified part, so as to cover it intirely, where it will act with greater force, by reason of its immediate application to the seat of the disease. Of the efficacy of the bark, when used in the manner here directed; I was an eye witness in two cases of mortification, one, from a bad ulcer on the leg, in the Pennsylvania hospital; the other, in a citizen of Philadelphia, from a compound fracture. The particulars of the latter case are as follow. The accident happened at Elkton, in Maryland, in the beginning of November, 1790, by the passage of a waggon wheel over the leg, which was set and dressed by a country physician, and the person conveyed to the city by water, where he remained one week before Dr. Foulke was called to him, which was on the morning of the 11th of the same month. The leg at this time was violently inflamed from the foot to the knee, and many parts of its surface were covered with yellow and livid vesicles; attended

tle ſearch with the probe or forceps as poſſible; as all irritation on theſe occaſions increaſes the conſequent pain and inflammation. Mr. Ranby is of opinion, that we ought not to attempt the extraction of any thing which lies beyond the reach of the finger; though if the ball can be felt under the ſkin in an oppoſite direction to the wound, it ought immediately to be cut upon and taken out. As the external wound made by a muſket ball is very narrow, the orifice ſhould

with a diſcharge of ichorous ſanies from the wound. His pulſe was quick, ſmall and irregular; his ſkin dry, and he had occaſional delirium, with ſpaſmodic twitchings of the extremities. A pound of Peruv. bark in fine powder was applied to the leg, which was placed in a ſtate of moderate flexion, ſo as to favour the draining of the pus, and be moſt eaſy to the patient. The liberal uſe of the bark, and Madeira wine was alſo directed. In the evening the leg was dreſſed, and a crooked red line was diſcernable between the parts ſituated a little diſtant from the lacerations of the leg, and thoſe contiguous to the lacerated lips, which were of a bright yellow. The next day, the leg exhibited by a further diſcolouration of certain parts, evident marks of ſphacelation, and as the ſurrounding edges put on a natural appearance, ſome hopes were entertained of a ſtoppage of the mortification. The ſloughs ſoon ſeparated, the ſurrounding edges granulated, and the man in a few weeks perfectly recovered. M.

be conſiderably dilated, and that on both ſides, when it has penetrated through any part of the body or limbs, particularly the moſt depending orifice; yet in wounds near the joint, or in very membranous or tendinous parts, the knife as well as forceps ſhould be under ſome reſtraint, and no more dilatation made, than what is abſolutely neceſſary for the free diſcharge of the matter lodged within; for we know from experience, that wounds about the joints, are always attended with great pain and inflammation; and diſpoſed to ſhoot out fungus fleſh, and form new abſceſſes round all the adjacent parts. The air too ſeems to produce worſe effects upon membranous and nervous parts, than thoſe which are more fleſhy; for all which reaſons the young ſurgeon ſhould be very cautious in wounding them. The firſt dreſſing to a gun-ſhot wound, ſhould be light, eaſy, and ſuperficial, with a barely retentive bandage, which ought to be made of ſoft flannel and linen. If the lint be dipped in oil, it will not only ſit much eaſier on the wound, but allow a freer diſcharge to the extravaſated fluids, which nature always endeavours to expel as early as poſſible. At the ſecond dreſſing, ſome mild digeſtive

may be uſed, and where the wound is large, the bread and milk poultice, or one compoſed of the powder of flaxſeed, over all; and if much tenſion and inflammation attend, an emollient fomentation will be very neceſſary. Theſe ſymptoms will be much leſſened, if when we are firſt called in, a proper quantity of blood be taken from the patient; his body kept open by clyſters and gentle purgatives; an eaſy perſpiration promoted, and in general a cool moderate regimen preſcribed, avoiding every thing hot and ſpirituous, either internally or externally, which during the ſtate of inflammation is extremely injurious to wounds. Nor ſhould the ſurgeon, if not called in until the inflammation is come on, attempt to remove any extraneous bodies before it is almoſt entirely abated, and a good digeſtion appears; unleſs the foreign body lies ſo near as to render its extraction certain, without much pain or difficulty.

If a wound be of ſuch a deſperate nature as to require amputation, which is frequently the caſe where it happens in a large joint; it is of the utmoſt importance to perform the operation immediately; as the conſequent pain and

inflammation, renders it improper during theſe ſymptoms; and, when they are paſt, the patient is often reduced to ſo low and weak a ſtate as to make amputation a very dangerous and doubtful operation. Wounds, that border on any conſiderable artery, are very apt to bleed afreſh upon motion, or the return of a free circulation of the blood into the parts; and this is frequently the caſe when the cruſt and ſlough begins to ſeparate; for which reaſon one ſhould never attempt to remove it by force, but wait with patience until there is a perfect ſeparation of the ſlough. The ſurgeon in the mean time ſhould be on his guard againſt this accident of a ſecond hæmorrhage, which is frequently indicated by the patient's complaining of a greater weight and fulneſs in the limb; attended with more or leſs pulſation in the wounded part. This latter is an almoſt infallible ſign of the approaching danger, and to obviate it, recourſe muſt be had to bleeding. Mr. Ranby ſays he has known many inſtances of perſons loſing their lives from the burſting of an artery after amputation; and affirms, that in ſome caſes, which proved mortal, not above twelve ounces of blood were loſt; this appears very extraordinary, and almoſt unaccountable, unleſs from the previous

hæmorrhage, and broken texture of the blood, a ſudden guſh, may give ſuch a check to the circulation, as to cauſe immediate death. This obſervation ought to be a leſſon of inſtruction to the young ſurgeon, to be particularly attentive in ſecuring every veſſel with a proper ligature. For this reaſon too, repeated bleedings in the beginning of an inflammation, or rather before it, are attended with ſuch beneficial conſequences; they generally prevent, and always leſſen the fever and inflammation, and conſequently thoſe abceſſes, which generally attend them. Mild laxative medicines contribute greatly to anſwer the ſame purpoſes; and to remove the rack of pain, recourſe muſt be had to the ſovereign and almoſt divine power of opium; next to which, the bark may be added, as a medicine, which Mr. Ranby ſays, no human eloquence can deck with panegyric, proportionable to its virtues. He declares, he has known it to procure reſt, if given in large doſes, when opium had been taken without any effect.

