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# SURGICAL TRACTS,

BY THE LATE

## J. O. JUSTAMOND, F. R. S.

SURGEON TO THE WESTMINSTER HOSPITAL,

CONSISTING OF

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*Outlines of the History of Surgery,*

From the earliest Antiquity of the Art, pointing out the particular Improvements, and fixing them where due.

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With their proper Modes of Treatment in different Parts of the Body.

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*On the Methods employed in treating Cancerous Diseases,*

Including Remarks on the Cure of Indurations of the Breast.

THE WHOLE COLLECTED AND INTERSPERSED WITH OCCASIONAL

NOTES AND OBSERVATIONS

By WILLIAM HOULSTON,

MEMBER OF THE CORPORATION OF SURGEONS, FELLOW OF THE SOCIETY OF ANTIQUARIES, AND OF THE MEDICAL SOCIETY OF LONDON.

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TO

# Mr. HENRY WATSON, F. R. S.

SENIOR SURGEON

TO THE

WESTMINSTER HOSPITAL,

AND TO THE REST OF THE

MEDICAL FACULTY

OF THAT

EXCELLENT INSTITUTION,

THE FOLLOWING SHEETS ARE MOST RESPECTFULLY DEDICATED

BY THEIR FAITHFUL AND OBLIGED

HUMBLE SERVANT,

THE EDITOR.

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# EDITOR'S PREFACE.

THE work now ſubmitted to the reader's attention, is by no means offered, as either an extremely correct or an highly valuable performance. It is not the character of poſthumous works to be unexceptionable in theſe reſpects, ſince they moſt commonly conſiſt of materials on which their author only fixed a ſecondary value, and thought juſt good enough not to deſtroy, yet of inſufficient merit for publication. To this diſadvantage may be added, the want of that improvement which the author's hand might have afforded to the manuſcript, in its progreſs through the preſs; (ſuppoſing he had been induced, by particular circumſtances, to agree to its public appearance) a deficiency, which no collateral aſſiſtance whatever can fully ſupply.

But the principal motives for the preſent undertaking are not unknown to the generality of readers. They are indeed well underſtood, by thoſe humane and reſpectable perſons,

who, equally diſpoſed to lament the occaſion, and to admire the chirurgical abilities of the deceaſed author, have liberally encouraged and generouſly ſupported the deſign.

The hiſtory of ſurgery will be found to afford leſs novelty in the matter, than in the arrangement of it. In chronological points, the author will appear to have ſo far differed from FREIND, and other writers, as to juſtify the deſign of the whole performance, which is likewiſe meant to ſeparate the hiſtorical occurrences of Surgery from thoſe which relate to the medical art at large; a view in which, hitherto, the ſubject has been uniformly treated, but which, in proportion as it is advanced towards the preſent period, muſt have become the more obviouſly improper. It may be likewiſe remarked, that the author, in carrying this hiſtory to his own time, has included many eminent ſurgeons, to whoſe extraordinary talents this neceſſary tribute had not before been paid *.

* We ſhould here regret, that in the number of thoſe whoſe eminence as practitioners, and whoſe zeal and ability in the improvement of our art, have rendered them the proper objects of public regard and veneration; the particulars of the life of that great and diſtinguiſhed ſurgeon, Mr. POTT, are not included. This however will not be difficult to account for, and in a way that does the author no diſcredit. The manuſcript which ſupplied the Hiſtory of Surgery, was uſed by the author as notes, for a diſcourſe, introductory to a ſeries of Lectures on the Practice of Surgery, which he publicly delivered in London; and, thus circumſtanced, he thought it highly proper to avoid animadverting on the profeſſional abilities and conduct of any living character; a motive not unworthy our commendation, and obviouſly neceſſary in a public lecturer. The medical world, however, will ſhortly be gratified, with an account of this very diſtinguiſhed Practitioner, affixed to a complete edition of his works, from the pen of Mr. EARLE.

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An account of the ſeveral qualifications requiſite to form a good ſurgeon, annexed to this part of the work, and of obvious utility to the junior part of the profeſſion, will not, it is preſumed, be found undeſerving of the place aſſigned it. More indeed might have been ſaid on a ſubject which involves the general reputation of Phyſic, and from the due obſervance of which, we can alone expect to reſcue our profeſſion from the imputations of the malevolent and illiberal.

The general plan of treating inflammation and abſceſs laid down in the ſucceeding treatiſe, though in many reſpects no more than a deſcription of what is adopted by practitioners at preſent, exhibits many marks of ſound judgement and ability in the writer. We may conſider among the beſt of his obſervations, his account of the whitloe and its ſeveral diſtinctions, together with the reaſons on which the particular treatment recommended is grounded. In thoſe parts of his ſubject where the reader will find occaſion to conſider the author as having been ſomewhat too conciſe, as in ſpeaking of the cauſes and treatment of abſceſſes of the joints, of the viſcera, of the abdomen, &c., there appears to be reaſon for an apology. Yet, it is hoped, the ſubject, ſo far as it extends, will be found not unworthy of the author, nor wholly wanting in utility to the practitioner. The obſervations on tumours, may alſo be thought incomplete in many reſpects; but theſe being ſuperadded, and capable of being wholly left out without breaking in upon the ſubject profeſſed to be conſidered by the author, will probably be entitled to indulgence.

# OUTLINES

## OF THE

# HISTORY

## OF

# SURGERY.

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To thoſe who would be well verſed in the principles of Surgery, it cannot be a diſagreeable taſk, to trace the origin and progreſs of it from the earlieſt accounts down to the preſent period; eſpecially as the firſt neceſſary ſtep in the purſuit of any ſcience, is to become acquainted with all that has already been made known upon the ſubject. It is therefore the object of the preſent undertaking to exhibit a general ſketch of the Hiſtory of Surgery, and point out in a curſory manner the principal perſons who have adorned this noble art, with their practice and writings.

The moſt ancient diviſion of medicine was into Chirurgery, Diet, and Pharmacy; the former of theſe teaches us to cure by the aſſiſtance of our hands, and by various external applications, many diſorders to which the human frame is incident, and which are not within the power of the other two branches.

In the primary ages of mankind, when the moſt perfect of all created beings had yet ſcarce degenerated from that ſtate of perfection in which he firſt was produced from the hands of the Creator, diſeaſe was yet unknown upon the earth. Man had then no wants but ſuch as the neighbouring ſtream or the labour of his own hands would ſupply, no cares but thoſe of a domeſtic nature, amply compenſated by the ſatisfaction which attends them. His mind was not yet weakened by intemperance nor his body impaired by debauchery—exerciſe was his only phyſic, and unbroken, undiſturbed reſt his only reſtorer. But even in thoſe happy and tranquil times, man was not exempt from the conſequences of accidental violence. His body was not leſs expoſed to common caſualties and to a variety of ſtrokes that might bruiſe or wound his fleſh, or diſlocate or fracture his bones. He might be torn by the fangs of ſome wild beaſt, or affected by the bite of ſome venemous inſect. Such were the firſt and moſt natural evils to which man in the place aſſigned him in the order of created beings muſt have been obnoxious, and therefore his thoughts would neceſſarily be engaged in finding out ſome means of relief for theſe accidents. Thus from the nature of the ſubject, as well as from the teſtimony of Celsus and many other remote authors, it appears that Surgery was inconteſtably the moſt ancient branch of medicine, the parent of all the reſt.

We learn, however, from the earlieſt accounts that have been tranſmitted to us, that the two profeſſions of Phyſic and Surgery were by no means diſtinct from each other, but that, on the contrary, the profeſſors of one, were equally practitioners of the other. It will be impoſſible therefore, in ſpeaking of the Hiſtory of Surgery, to ſeparate it entirely from that of Phyſic; but this connection will only regard the profeſſors of the art, for we ſhall avoid taking notice of any of their diſcoveries or improvements in Medicine, unleſs they are immediately connected with Surgery. For the ſake of clearneſs and preciſion it may be right to premiſe, that this hiſtory will be diſtinguiſhed by two periods: The firſt will comprehend from the beginning of the world to the coming of Christ, a ſpace generally reckoned of about four thouſand years. The computation

of

the ſecond period, reckoning the centuries in the uſual manner, will begin from the Chriſtian æra. By way of illuſtrating this, let us ſuppoſe that mention is to be made of thoſe writers who lived in the ſpace of time between the years 1300, and 1400. Theſe may be ſaid to have flouriſhed in the fourteenth century. Thus whenever one century is compleated the next begins; ſo that according to this method of reckoning we are at preſent beyond the middle of the eighteenth century. It ſeems neceſſary to be ſomewhat particular in explaining this circumſtance, as ſome writers, and eſpecially GOELICKE, who profeſſedly wrote a Hiſtory of Surgery, has miſtaken this point, reckoning the centuries in an erroneous manner. GOELICKE, though his book was publiſhed in 1713, ſays he writes in the ſeventeenth century. This has made him very inconſiſtent with FREIND, and other writers; for though he agrees with them as to the period of time in which the ſeveral authors lived, yet if we judge by his method of reckoning the centuries, we ſhall find them placed one century later than they are by other writers. A ſlight degree of attention to this circumſtance will indeed reconcile many doubts, and clear up ſeveral difficulties which otherwiſe occur in the relations of writers on the Hiſtory of the Medical Art.

It was in EGYPT, that grand nurſery of all the arts and ſciences, that Surgery is ſaid to have received its firſt cultivation. PROSPER ALPINUS, profeſſor of Phyſic at Padua, in the ſeventeenth century, publiſhed a work treating profeſſedly *De Medicina Ægyptiorum*, and in it are included many things relating to Surgery. Among others, a very ſingular method of extracting the ſtone from the bladder——It was done by inſinuating a canula of a certain length into the urethra, through which that and the bladder were inflated to as great a ſize as they could bear. The urethra being well diſtended, a finger was next introduced into the anus, and the ſtone puſhed towards the neck of the bladder. The canula was then removed ſuddenly and with great force, and by this ſingular management, ſeveral ſtones were ſaid to be extracted. ALPINUS was a writer of ſome credit: he had left his own country, inſpired with a laudable thirſt of medical knowledge, and had travelled into Egypt, where

he reſided ſeveral years, and converſed familiarly with the phyſicians there, in order to acquire an inſight into their practice, and he affirms to have ſeen the above operation practiſed with ſucceſs. Mr. CHESELDEN, however, very judiciouſly obſerves in his treatiſe on the high operation, that it is not probable this method could have been uſed with effect, where the ſtone was of any ſize, and that it could only have been practiſed where a number of little ſtones, or perhaps gravel, was in the bladder. And indeed the inſtance ALPINUS produces ſeems to confirm this opinion, as it mentions that he ſaw an operator whoſe name was HALY, extract ſeveral ſtones from a certain general of the Turks, by this proceſs. Bleeding in the veins, as well as in the arteries is likewiſe ſaid to have been in uſe with them. Actual cautery was frequent; and ALPINUS alſo mentions their performing the paracenteſis of the abdomen in a dropſy. Theſe obſervations however ſeem rather to reſpect the modern practices of the Egyptians; for the firſt inſtance we have upon record of the performance of the operation of bleeding occurs among the Greeks, as we ſhall ſee hereafter.

From the moſt ancient hiſtorians, we collect that the Egyptians attributed the invention of phyſic to HERMES, or MERCURY, who afterwards taught it to ÆSCULAPIUS, his nephew. They alſo included OSIRIS, APIS, or SERAPIS, and ISIS, (who were afterwards claſſed with their divinities) among the firſt practitioners of medicine; who, from the reſpect they were held in, on account of the wonders of their art, which was ſuppoſed to proceed from the gods, were all of them deified by the Greeks, as well as by the Egyptians. This ÆSCULAPIUS of Egypt was different from the Grecian ÆSCULAPIUS, or rather perhaps there never was but one perſon of that name, and the Greeks may have given it to the firſt phyſician among them, in order that poſterity might imagine him to have been a native of Greece, and that the honor of the firſt invention of the ſcience might by that means be transferred from Egypt to their own country; an honor which the Greeks were very jealous of arrogating to themſelves, and which may be the reaſon, why we find that the technical terms of almoſt all arts and ſciences even at this day, are compounded

pounded of words derived from their language. The Egyptian ÆSCULAPIUS, and the other firſt inventors of medicine, are ſuppoſed to have lived about the time of the deluge, which is ſaid to have happened near the middle of the ſeventeenth century from the creation of the world. From Egypt, however, Phyſic and Surgery travelled with the other arts and ſciences into Greece. CHIRON of Theſſalia, the Centaur, as he is called, who is reputed to have been inventor of the healing art, lived about the time of the Argonautic expedition. He is ſaid to have been well ſkilled in the knowledge of plants, particularly ſuch as were proper for wounds, and inveterate ulcers, which are ſaid to have been called *Chironian* ulcers from him. The Grecian ÆSCULAPIUS was one of CHIRON's diſciples, and of him it is reported by his countrymen that he was preſent at the Argonautic expedition which took place about 1100 years after the deluge.

From all we can learn concerning this ÆSCULAPIUS, it is moſt probable that his knowlege conſiſted chiefly in Surgery, as we have given our reaſons for ſuppoſing that the moſt ancient branch of medicine *; and indeed the moſt conſiderable of his cures upon record, and that which gained him the reputation of bringing the dead to life, was of a ſurgical nature, ſince it was performed upon HIPPOLYTUS, whoſe limbs had been torn, and broken to pieces by horſes.

From this ſhort account we may obſerve that the Hiſtory of Surgery in theſe early periods is ſo uncertain, and ſo blended with the fabulous ſyſtem of pagan mythology, that we can have very little dependance upon its truth and authenticity.

MACHAON, and PODALIRIUS, two ſons of ÆSCULAPIUS, according to the teſtimony of HOMER, were in the Grecian army at the Trojan war. The accounts we have of them relate entirely to ſurgery, as they are ſaid to have aſſiſted thoſe who were wounded in battle. MACHAON was killed at the ſiege of Troy: PODALIRIUS returning from that ſiege, was

* CELSUS and PLINY were both of this opinion.

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caſt by a ſtorm upon the coaſt of Caria, where being introduced to King DAMÆTUS, whoſe daughter had fallen from the top of a houſe, he bled her in both arms, after which ſhe recovered. This is the firſt inſtance of bleeding, as before alluded to, and the anecdote is recorded by STEPHANUS BYZANTINUS in his geographical lexicon under the word *ſyrma*.

Moſt of the ancient heroes indeed are ſuppoſed to have underſtood the art of Surgery; for, being much engaged in war they, would naturally be induced to endeavour to repair the injuries they were expoſed to. ACHILLES is ſaid to have found out the uſe of verdigreaſe, and is on that account painted ſcraping the verdigreaſe from the point of his lance, upon the wound of TELEPHUS; and EURIPILES being wounded, is repreſented by HOMER as deſiring PATROCLUS, the friend of ACHILLES, to prevail upon him to communicate ſome of the excellent remedies that hero had learnt from CHIRON.