In all large wounds, particularly thoſe made by a cannon ball, there is conſtantly a laceration of the membranes and exquiſitely ſenſible parts, which are ever attended with excrutia-

ting pain, and a great diſcharge of gleety mat ter, which if not reſtrained, proves of the moſt dangerous conſequence. Under theſe unhappy circumſtances, the bark given in the quantity of a drachm every three hours, or oftner if the ſtomach will bear it, has a moſt ſurpriſing efficacy in removing theſe terrible ſymptoms. The elixir of vitriol taken three or four times a day in a glaſs of water, is in theſe caſes of ſingular benefit, and proves a very good aſſiſtant to the virtues of the bark. If the body be coſtive, a few grains of rhubarb may be added to each doſe of the bark, till that inconveniency is removed; but on the contrary, if the bark ſhould run off, in more than three or four ſucceſſive ſtools, its operation that way muſt be checked by a few drops of the liquid laudanum. or a ſpoonful of the *Diaſcordium* mixture, given in each doſe.

From what has been ſaid, it is evident, that the bark is one of the beſt remedies hitherto diſcovered, for contracting the veſſels, and reſtoring their due action upon the blood, when too great a quantity of that neceſſary fluid is loſt by a profuſe hæmorrhage, provided the larger wounded veſſels are ſecured by a proper ligature from future bleeding. But

where there is is too great a fulneſs, or too much ſtrength and contractile force in the ſolids, and an inflammatory ſtate of the ſyſtem, it may occaſion obſtructions, pains, inflammations, and their conſequences, unleſs it be timely laid aſide, upon the appearance of ſuch effects.

Fractures of the bones of the limbs by a muſket ball, are attended with the ſame general ſymptoms of other compound fractures, the proper treatment of which, has already been pretty fully explained in the chapter upthat ſubject; for which reaſon, I need not here repeat what has been there ſaid.

It ſometimes happens that two balls paſs into a limb, making only one orifice where they entered; and afterwards diverging in their courſe, form two openings on the oppoſite ſide. In ſuch caſes, if the two orifices are pretty near each other, they ought to be laid into one, in order to facilitate the diſcharge of extraneous bodies, or matter, that may be lodged in the wound.

Where there is reaſon to ſuſpect, from the courſe of the ball, that ſo large an artery is wounded as to occaſion a dangerous hæmorrhage; upon the approach of the ſymptomatic fever, and removal of the eſchar, the tourni-

quet ought to be left looſe about the limb, with directions to the patient or ſome perſon near him, to tighten it in caſe of bleeding, until the ſurgeon comes to his aſſiſtance.

When the *os humeri* is fractured, after making the neceſſary dilatations, and extracting ſuch looſe ſplinters as can ſafely be diſengaged from the muſcles; the wound being dreſſed in the uſual way, the bones muſt be preſerved in the moſt appoſite ſituation by means of the hollow ſplints recommended in the chapter upon ſimple fractures, only with this difference; that openings muſt be made in them oppoſite to the wound, to admit of the application of the dreſſings, and afford a free diſcharge to the matter, without removing the ſplints, which would unavoidably excite pain and inflammation, by diſturbing the poſition of the bones.

Mr. Le Dran, lays it down as a general rule, never to attempt ſaving the leg, when the bones of the tarſus are fractured by a muſket ball; for as the tendinous and ligamentous ſtructure of the part, does not admit of the neceſſary dilatations, the conſequent fever and inflammation proves fatal in

almoſt every caſe; immediate amputation is therefore the moſt adviſable practice.

A leg or an arm is frequently carried off by a cannon ball, which accident generally leaves the extremities of the bones as well as tendons in ſo ſhattered a ſtate, as to render amputation neceſſary. When this happens to be the caſe, ſo much of the limb ought to be preſerved, as is conſiſtent with the nature of the injury; but the operation ſhould always be performed high enough to leave no looſe fractured bones above the amputated part.

A complaint of a very ſingular nature, known by the name of an *Emphyſema*, is ſometimes the conſequence of a fractured rib, either from blows, falls, or a muſket ball paſſing in an oblique direction, ſo as to fracture the rib without entering into the cavity of the thorax; and this complaint is occaſioned by ſmall ſharp points of the fractured rib, wounding the veſicular part of the ſubſtance of the lungs, ſo as to permit the air to paſs into the cavity of the thorax, where being retained, it induces ſuch a degree of difficulty in reſpiration, by compreſſing the lobes of the lungs, as ſometimes to terminate

in an abſolute ſuffocation. The only remedy, capable of affording effectual relief in ſo diſtreſſing a ſituation, is, to perform the operation of the *paracenteſis thoracis* or opening into the cavity of the cheſt, through which the confined air may be diſcharged. This opening may be made without much difficulty or danger, by dividing the integument ſomething better than half an inch in length, and then cautiouſly purſuing the diſſection through the intercoſtal muſcles and pleura, with the point of the ſcalpel. There is no danger of wounding the lungs under ſuch circumſtances, as they are ſufficiently compreſſed by the air in the cheſt to keep them out of the way of the knife.

But when the wound made in the pleura by the points of the fractured ribs, is large enough to permit the air to ruſh freely out of the cavity of the thorax; it paſſes into the cellular membrane, and ſometimes diſtends it to a monſtrous ſize, extending over great part of the body, face and limbs. The proper remedies in this ſpecies of diſeaſe, are ſmall ſcarifications, made with the knife or lancet, into the cellular membrane, and then compreſſing the integument ſo as to force out the

confined air. Repeated bleeding in both ſpecies of emphyſema, and particularly the laſt, is neceſſary to relieve the urgency of the ſymptoms, which are ſometimes very ſevere and oppreſſive; the emphyſematous tumor of the cellular membrane, often laſting ſeveral days, before it entirely ſubſides.

There is ſo much affinity between wounds made by fire-arms, and burns, that I ſhall conclude the preſent ſubject with a few obſervations on the latter. Burns have generally been conſidered as a diſtinct ſpecies of ſores; and the idea of fire remaining in the burnt part, has given riſe to a great many whimſical applications, which the more rational theory of the preſent ſurgery has very rightly rejected. Superficial burns or ſcalds, which penetrate no deeper than the cuticle, are moſt effectually and ſpeedily relieved by the immediate application of the ſpirit of wine. But when they produce bliſters ſome ſoft, mild application, ſuch as linſeed oil or a cerate of oil, wax, and ſpermaceti, are neceſſary to heal the excoriated parts. When they penetrate ſtill deeper, and the true ſkin and *membrana adipoſa* down to the muſcles are affected, and ſlough away, a different me-

thod of treatment is to be made uſe of. In theſe laſt circumſtances, where the burn or ſcald has extended itſelf over an entire limb, or a large ſurface of the body, a violent inflammation immediately enſues, attended with moſt exquiſite pain, and ſometimes even convulſions. Bleeding in ſuch caſes, according to the age and ſtrength of the patient, muſt precede every other remedy; the body muſt be kept open by clyſters and gentle purgative medicines; and the parts affected covered with an emollient poultice, and fomented twice a day or oftner, with anodyne fomentations, till the mortified parts begin to ſlough away, when they may be dreſſed with ſome mild digeſtive, though ſuch an exquiſite tenderneſs affects large burns, that very few ointments are applied, which do not irritate them. One of the moſt ſucceſsful I have ever tried, is the *unguentum e ſtramonio*, prepared by boiling the leaves of the *ſtramonium*, or thorn aple in freſh hog's-lard, till the lard will take up no more of the juice; and then adding as much wax as will give a ſufficient degree of conſiſtence to withſtand the ſummer's heat. This ointment is poſſeſſed of an anodyne quality, which renders it the eaſieſt application

during the whole ſtate of inflammation, which, with the extreme ſlowneſs of the cicatrization, generally laſts long enough to tire both the patient and ſurgeon, for, where the burn or ſcald is very extenſive, the elongation of the ſound ſkin is produced with great difficulty, and is extremely apt to break open upon the ſlighteſt occaſion. The ulcer too, by remaining ſo long open, is very much diſpoſed to ſhoot out into fungous excreſcences, which are with great difficulty kept down by mild eſcharotics, ſuch as the Roman vitriol, *aq. calcis* or even lunar cauſtic and the *pulvis angelicus*, for dry lint adheres ſo cloſely, that you cannot remove it at every dreſſing, and the fungus ſhoots up amazingly, if not corrected daily by ſome or other of the eſcharotics juſt mentioned, even though you ſhould apply a well adapted roller, which is highly neceſſary anduſeful, to prevent this luxuriant growth of fleſh, and preſerve the parts from diſagreeable ſcars.

A ſtrict regimen is very neceſſary in theſe ſevere caſes, which are ſometimes ſo obſtinately ſlow, that a twelve-month will elapſe before you can entirely heal ſome of them.*

* The practice of dilating gun-ſhot wounds, formerly ſo much practiſed, unleſs for the more eaſy extraction of

APPENDIX,

CONTAINING, SOME SHORT HINTS ON THE STRUCTURE AND OECONOMY OF HOSPITALS; PARTICULARLY APPLIED TO MILITARY ONES: WITH THE GENERAL MEANS OF PRESERVING HEALTH IN AN ARMY.

AMONG the variety of public errors and abuſes, to be met with in human affairs, there is not one perhaps which more loudly calls for a ſpeedy and effectual reformation, than the miſapplied benevolence of

a ball, lead, or other extraneous ſubſtance, is here very properly reprobated. In warm climates, the *locked jaw*, or tetanus, is common after gun-ſhot wounds, owing to the laceration of the parts, and the debility of the ſyſtem at the time they are commonly received. For this reaſon, bark internally, and ſtimulating applications to the part, as laudanum, or ſpirits of turpentine, &c. are highly proper, to prevent by their local irritation, the general affection.

hoſpitals for the ſick and wounded. We daily ſee perſons of every rank and ſex, contributing to theſe charities, with a ſpirit of liberality, which does honour to humanity; while many of them, with the moſt becoming zeal, are devoting their time, and ſacrificing their private intereſt to the care of ſuperintending the ſtructure and management of the houſe; and yet, an abſurd miſtaken œconomy, has hitherto not only rendered all this pious labour and expence, in a great meaſure uſeleſs, but even fatal and deſtructive to the very end and aim of the intended purpoſe; that of healing the diſeaſes of the ſick poor.

To thoſe who are unacquainted with the ſubject in queſtion, it will doubtleſs appear a very extraordinary aſſertion that there is not at preſent in the capital of the kingdom, a

Dr. Jackſon relates, (Lond. Med. Journal;) that after a battle in North-Carolina, during the late American war; many wounded ſoldiers, who were carried a conſiderable diſtance in waggons, recovered much ſooner, during their journey, than when they were put into hoſpitals; the exerciſe reſtoring their uſual vigour which they had loſt during the fatigue of battle. This practice for obvious reaſons will not apply to wounds received in high health, which as much require reſt, and debilitating remedies, as the former did exerciſe, and other invigorating means. M.

ſingle hoſpital conſtructed upon proper medical principles; yet it is a fact very generally acknowledged by the moſt eminent men in the profeſſion of phyſic and ſurgery in England.

If we enquire into the cauſes of ſuch glaring abſurdities, we ſhall eaſily trace them to thoſe ſources of darkneſs and ignorance, from which moſt of our civil and religious abuſes have originated; but how they ſhould be continued to diſgrace the improvements of more enlightened times, can only be reſolved, by reflecting on the pride, obſtinacy and ſelf-intereſt, which are too generally annexed to ancient errors.

If great and populous cities, have been juſtly ſtiled the graves, of the human ſpecies; the large and crowded hoſpitals, generally built in them, may with equal truth and propriety be deemed the lazarrettos or peſt-houſes of the moſt unfortunate perſons, who from ill directed motives of compaſſion, are carried into theſe charities. In the two great hoſpitals of St. Thomas, and St. Bartholomew, in London; about ſix hundred patients die annually which is about one in thirteen

of thoſe who are admitted as in-patients*. In Paris it is ſuppoſed that one third of all who die there, die in hoſpitals. The hotel Dieu, a vaſt building ſituated in the middle of that great city, receives about twenty-two thouſand perſons annually, one fifth of which