From the end of the Trojan to the beginning of the Peloponneſian war, a ſpace of about eight hundred years, there is a great vacuity in the Hiſtory of Medicine; yet in this interval lived many philoſophers, among whom were THALES, EMPEDOCLES, PYTHAGORAS, HERACLITUS and DEMOCRITUS. The philoſophers of thoſe days were all phyſicians and ſurgeons; for the ſciences of philoſophy and medicine were not then divided or conſidered as diſtinct acquiſitions. We have no other accounts of their medical knowledge but ſuch as are traditional, or tranſmitted to us in the writings of HIPPOCRATES, CELSUS, and others. About the end of the *thirty-fifth century*, near thirty years before the breaking out of the Peloponneſian war, HIPPOCRATES was born in the iſland of Cos: he was a deſcendant of the *Aſclepiadean* family, according to his own account. Medicine and Philoſophy were firſt diſtinguiſhed, and treated of as ſeparate ſciences, by this accurate writer. He is the moſt ancient phyſician of any whoſe writings have been tranſmitted to us; and there can be no doubt of his having been a ſkilful practitioner * in ſurgery. One

* From the internal evidence exhibited in his Aphoriſms, it is to be preſumed that HIPPOCRATES derived almoſt all his medical knowledge from his own obſervation and practice.

One of his Aphorifms points out the particular ufe and end of this art. It fays that diforders which medicine will not cure muft be referred to the knife; if the knife is unfuccefsful, cautery muft be applied; and if cautery fails, they are to be deemed incurable. His chirurgical writings are particularly, one book upon wounds, another upon ulcers, a third on fiftulas, a fourth on fractures, and a fifth on the articulations, in which the doctrine of diflocations is included. Moft of his Aphorifms may be confidered as fo many axioms in phyfic or furgery, which have ftood uncontroverted to this day. There are feveral furgical remarks, among them; I fhall quote one which may ferve to prove that he was as accurate an obferver in furgery as he was in phyfic. It eftablifhes a rule, admitted ever fince, by which we may judge whether pus is already collected in any part of the body where we have reafon to fufpect its exiftence. The words of the Aphorifm literally tranflated are, that while the generation of pus is going on, pain and fever are more violent than after it is formed. This rule ftrictly attended to, may be of great fervice in indicating the proper time for the opening of abfcefles, efpecially fuch as are deep feated, and where we wifh to let out the matter as foon as we can be affured from any figns that it is actually collected. In general the operations practifed by HIPPOCRATES confifted in the opening of abfcefles, the paracentefis of the thorax as well as that of the abdomen, the trepan, and fcarifications. He has many excellent remarks on ulcers and wounds, and particularly fome obfervations on the latter very ufeful in inftructing young Surgeons to be cautious in their treatment and prognoftics of all wounds, particularly of the head, however fmall or inconfiderable they may appear.

This great mafter of the art, for reafons known only to himfelf, did not chufe to perform the operation of lithotomy, though it appears to have been generally practifed in his time. It is evident indeed from his writings that even in thofe days it was an operation configned to a diftinct

practice. There are no traits of a compiler, and if any medical writings exifted before his in Greece, he appears to have made no ufe of them farther than was confirmed by his own experience. Thefe circumftances, if true, render the writings of HIPPOCRATES invaluable. G.

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ſet of people ; for in the oath which he required his pupils to take, he makes them ſwear that they ſhall not cut for the ſtone, but leave that operation to perſons who made it their particular ſtudy and buſineſs.

I cannot diſmiſs the account of this divine old man, as he is often ſtiled, without ſpeaking of the *actual cautery*, an operation ſo much uſed by him, that there is ſcarcely any chronic diſorder in which he has not recommended it. One circumſtance in which he uſed it, is very ſingular ; in his book *De affectionibus*, we learn, that in the beginning of an aſcites he cauterized the belly in eight places, near the region of the liver.

When I conſider how much this practice has been adviſed by all the moſt learned and judicious of the ancients, I cannot help thinking that from the frequent and numerous applications of it upon the ſame patient, in many obſtinate chronic caſes, they muſt have experienced advantages unknown to the moderns. Perhaps therefore we have little reaſon to pride ourſelves upon the entire abolition of this reputed barbarous cuſtom. Neither does it appear to have been attended with ſo much pain as we are apt to imagine. M. POUTEAU, an ingenious Surgeon of Lyons, in his ſurgical eſſays, has revived the uſe of it in ſome caſes with good ſucceſs ; and from the inſtances he produces, we may conclude that the pain attending the operation is very ſupportable. So zealous was he indeed for the improvement of the art, that he has frequently tried the application of it upon himſelf; and after his death his body is ſaid to have been found covered with various ſcars, as glorious ſure to a man in the acquiſition of ſcience, as thoſe which others can boaſt of in the purſuit of military fame. If, however, it is even probable that cures, which have baffled all other means, may be effected by this, I think it deſerves at leaſt our ſerious conſideration.

In the interval of time between HIPPOCRATES and CELSUS, many Profeſſors of Surgery appeared, as we find by the teſtimony of CELSUS and GALEN, as well as of ſeveral hiſtorians. Though ſcarcely any of their works are handed down to us, yet, I ſhall take notice of ſome of them

them, and relate ſome anecdotes upon record, both to give an idea of the perſons who profeſſed the art, and of the ſtate of Surgery in thoſe ancient times.

About thirty-three years after HIPPOCRATES, lived CTESIAS, who was alſo of the ſame family. He is ſaid to have been taken priſoner in a battle between CYRUS the younger and his brother ARTAXERXES MNEMON, in the year 401 before Chriſt. He cured CYRUS of a wound he had received in the fight, and afterwards remained with that monarch, and continued exerciſing his art for ſeventeen years.

DIONYSIUS the tyrant of Syracuſe, as we are told by ÆLIAN, alſo underſtood Surgery, and performed divers operations himſelf.

CRITOBULUS lived much at the ſame time as DIONYSIUS. He was attached to the court of PHILIP King of Macedon, and extracted very happily from that monarch's eye, an arrow with which he had been wounded. He conducted the cure ſo well that PHILIP was not diſfigured by the accident.

DIOCLES *of Caryſtia* was the firſt who enjoyed any conſiderable degree of reputation after HIPPOCRATES. The Athenians uſed to call him the *ſecond Hippocrates*, and according to GALEN, he made conſiderable progreſs in the healing art. He flouriſhed 130 years after HIPPOCRATES; about 380 years before the Meſſiah, under the reign of ANTIGONUS, King of Aſia.

His practice was nearly the ſame as that of HIPPOCRATES. He invented an inſtrument for extracting the point of an arrow when left ſticking in a wound. This inſtrument was ſtill called *Diocles*, in the time of CELSUS. He alſo invented ſome bandages for the head, which we are told by GALEN in his book *de faſciis*, likewiſe bore his name.

PRAXAGORAS was the firſt in reputation after HIPPOCRATES, and DIOCLES. He was alſo born in the iſland of Cos, and was the laſt of the *Aſclepiadean* race. He was a famous practitioner in Surgery. In the diſeaſe which he called the *Ileus*, if the ſymptoms did not remit after the patient had been made to ſwallow a leaden bullet, as practiced by HIPPOCRATES, he boldly made an inciſion into the cavity of the belly, to extract the fæces, and afterwards ſewed up the inteſtine.

About this period, that is to ſay in the time of ERASISTRATUS and HEROPHILUS, as we are informed by CELSUS, Medicine was divided into three branches, the *Dietetic*, which was the province of the phyſician, the *Pharmaceutic*, and the *Surgical*.

ERASISTRATUS was born at Julis, in the iſland of Ceos, or Cea, and not at Cos, as ſome have imagined. He lived near the end of the *thirty-ſeventh century* of the creation of the world. The only fragments of his works are found in GALEN; whence it appears, that he was adventurous in ſurgical operations. In a ſchirrus of the liver, or in tumours of that viſcus, he uſed to make an inciſion into the cavity, and apply his remedies to the viſcus itſelf *.

HEROPHILUS was born at Carthage. According to GALEN, he lived about the beginning of the *thirty-eighth century*, under the reign of PTOLOMY SOTER. SEXTUS EMPIRICUS relates of him, that being called to reduce the diſlocated ſhoulder of the philoſopher DIODORUS, who aſſerted that there was no ſuch thing as motion, and pretended to prove it by a ſophiſm, HEROPHILUS argued with him thus: "The bone of your "arm has moved either in the place, where it was, or in the place where

* Is it not more probable that the inciſion in theſe caſes was made into the diſeaſed part, only after ſuch adheſion had taken place as to preclude all communication with the cavity of the abdomen? To caſes of this kind the moderns are no ſtrangers. H.

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" it was not; now according to your principles, it cannot have moved " either in one or the other of theſe places, therefore it has not moved " at all." DIODORUS, perceiving that HEROPHILUS was merry at his expence, begged of him to quit his logic and ſophiſtry, and make haſte to relieve him. This is an anecdote which proves beyond a doubt that HEROPHILUS practiced Surgery.

About this time, AMMONIUS, a famous Surgeon, flouriſhed at Alexandria. He was ſurnamed LITHOTOMUS, becauſe he was the firſt who ventured to cut, or break in the bladder, ſuch ſtones as were too large to be extracted without danger.

In the *thirty-ſeventh century*, ASCLEPIADES was born at Pruſus, a city of Bythinia, under the reigns of ATTALUS and EUMENES, Kings of Pergamus.

He practiced Surgery, as appears from his writings, which abound in remarks upon topical applications. In a quinſey, he opened the veins of the arms, of the tongue, of the forehead, or even of the angles of the eyes, and alſo cupped and ſcarified, as we learn from PLUTARCH. He alſo performed Trachæotomy, and uſed the Paracenteſis of the abdomen in an Aſcites, but directed that the opening ſhould be made exceedingly ſmall. His practice may be known more fully by conſulting CELSUS, and COELIUS AURELIANUS. The fragments that remain of this writer, are to be found in ÆTIUS AMYDENUS.

CASSIUS was contemporary with the firſt ſcholars of ASCLEPIADES. The works which are extant of his, beſpeak him well verſed in anatomy. There is, however, but one that particularly relates to Surgery, entitled *De Animalibus Quæſtiones medicinales.*

Several of theſe queſtions are chirurgical. I ſhall produce two of them, with his anſwers, which will ſerve to ſhew as much the author's ingenuity,

as

as his anatomical knowledge, and are ſuch as one would ſcarcely expect to meet with at ſo early a period.

One of theſe queſtions is, why circular ulcers are more difficult of healing, than others. CASSIUS, after having related and refuted the opinion of ASCLEPIADES upon this ſubject, propoſes his own thus: the cicatrix of round ulcers is long in forming, becauſe in theſe the ſound parts are all equally diſtant from each other, and on this account have more difficulty in coming together; whereas, in ulcers which have angles, the ſound parts, and the ſkin by which the cicatrix muſt begin, being nearer to each other (eſpecially towards the extremity of the angles,) the cicatrix is therefore more eaſily formed, and the edges of the ulcer which are moſt contiguous join with greater facility.

The other queſtion that remains to be mentioned, is, how does it happen that in wounds of the head, when the meninges of the brain are injured on the right ſide, the left ſide becomes paralytic, and vice verſa?

CASSIUS anſwers, that the reaſon of this is, becauſe the nerves whoſe origin is in the baſis of the brain, decuſſate, or croſs each other, ſo that thoſe which ariſe from the right ſide of this baſis paſs to the left, and thoſe which ſpring from the left, go to the oppoſite ſide.

ARETÆUS was a native of Cappadocia, from whence he was ſurnamed CAPPADOX, by way of diſtinguiſhing him from another ARETÆUS who was of Corinth: He lived in the time of STRABO, and GREGORY NAZIANZEN, and under the empire of AUGUSTUS CÆSAR*.

He was a man of great celebrity in his days, and is as much eſteemed for the elegance and preciſion of his ſtyle, as for the ſoundneſs of his judgement.

* In this chronological point the author has followed M. le CLERC; but Dr. FREIND aſſerts, and apparently on good grounds, that it is a palpable miſtake—See *Hiſtory of Phyſic*, Vol. I. page 6. H.

He

He was the firſt who introduced the uſe of bliſtering with cantharides; and practiced bleeding nearly as HIPPOCRATES did. In violent pains of the head, he opened the veins of the forehead, and ſometimes drew blood from the veſſels in the inſide of the noſe. For this purpoſe he uſed certain inſtruments, one of which he called *Cateiadion*, and the other *Storyma*. When theſe were not at hand, he uſed a gooſe quill, the end of which he cut into the form of the teeth of a ſaw. This he introduced into the noſe, near the *ethmoid* bone, and by moving the quill about with his two hands, he made the blood flow.

As ARETÆUS lived in the beginning of the *fortieth century* of the world, which is the date of the birth of CHRIST, the ſecond part of this hiſtory, computing from the Chriſtian Æra, neceſſarily begins with him.

The preciſe time in which CORNELIUS CELSUS flouriſhed is not abſolutely aſcertained. It is moſt probable, however, that he was born in the reign of AUGUSTUS, and wrote in that of TIBERIUS CÆSAR. He is particularly remarkable for the elegance of his ſtyle; and indeed we need not be ſurpriſed at this, ſince he lived at a time when the Latin language was juſt brought to its higheſt degree of perfection.

His ſeventh and eighth books treat wholly of chirurgical matters. It appears that he confined the practice of Surgery to thoſe caſes where the Surgeon himſelf made the wound, not where he found it ready made, ſo that all ulcers and other complaints not requiring manual operation he referred to the Phyſician. He ſeems to have added very little, on this ſubject, to what is found in HIPPOCRATES, from whom he copies many ſentences verbatim. The chief improvements we find in him, are a chapter on the operation called *Gaſtroraphy*, or the ſuture of the belly; to which that of the inteſtine, or Εντεροραφη, is added.

He is the firſt writer who adviſes perforating the bones with ſeveral ſmall holes in caſes of caries, a practice mentioned alſo by BELLOST.

His deſcription of Gaſtroraphy is accurate, and the directions for performing it nearly the ſame as the rules laid down by the beſt modern writers.

CELSUS is alſo the firſt who notices that the veſſels of the brain may be ruptured, without the cranium being fractured. For the *fiſtula in ano*, he mentions the ſame method of cure as that which has been lately propoſed by M. FOUBERT, and is now very commonly practiced in France; except that CELSUS adviſes a linen thread, inſtead of a leaden ſtillet, which is uſed by the moderns. This method conſiſts in paſſing a thread or piece of lead into the external opening, up the *ſinus*, then bringing it out by the *rectum*, and afterwards drawing it tighter every day by degrees, till the whole of the *fiſtulous ſinus* is cut through. This method of cure may certainly be uſed with advantage in a ſimple ſtate of the diſorder, and with perſons too timorous to ſubmit to the knife*. He alſo deſcribes the operation of lithotomy, after that manner which is now called *Apparatus minor*, or cutting upon the gripe; however Mr. HEISTER is very much miſtaken, when he obſerves that CHESSELDEN, and MORAND's method of cutting, are no more than an improvement of this author. CELSUS directs that the operation ſhould not be performed on children under nine, or above fourteen years old. He writes, though very unintelligibly, upon the radical cure of the *hydrocele of the tunica vaginalis*, by the exciſion of the *cyſt*, and gives a very confuſed account of the operation for the *bubonocele*.

It will be as well if we paſs over the time between CELSUS and GALEN, a ſpace of about one hundred and fifty years, becauſe it is a period in which we meet with nothing intereſting enough to deſerve repetition.

* This method is at preſent practiced, and has even been ſtrongly recommended by PROFESSOR CAMPER, who it ſeems has conſtantly employed it in the cure of perſons whoſe ſituation in life would not allow of leiſure to be cured by cutting; but by his own confeſſion very great and uniform inconvenience attends this mode, ariſing from the conſtant irritation to which the inteſtine is expoſed from the ligature, and by which, in moſt inſtances, a very painful prolapſus is occaſioned. H.

CLAUDIUS

CLAUDIUS GALEN of Pergamus, a city of Asia, famous in many respects, and particularly for its having a temple dedicated to ÆSCULAPIUS, was born near the middle of the *second century* after CHRIST, under the reign of the Emperor ADRIAN, and flourished under the Emperors ANTONINUS, MARCUS AURELIUS, COMMODUS, and SEVERUS. He was a very laborious man, and the most accurate anatomist that had yet appeared in the profession. He certainly practiced Surgery himself, and understood it as well as Physic, for he had acquired great skill in wounds of the nerves, and had a method of treating them unknown before. He tried it with success upon some Gladiators which the High Priest of Pergamus had committed to his care.

He established two general operations of Surgery, which he considered as the basis of this art, namely, *reunion*, otherwise called *synthesis*, and division, called *diæresis*.

In violent blows, or fractures of the *cranium*, he advises the trepan; and though he confesses he never performed it himself, yet he thinks it useful, provided the Surgeon takes care not to touch the *dura mater*, which he thinks might destroy the patient. I cannot avoid mentioning that this caution is totally inconsistent with an observation we find in his book, *De usu partium*, which speaks of a wound of the brain that had penetrated as far as the ventricle, with loss of substance, which however the patient survived.

In his treatise on luxations, and fractures, we find many excellent precepts, which some of the moderns have shamefully pillaged, without ascribing the honour of them to him.

In violent head aches he applied leeches, and used cupping, and scarifications; surgical helps, which notwithstanding the testimony of this great man, are still too much neglected, to the prejudice of the art. It must be owned however, that his chirurgical works are chiefly explanations of, and commentaries on, those of HIPPOCRATES.

In

In the *fourth century* lived a Phyſician of great erudition, and amiable manners, named ORIBASIUS. He has been conſidered by many as a mere compiler; and M. le CLERC thinks that what he has left us upon Surgery, is entirely copied from GALEN, and ÆTIUS. In this particular he certainly is miſtaken; for though the aſſertion may be true in ſome reſpects, yet it is far from being ſo entirely. ÆTIUS indeed, according to Dr. FREIND, was poſterior to ORIBASIUS, and therefore the latter could not have copied from him.

He is very full upon the advantages of ſcarifications in many diſorders, and ſays he has practiced them with great ſucceſs in ſuppreſſions of the menſes, inflammation of the eyes, and difficulty of breathing. The ſcarifications uſed by ORIBASIUS were different from thoſe practiced in cupping. The latter were only in uſe among the Arabian Phyſicians, whereas it appears from ſeveral paſſages in GALEN, that the ancients practiced only the former. Theſe ſcarifications conſiſted in making deep inciſions in the ſkin. The Egyptians, as we have before obſerved from PROSPER ALPINUS, uſe them to this day. They were performed in the following manner. A ligature was firſt placed below the ham, and pulled to a certain tightneſs. This being done, the leg was then rubbed, and immerſed in warm water. When it had remained there for ſome time, it was taken out, to be beaten with a ſtick till it ſwelled; and in this ſtate the ſcarifications were made.

The ſeventh book of ORIBASIUS's collection is entirely on Surgical matters; namely, bleeding, cupping, the application of leeches, and eſcharotics. He has alſo given an ample deſcription of ſeveral inſtruments of Surgery, and in particular of a machine for reducing luxations, which continued in uſe a long time. We are indebted to him for throwing much light upon different points of Anatomy and Surgery in GALEN, which without his explanation, would have been unintelligible.

Towards the end of the *fifth century*, and the beginning of the ſixth, lived ÆTIUS, of Amida, in Meſopotamia. His works abound in uſeful obſervations

obſervations relative to Surgery, which, however, are not ranged under diſtinct heads, but thinly ſcattered among a variety of other matter: the reader will not find his time mis-ſpent in picking them out. His method of treating the Anaſarca is laid down with ſo much propriety, that it is a matter of ſurpriſe the practice has not been invariably followed ever ſince. It directs us to make an inciſion on the internal part of the leg, at the diſtance of four fingers breadth from the ancle, nearly in the place where bleeding is now uſually performed in the foot. This opening, he ſays, is not attended with any inflammation; it is a ſort of ſpout through which nature diſcharges herſelf; and he has known the diſorder cured by this method, without the uſe of internal medicines. He recommends both actual and potential cautery, and in paralytic complaints he applied them to the nape of the neck, and top of the head, and proportioned their number to the violence of the affection.

He conſidered the cautery as the only relief one could expect in an inveterate aſthma. In this caſe he applied many; one on the articulation of the clavicle with the ſternum; two in the courſe of the carotid artery near the lower jaw; two under the breaſts between the third and fourth ribs; two more on the back, in the ſpace between the fifth and ſixth ribs; one upon the xiphoid cartilage; two between the eighth and ninth ribs on each ſide; and three more in the back; one in the middle of the ſpinal column, the other two a little below the former, and upon the ſpinal proceſſes of the vertebræ.

In an excellent treatiſe he has left us on the bite of mad animals he recommends keeping the wound open * for ſixty days. The uſe of Setons was alſo known to him, a circumſtance worthy to be mentioned, becauſe the knowledge of them has been fixed by others poſterior to his time.

* A mode of treatment thought *ſo likely to be uſeful*, that all ſucceeding practitioners have imitated it even to the preſent day, but which has not a ſingle fact to eſtabliſh its propriety. The intention of affording the Virus which has been left in the wound a ready outlet, and thereby rendering its abſorption leſs probable, is good. But this ſalutary effect can ſcarcely be expected from any of the common modes of keeping a wound open in oppoſition to the efforts of nature, or from the uſe of irritating applications, which we ſee, in common caſes, rather tend to bring the abſorbents of the part into action. H.

LEONIDAS practiced Surgery at Alexandria, about the end of the fourth, and the beginning of the fifth century.

He affirms, that by ſcarifications in the legs, arms, thighs, and ſcrotum, of perſons afflicted with the anaſarca, he has evacuated not only the water in the cellular membrane, but that contained in the cavity of the belly alſo; and in the *Empyema* he recommends the thorax to be opened by actual cautery.

He is the firſt who mentions thoſe worms which, forming under the ſkin, ſometimes occaſion ſuppuration, and are to be extracted by rolling them gradually round a ſtick; in doing which, great care muſt be taken not to break them.

This worm is very frequent on the Coaſt of Guinea, along the Perſian Gulph, and in Tartary. KEMPFER alſo in his *Amœnitetes exoticæ*, obſerves, that this diſeaſe is moſt prevalent in hot countries, and deſcribes particularly the method of extracting theſe worms—There are only fragments of this author extant, and theſe are to be found in the works of ÆTIUS.

PROCOPIUS, who lived in the *ſixth century*, under the reign of JUSTINIAN, was a Phyſician and Surgeon, as well as an Hiſtorian. It is from the accounts we meet with in his Hiſtory of the Wars of the Romans with different nations, that we collect the knowledge he had in Surgery. Speaking of the wound which deſtroyed ARTABASES, King of Perſia, he declares, in expreſs terms, that the carotid artery was wounded, and that the hemorrhage could not be ſtopped.

The Emperor TRAJAN being wounded above the right eye, the end of the arrow was entirely buried in the parts without giving any pain. PROCOPIUS acknowledges ingenuouſly that he knew not what courſe the inſtrument had taken; but acquaints us that it came out five years after, and that the Emperor was perfectly cured.

This

This writer alſo gives a very circumſtantial account of a wound in the face, which a King of the Goths received from an arrow. The Surgeons were not determined upon the plan they had to purſue. The apprehenſion of affecting the patient's eye, of irritating the parts by an operation, and thereby increaſing the diſeaſe, prevented them from extracting the end of the arrow remaining in the wound. One of the Surgeons, however, bolder than the reſt, having undertaken to do it, made a preſſure upon the King's eye, who cried out violently, and complained of acute pain. The Surgeon, from this circumſtance, foretold the cure, and accordingly making an inciſion through the ſkin and muſcles, he extracted the foreign body; after which the wound healed ſpeedily, and without accident.

But the moſt remarkable writer in our profeſſion after GALEN, was PAULUS ÆGINETA. Authors differ much about the time in which he lived. We ſhall however place him, with Dr. FREIND, in the *ſeventh century*. Though he was a great compiler, yet in ſeveral particulars, eſpecially ſuch as belong to Surgery, it appears that he was an original writer. Many people have ſpoken of him with contempt; but it is evident, from the manner in which he writes upon the operations, that he muſt have performed them himſelf.

His works abound in Surgical improvements, and every circumſtance in them relative to this art, is in general treated with more copiouſneſs and preciſion than we find in CELSUS, GALEN, or any preceding writers, ſo that he is very injudiciouſly ſtiled *Simia Galeni*. In ſhort, PAULUS ÆGINETA is one of thoſe unfortunate perſons to whom poſterity has by no means done the juſtice he deſerved.

Be this as it may, however, his treatiſe deſerves to be looked upon as the moſt complete body of Surgery publiſhed before the reſtoration of learning. He is much more full and accurate than CELSUS upon ſeveral articles; and with regard to lithotomy in particular, he does not forbid the practice of it in a more advanced age than the former allowed of.

He recommended alſo that the inciſion ſhould not be made in the middle of the *Perinæum*, but rather obliquely on the left ſide, which is near the place where we now begin our inciſion in the lateral method. The fracture of the *Patella* is firſt mentioned by him; though he ſpeaks of it as happening but ſeldom.

He is much more circumſtantial than CELSUS in deſcribing the ſeveral ſorts of Herniæ, and much more accurate and clear in the detail of the operation. His account of Aneuriſms is new and intereſting, and his method of performing the operation the ſame as the moderns. His method of treating wounds and abſceſſes, is more ſimple and rational than any yet given. He proſcribed that multitude of plaſters that obſtruct the operations of nature, by whoſe power alone he was ſenſible that ſuppuration and the healing of wounds was effected. He adviſes the opening of the jugulars and the arteries behind the ears, againſt the opinion of CELSUS; and is alſo the firſt who ſpeaks of extirpating cancerous Mammæ. From theſe various improvements in the art, it is evident that this excellent author deſerves more attention than has hitherto been paid to him.

The laſt thing I ſhall obſerve of him, is, that he recommends Bronchotomy, or the opening of the Trachea, in a violent Quinſey. He is the firſt writer in whom we meet with a deſcription of this operation, which I fear has been too much neglected by his ſucceſſors. He has judiciouſly remarked after ANTYLLUS, as he declares that this operation is uſeleſs in the Quinſey which affects the muſcles of the Larynx, the membrane lining the internal ſurface of the trachea, and even the lungs, and can only be ſerviceable in the ſwelling of the tonſils, when the trachea is not injured.

After this time Europe being overrun by the *Saracens*, a barbarous and ignorant people, the whole learned world was thrown into confuſion, and Phyſic and Surgery ſhared the ſame fate as the other ſciences—But in the *tenth* and *eleventh centuries* the Arabs began, by their aſſiduity and application, to reſtore them to their priſtine ſtate. About this time flouriſhed

riſhed MESUE, SERAPION, HALY ABBAS, RHASES, AVICENNA, AVENZOAR, ALBUCASIS, and others.

MESUE is one of the moſt ancient of the Arabs. There are ſeveral ſurgical diſorders treated of in his works, which, though they are publiſhed in his name, do not appear to belong to him, ſince RHASES, who lived a conſiderable time after, is frequently quoted in them. He propoſes a ſingular method of extracting the polypus that doth not come out of the noſe nor appear in the poſterior noſtrils. It is, to take two or three horſe hairs, and twiſting them in the manner of a thread, to make two or three knots in them: one of the ends of this thread is then to be introduced into the noſtrils by means of a leaden probe, with an eye to it, and is to be brought out by the mouth. This being done, we are to take hold of the two extremities of the thread, and to move them backwards and forwards till the root of the polypus be cut through.

ABUBEKER MAHOMMED, who lived in the tenth and eleventh centuries, and who obtained the name of RHASES, from the town in which he was born, was a phyſician of much learning and genius. His thirſt after knowledge induced him to viſit foreign countries, and it is upon this occaſion that the following ſingular ſtory is told of him. As he was paſſing through one of the ſtreets of Cordova in Spain, he ſaw a great croud aſſembled, and ſtopping to know the cauſe of it, was told that a man had juſt expired ſuddenly. Curioſity prompted him to draw near, and after having examined the body with attention, he ordered a bundle of rods to be brought to him, which he diſtributed to the byſtanders, keeping one for himſelf. Then deſiring them to do as he did, he began to flog the motionleſs body on all parts, and chiefly on the ſoles of the feet. This extraordinary proceeding made him at firſt to be looked upon as a madman; till in the ſpace of a quarter of an hour the dead man began to move, and was ſoon after perfectly reſtored to life, amidſt the acclamations of the multitude who thought it was a miracle.*

* This fact ſhould be communicated to the ſociety for recovering drowned perſons, as it might prove a uſeful addition to the ſeveral ingenious modes deviſed and taught by them for the reſtoration of bodies apparently dead.

Though

Though with regard to Surgery RHASES may be conſidered in many reſpects as a mere compiler, yet it muſt be acknowledged that there are many things peculiar to him in this branch; for inſtance, he is the firſt writer who has given a deſcription of the *ſpina ventoſa*, which he defines to be a corruption of the bone with ſwelling, and extenſion. This definition is very juſt, for we know that this dreadful diſeaſe begins in the cavity of the bone, that the medulla is affected in the firſt inſtance, and that the diſeaſe is afterwards communicated to the ſeveral layers of the bone, which are ſeparated, extended, grow carious, irritate the perioſteum that covers them, and occaſion great pain. The author diſtinguiſhes the *ſpina ventoſa*, from what is commonly called *Pædarthrocace*, though moſt modern writers have confounded them: the following are the differences he eſtabliſhes. The *Pædarthrocace* is a kind of tumour which only ſeizes upon the Epiphyſes of the joints, and is almoſt always unattended with pain. But the *ſpina ventoſa* happens in all parts of the bone, and particularly in the body of it, beſides that pain never fails to accompany it. It is a diſeaſe moſt frequent in infancy, though often found in adults.

The *Nodus* differs again, according to RHASES, both from the *ſpina ventoſa* and the *Pædarthrocace*. In the Node, he ſays, the external layers of the bone are affected, and the tumour is formed without, before the cavity be injured. With regard to the treatment of the Node, RHASES adviſes, after having opened the tumour, to remove with a cutting inſtrument, or to deſtroy by actual cautery, all that part of the bone that is tainted.