* Hoſpitals, and eſpecially military ones, frequently defeat the very intention of their eſtabliſhment; and inſtead of proving the means of reſtoring the health of thoſe confined within them; become the moſt certain ſources of diſeaſe. Men, ſhut up in the ſame room, all differing in cuſtoms, manners and diſeaſes; and deprived of the free circulation of that pabulum of life, *pure air*; have no chance of recovery from the diſeaſes, under which they labour; and acquire new ones from their ſituation. We are informed in the "Reſult of the Obſervations made in the Military Hoſ-"pitals by Dr. Ruſh;" that the principal diſeaſes, that prevailed, were the *typhus gravior* and *mitior*, and "ſuch was "the prevalence of their contagion, that men who came "into the hoſpitals with other diſeaſes, ſoon loſt the type "of their complaints, and became affected with the above "mentioned fevers." Hence hoſpitals have been ſtiled by the ſame author, the SINKS of HUMAN LIFE, in an army; and he alſo aſſerts that they "robbed the United States of more citizens than the ſword." In order therefore, to render hoſpitals of that importance, which they were intended to be of; the great object ſhould be, to prevent the progreſs of contagious diſeaſes, by the greateſt attention to cleanlineſs, free ventilation, and frequent white waſhing. Of the efficacy of the latter means, there are ſome remarkable

number die every year. It is impoſſible for a man of any humanity to walk through the long wards of this crowded hoſpital, without a mixture of horror and commiſeration, at the ſad ſpectacle of miſery which preſents itſelf. The beds are placed in triple rows, with four and ſix patients on each bed; and I

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facts in the works of Mr. Howard, and it was experienced in ſeveral inſtances in the military hoſpital of the late war. The contagion of the *typhus* fever, eſpecially when it prevails with that degree of malignity, obſervable in hoſpitals and priſon ſhips, will adhere to the bed cloaths, and even walls and beams of the houſe, and can only be deſtroyed by the above means. That the contagion remained on the walls, and thus exerted its influence upon all thoſe who were confined within them; was proved by people having been obſerved to die in great numbers, while their beds were nigh the wall, while others who lay in the middle of the room recovered. See Tranſ. Med. Soc. of New-Haven. So permanent was the nature of the contagion, that it remained in one hoſpital, for ſix months, and affected healthy troops, who at that diſtance of time were quartered in it. As a means of counteracting the effects of contagion, or noxious air of any kind; Dr. Prieſtly recommends the *muriatic acid gas*, obtained by the decompoſition of that acid, by means of the vitriolic acid poured on common ſalt. Dr. William Fordyce alſo ſpeaks highly of the efficacy of the muriatic acid diluted with water, as an *internal* remedy in all diſeaſes commonly called putrid. M.

have more than once in the morning rounds, found the dead lying with the living; for notwithſtanding the great aſſiduiiy and tenderneſs of the nurſes, ſome of whom are women of family, who take veil and piouſly devote themſelves to that office; yet it is almoſt impoſſible from the vaſt number of patients, to beſtow timely aſſiſtance upon every individual.

If we compare the numbers of patients who die in the county infirmaries of England, with thoſe of the London and Paris hoſpitals, the proportinal difference will be greatly in favor of the former; *and although the putrid air of great cities is more unfavorable to health in general, than that of country towns; yet the greateſt difference in mortality, wil be found, upon a cloſe and fair examination, to ariſe from the ſtructure and crowded wards of the hoſpitals, in over-grown capitals†. For, if to

* In the Northampton infirmary, one in nineteen die annually, and in that of Mancheſter, placed in a more airy ſiutuation, one in twenty-two.

† It is to be hoped that the Hoſpital lately built in the city of New-York, will have fewer objections to its plan, than any hoſpital hitherto conſtructed. The principal wards, which are to contain no more than eight beds, are thirty-ſix feet in length, twenty four wide, and eighteen high; they are all well ventilated, not only from the oppoſite diſpoſition of the windows, but proper openings in the ſide walls, and

the compariſon between the mortality in large city hoſpitals, and thoſe of country towns, we further add, the proportional difference between the laſt and that of private practice, it will be found to be in favor of the latter, from all which facts, it evidently appears, how eſſentially neceſſary pure freſh air is, to the cure of diſeaſes in general, and particularly thoſe, which ariſe from putreſcent cauſes either internal or external.* It is computed that a

the doors open into a long paſſage or gallery, thoroughly ventilated from north to ſouth.

* So eſſential an article is pure freſh air, in the recovery of all thoſe who labour under low contagious fevers, which ſo commonly prevail in military hoſpitals; that all medicine will prove ineffectual without it. Thoſe therefore, who attempt to cure theſe fevers, and neglect this important remedy, act as unwiſely as the enervated and luxurious who ſeek to obtain that ſtrength from medicine, which ought to be acquired by the more rational mode of temperance and exerciſe. So re-animating is freſh air to perſons ill with low fevers; who breath the noxious air of an hoſpital, or confined room; that they will frequently recover by its influence alone. During the late war, the *jail*, or *hoſpital* fever prevailed to an alarming degree, and the houſes appropriated for the reception of the ſick, were either ſo dirty, or infectious, as to render them very improper receptacles for ſick people. By the judicious advice of Dr. Ruſh, (who informed me of the fact,) the patients were carried out every day, and placed under apple trees,

gallon of air is conſumed every minute by a man in health; and much more muſt be neceſſary to one who is ſick, as the morbid effluvia, which are continually exhaling from all parts of the body and lungs; muſt contaminate a larger portion of the ſurrounding atmoſphere, and render it leſs healthful to breathe in; for animals are obſerved to die much ſooner in foul air, than in *vacuo*.

But the preceding facts, not having been ſufficiently underſtood or attended to, a falſe œconomy has univerſally prevailed, in the ſtructure of hoſpitals for the ſick; for thoſe that have hitherto had a principal direction, both in the architecture and management of them, have confined their views entirely to

where they recovered with aſtoniſhing rapidity; for the miſerable ſufferers, notwithſtanding the uſe of the moſt ſuitable medicines, could not be expected to recover, while breathing an air, which from its impurity would induce ſickneſs in thoſe who were in health, and that would act with double force upon thoſe whoſe vital powers had been nearly exhauſted by previous diſeaſe. But when removed from this ſituation, and by breathing the freſh air, rendered doubly refreſhing, by its mixture with the pure air and odours diſcharged from growing trees and fruits; they gained ſtrength, and recovered as faſt, as they would have been rendered worſe, by continuing in their former unhealthy ſituation. M.

objects of conveniency, cheapneſs, or ornament; and in one of the laſt hoſpitals built in London, for lying-in women, there is more expence beſtowed upon an elegant chapel in it, than would have finiſhed four wards. In ſhort the phyſician and architect, have generally two very oppoſite and incompatible views: the latter laying out his plan ſo as to contain the greateſt number of perſons in the leaſt poſſible ſpace; whereas the former, always aims at having the utmoſt room which is conſiſtent with uſe and conveniency.