AVICENNA was born at *Bochara*, in the province of *Choraſſan*, in PERSIA, and lived in the eleventh century. He was a man of genius and early ſtudy. Though his Surgery is almoſt entirely extracted from GALEN, RHASES, and HALY ABBAS, yet he deſcribes ſome new operations, for inſtance, the amputation of the Clitoris when too long. This operation, I imagine, ſhould be practiced with as much caution as that of the Penis, though I cannot ſay I ever met with a caſe in which it was indiſpen-

indiſpenſably neceſſary. The Nymphæ, in Venereal complaints, I have, indeed, ſeen growing to an enormous ſize, and though frequently extirpated, frequently riſing up again, and filling up the entrance of the Vagina, ſometimes with, ſometimes without ulceration. This is a complaint which, indeed, in one inſtance, has baffled all my attempts to relieve.

AVENZOAR lived after AVICENNA, perhaps about the middle of the eleventh century. He is the firſt writer who has ſpoken of the *abſceſs of the mediaſtinum.* This complaint, ſays AVENZOAR, manifeſts itſelf by a conſtant and hard cough, followed by a diſtending kind of pain, which is felt along the forepart of the breaſt; the breathing is ſlow, confined, and frequent, an acute fever rages, the patient complains of burning thirſt, and his pulſe is hard and unequal; ſhiverings, the uſual attendants of all ſuppurations, alſo take place in this.

The operation propoſed for the relief of this diſorder, is trepanning the Sternum; a practice mentioned by Dr. FREIND in his Hiſtory of Phyſic, as being, from his own knowledge, frequently ſucceſsful; and ſince confirmed by ſeveral practical obſervations in the Memoirs of the Royal Academy of Surgery at Paris. Thus it is that the ideas of great men are never entirely loſt. Sooner or later ſome laborious inquirer, reſcues them from the oblivion into which they were fallen, and applies them with judgement.

Dr. FREIND ſays, that AVENZOAR is the firſt among the Arabs who mentions the operation of *Bronchotomy in the Quinſey*; but this is a miſtake, ſince we find it previouſly recommended by AVICENNA. But the chief of the Arabians, particularly in Surgery, is ALBUCASIS, who lived in the eleventh, or perhaps in the twelfth century.

Till the time of ALBUCASIS, Surgery had remained nearly upon the ſame footing as it was among the later Greeks, that is, as we have deſcribed it in ſpeaking of PAULUS ÆGINETA. But ALBUCASIS improved, and brought this art to a much greater degree of perfection. I cannot

help obſerving, that the actual cautery, ſo much commended by HIPPOCRATES, ſtill maintained its reputation throughout ſuch a long ſucceſſion of years, and ſuch varieties of revolutions, as the ſciences have experienced. It is recommended by all the Arabs, and ALBUCASIS himſelf is very laviſh in its praiſes. His Surgery is divided into three books, the firſt of which is written expreſſly on cautery.

His ſecond book treats in a very ample manner of all the operations of Surgery made by inciſion, which he reckons up to the number of ninety-ſeven. He ſeems to have copied many things from PAULUS, though he mentions no other writers than HIPPOCRATES and GALEN.

In his eighty-ſixth chapter, he relates a remarkable caſe, which, as it is the firſt of the kind upon record, deſerves to be mentioned. It is of an abſceſs in the thigh, in which the *Os Femoris* was carious for the length of ten or twelve inches. In the courſe of the ſuppuration the whole ſubſtance of the bone gradually came away, and its place was ſupplied by a callous of ſo hard and firm a nature that the patient was afterwards able to walk very well. I cannot omit taking this opportunity of obſerving, that if this caſe had been generally known, or properly attended to, many limbs which have been amputated, might probably have been ſaved, and the practice of removing carious bones without amputation, would ſcarcely have been left to adorn the many improvements of the preſent age. *

Almoſt all matters relative to Surgery are treated of in this ſecond book of ALBUCASIS, except luxations, which are the ſubject of the third.

* Our Author ſeems to have caught his idea of the poſſibility of a regeneration of bone to the extent mentioned by ALBUCASIS, from the ſucceſs of this caſe. The trial made of this at the Weſtminſter Hoſpital, in which ſeveral inches of a diſeaſed Tibia were removed by an operation, is well known, but the event was not ſo fortunate as was expected, ſince the callous thrown out from each extremity of the bone did not meet by a conſiderable ſpace. Conſequently it became neceſſary to ſupply the want of a Tibia by artificial means, which, however, in conjunction with the ſupport the Fibula afforded, has given the patient no inconſiderable advantage over thoſe cured by amputation. H.

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It is no incurious circumſtance, that in tracing the hiſtory of our profeſſion minutely, we are able to correct many miſtakes which have generally prevailed; to ſtrip many perſons of the inventions that have been aſcribed to them; and reſtore the honour of many diſcoveries to thoſe whom they juſtly belong to. It is a fact I believe generally received, that, till the time of AMBROSE PAREY, no other method had been practiſed to ſtop the hemorrhage of arteries, except that of actual cautery; and that this great ſurgeon, ſtruck with the cruelty as well as the precarioufneſs of this method, invented the ligature. Nothing can be more falſe, and injurious to many perſons, than this aſſertion. This honour does not certainly belong to him, nor can we even allow him, (as we ſhall hereafter ſee), that of having firſt propoſed the needle to facilitate the operation. In the time of ALBUCASIS, as we gather from the hiſtory of his writings, there were four known ways of ſtopping the flux of arterial blood, all practiſed with equal ſucceſs. The firſt was cautery; the ſecond was the total diviſion of the opened veſſel, the extremity of which retracting, diminiſhed its diameter; the third was the ligature *; and the fourth, the application of aſtringents. ALBUCASIS, ſeems even to have been acquainted with the coagulum or plug, which being formed at the orifice of the artery, ſtops the hemorrhage, and the exiſtence of which, M. PETIT among the moderns has firſt demonſtrated. The following quotation may enable the reader to judge.——"*Quamprimum digitis ſuis comprimat arteriæ orificium, et conſtringat eam valde donec obſeſſus ſit ſanguis, et digitus non removeatur effundatque celeriter aquam maxime frigidam, donec congeletur et ingroſſetur ſanguis.*"

ALBUCASIS diſtinguiſhes very properly the various treatment neceſſary for different abſceſſes, according to their nature, or ſituation, and very judiciouſly adviſes that ſome ſhould be opened before they come to maturity. In theſe laſt he includes ſuch as happen near the joints, leſt the matter ſhould corrode the ligaments.

* "Ligetur Arteria cum filo ligatione forti," lib. 1. cap. 57.

He ſpeaks of the method of extracting any foreign body by a ſpunge, faſtened to a thread; and invented an inſtrument for this purpoſe, which is engraved in his works. But as we have reſtored to him the honour of a diſcovery which he has been deprived of, we muſt with equal juſtice take one from him which he falſely aſcribes to himſelf; for when he ſpeaks of circumciſion as an operation of his own, he ſurely did not recollect the elegant deſcription given of it by PAULUS ÆGINETA, nor what CELSUS had ſaid of it, in his chapter on the phymoſis.

He has however one other circumſtance peculiar to himſelf; which is, that he is the firſt who has given deſcriptions of the inſtruments proper for each operation, and taught the method of uſing them.

In the *thirteenth century* ſeveral ſurgeons appeared in Italy; ROGER OF PARMA, JAMERIUS, BRUNNUS, and THEODORIC, but they were all ſervile copiers of ALBUCASIS. GULIELMUS DE SALICETO, contemporary with THEODORIC, is the moſt original writer of all theſe, for which reaſon I ſhall take ſome notice of his practice and writings.

He was born at Placentia, and exerciſed his profeſſion at Verona, where he died about the year 1277. Convinced of the inſufficiency of topical applications in many chirurgical diſeaſes, he made a free uſe of the knife, and of Cautery, in imitation of the Greeks and Arabians. ALBUCASIS is his chief model; but although he has copied him in ſeveral places, yet his ſurgery contains many things that are peculiar to himſelf. Though he conſidered the Hydrocephalus in general as an incurable diſorder, yet he mentions an inſtance of one, in the hoſpital at Cremona, which was cured by the efforts of nature alone; and of another which he cured himſelf by applying the cautery once to the forehead, and twice to the occiput.

Many good precepts are found in his works upon wounds, and upon the treatment of them. He mentions ſeveral cauſes that impede the reunion of wounds, and reduces them to the number of ten. Some of

thoſe are ingeniouſly ſuggeſted, and he lays down the method of remedying each.

GULIELMUS DE SALICETO likewiſe ſpeaks of the operation of caſtration, and as he ſays nothing of tying the ſpermatic cord, we may preſume he did not practiſe it: he only ſewed up the ſkin of the ſcrotum, leaving an opening at the lower part as a drain for the matter, and ſprinkled the wound with aſtringent powders.

LANFRANC, who was born at *Milan* in the thirteenth century, ſtudied under SALICETO. Italy being then diſturbed by the factions of the *Guelphs* and *Gibelines*; theſe commotions compelled him to leave his country, whence he retired to France, and fixed his reſidence at firſt at Lyons; but in the year 1295 he repaired to Paris, where his reputation had already gone before him.

The work publiſhed by this writer is entitled *Chirurgia magna et parva*, printed at Venice, in folio, and at four different times. It conſiſts of five treatiſes, divided into ſections and chapters. The firſt and ſecond treat on wounds, both ſimple and complicated. The third treats of cutaneous diſeaſes, of abſceſſes, of hernias, of the ſtone, of diſorders of the eyes, noſe, ears, &c. The fourth ſpeaks of fractures, and luxations; and the fifth, of the ſeveral inſtruments uſed in Surgery.

He is the firſt writer I know of, who lays down the rule to diſtinguiſh the wound of an artery, from that of a vein. In the former caſe he ſays, that the blood comes out by jerks, while in the latter it flows in a uniform, ſteady ſtream. His mode of treating this accident is remarkable. He adviſes the Surgeon called in, to apply one finger upon the orifice in the veſſel, ſo as to prevent the flux of the blood, and to hold it there for an hour, in order to give time to the blood to coagulate. He then directs the application of an aſtringent powder, and if this be not ſucceſsful, adviſes the uſe of the ligature.

At this period in France we find PITTARD, chief Surgeon to three Kings of that nation; *Lewis the Firſt*, *Philip the Bold*, and *Philip the Handſome*. PITTARD was the firſt who formed the Surgeons into one body, or ſociety, which was the foundation of what is now called the Academy of Surgery, at Paris.

HERMANDAVILLE, who was a pupil of PITTARD's, and taught Surgery at Montpellier, was one of the moſt learned men of his time. He wrote a courſe of Surgery, divided into five treatiſes. As this book has never been printed, Baron HALLER doubts whether the author wrote any thing; but there are two manuſcripts of his work extant, one in the King's library at Paris, the other in that of the Sorbonne. It is written in Latin, and is ſaid to be an improvement upon the work of his maſter.

At the ſame time there lived at Paris four ſurgeons, whoſe humanity, and the deſire of public good had brought together in the ſame houſe.—They were then diſtinguiſhed by the honourable name of the four maſters in Surgery—Their time was devoted to the care of the poor, and their houſe was a kind of temporary hoſpital in which the diſtreſſed were always ſure of meeting with every aſſiſtance the ſurgery of that age could ſupply. They collected in one Treatiſe, which appeared under the name of the Four Maſters, all they had learned from a long and attentive experience. GUIDO DE CAULIACO acquaints us, that he obtained a great deal of information from this work, and puts it upon a par with the writings of the principal men in this art. It has been loſt about one hundred years, though ſome of the remains of it were ſeen a few years ſince, in the Univerſity of Navarre, but the characters were much defaced, and the book almoſt deſtroyed by the worms.

In the *fourteenth century* lived GUIDO DE CAULIACO, mentioned above. His work conſiſts of two parts, the firſt on anatomy, the next treats of ſurgery. He practiced at Lyons for ſeveral years, and at laſt was called to Avignon, where he was phyſician to Pope Clement the Vth, and his

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ſucceſſors. The principal writer he copies, is ALBUCASIS. He copies him, however, with judgement, and moreover gives an abridged hiſtory of the ſtate of ſurgery in his time, obſerving that it was divided into five ſects, each of theſe profeſſing to follow their ſeveral maſters.

GUIDO DE CAULIACO was certainly one of the ableſt of the ancient ſurgeons. He treated the art in a ſcientific manner, and performed almoſt all the operations that are in uſe at this day. His remarks on wounds of the head are particularly worth attending to; and we find no author before his time who mentions the cure of a wound in the brain, with loſs of ſubſtance, except one inſtance from Galen already quoted. He heſitated not to perform the operation of the empyema, a practice unfortunately too much neglected, and has cenſured SALICETO for recommending the inciſion to be made too low down in the Thorax, by which he ſays the diaphragm is in danger of being wounded, ſince it riſes higher in the Thorax, in ſome people, than in others. This is certainly a very judicious remark. He performed the operation for the cataract by depreſſion; and his work may be conſidered as more valuable in ſurgery than any that had appeared before, or that appeared for a long time after. It deſerves to be much more generally read than it is.

But while we beſtow all due encomium on foreign writers, let us not forget thoſe of our own country. The firſt of theſe in point of time was GILBERT, ſurnamed the Engliſhman, who flouriſhed in the *thirteenth century*. He was a good claſſical ſcholar, and a man of learning, but no very great adept in ſurgery, if we may judge from the things relative to this art, which are found in an only publication of his, entitled *Compendium totius Medicinæ*. It appeared firſt at Lyons, in Quarto, in 1510, and was reprinted at Geneva under the title of *Laurea Anglicana, ſeu compendium totius Medicinæ*.

The next I ſhall mention, is JOHN OF GADDESDEN, Fellow of Merton College, Oxford, and author of the famous *Roſa Anglica*. This book was greatly eſteemed at that time, inſomuch that our Poet Chaucer does the

the author the honour to rank him among the moſt celebrated writers in medicine. GUIDO DE CAULIACO, who wrote after him in the ſame century, was of a contrary opinion, and his expreſſions about this book are ſomewhat remarkable. "*Ultimo inſurrexit una fatua Roſa Anglicana quæ mihi miſſa* "*fuit, et viſa, credidi in ea invenire odorem ſuavitatis, et inveni fabulas Hiſ-* "*pani, Gilberti, et Theodorici.*" Although this cenſure of GUIDO's might in ſome reſpects be juſt enough, as it muſt be confeſſed that our countryman was little more than an Empiric, yet he was certainly an Empiric of the better ſort, and perhaps only profeſſed being ſuch from pecuniary motives, for he undoubtedly was conſidered in his time as a man of learning, and a judicious practitioner. JOHN, however, was a man of that kind to whom nothing that looked like the profeſſion came amiſs.—He was literally and truly one of thoſe perſons who, according to an elegant metaphor much uſed among us at preſent, *fought both horſe and foot.* If a patient was afflicted with the ſtone, JOHN was the man who would attempt to diſſolve it. For Epileptic Fits, he had an anodyne necklace, and, for the moſt violent paroxiſm of the Gout, an infallible cataplaſm. He declares himſelf to have been a very dextrous bone-ſetter, and, upon occaſion, would extract a rotten tooth. He was very aſſiduous in inventing lotions for preſerving the ladies' complexions, would even be complaiſant enough to cut their corns, and as for thoſe troubleſome inſects which now and then infeſt a gentleman's head, no man had a more effectual, and leſs offenſive, method of deſtroying them.

Such was our countryman JOHN OF GADDESDEN, upon whoſe hiſtory I have been perhaps more particular than he deſerved, not only becauſe he was one of the firſt Engliſh ſurgeons, but alſo becauſe he was the firſt ever employed at Court, for before that time, all the phyſicians and ſurgeons belonging to the Royal Family had been foreigners.

Not long after JOHN OF GADDESDEN, JOHN ARDERN, a ſurgeon, cotemporary with GUIDO DE CAULIACO, made a conſiderable figure in this country. He left behind him a large volume of phyſic which ſtill exiſts among us in manuſcript. It is rather ſurpriſing that this book

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ſhould never have been printed, for it is certainly as uſeful a work as any which appeared about that time, except that of GUIDO DE CAULIACO. He ſeems to have been the firſt improver of ſurgery in England, for before his time our countrymen had not been very converſant in ſurgical operations. Dr. FREIND ſays, that he was a man of probity and experience; as indeed is in ſome meaſure evident from the unaffected ſimplicity of his writings. Among them there is a long treatiſe on the Fiſtula *in Ano*, which was tranſlated by JOHN READ in 1588.

In the *fifteenth century*, Surgery made a rapid progreſs in Italy. The example of the Arabs had excited the emulation of the Italian ſurgeons, who applied themſelves ſeriouſly to the improvement of their art. PETRUS DE ARGILLATA was one of the moſt enlightened of this period. He wrote ſix books of Surgery, which went through ſeveral editions at Venice; and this work is full of intereſting obſervations made by the author in the courſe of his practice. He relates ingenuouſly the faults which he happened to commit, in order to prevent others from falling into the ſame errors; a rare inſtance of candour, and ſuch as unfortunately is not ſufficiently imitated. ARGILLATA treats of the Phlegmon, and its cure, then of Eryſipelas, of Eruptions, and of all inflammatory diſeaſes belonging to Surgery; of Gangrene, and of the peſtilential Carbuncle. The doctrines of Abſceſſes, Scrophula, and Cancer, are then conſidered, together with the remedies proper for each of theſe complaints. A third part treats of wounds in general; and in particular, he mentions an inſtance of a wound in the arm, the effect of which was an immediate ceſſation of muſcular motion, without the loſs of ſenſation. There is reaſon to believe he is the firſt author that has made this obſervation.

PETRUS DE MONTAGNANA practiced phyſic and ſurgery about the year 1440, and was eſteemed a man of conſummate ſkill in his profeſſion. The works of this writer are very numerous. Among them ſeveral ſurgical diſeaſes are treated of, under the title of *Conſilia de Ægritudinibus, &c. &c.* All matters relative to our art, that are to be found in MONTAGNANA, are diſcuſſed with much preciſion and clearneſs.

In

In the beginning of the *ſixteenth century* a new ſcene was opened to the profeſſion, by the breaking out of the *Venereal Diſeaſe*, a diſorder till then unknown; and in the courſe of this century many great men appeared in the profeſſion of ſurgery.

The firſt that occurs is WILLIAM VAVASSOR, Serjeant Surgeon to FRANCIS I. King of France. Though he never publiſhed any thing, yet his name deſerves to be mentioned, as he was a man of ſo much conſideration in his time, that he obtained of the King a grant of the privileges of an univerſity to the Society of Surgeons in Paris.

About this time HERY, another French Surgeon, was ſent by FRANCIS I. into Italy, to cure his troops afflicted with the *Lues*. HERY reſided at Rome, where he learned from BERENGARIUS CARPI the method of mercurial frictions. When he returned into France, he publiſhed an accurate and learned account of this diſeaſe.

It may not here be improper to mention that moſt of the writers in this century upon the Venereal Diſeaſe were Phyſicians, ſo that they ſcarcely belong to this Hiſtory. I ſhall, however, juſt obſerve, that theſe writers are all collected in one volume folio by Boerhaave, under the title of *Scriptores de Morbo Gallico*. Among them, the writer who has given the moſt circumſtantial account of the diſeaſe and its method of cure, is NICHOLAS MASSA of Venice. His treatiſe contains almoſt all that is known on the ſubject of the *Lues* at preſent *. It muſt be obſerved, however, that no mention is made by the firſt of theſe writers of the *Gonorrhœa*; for this was probably a ſymptom which made its appearance afterwards.

* This aſſertion of the author is rather too unqualified, as thoſe who have ever looked into this treatiſe will not heſitate to allow. It is, however, one of the beſt in Boerhaave's collection, and has fewer exceptionable parts than even the productions of thoſe who wrote after him. One practical remark of his is particularly worthy of mention. He commends the uſe of occaſional vomiting to relieve Venereal pains; a practice which I have known to be attended with extraordinary good effects. H.

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The other Italians who flourifhed in the fixteenth century are, firft JOHANNES DE VIGO *of Genoa*, a man of great erudition, who was chief Surgeon to one of the Popes. He has left a chirurgical work confifting of nine books, which ought to be read by every Surgeon, as they treat circumftantially on every branch of the art.

I fhall only take notice of two circumftances, in this writer, which particularly elucidate the hiftory we are giving.—The firft is, his having mentioned the ufe of the ligature for ftopping hemorrhages. It is a cuftom with fome people, he fays, to tie the veins and arteries when opened, with a needle and thread, with which they clofe the fides of thefe veffels—" *Modus autem ligationis. Eam aliqui efficiunt intromittendo acum fub vena* " *defuper filum ftringendo.*" We have before feen that ALBUCASIS mentions the fame method, though he has not pointed it out fo explicitly. The next circumftance is, that VIGO is certainly one of the firft, if not *the* firft, who ufed *Mercury* in the cure of the Venereal Difeafe; an honour which is folely given to CARPI.

JACOBUS BERENGARIUS CARPI, and not CARPUS as he is ufually called, practiced Surgery with diftinction at Bologna. Though it appears, from what has been faid above, that VIGO muft have ufed Mercury in the *Lues* as foon as CARPI, yet the honour of the difcovery may belong to both of them, for VIGO's edition appeared only two years before the publication of CARPI. However this may be, it is certain that CARPI acquired fo great a fortune by his practice in the Venereal Difeafe, that he left a quantity of plate, befides a confiderable fum of money, to the Duke of Ferrara, as we are informed by FALLOPIUS in his treatife *De Morbo Gallico.* But though VIGO and others had ufed Mercury in the Venereal Difeafe before CARPI, yet he was the firft who cured by the mode of mercurial frictions, which was in itfelf certainly a very confiderable improvement. He alfo wrote a treatife *De Fractura Cranii*, which contains nothing worthy of notice.

MARIANUS SANCTUS was a pupil of VIGO, and famous in the profeſſion, for his method of cutting for the Stone by a particular apparatus. He attributes the invention of this method to JOHANNES DE ROMANIS, from whom he confeſſes that he learnt it. MARIANUS has alſo publiſhed ſome other works, which are all in GESNER's Collection of Surgical Writers, but none of them are worth attending to, except his treatiſe on the Stone.

ALPHONSUS FERRUS was public profeſſor of Surgery at Naples, and in 1534 was elected firſt Phyſician to Pope PAUL III. He publiſhed a treatiſe on Gun-ſhot Wounds in three books, which is one of the firſt that appeared. This treatiſe, though full of judicious and uſeful precepts, is, by an inconceivable fatality, very little known amongſt us. Thoſe who ſhall take the trouble to read it, however, though ever ſo well verſed in their profeſſion, will not find their time miſemployed. There is one remarkable paſſage in this work. Speaking of hemorrhages, he ſays, "yet if the veſſel opened, be of any ſize, nothing but the ligature will "ſucceed; in order to apply this, we make uſe of a crooked needle, "pointed at one end and perforated at the other; this needle muſt be "paſſed through the fleſh and the thread left, with which, the veſſel "that bleeds is to be tied. This method is always effectual, and ſtops "the bleeding of the arteries." FERRUS does not aſſume the diſcovery of this method to himſelf; and indeed how is it poſſible he ſhould, ſince we have ſeen that ALBUCASIS, VIGO, and others before mentioned, had employed it with ſucceſs. He alſo wrote a treatiſe on the Iſchury produced by obliteration of the neck of the bladder, which contains ſome curious details. His reflections on ſounds, and the art of ſounding the bladder, are worthy of the firſt Surgeons of the preſent age. He employed ſounds of different metals, and knew the uſe of bougies, for which he has given a formula. He has carried his improvements in this part of Surgery ſtill farther, and has employed, for the purpoſe of deſtroying Caruncles in the Urethra, the ſtems of mallows, parſley, fennel, &c. and covered his bougies with deterſive or ſuppurative ointments, according to the variety of his intentions.

BARTHO-

BARTHOLOMÆUS MAGGIUS *of Bononia*, a man of great merit in the profeſſion of Surgery, wrote a treatiſe on Gun-ſhot Wounds, which is the ſecond of the kind, and contains ſome obſervations on wounds in general, and on amputations. This alſo is included in GESNER's collection.

VIDUS VIDIUS *of Florence*, publiſhed four volumes on Surgery; he was a learned commentator and tranſlator of ſome parts of HIPPOCRATES and GALEN.

GABRIEL FALLOPIUS, a very eminent Anatomiſt and Surgeon of his time, was profeſſor at Padua; and beſides ſeveral anatomical pieces, has left us almoſt a complete ſyſtem of Surgery, excluſive of the operative part. His book on ulcers is very diffuſe, and many uſeful things may be collected from it. His treatiſe *De Morbo Gallico*, is printed among BOERHAAVE's collection.

In this century lived CASPAR TAGLIACOTIUS, a man rendered immortal by the facetious author of HUDIBRAS, for his extraordinary method of making ſupplemental noſes, ears, or lips, from any thick fleſhy part of another perſon's body; concerning this practice, he has left us an expreſs treatiſe.

JOHANNES ANDREAS, *of Venice*, publiſhed a complete body of Surgery, both operative and pharmaceutic, to which he has added, deſcriptions and plates of all the ſurgical inſtruments in uſe at that time.

The only French writers I ſhall take notice of in this *ſixteenth century*, are FRANCO, AMBROSE PAREY, and GUILLEMEAN.

PETER FRANCO was a native of France, though he practiced his art for a conſiderable time in Switzerland. He acquired a great deal of knowledge in Anatomy and Surgery, and appears to be the firſt French author who wrote ſcientifically on the art. His candour and honeſty are

evident from the franknefs of his confeffions, and the plainnefs and fimplicity of his ftile. He has left behind him two works, one entirely upon Herniæ, the other upon that, and almoft every other part of Surgery. His defcription of the feveral kinds of Herniæ is very exact, and the detail of the fymptoms very accurate. His method of cure is by the *punctum aureum*, which he prefers to all others. In treating of the Hydrocele he propofes feveral methods of cure, among which, he defcribes the feton, but prefers incifion.

He is alfo the inventor of the high operation for the Stone, to the difcovery of which he was urged by neceffity; for, having cut a child about two years old by the greater apparatus, or JOHN DE ROMANIS's method, and the Stone being too large to be extracted at the Perinæum, he made an incifion above the Os Pubis, and took it out by that opening, by which fortunate thought he faved the life of his patient

AMBROSE PAREY practiced and taught Surgery, with great diligence, for fifty years fucceffively. He was chief Surgeon to HENRY II. FRANCIS II. CHARLES IX. and HENRY of France. He has publifhed a complete fyftem of Surgery, in which we find a variety of improvements; nay it may very juftly be faid of this work, that there is fcarcely any part of Surgery which he has not treated with more knowledge, clearnefs, and precifion, than any preceding writer, fo that he is not improperly confidered as the father of Surgery in France. It would be doing him injuftice therefore, to make any extracts from this performance, for the whole deferves to be read with the greateft attention.

He likewife publifhed a treatife on Gun-fhot Wounds, which contains a number of intereffing obfervations and judicious precepts, confirmed by the long experience the author had acquired in following the army. This is not fo original, however, as the former work, for the fame precepts nearly, are to be found in LANGIUS, FERRUS, and others.

With

With respect to the circumstance of stopping hemorrhages by ligature, which AMBROSE PAREY describes with great clearness, it may be observed, that he does not take the discovery to himself; though his countrymen, either from ignorance or vanity, have been so fond of ascribing the honour of this invention to him. Neither indeed is the crooked needle, or instrument used for this operation, invented by PAREY; for, in the passages before quoted from VIGO and FERRUS, this circumstance is mentioned. The fact seems indeed to be, that AMBROSE PAREY is the first *French* Surgeon who ever spoke of the ligature. This method of securing the vessels had long been in use in Italy, and probably PAREY might have learnt it when he followed the French army into that country, or perhaps he might have taken it from FERRUS who had described it very fully. For the latter published his work long before AMBROSE PAREY's appeared, FERRUS being far advanced in years before the other wrote. The original works of AMBROSE PAREY are written in French, and he is said not to have understood Latin. One of his pupils, however, gave an enlarged edition of them in that language, with the addition of several new plates*. Among the Germans, Swiss, &c. of the sixteenth century, only three seem to merit our notice. These are PARACELSUS, VESALIUS, and FORESTUS.

PARACELSUS was born in Switzerland. He was very famous for his knowledge in Chemistry, which at that time began to be much cultivated. He published two volumes on Surgery, one called *Chirurgia magna*, the other *Chirurgia minor*. They contain several arcana for the cure of ulcers, and other chirurgical complaints. It appears indeed from the testimony of GESNER, as well as that of his pupil APOSINUS, that he was, as the latter expresses it, miraculously successful in curing the most malignant and stubborn ulcers. This is not in the least improbable; for

* It should farther have been observed with regard to this author that, in his treatise on Gun-shot Wounds, he reprobated the practice of dressing them with hot and irritating oils, an improvement of some importance, considering the state of Surgery at that period, and the strong prejudices of the older practitioners in favour of that mode of treatment. H.

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however modern Surgeons, ſeduced by the brilliancy of operation, by which fame and profit are more eaſily attained, may affect to deſpiſe topical applications, yet there is great room to conjecture that any one who pays a proper attention to them, will be very likely to cure complaints, which may baffle all other means. A knowledge of Chemiſtry will probably ſupply a curious and obſerving man with many remedies, which he may uſe with advantage in Surgery; PARACELSUS is ſaid to have been very bold in his topical remedies, and frequently applied ointments to parts affected with cancer.

ANDREAS VESALIUS *of Bruſſels*, was deſervedly famous for his knowledge in Anatomy. His Surgery is diſtributed into ſeven parts, in which nothing which concerns the practice of that art is omitted. It is not, however, equal to what we might expect from a man of his underſtanding and genius. FALLOPIUS, of whom we have already ſpoken, has written ſeveral criticiſms on VESALIUS. The latter in his anſwers ſeems hurt by them, and FALLOPIUS has in general much the beſt of the controverſy.

PETRUS FORESTUS, a Dutchman, was a very judicious and experienced practitioner. He was the firſt profeſſor in the univerſity of Leyden; and has publiſhed ſeveral obſervations in Surgery, which contain many curious particulars.