The ſame falſe maxims of œconomy, which have prevailed in the conſtruction of hoſpitals in large cities, are too much adopted in the military hoſpitals of camps and garriſons, as evidently appears from the complaints made of them, by ſir John Pringle, to whoſe excellent obſervations, on the diſeaſes of the army, I am principally indebted for the few following remarks on the means of preventing diſeaſes in camp or garriſon.

As changes in the ſenſible qualities of the air; exceſſes in diet, and irregularities in exerciſe, are the principal ſources of diſeaſes; ſo the means made uſe of to prevent or remove theſe diſtempers; muſt be chiefly directed to the three general cauſes juſt mentioned.

As the extremes of heat and cold, are pretty ſeverely felt in theſe nothern ſtates, and the tranſitions from one to the other, remarkably ſudden, they occaſion ſo large a portion of American diſorders; as to claim the firſt conſideration.

To obviate the effects of intemperate heat during the ſummer ſeaſon, the clothing of the troops ought to be lighter than what is generally worn by ſoldiers. The tanned rifle ſhirt, *over a ſhort linen coat or waiſtcoat, with ſleeves, would be a much cooler and healthier dreſs to march in during the heat of the ſummer, than a thick woollen coat, which, by its weight and warmth, promoting exceſſive ſweat muſt neceſſarily exhauſt the ſoldiers ſtrength; the linen dreſs too is cheaper, and bears waſhing, no trifling conſiderations in the cloathing of an army.

* This advice to eſtabliſh the rifle ſhirt for the heavy woolen cloaths of ſoldiers in ſummer, is apparently ſo juſt that every one would be on firſt view ſtruck by the propriety of the change. The great diſadvantage however attending the uſe of theſe ſhirts, is, that they are very apt to accumulate dirt, which is ſeldom attended to by the ſoldiers; and thereby cauſe diſeaſes. If however, the cloathing of the ſoldiers were made for ſummer, of lighter materials than they commonly are; it would prove very advantageous in preſerving their health. M.

The marches ſhould always be ſo ordered, if poſſible; that the men may come to their ground before the heat of the day; and ſtrict orders ſhould be given, that none of the men ſhould ſleep out of their tents, which in fixed encampments may be covered with boughs of trees to ſhade them from the ſun. The uſual military exerciſes too, ſhould be performed before the cool of the morning is over, by which means the fibres will be braced, ſo as to enable the men to bear exceſſive heat the better, when it bcomes abſolutely neceſſary; and in very hot weather the ſentinel duty ought to be ſhortened.

The preſervatives againſt cold, conſiſts in cloaths, bedding and fire: winter clothing is one of the moſt expenſive articles in a cold country: for which reaſon, too much attention can hardly be paid to the ſubject. Sir John Pringle recommends ſhort flannel waiſtcoats, which are worn by moſt of the northern European ſoldiers, with warm watch-coats for thoſe who are upon centinel duty. It is well known from experience, particularly in many parts of New-England, that a flannel waiſtcoat or ſhirt, worn next to the ſkin, will keep a man much warmer than nearly double the quantity

of covering over a linen ſhirt, and conſequently a very great ſaving might be made in this part of a ſoldier's dreſs*. The watch-coats for ſentinel duty, may be made of coarſe furs,

* This obſervation is founded in both reaſon and experience. It is now fully aſcertained by thoſe who had the beſt opportunity of judging; that no article in a ſoldiers cloathing, is of more importance for the preſervation of his health, than *flannel*, when worn next the ſkin. It is the grand preſervative againſt diſeaſes, whether ariſing from ſudden viciſſitudes in the ſenſible qualities of the air, or from expoſure of the body to the exceſs of either the oppoſite extremes of hot and cold weather. Unlike the many expenſive articles, which have at various times been furniſhed by government for preventing diſeaſes in armies; and which are rendered intirely uſeleſs by the intemperate nature of different climates; a flannel ſhirt is equally ſervicable in hot or cold countries. We are told by Dr. RUSH, that during the late war, "thoſe officers who wore flannel ſhirts "or waiſtcoats next to their ſkins, in general eſcaped fevers "and diſeaſes of all kinds. (Med. Inq. p. 181.) Dr. MOSELY alſo in his Treatiſe on Tropical and Weſt-India diſeaſes, ſpeaks in the higheſt terms of the utility of flannel in preventing the ſudden ſuppreſſion of perſpiration in ſoldiers, when expoſed to rains or dews, (p. 182.) The great advantage of ffannel is; that it never chills if it ſhould chance to be wet with ſweat or rain; whereas linnen, can never be worn with ſafety, unleſs it be perfectly dry. The expenſe of theſe flannel ſhirts would be nothing, in compariſon with the profit which would ariſe from their uſe in preſerving the ſoldiers lives. M.

which in dry frosty weather, are preferable to cloth, and Indian shoes or mockasins, under the same circumstances, are much warmer than common leather ones; they however, ought to be provided with firm thick soles, to keep the feet dry when the ground is wet.

The next means of preservation mentioned, was bedding. By this, according to Sir John Pringle, is understood, a blanket to every tent of the infantry; but in this climate, if a blanket was allowed to every soldier, particularly at the beginning and end of a campaign, the advantages accruing to the service, by preserving the health of the men, would infinitely more than counter-balance the expence.

As to fuel; a soldier ought to be allowed as much as would serve to dress his victuals, keep his barrack dry, to moderate rigorous frost; but in general, warm clothing and exercise are the best preservatives against cold.

To prevent the ill effects of moisture in camps; trenches should be made around the tents to carry off the water, and it is of great importance to allow the soldiers plenty of straw, and to have it frequently changed. But in fixed camps; where a large quantity can-

not eaſily be procured; matraſſes made of ſtraw or corn huſks, might poſſibly be ſubſtituted for it, without much expence; and this kind of bedding would admit of being conſtantly aired, and even waſhed and dried again, in good weather. If a ſoldier's bedding could be raiſed to a ſmall height from the ground, particularly in damp ſituations, it would certainly contribute much to the preſervation of his health, and the tents ſhould be opened and aired every day when the weather will permit.

The wearing of wet cloaths is a common ſource of a great many complaints; for this reaſon, as marches and out-duty neceſſarily expoſe the men to rain, they ought to be allowed fires in the rear of the camp, to dry their clothing; an indulgence which has been found to be of great benefit.

To obviate the effects of putrid air, ariſing from marſhes and ſtagnating waters, the encampments ſhould be frequently changed; but if this is incompatible with the nature of the ſervice; other means muſt be ſubſtituted, to preſerve as much purity of air as is poſſible under ſuch circumſtances, particularly during the dyſenteric ſeaſon, when the putrid ef-

fluvia arifing from the diſcharges of the ſick, combined with thoſe already mentioned; render the air of a camp almoſt peſtilental.

For this reaſon no ſoldier ſhould be permitted to eaſe himſelf any where about the camp, except in the privies, under the forfeiture of ſome ſlight but ſtrictly inflicted penalty; and upon the firſt appearance of a ſpreading flux, the privies ſhould be made deeper than uſual, and once a day a thick layer of earth thrown into them, till the pits are near full, when they ſhould be well covered and ſupplied by others: It will alſo be a proper caution, to order the privies to be made either in the front or rear of camp, according to the ſtationary winds, which will carry off the effluvia, without proving offenſive or noxious. The ſtraw too, and bedding, ought to be more frequently changed and aired, at ſuch times, than is uſual*.

* In order to prevent the great inconveniencies ariſing from the above cauſes; Sir John Pringle judiciouſly adviſes troops to encamp nigh flowing rivers; but attention ought to be paid to the nature of the ſoil upon the banks; and of the bottom nigh the ſhore. The former ſhould be high and dry; and the latter gravel. If the banks are marſhy, the river broad and ſhallow; and the

When the dyſentery begins to be frequent in camp, the ſick ſhould never be ſent to one general hoſpital; the conſequences of which after the battle of Dettingen, were ſo fatal, that the whole village of Feckenheim, where the hoſpital was fixed received the diſtemper; and the air became at laſt ſo vitiated and contagious, from the numbers of ſick and wounded crowded together; as to generate the jail or hoſpital fever, which combined with the dyſentery, become a perfect plague, and and ſwept off the apothecaries, nurſes, and attendants, equally with the patients who were brought in; at the ſame time, thoſe who re-

low water mark extending a conſiderable way in, expoſing a muddy bottom filled with dead weeds, leaves and other vegetables; exhalations will no doubt ariſe, and cauſe intermittent fevers; this actually happened to the Britiſh troops, during the late war, when encamped nigh rivers in Georgia and South-Carolina, of which Dr. Jackſon was ſurgeon; who not adverting to the circumſtance, has generally diſapproved of Pringle's advice.—See Treat. on Fevers.

If neceſſity ſhould oblige an army to encamp nigh a marſh, much advantage would accrue from a grove or wood intervening, to defend againſt the exhalation ariſing therefrom. The utility of this, is proved by Dr. Ruſh, Med. Inq. Vol. II. p. 266, and by Dr. Jackſon, Treat. on Fevers, p. 86, 88. M.

mained ſick in the camp though the wanted many of the conveniences and neceſſaries found in the hoſpitals, ſuffered only the original diſeaſes, and generally recovered.

For this reaſon, when the dyſentery prevails, Sir John Pringle adviſes the ſlighter caſes to be treated by the regimental ſurgeons in camp, while the reſt, or as many as can be attended by the ſame ſurgeons, ſhould be put into regimental hoſpitals, the ſituation of which, ought to be as dry and as airy as poſſible. The buildings too, appropriated to ſuch purpoſes ſhould be the moſt ſpacious that can be found; for which reaſon, churches, barns, and every kind of large out-houſes, are preferable to cloſe private dwellings; for as the greateſt danger ariſes from foul air, it can never be compenſated by diet or medicine.

As theſe regimental hoſpitals are of the greateſt conſequence, they ought to be ſupplied with blankets and medicines from the public ſtores, with an allowance to nurſes, and other neceſſaries; and to enable the regimental ſurgeons to pay more attention to the ſick; an additional mate ſhould be added to each regiment; for in ſickly ſeaſons, one or

both mates may fall ill at once; and it is then impoſſible for the ſurgeon to do his duty.

As to the diſpoſitions of hoſpitals, with regard to preſerving the purity of air; the beſt rule is, to admit ſo few patients into each ward, that a perſon unacquainted with the danger of bad air, might imagine there was room to take in triple the number. When the ceilings are low, it will be a good expedient, to remove ſome part of them, and to open the garret ſtory to the roof; for Sir John Pringle ſays, it is incredible in how few days the air will be corrupted in thronged and cloſe wards; and what renders it difficult to remedy the evil, is; the impoſſibility of convincing the nurſes, or even the ſick themſelves, of the neceſſity of opening the doors, or windows, at any time, for the admiſſion of air.

The ſick or wounded ſhould by no means be put into common rooms, without fire-places; as by that means, the foul air is confined, and increaſed to a ten-fold degree; nor will the uſual ventilators, anſwer the purpoſe of correcting or expelling the putrid effluvia. Laſtly, the utmoſt poſſible cleanlineſs is to be obſerved, both in the perſons and bedding of the ſick, whoſe diſcharges and dreſſings, ſhould be re-

moved immediately out of the wards; and the floors, after being properly cleaned, may be ſprinkled with vinegar, of which a large quantity ſhould be allowed to every hoſpital.

With reſpect to thoſe diſeaſes which ariſe from improper diet, Sir John Pringle obſerves, that no orders will reſtrain ſoldiers from eating and drinking what they like, while they have money to purchaſe it; and the only way to prevent exceſſes, will be to oblige the men to eat in meſſes; by which means, the beſt part of their pay will be beſtowed on wholeſome food, the choice of which may be left to their taſte, as moſt men commit more errors in the quantity than quality of their food.