About this time the hiſtory of Surgery begins to be ſo diffuſe, and the writers are ſo numerous, that it would be endleſs to enumerate them all, and would exceed the limits of our preſent plan. I ſhall therefore only take notice of the moſt celebrated among them.

Among the moſt diſtinguiſhed writers of the *laſt century*, were PIGRÆUS, COLOT, TOLET, and LE CLERC.

PIGRÆUS was a pupil of AMBROSE PAREY. His chirurgical works are a ſort of abridgement and improvement on thoſe of his maſter, and are written with great clearneſs and elegance of ſtile.

COLOT

COLOT was a famous Lithotomiſt in France. He is ſaid to have performed the operation by the *apparatus major* with great ſucceſs, and is recorded as the firſt who ever cut adults and old people. Lithotomy was afterwards preſerved for ſome time in the COLOT family, as their peculiar property, and deſcended as an hereditary poſſeſſion from father to ſon.

FRANCIS TOLET, Surgeon to the *Charité* at Paris, was a very expert Lithotomiſt, and publiſhed a treatiſe on that operation, in which are contained many uſeful remarks, either omitted or overlooked by all preceding writers on this ſubject.

About the end of the laſt century LE CLERC wrote a complete ſyſtem of Surgery, by queſtion and anſwer. It is calculated for the uſe of beginners, and though ſuperficial, yet it is faithful, and to be depended upon for the inſtruction it conveys. It is certainly a book that may be uſeful to ſtudents.

About this time the lateral method of cutting for the Stone was firſt introduced into France, by FRERE JAQUES. Rude and unſkilful as the method was in his hands, we ſhall ſee that it was the baſis of all the improvements that have ſince been made in this operation, and of the preſent mode of performing it.

MERY, a famous Surgeon of the *Hotel Dieu*, who was witneſs to the firſt operation of FRERE JAQUES, and examined ſome of his patients after death, took the hint from thence, of writing a treatiſe on Lithotomy, in which he propoſes this new lateral method, with the improvement of a grooved ſtaff, introduced into the urethra to conduct the inciſion, of which ſtaff he was the firſt inventor.

Among the Italians of the *ſeventeenth century*, the two moſt famous were, HIERONIMUS FABRICIUS *ab* AQUAPENDENTE, and MARCUS AURELIUS SEVERINUS. The firſt ſucceeded the learned FALLOPIUS in the profeſſor's chair of Padua. He was a great admirer of CELSUS, calling him

" *mirabilis*

"*mirabilis in omnibus*," and applies to him the advice of HORACE with respect to the Greek writers—"*Nocturnâ versate manu*," &c. He declares that CELSUS, PAULUS ÆGINETA, and ALBUCASIS, were the three principal sources from whence he derived his surgical knowledge. He was a man of great labour and learning. His writings contain many improvements in our art, one in particular, for which he deserves much commendation. I mean his abolition of the common practice of that age, of removing the testicle in the operation for the Bubonocele; and his invention of a truss, which if the patient always wore, he would never be in danger of being exposed to the operation.

MARCUS AURELIUS SEVERINUS, professor at Naples, was certainly the most accomplished Surgeon of his time. He preferred the science of Surgery to that of Medicine, as we may judge from the title he gives his book—"*De Efficaci Medicina*." In this treatise, which is divided into three parts, he teaches in what manner all external, as well as many internal and obstinate disorders, may be cured by an intrepid use of the knife, or by the free application of actual cautery. He likewise published a very singular treatise "*De recondita abscessuum natura*." This work expounds the doctrine of Abscesses in a much more scientific manner than it had ever yet been treated. The last work of this truly surgical writer is entitled "*De Trimembri Chirurgia*, in which he treats of the Dietetic, Pharmaceutic, and Chemical parts of Surgery. Another book has likewise been ascribed to him, which is a kind of Compendium of all his other works, but this is reckoned spurious.

In this century we meet with several Germans, Hollanders, and Danes, of note and reputation. Many of them wrote fugitive pieces, which are only to be found in the compilations of others, especially among the "*Centuriæ Observationum Chirurgicarum*," published by GULIELMUS FABRICIUS HILDANUS. PETRUS UFFENBACHIUS, a very useful compiler, published a collection, in one large volume folio, of the writings of many eminent Surgeons, in which the doctrine of tumours, wounds, ulcers, fractures, and luxations, is fully explained.

About

About this time, ſeveral authors wrote profeſſedly on the prognoſtics of wounds, or the rules for judging of the danger or fatality of any given wound. Of theſe, I ſhall only mention the laſt in point of time, though certainly the firſt in point of erudition. This is JOHANNES BOHNICES, a very learned profeſſor of Anatomy and Surgery at Leipſic. His book "*De Renunciatione Vulnerum*" is the beſt that has ever been written on the ſubject, and exhibits ſo many remarkable inſtances of the fatality of wounds, however ſlight they may ſeem, that an attentive peruſal of it cannot fail of furniſhing the reader with much uſeful and neceſſary information.

In this century SCULTETUS wrote his "*Armamenta Chirurgica*," a book in which are given plates of all ſurgical inſtruments employed till that time, with a deſcription of their uſe. JOHANNES BAPTISTA LAMBSWERDE reprinted this book, with conſiderable improvements, and the addition of one hundred ſurgical obſervations. It was publiſhed a third time by JOHANNES FILENGIUS, when it was corrected and enriched with ſome new plates, and improved by the addition of two and twenty obſervations in Surgery, aſcribed to PETER VERDUIN, an eminent Surgeon at Amſterdam. This work was the firſt of the kind. GARENGEOT, a French Surgeon, has ſince given us in the preſent century a treatiſe on the inſtruments of Surgery, compriſed in three Volumes Duodecimo, which contains a deſcription of ſeveral inſtruments not to be found in SCULTETUS.

Among the Swiſs of the *ſeventeenth century* are GULIELMUS FABRICIUS HILDANUS, and JOHANNES DE MURALTO. The chirurgical works of FABRICIUS HILDANUS are publiſhed in one volume folio, and are chiefly a collection of ſix centuriæ of chirurgical obſervations, illuſtrated with plates of inſtruments invented by the author and others. Though it contains ſeveral trifling things, yet ſome may be found from which a practitioner of knowledge and experience may derive improvement.

The works of JOHANNES DE MURALTO, professor of Anatomy and Surgery at *Zurich*, were published in one volume the beginning of this century at Basil, in the German language. They contain a short introduction to the whole art of Surgery, in which the doctrine of tumours, inflammations, wounds, contusions, fractures and dislocations, is explained in a very concise and instructive manner. He next describes the several operations of Surgery, and finishes with some observations of so extraordinary a nature, that their veracity might be called in question, if their author's character did not secure him against any suspicions of the kind. This author, I believe, has never been translated out of the German language, though he certainly deserves it, if for no other reason than that of his having first written a complete system of the art.

The principal writers among the Dutch, were HENRICUS ROONHUYSEN, and JOB VAN MECKEREN, both of Amsterdam, and both writers of observations in the Dutch language, which were afterwards translated into Latin.

JOHANNES MUYS of *Arnheim*, not only wrote some interesting observations in Surgery himself, but also published a system of the art, written by PAUL BARBETT, a Surgeon of Amsterdam, with curious and explanatory notes of his own. To these may be added JOHANNES VAN HORN, professor of Anatomy and Surgery at Leyden, author of the "*Microtechne* "*seu methodica ad Chirurgiam introductio*;" ANTONIUS NUCK, a very accurate Anatomist, who published a treatise on the operations; and CORNELIUS STALPART VAN DER WIEL, practitioner at the Hague and writer of several observations, among which one in particular deserves to be recorded, to wit, an instance of a patient who had fractured his skull, and was cured by the Trepan being applied twenty-seven times.

There are also many curious observations in Surgery, in the works of that celebrated Anatomist FREDERICK RUYSCH, professor of Anatomy and Surgery at Amsterdam, and famous for his anatomical preparations.

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We will close the catalogue of Dutch writers with the mention of another Anatomist of our own time, ALBINUS, late professor at Leyden, among whose works are several observations useful in our art, particularly on the *Polypus*, on the *Paronychia*, on the *Fistula Lachrymalis*, and on the *Cataract*.

Neither are there wanting surgical writers of our own country in the *seventeenth century*; among these may be enumerated LOWE, GALE, and RICHARD WISEMAN serjeant Surgeon to King CHARLES II. The last of these was a man of the greatest eminence, and may justly be stiled the AMBROSE PAREY of the English. The same spirit of observation, the same attention, the same simplicity, and above all, the same amiable candour prevails in both of them. His System of Surgery is as useful as any of that period, and indeed much more so than any one published before in England. It is a work which no young Surgeon ought to be without. He has divided it into eight books, which treat of tumours, ulcers, of the diseases of the anus, of strumæ and other analogous diseases; of ordinary wounds, and of gun-shot wounds; of fractures, of luxations, and of the lues. He has also several interesting observations upon wounds of the head. WISEMAN blames the use of tents in wounds of the chest, and follows, in the treating of them, the method of *Magati*. In this circumstance he has forestalled *Belloſt*. His remarks upon the *hæmorrhoids*, upon *Condylomata*, upon the descent of the *anus*, and upon *fistulas*, are inestimable. As the ingenuous confession of one single mistake is infinitely more useful, and makes a much more lasting impression than the recital of a series of the most brilliant successes, so our author has a more absolute claim to our admiration and attention from this particular circumstance. He relates his failures with as much exactness, as he relates his cures, and observes, particularly, that the mode of operating by ligature on the fistula in *Ano*, which he had practised, had often occasioned many dreadful accidents *. He gives several observations on the utility of actual

* I am wholly at a loss to account for this assertion, having carefully examined WISEMAN's treatise without being able to trace his *disapprobation* of the cure of fistula in *Ano*

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actual cautery in the cure of that moſt terrible diſeaſe the *polypus* in the *Antrum Highmorianum*, of which a deplorable inſtance lately occurred at the Weſtminſter Hoſpital *.

His works indeed abound in ſenſible obſervations not unworthy even of this more enlightened age. He is the firſt of our countrymen, who treated of the art in a rational and ſcientific manner, for which his memory deſerves to be revered by us. If his works were exempt from the ſuperſtition of the times, particularly where he treats of ſcrophulous diſorders, it would be perfect in its kind.

We have now brought the hiſtory of our profeſſion fully to the end of the *laſt century*, and in ſome parts of the world, have even carried it on to the beginning of this. But the improvements Surgery has received in the preſent century are ſo great, and the eminent men who have diſtinguiſhed themſelves in the art, ſo numerous, that it is impoſſible to give a circumſtantial account of them.

In order however to compleat this general hiſtory of the art to the preſent time, it may be obſerved, that in the beginning of *this century*,

by ligature, or to diſcover (as I was anxious to do) what theſe dreadful accidents were. In the moſt untoward of the caſes in which he employed it, he perfectly ſucceeded in the cure, and the ligature remained in the part not more than ſixteen days.—He does not even ſpeak, but by implication, of the temporary inconveniences which attend this mode. The reader will judge what were WISEMAN's ſentiments of it by the following extract. Making a compariſon between the cure by inciſion and that by ligature, after having ſtated his objections to the former, he ſays:—"The ligature *contuſes the lips* in cutting them, ſo that they "require *to be digeſted* before they can unite, *in which time the ſinus fills up and heals within*; "inſomuch as the fiſtula may be judged *to cure above, as the ligature divides it below*."——Notwithſtanding WISEMAN's ſucceſs in the inſtances he has related, the practitioners of the preſent time will hardly be induced to prefer this mode to the more expeditious cure by the operation; yet, if any are diſpoſed to follow him in the uſe of the ligature, his advice not to employ one of too great thickneſs, is, in the firſt place, worth attending to; and, ſecondly, not to wait for its cutting through the thick and callous edge of a fiſtula, but to divide that part by inciſion; both which evidently tend to facilitate the cure.—See note, p. 14. H.

* The particulars of this very extraordinary caſe are now in the poſſeſſion of Mr. WATSON, and will be ſubmitted to the public, with every neceſſary illuſtration. H.

LAWRENCE

LAWRENCE HEISTER was public profeſſor of Anatomy and Surgery at the univerſity of *Altorf*. In the year 1718 his Syſtem of Surgery firſt appeared in quarto, and in the German language. In the year 1719 he was called by his Britannic Majeſty George the Firſt, to the public profeſſorſhip of Anatomy and Surgery at the Julian Univerſity of *Helmſtadt*. Our Engliſh tranſlation of this work is taken from the Latin edition, publiſhed by himſelf, with conſiderable additions and emendations, and it is inconteſtably the moſt uſeful, and beſt ſyſtem of Surgery ever made public, ſince there is not any one point of the ſcience, whether trivial or important, that is not explained with great accuracy, and in the moſt ample manner. But the prodigious length of it, the many things of which it might be abridged, and the various improvements which have been made ſince the publication of it, ſeem to beſpeak the neceſſity of a new ſyſtem; and it is to be hoped, that whoever undertakes this arduous taſk, will endeavour to contract his labours into a leſſer compaſs *.

At the latter end of the *laſt* and the beginning of *this century*, the French Surgeons began to make conſiderable improvements in their profeſſion. We have already mentioned M. MERY in regard to the operation of *lithotomy*. To this account may be added an anecdote not generally known, that he, together with M. PETIT, a man of great ingenuity, were the firſt who performed the operation for the cataract by extraction; an invention which has ſince been attributed to M. DAVIEL, a man of much inferior talents. M. PETIT has left behind him a treatiſe on diſeaſes of the bones, in which the doctrine of fractures and luxations is treated in a compleat and maſterly manner.

It muſt be owned that the French have had the merit of ſetting us the example, ſince they were the firſt who contributed to bring Surgery to

* The author's wiſhes in this reſpect have ſince been fulfilled in the excellent Syſtem of Surgery, lately publiſhed by Mr. BELL of Edinburgh. In this work all the improvements made in the art ſince HEISTER's time are very judiciouſly and correctly introduced. H.

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the degree of perfection in which it flourishes at present. M. DE LA PEYRONE, Surgeon to LEWIS the Fifteenth, with great abilities in his profession, and excessive zeal for the honour of it, solicited, and at length obtained, for the body of Surgeons at Paris, the establishment of the Royal Academy of Surgery, which held its first meeting as an academic Body in the year 1731.

The Academy have already published several volumes in quarto, upon different parts of Surgery. These volumes contain varieties of improvements, and are certainly treasures of abstruse and critical knowledge, upon some of the most important, though before less cultivated, parts of the science. In them, are preserved and registered the names of all the Members of the Academy foreign or domestic, whether they have contributed their share to the composition of the volume or not. It is true, indeed, that the operative part of Surgery has been the chief object, towards which the improvements of the French have been directed. A course of operations, publicly read and afterwards published by DIONIS, a few years before the establishment of the Academy, had already indicated the necessity, and traced the way for the cultivation of this branch. This course, indeed, was the best system of operative Surgery that had ever been made known, and may be considered in many respects as a classical book even to this day.