Pork has been ſometimes forbidden in camps from being regarded as unwholeſome. Sanctorius ſays, it retards perſpiration, and as it corrupts ſooner than beef or mutton, it may be preſumed to afford leſs proper nouriſhment, where there is any tendency to putrefaction, however, it certainly conſtitutes more than one half of the animal food conſumed by the American country people, and when mixed with vegetables, is found to be a very nouriſhing and wholeſome diet. It may not be amiſs to obſerve; that fat meats are ſo much more

nutritive than lean ones, that two ounces of ſuet, will afford more nouriſhment, than eight or ten of lean meat; and conſequently in long marches, through uninhabited countries, a ſoldier's proviſion, might be rendered much lighter, by taking only ſuet or fat pork with his biſcuit.*

As to ſpiritous liquors; though the exceſs of

* It would appear to be a fact, that in order to ſupport a perſon under great bodily labour, as frequently happens in a military life; ſuch ſubſtances as afford much ſtimulus to the ſtomach, though not nutritious, are more proper to ſubſiſt on, than ſuch as contain much nouriſhment, without that ſtimulus. Labouring people, we obſerve, make great and often exceſſive uſe of pickles, onions, garlic, and ſimilar articles; and thereby ſupport themſelves under great fatigue. The two laſt vegetables, "compoſed a part of the diet which enabled the Iſrae-"lites to endure the heavy taſks impoſed upon them by "their Egyptian taſk-maſters." An Highlander will work all day, at the moſt laborious emyloyment, and ſubſiſt upon nothing but the ſame vegetables and oaten bread. The Germans in the United States, are alſo in the habit of uſing great quantities of thoſe articles with their aliment, and prefer them to animal food; for from their indigeſtable nature, they remain a long time in the ſtomach, to which they afford much ſtimulus, and by means of that organ to the whole ſyſtem; which enables thoſe induſtrious, hard working people to undergo the fatigues of their labour, with ſpirit. M.

them is undoubtedly pernicious; yet ſomething ſtronger than water or ſmall beer is neceſſary, for men who are expoſed to all the extremes of heat and cold, to long marches and wet cloths; for which reaſon, a moderate quantity of ſpirits may be allowed with great propriety: and if, during the heats of ſummer, the allowance of rum was mixed with vinegar, it would make a good antiſeptic drink, and ſerve to correct in ſome meaſure, the natural tendency of the humours to corruption, at that ſeaſon.

With reſpect to the means of preventing diſeaſes, ariſing from errors in exerciſe; they may be confined to the two oppoſite extremes, of indolence and fatigue. When the ſervice requires it, every fatigue muſt be endured; yet, in general, there is leſs danger from exceſſes in the latter than the former, particularly if good proviſions and dry ſtraw are to be procured.

In fixed camps the exerciſe of a ſoldier may be conſidered under three heads; the firſt relates to his duty; the ſecond, to his living more commodiouſly; and the third, to his diverſions.

The firſt, conſiſting chiefly in the exerciſe of his arms, will be no leſs the means of his preſerving health, than of making him expert in his duty; and frequent returns of this, early and before the ſun grows hot, will be more advantageous, than repeating it ſeldom, and ſtaying out too long at a time; for a camp affording little convenience for refreſhment, all unneceſſary fatigue is to be avoided.

As to the ſecond article, cutting boughs for ſhading the tents, making trenches round them for carrying off the water; airing the ſtraw, cleaning their cloths and accoutrements, and aſſiſting in the buſineſs of the meſs; are all things, which, as they muſt be ſtrictly executed by orders; ought to be no diſagreeable exerciſe to the men, for ſome part of the day.

Laſtly, as to diverſions; ſince nothing of that ſort can be enforced by orders, the men muſt be encouraged to them by the example of their officers, or by ſmall premiums to thoſe who ſhall excell in any kind of ſports, which ſhall be judged moſt proper for anſwering this purpoſes: but, herein ſome caution is neceſſary, with regard to exceſs; becauſe the common people obſerve no medium between

their love of eaſe, and purſuing the moſt violent exerciſe; and however neceſſary, motion may be to troops, in fixed camps; we are to beware of given them too much fatigue, eſpecially in hot weather, and in times of ſickneſs; and above all in expoſing them to wet cloths, which as it has been already obſerved, are the moſt common cauſes of camp diſeaſes.

THE following caſe of anthrax, or more commonly termed carbuncle; is taken from the firſt part of the firſt volume of the Tranſ. Philad. Coll. Phyſ. and exhibits a remarkable proof of the ſucceſs attending the treatment of a diſeaſe, which has hitherto eſpecially in this country, proved ſuperior to the efforts of phyſicians. I have ſeen a ſimilar, and if poſſible, a more terrible caſe of the ſame diſeaſe, in an old gentleman, terminate happily, under the care of Dr. Jones. The muſcles half way down the back, were as completely laid bare, as if diſſected by a ſcalpel, but though the weather warm, a cure was finally effected, by a due eontinuance of the means purſued in the following caſe.

EDITOR.

CASE OF ANTHRAX.

IN the month of January, 1789, I was deſired to viſit a lady approaching her 60th year, but of a good conſtitution, active and healthy: ſhe was then confined to her bed, but as the ſymptoms, which previouſly attended her, appear very characteriſtic of the diſeaſe, ſhall relate them in her own words as communicated to in a letter.

" Early in the month of January, I found myſelf extremely indiſpoſed, attended with an unuſual depreſſion of ſpirits, and a want of appetite, which I could by no means account for; I felt a feveriſh heat and conſtant thirſt; had

frequent chills, and ſoon perceived a diſagreeable ſenſation upon the back of my neck, which I compared to the crawling of caterpillars; and very often it appeared to me as my handkerchief was riſing from my neck. A few days after this ſenſation began, a ſmall pimple made its appearance juſt below the neck bone, attended with excruciating pain, my ſleep was diſturbed by frightful dreams. One night particularly, I fancied I was thrown upon a great of red hot coals, and that my neck burſt into burning flakes; I awaked in the utmoſt terror, and related this dream to the family, I complained more and more of the inflammation, which gave me ſtill greater torture, and had then aſſumed the appearance of a ſmall angry blind bile; the night before I took to my chamber, which was near a fortnight from my firſt indiſpoſition, as I went up ſtairs, I felt a ſhock through my whole frame, as ſudden and general as a ſevere ſhock of electricity. A poultice of bread and milk was then applied, and continued for three or four days till you was called in."

At this period, when I firſt ſaw her, the inflammation had extended itſelf from the firſt vertebra of the neck to the inferior ſpines of the

ſcapula, and from ſhoulder to ſhoulder: the tumor was extremely hard, of a deep red colour in the circumference, but approaching to livid in the central part with very little elevation of the ſkin; her pulſe was quick but not full; her thirſt great, with a conſtant ſenſation of heat, like burning coals upon the part affected, which was now evidently tending to a mortification. Under theſe circumſtances, the principal curative indications appeared to be a proper ſupport of the patient's ſtrength, a regulation of the natural ſecretions and excretions, and at the ſame time as much alleviation of the extreme burning pain as could be prudently procured by anodynes. With theſe views, a poultice of the farina lini was applied over the inflamed parts, and renewed every ſix or eight hours; a diet conſiſting of gruel, panada, and wine whey, was ordered in ſuch quantities as her ſtomach would bear; the body was kept gently open by emolient glyſters, ſhe took a tea-ſpoonful of bark in powder every four or five hours, and, at night, ſuch a quantity of laudanum, as ſerved to compoſe her for a few hours. Under this management ſhe continued till the 19th day from the firſt application of the poultice; when the

whole extent of the inflammation appeared of a deep black, and completely mortified. Preſſure with the fingers upon the mortified parts; though very hard and tenſe, evidently indicated, from a craſhing undulating noiſe and feel, the exiſtence of ſome fluid beneath, and induced me to make a longitudinal inciſion through the true ſkin the whole length of the tumour, by which means a large quantity of tolerably well digeſted matter was not only diſcharged from the cavity, but large portions of it poured from the cells of the true ſkin, become perfectly ſpongy and enlarged to the thickneſs of an inch and a half. This operation gave not the leaſt pain; but, on making another croſs inciſion, ſeemed to afford a ſenſible relief, by taking off a moſt uneaſy ſtricture which ſhe had before complained of. The wound was dreſſed with ſoft lint, covered with ſimple cerate, and a thick compreſs, dipped in brandy, laid over the whole. As the diſcharge was very great and offenſive, it was dreſſed twice a-day, and the compreſs frequently moiſtened with brandy. The uſe of the bark was continued, her diet rendered more cordial by a liberal uſe of wine, and different portions of the mortified membrana

adipoſa daily removed, till a complete ſeparation, between the ſound and mortified parts took place; but as this ſeparation, which was the work of nature, left the edges of the ſore with large flabby irregular lips, under which the matter lodged, and prevented a re-union, I was under the diſagreeable neceſſity of removing them from the whole circumference of the ſore. This was a very painful operation, but as it was abſolutely neceſſary, ſhe bore it with great fortitude. From this period, the cure went on very happily, though ſlowly, and in the beginning of June, the ſore was completely healed, leaving a cicatrix, of a radiated form, eight inches long and five broad. Her health has been ſince very good, and ſhe finds no other inconvenience than a degree of tightneſs and reſtraint in the motions of her arms about the ſhoulders.

ON perusing the manuscript lectures of my deceased friend; I found the following uncommon case of *hydrocele*, which I insert in this place; from a conviction of its singularity, and on account of the success attending the operation instituted for its cure.

EDITOR.

UNCOMMON CASE OF HYDROCELE.

A MAN about forty years of age and of a good conſtitution, had for many years been troubled with a tumor in his ſcrotum; which he was told by his phyſician was a rupture; and was recommended to wear a truſs. The tumor however continuing to increaſe; and had at laſt acquired ſo monſtrous a ſize, that it was with great pain, and difficulty he walked. As his health manifeſtly declined, with a conſtant ſlow fever that attended him, and being alarmed with ſome appearances of a mortification, he applied to me for relief.

Upon examination, I found a monſtrous tumour, which extended almoſt to his knees, and whoſe ſize was ſo great as to cover the anterior parts of of both his thighs. The veins

of the ſcrotum, were greatly diſtended and varicoſe; and on the inferior extremity of the tumour, there were ſome veſications, which diſcharged a thin ichor of a browniſh colour; the ſurrounding parts were very livid, and were beginning to form a real mortification.

Under theſe unpromiſing appearances, there were very little hopes of ſucceſs; and I made my prognoſtic accordingly; yet being aſſured from the hiſtory of the caſe, and from an attentive examination of the tumour, that there muſt be a very conſiderable quantity of ſome fluid contained in it, and probably complicated with a rupture; I ventured to make an inciſion through the integuments with a ſcalpel; and immediately a dark browniſh fluid guſhed out; but this was ſoon interrupted by a diſcharge of purulent matter. I then introduced my fore finger as a director into the orifice, which I enlarged ſix or eight inches, and diſcharged about two gallons of the ſame kind of fluid curd like matter; a great part of which I was obliged to ſcoop out with a ſpoon. I dreſſed the wound with a warm digeſtive, and ordered the uſe of the bark, and ſuitable generous diet. In about three months, by the continuance of this method; the man was reſtored to health. The teſticle was found,

and notwithſtanding ſuch a lengthy and prodigious diſtenſion; the ſcrotum contracted itſelf in ſo ſurpriſing a manner, that the part was very little larger than before the formation of the tumour.*

* A caſe very ſimilar to the above, happened while I was a pupil of Dr. Jones, the particulars of which are as follow.

The man had been afflicted with the complaint for ſeveral months, but the tumor was not ſo large as that above deſcribed, though the veins of the ſcrotum were diſtended to a moſt monſtrous degree. He had refuſed to ſubmit to any operation propoſed for his relief until the ſummer came on, when the weather became very warm. The pain was at this time, exceſſive, and the part putting on a livid appearance, he was induced to ſubmit to the operation, which was performed by Dr. Jones in the manner deſcribed in the preceding caſe: upwards of a quart of fluid matter mixed with blood, was diſcharged. The wound was dreſſed lightly and the moſt proper means were immediately purſued to ſupport the ſtrength, and guard againſt a mortification, which it was highly probable would occur; from the great debility of the man's ſyſtem, and the exceſſive heat of the ſeaſon. He accordingly took bark, and wine, and the part was wrapped up in linen wet with ſpirits, and frequently renewed. Appearances were promiſing for the firſt two days, but they then changed, and a cholera came on that baffled all remedies and finally carried him off. M.

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THE END.

Geo. Hamilton