But the labours of the French were not confined within the walls of the Academy, nor appropriated merely to the embellishment of academic productions, for, about the year 1742, M. LE DRAN, one of their first members, published his excellent treatise on the operations, the merit of which is well known in this country, since it was translated into our language by the late Mr. GATAKER, with the addition of a few critical notes by Mr. CHESELDEN. M. LE DRAN has also published a volume of *Observations*; and another, within these few years, which he calls *Consultations in Surgery*. This last work contains a variety of cases which are supposed to be stated from one Surgeon to another. The consulted Surgeon gives his advice, indicating what is necessary to be done. An answer

is returned, declaring the good or ill ſucceſs which hath attended either the following or neglecting the advice propoſed. Thus the caſe is carried on by queſtion and anſwer, till the patient is ſuppoſed either to fall a victim to the diſeaſe and the method of treatment, or to recover.

Hence, it cannot but be evident, how uſeful ſuch a book muſt be to practitioners in general, and more eſpecially to thoſe of little experience; for which reaſon, and becauſe it is not ſo much known as the reſt of his works, a particular account was thought neceſſary here: ſtill, however, it muſt be confeſſed, that there are but few caſes of conſequence in it; and although the plan is moſt excellent, there is great cauſe to lament that it has not been executed in ſo maſterly a manner as could be wiſhed, or as might ſurely have been expected from a perſon of his rank in the profeſſion; but, to ſay the truth, he ſeems to have been a man of only moderate abilities. His ſtyle is vulgar and inelegant, and his expreſſions coarſe and obſcene; but the very conſiderable experience, which a very long life and a very extenſive practice had afforded him, together with his aſſiduity and laborious attention, are ſuch recommendations as cannot fail of placing his chirurgical writings among the moſt valuable and uſeful in the profeſſion.

To the labours of this century we are alſo indebted for that invaluable work, publiſhed by Dr. ASTRUC on the Venereal diſeaſe, in which its hiſtory and ſymptoms, whether in the ſtate of Gonorrhœa or confirmed Lues, are ſo accurately, ſo minutely, and ſo clearly deſcribed, that I cannot but conſider it as one of the moſt perfect productions of medical judgement and nice obſervation. I never collected ſo much uſeful and certain information from any book I ever read; and would recommend the conſtant peruſal of it to all who would acquire a thorough knowledge of this diſeaſe, and of its various and complicated appearances; this I can do with the more confidence, as it is from my own experience, and from the frequent reading of it, that I have formed my opinion of its real and intrinſic merit. But it muſt be obſerved that my encomiums are beſtowed chiefly upon that part of the work which treats of the Prognoſtic ſigns

or

or ſymptoms of the diſeaſe. The other, which relates to the method of cure, though it communicates the beſt practice known at that time, has received many and great improvements ſince the time of this writer.

Before I quit the account of theſe rivals of our chirurgical fame, let me be allowed to pay the tribute of friendſhip to the memory of one man among them, whom, from an intimate knowledge of his worth, I ſhall ever revere; I mean M. Le Cat, Surgeon of the hoſpital at *Rouen*: his writings indeed are few, and thoſe, moſt of them fugitive pieces, either inſerted in the Philoſophical Tranſactions, or preſerved as monuments of his ſuperior abilities, in the eſſays publiſhed by the Royal Academy, upon the Theſes propoſed by them at different times for premiums. As often as he had written upon theſe occaſions, ſo often had he obtained the prize; till at length the Academy ſent him the honourable prohibition, by which he was intreated not to enter the liſts again, but to leave future conteſts to perſons who could engage in them upon more equal terms. He laboured for many years to bring the operation of Lithotomy to an abſolute and determined degree of perfection. His publications on this ſubject, if abſtracted from the controverſy with which they abound, to the beſt of my judgement, are works of the greateſt ſagacity and knowledge in their kind. His operation was founded upon the cleareſt and moſt uncontroverted principles: if any fault could be found with it, it was in the inſtruments deſigned for the performance, and here it might perhaps admit of improvement. Excluſive of his profeſſion, he was a man of much erudition; his ideas were abſtracted, but clear; his apprehenſion lively, and his application moſt ſurpriſingly intenſe; inſomuch, that he ſcarcely knew what it was to loſe even a moment of time. In performing operations, he was quick, ſure, ſteady, and intrepid; though, at the time I ſaw him operate, old age and infirmities might not have ſhewn him to me in the moſt favourable light in this particular. Being, truly and ſtrictly ſpeaking, ſuch a man as I have deſcribed, we need not be ſurpriſed that he was continually expoſed to the malignity of envy.

The

The laſt writer mentioned among our own countrymen was RICHARD WISEMAN, who wrote about the middle of the laſt century: from that time till we were ſome way advanced in the preſent century, Surgery made but little progreſs in England. The example ſet us by the French, and the appearance of ſo many able men in all other branches of ſcience at that period in England, at length raiſed a ſpirit of emulation in the profeſſors of our art, which, we may venture to ſay, without partiality, ſoon exceeded the efforts of thoſe who furniſhed the example.

Mr. CHESELDEN may, with as much truth, be reckoned the father of Surgery in this kingdom, as Mr. SMELLIE has ſince been of the obſtetric art. The operation of Lithotomy was ſtill practiſed in France upon very uncertain principles. FRERE JAQUES had indeed drawn all the rude outlines of the lateral method, which had received no improvements, but from the invention of a grooved ſtaff by M. MERY. Here then the operation was at a ſtand, and the French ſtill continued to perform it in the complicated, dangerous, and almoſt certainly fatal way, uſed by MARIANUS SANCTUS, and commonly called the *greater apparatus*. CHESELDEN was the firſt who reduced the operation to ſound principles, and invented a ſimple method of performing it, which he practiſed with as much dexterity as ſucceſs, ſo that no real improvement has ſince been made upon his operation. But this was not the only advantage Mr. CHESELDEN procured to our art, he made the whole ſyſtem of ſurgical practice more ſimple, and invented a method of tying the tonſils when indurated and ſwelled to ſuch a ſize as to endanger ſuffocation. Before his time, it had been the univerſal practice to extirpate them with a knife, a practice which often endangered, and ſometimes put an end to the life of the patient, from the enſuing hemorrhage. Mr. CHESELDEN's method removed this danger by a new operation, as ſafe in the performance as it was ingenious in the invention.

In this century, Dr. JAMES DOUGLAS propoſed the high operation for the ſtone, which his brother, Mr. JOHN DOUGLAS, performed upon many occaſions. JOHN, indeed, did all he could to promote this opera-

tion, and render it univerſal, but his efforts, however ſtrenuous and violent, were of no effect. Mr. CHESELDEN publiſhed an account of the operation, which was ſoon after dropped, becauſe of the ill ſucceſs which had attended it.

I ſhall cloſe this hiſtory with ſome account of Mr. SAMUEL SHARP, not long ſince dead, and who was many years Surgeon to Guy's Hoſpital. He was educated under Mr. CHESELDEN; and under the eye of ſuch a maſter, it is not ſingular that a man of Mr. SHARP's abilities ſhould make a great progreſs. He was a man of infinite dexterity and neatneſs in his operations, a qualification in which he could only be exceeded by his extraordinary penetration and judgement in all chirurgical matters: but it is hardly neceſſary to attempt any farther encomiums upon him, ſince his works have ſo effectually beſtowed them. His Syſtem of *Operations*, and his *Critical Enquiry*, are the only works he ever publiſhed. They contain ſimple, familiar, ſcientific, Britiſh ſurgery, and are certainly maſterpieces in that ſcience. Beſides the new and various inſtructions they convey, they are not leſs admirable for the elegant manner in which they are written: the ſtile is eaſy and flowing, the periods round and harmonious, the expreſſions conciſe, clear, and unaffected; and, to many, the charms of his language are as alluring, as his inſtructions are ſound and uſeful. The only wiſh uſually excited in the minds of his readers, is, that he had written more on ſubjects in which he ſeemed ſo well fitted to excel.

But theſe excellent works are not the only obligations we owe to the Surgeons of this century in England; they were the perſons who ſolicited and obtained a ſeparation of the Surgeons Company from that of the Barbers, to which they were before united, and they exerted themſelves, in this inſtance, as much for the honour, as they had before laboured for the improvement of their profeſſion.

Thus have we traced the hiſtory of Surgery down to the preſent time, and though what has been ſaid amounts to no more than a general account, yet it is probably ſufficient to enable us to form a juſt eſtimation of the difference

difference between ancient and modern Surgery: yet I muſt farther be permitted to obſerve, that it is a matter of no ſmall ſurpriſe that ſome learned writers among the moderns, particularly Dr. FREIND, ſhould have aſſerted, not only that the art of Surgery has received ſcarcely any improvements among the moderns, but alſo, that many operations were executed by the ancients, which the moderns, either through ignorance or neglect, have ceaſed to perform*. What has been advanced in the foregoing pages, will ſurely be ſufficient to invalidate this aſſertion. Has it not appeared, for inſtance, in how many circumſtances the practice of CELSUS, GALEN, PAULUS ÆGINETA, and even ALBUCASIS himſelf, (the four beſt writers among the ancients ſince HIPPOCRATES) were deficient? Were they not ſtrangers to the various methods we employ to reduce Herniæ by the Taxis? And if the knife became neceſſary, how ignorant were they of the proper method of performing the operation? Have we not ſeen that in their days it was a cuſtomary thing to extirpate the teſticle with the hernial ſac? a moſt ignorant and cruel practice, which was not fairly aboliſhed till the laſt century by that learned Italian, FABRICIUS AB AQUAPENDENTE. The operation of Lithotomy they had but one method of performing, and this was by cutting on the gripe, a method ſo limited, that CELSUS, the firſt deſcriber of it, confines the practice to children

* Here, I apprehend, the author alludes to the ſentiments of Mr. C. BERNARD, which Dr. FREIND, in his Hiſtory of Phyſic, Vol. I. page 113, has adopted and quoted at large. The ſubſtance of the argument is given us in the following words: — " If we enquire into " *the improvements made by the moderns in Surgery*, we ſhall be forced to confeſs, that we have " ſo little reaſon to value ourſelves beyond the ancients, or to be tempted to contemn them, " as the faſhion is among thoſe who know little and have read nothing, that we cannot give " ſtronger or more convincing proofs of our own ignorance, as well as our pride. I do not " pretend that the moderns have *not at all contributed* towards the improvement of Surgery; " that were both abſurd and injurious, and would argue as much folly as that which I am " reproaching: but that which I am conteſting for is, that it conſiſts rather in refining and " dreſſing up the inventions of the antients, and ſetting them in a better light, than in ad- " ding many important ones of our own." In the concluding ſentence, he ſays, " But " how many *operations* are there now in uſe which were unknown to the antients? I fear, " upon a due enquiry, it will be found that more uſeful ones are omitted or diſcontinued " than have been invented by us." H.

from nine to fourteen years of age; a method apparently ſo uncertain, that however ſilent the practitioners of it may have been with regard to its ſucceſs, it is ſtill clear to every perſon converſant in anatomy and the nature of the diſeaſe, that it certainly muſt have failed in many inſtances, though practiſed with the reſtrictions laid down by CELSUS. If Lithotomy had not, therefore, received numberleſs improvements from the knowledge and attention of the moderns, all children under nine years of age, and all adults, would ſtill have been left to periſh or linger out a weary life, in continual pain, from the paroxyſms of this moſt deplorable diſeaſe: but we have cauſe to exult that theſe deficiencies have been ſupplied by a ſeries of ingenious improvements, and that infants of the tendereſt years, as well as perſons of the moſt advanced age, are now relieved, and ſucceſsfully freed from this cruel diſorder, by the work of our hands. In this inſtance, our ſuperiority to the ancients is inconteſtably manifeſt, and it is a ſuperiority which we owe entirely to the ſagacity and labour of our own countrymen in the beginning of the preſent century. Several other inſtances might here be added, which would equally tend to illuſtrate the ſame ſuperiority; but theſe are ſufficient to ſettle the compariſon. It may not, however, be improper to remark that, Anatomy and Surgery being ſiſter arts, it is evident that any improvement in the one, muſt have been attended with ſome advantages to the other. In this view, the Surgery of the moderns will appear in the moſt conſpicuous and favourable light. The ſeveral parts of the human body have never been ſo accurately deſcribed, and conſequently the uſes of them have never before been ſo minutely inveſtigated and ſo indiſputably aſcertained, as they have been by the modern phyſiologiſts. The diſcovery of the circulation of the blood, in the laſt century, by our laborious and accurate countryman Dr. HARVEY, firſt opened a new ſcene to the eyes of the medical world. This, and the diſcoveries immediately connected with it, reduced the practice of Surgery as well as Phyſic to fixed and rational principles, for we certainly become much better fitted to perform ſurgical operations when, from previous anatomical knowledge, we know exactly how to account for the conſequences of them.

There

There is one point of practice however, in which (as has been already obſerved) the moderns, perhaps from an ill-grounded prejudice, have been too remiſs, ſince it appears to have been extremely prevalent among the antients, I mean the application of the actual Cautery. It is to be wiſhed, that, in ſome *deſperate* caſes at leaſt, this remedy might be fully tried, in order that, from a few experiments, made with care, and related with candour, we might be able to judge whether the antients really derived all thoſe benefits which they pretend to have experienced from it or not.

Upon the whole, it may be fairly concluded that the preſent practice of Surgery is ſuperior in moſt reſpects to that of the antients. This however affords us no reaſon for neglecting the peruſal of their works. We ſhall find they abound in ſound precepts and accurate obſervations, which the ſagacity of the moderns has not been able either to contradict or improve. Beſides, it is natural to ſuppoſe, that whoever traces the progreſs of medicine and Surgery, from their firſt riſe, with a ſpirit of attention and enquiry, will, in all likelihood, be furniſhed with new and intereſting ideas, which might otherwiſe entirely eſcape his obſervation. It is, in fact, highly beneficial to the mind, to be familiarized with the contemplation of the gradual improvements, or various revolutions, which any ſcience may have undergone. The antients therefore may not improperly be conſidered as perſons of an extraodinary ſtature, the Patagonians of the time, who, taking us up in their arms and raiſing us above their own heads, diſcover proſpects and countries to us, which they themſelves could never diſtinguiſh.

It may not be improper to conclude this ſketch with a ſhort inquiry into

## THE QUALIFICATIONS NECESSARY TO FORM A GOOD SURGEON.

THERE is undoubtedly no profeſſion in which greater natural qualifications are required, than our own. The more liberal nature has been in her gifts, the more carefully her firſt impreſſions have been cultivated by rational

rational education, by ſo much the better will a man be fitted for the practice of it.

Youth, firmneſs, dexterity, acute ſenſation, ſound judgement, and humanity, are the qualifications which may be conſidered as neceſſary for a Surgeon.

We will begin with *Youth*, by which I mean that period of life, when the body and mind are ſuppoſed to be arrived at their fulleſt vigour. Celſus tells us, "*Eſſe autem Chirurgus debet adoleſcens, aut certè adoleſcentiæ propior*" —ſo that, if a man has made good uſe of time, and has acquired ſufficient knowledge to direct him, he cannot well be too young to perform operations. On the other hand, there is a time perhaps, if a man is willing to preſerve the reputation he has acquired by long and extenſive practice, when he ſhould lay aſide the knife, and content himſelf with ſuperintending the operations of others. The very cautions which age naturally brings along with it, are apt to degenerate into a timidity highly unfavourable to that adroitneſs which ſhould diſtinguiſh the motions of a good operator.

*Firmneſs*, is the ſecond qualification of a Surgeon, and is indeed extended to the mind as well as the body. It implies reſolution to go through his operations, however hazardous or ſevere, undiſturbed by any external or accidental circumſtances, unmoved by the cries of the patient, and unawed by the preſence of the ſpectators, however numerous or reſpectable. It implies preſence of mind, to enable him inſtantly to determine in what manner he ſhall act if any unexpected accident or appearance ſhould occur in the courſe of his operation. If, for inſtance, while he is amputating, his Tourniquet were to break, or if ſome large veſſel ſhould, in any operation, run out of the uſual courſe, and come in the way of his knife when he has reaſon to think himſelf at ſome diſtance from it. And laſtly, firmneſs implies, a ſteady, unſhaking hand—"*Manus ſtrenua, ſtabilis nec unquam intremiſcens.*"

*Dexterity*

*Dexterity* in a Surgeon argues a manner of ſo uſing his inſtruments, that he ſhall appear not to be embarraſſed with them. It argues agility of motion ſo as to finiſh an operation with all convenient diſpatch; and neatneſs in performing it, ſo that his inciſions ſhall not be carried on in parts where there is no need of them, nor the parts inciſed left unequal or jagged, either of which circumſtances is very unſeemly in the eyes of the byſtanders. It alſo requires, that the Surgeon ſhould be equally ready with his left, as his right hand, "*Nec minus ſiniſtra quam dextra promptus*".

*Acute ſenſation*, or having all the ſenſes in their moſt perfect ſtate, is extremely neceſſary to a Surgeon. Celſus confines this to the ſight "*Acies occulorum acer et clara*". But in this, he is ſurely guilty of an error. The ſteady penetrating eye of the Eagle, may indeed prove very uſeful to the practitioners of our art, but there are many caſes where this is of little avail unleſs we appeal to the teſtimony of the other ſenſes alſo. It is poſſible, that inſtances may occur, where the delicacy of the touch, the quickneſs of the hearing, the nicety of the ſmell, and ſometimes even the diſtinguiſhing property of the taſte, are abſolutely needful to direct our judgement. How frequently does it happen, when we cannot be determined by one ſenſe, that we call in another to its aſſiſtance, and thus from the combination of both, form a diagnoſtic, which we ſhould not have been able to aſcertain from either of them ſeparately?

A *ſound judgement*, is, on many accounts, of the utmoſt importance. It enables the Surgeon to form judicious prognoſtics, by which he may calculate the chances for or againſt the ſucceſs of any operation propoſed. It is often not leſs uſeful in deciding for the patient's utmoſt poſſible advantage, than in preſerving his own reputation and keeping up the credit of his art. It teaches him to determine with preciſion, the time neceſſary for performing an operation, leads him to the choice of the beſt methods of executing it, or perhaps furniſhes him with the more laudable and happy contrivance of recovering his patient by more gentle means.

*Humanity*

*Humanity* is the laſt qualification mentioned as neceſſary for a Surgeon; and though laſt, not the leaſt important and laudable. This indeed is the cardinal qualification of all; it reflects a luſtre on the reſt, and compleats the true character of the man, as well as of the Surgeon. The exerciſe of it is required in two ways, firſt, humanity in operation, and ſecondly, tenderneſs in our language and behaviour towards the patient. Humanity in operating, ſhould induce us to put an end to our patient's ſufferings as ſoon as we can, and alſo to perform this ſevere though neceſſary taſk, after ſuch a manner, as ſhall be attended with the leaſt poſſible degree of pain. Beſides the ſatisfaction neceſſarily reſulting to ourſelves from the conſciouſneſs of having been actuated by ſuch motives, it may even be of great conſequence to the ſucceſs of the undertaking, for no one can be ignorant how dangerous to the patient is the inflammation that often ſucceeds an operation, and it is equally obvious, that a long continuance of ſharp pain is very likely to produce or increaſe it.* Tenderneſs in our behaviour needs not an argument to enforce its neceſſity. It is not leſs honourable to the human than to the profeſſional character; and ſurely the diſtreſſes of our fellow creatures and the pain we are often obliged to inflict upon them, is ſufficient to ſoften the hardeſt heart, and to raiſe the tender emotions of compaſſion within us! When we are obliged to arm our hands with ſteel, ſhall we likewiſe ſteel our hearts, and on our brows wear terrors, if poſſible, more formidable to the ſufferer, than the knife we hold? On the contrary, let us endeavour, by complacency of aſpect, ſoftneſs of ſpeech,

* In the performance of an operation, the Surgeon ſhould be on his guard, not to hazard the final ſucceſs of it, through a wiſh to be expeditious. It has been too common, to eſtimate the degree of excellence due to an operator, by the number of minutes in which his work has been performed. The wiſh to acquire a reputation for ſuperior dexterity ſhould have no exiſtence in the mind on ſuch an occaſion; it is a principle dangerous to the patient, though gaining his approbation, equally with that of the ſpectators, by the ſpeedy end put to his ſufferings. But ſurely this proves a cruel lenity to the one, and a ſhort-lived triumph to the other, if, in the event, it appears that either too much or too little has been done, and if, as too commonly happens, the patient either fails of obtaining the expected cure, or loſes a life which a more deliberate operation might have preſerved. On theſe occaſions, we ſhould rather be careful not to loſe time than anxious to gain it. H.

and

and gentle handling, to ſooth the pangs of agony and torture, and let us ſtrive, by perſuaſive language, to reconcile the patient to his ſufferings; this will enable him to ſubmit with patience at leaſt, if not with willingneſs, to his fate, and bleſs the friendly hand that inflicts the wound. *Suaviter in modo fortiter in re*, is a maxim we ought always to have in our minds on theſe trying occaſions.

To ſtudents in the art of Surgery, no language can too powerfully enforce the neceſſity of cheriſhing in their hearts this amiable and, to them, moſt indiſpenſable virtue.

As ſtudents, it is their buſineſs to attend the hoſpitals, where the poor become the immediate objects of their care and management. It is, perhaps not unjuſtly, conſidered as the opprobrium of medical men, that they have conſiderations for the rich, in which the poor are not thought worthy to be ſharers. Though youth be "prone to compaſſion," yet its haſty and inconſiderate ſallies are but too apt to break forth in harſh and indignant expreſſions. But it ſhould be conſidered, that theſe unhappy people whom want and diſeaſe have driven to ſeek relief in an hoſpital, have, on this account, a double claim to the attention and tenderneſs of thoſe, to whoſe management their caſes are conſigned. An hard lot has been their portion in life, and with this additional weight of miſery, there is little need to wound their feelings by rough and unqualified language, or by a kind of treatment which tends to depreſs them yet more with a ſenſe of their dependent and helpleſs ſituation. When dreſſings are either removed or applied it ſhould be done with a gentle hand, and in a manner, which would convince the byſtanders that it is not the Surgeon's intention to give pain if he can avoid it.* A contrary conduct may even prove an obſtacle to a practitioner's ſucceſs in life; for, ſhould he uſe himſelf to behave harſhly and with rudeneſs to the poor, it is an habit that will en-

* Not leſs to avoid giving the patient unneceſſary pain, than becauſe nature may be counteracted, in her efforts to heal a wound, by a contrary management. I fear this is by no means an uncommon caſe, having repeatedly ſeen inſtances, where, by rough wiping, &c. the progreſs of cicatrization has been impeded. H.

creaſe upon him, and at length render his manners coarſe and offenſive, even to thoſe on whoſe liberality the emoluments of his future practice may in a great meaſure depend. To obtain the bleſſings of the poor, is one way to ſecure the confidence of the wealthy.

We come now to conſider the acquired knowledge neceſſary to make a good Surgeon. On this point I ſhall make one general obſervation, to wit, that the more extenſive and univerſal a man's knowledge is, the better fitted will he be for the exerciſe of all learned profeſſions as well as of our own. But, not to alarm or diſcourage young perſons by conſidering the ſubject too extenſively, or by a vain diſplay of ſcience, I will mention only that knowledge which, in my opinion, it is abſolutely neceſſary they ſhould acquire. I am ſufficiently convinced, that if they are as converſant as they ought to be in the few particulars I ſhall propoſe to their induſtry and application, the knowledge they will then have attained, cannot but raiſe a ſpirit of inquiry in their minds which will lead them to thirſt after more.

It is abſolutely neceſſary, before young perſons apply themſelves to Surgery, that they ſhould have had, in their earlieſt days, at leaſt a liberal, and in ſome degree a claſſical, education. A knowledge of Greek I ſhall not abſolutely inſiſt upon, though no man, who wiſhes to ſecure to himſelf the reputation of learning in any ſcience, can accompliſh that end without it. The technical terms in medicine, as well as in moſt other ſciences, are derived from that ſource; we have a few indeed which are borrowed from the Arabic tongue, among which is the word cataract, a diſorder called by the Greeks ὑπόχυσις. But we have before ſeen that the ſurgical knowledge of the Arabians was chiefly deduced from the Greeks.

In the Latin language the ſtudent ought to be well verſed; he may indeed comprehend the principles of the profeſſion without it, but it is in ſuch conſtant uſe, and there are ſo many Latin books daily publiſhed, both in our own and in foreign countries, that a knowledge of this language can

ſcarcely

ſcarcely be diſpenſed with. Tranſlations indeed generally appear to ſupply this deficiency, but there is nothing ſo ſatisfactory as the peruſal of a book as it comes out of the author's own hands; and beſides, it may and often does happen, that works of great merit remain untranſlated for a great length of time, ſo that here a conſiderable impediment to the acquiſition of knowledge may occur to a perſon ignorant of the Latin tongue.

On the ſame ground I would recommend a knowledge of the French, ſufficient, at leaſt, to enable the pupil to read and underſtand it. In this and the Latin he will find many principal ſources whence information in chirurgical matters may be procured. Some conſiderable advantages may likewiſe be reaped from the ſtudy of books written in the German language, tranſlations of which have never appeared. Our beſt and moſt uſeful ſyſtem of Surgery was publiſhed in that language in the year 1718: I mean that of HEISTER, which did not appear in Latin till more than twenty years after. The Engliſh tranſlation was made from this latter edition, ſo that thoſe of our countrymen who had the misfortune to be deficient in theſe reſpects, were deprived of the information they might have gathered from that excellent work (the only one of the kind extant) during the fourth part of a century.

I would therefore, for theſe reaſons, ſeriouſly adviſe all gentlemen who apply themſelves to Surgery, and who are acquainted with none but their native tongue, to acquire a knowledge of other languages; a taſk they will find by no means difficult, ſince a *critical* knowledge of them is not required. I only mean to hint the neceſſity of ſuch a progreſs as will juſt enable them to range through foreign fields, as well as through their native meadows, that the choiceſt flowers of neither may eſcape their obſervation *.

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* Doubtleſs the Author is right in his concluſion that a *critical* knowledge of the languages, whether the dead or living, is not indiſpenſably neceſſary to be included amongſt the qualifications of a good Surgeon. He to whom Homer is unintelligible may yet underſtand

The next acquiſition we ſhall recommend, is a knowledge of the powers and properties of medicines. The various ſubſtances of the Materia Medica, the different claſſes of the vegetable, mineral and animal kingdoms, ſo far as they relate to phyſic, ſupply all the ſeveral applications uſed externally in Surgery. If therefore we are ignorant of the qualities of theſe ſubſtances, we may commit the groſſeſt miſtakes in the uſe of them. Inſtead of an emollient, we may apply an eſcharotic, and, inſtead of a ſtimulating application, we may perhaps preſcribe an anodyne. Without this knowledge, how ſhould we have diſcovered, that Sal Armoniac mixed with Hungary water, diſſolves ſchirrous tumors in the breaſt, by the property it poſſeſſes of keeping the milk fluid *. Many other ſimilar inſtances might be adduced, in anſwer to which, it may poſſibly be argued, that we ſhould have learned theſe things equally from experience. If there be any young Surgeons who are diſpoſed to take what they hear for granted, and can ſit down ſatisfied with being told that ſuch and ſuch things are ſo, without being anxious to inquire into the reaſons why they are ſo; if, when they have it in their power to inveſtigate the true principles upon which the action of any medicine is founded, they neglect the opportunity of being acquainted with them, and, like mere empirics, inattentive to the peculiar habit of their patients, or the variety of appearances ſo frequent in the ſame diſeaſe in different

Hippocrates; and the ancient authors in Phyſic and Surgery may be read, even with facility, by men little acquainted with the Latin claſſics; yet this kind of ſuperficial knowledge is hardly to be held out as ſufficient to qualify a young man who would become conſpicuous in his profeſſion. H.

* The Author's experience is much to be depended on, but the power of *any* external application to keep the *milk fluid* will be doubted by many, and muſt be extremely difficult to prove. Amongſt that claſs of ſaline applications which act by their aſtringent and corrugating quality, Sal Armoniac certainly ranks foremoſt, and is well adapted to reſiſt indurations in the breaſts of women, if applied early, and more eſpecially if aſſiſted by the exhibition of repeated vomits. It is of conſequence to pay a very early attention to theſe tumours, otherwiſe they get into a ſtate of indolence from which it is extremely difficult to rouſe them by any methods known to Surgery. The Hungary water uſed in the author's practice as a vehicle for Sal Armoniac in theſe caſes, can only add to the aſtringent qualities of the latter. H.

perſons, content themſelves with knowing that any one medicine has been uſed with repeated ſucceſs in the ſame caſe, to ſuch I can only ſay, that the practice of our profeſſion is very improper for minds ſo ſupine and uninquiſitive. Nothing can be more neceſſary therefore than a knowledge of the *materia medica*, and conſequently of Pharmacy, which is nothing more than the art of mixing the ſeveral articles of the materia medica, ſo as to produce combinations capable of effecting what cannot be done by any ſolid or fluid ſubſtance ſingly.

The laſt point I muſt inſiſt upon being particularly attended to, is the ſtudy of Anatomy. The human body, being the ſubject of our operations, how ſhall we be able to perform them properly, if we are ignorant of the conſtruction of the machine on which we are to work?

A compleat and thorough knowledge of Anatomy it is abſolutely neceſſary to acquire, and the method to be purſued in order to attain it, muſt be the work of our own hands. Mere aural inſtruction is not ſufficient; we may attend the moſt ingenious and inſtructive lectures in Anatomy, without being fitted for the exerciſe of our profeſſion.—It is therefore neceſſary for us to diſſect, to trace and inſpect the ſeveral parts of the human body, with our own hands and eyes; and thus, with care and aſſiduity, we may get ſufficiently acquainted with the ſtructure and formation of the human machine to attempt any operation that Surgery requires. Upon this very eſſential point a young Surgeon muſt ſpare no pains, nor ever let ſlip an opportunity of diſſecting whenever it may accidentally preſent itſelf. *. Beſides the proper anatomical knowledge that cannot but be acquired

* The Author ſeems to allude to the *difficulty* which young ſtudents find in meeting with *opportunities of diſſecting*. We may here take occaſion to obſerve, that, although the good of mankind has been ſo greatly promoted by the improvement of medicine through that of Anatomy, and although the inſpection of dead bodies is *yet* ſo likely to prove of conſequence to living ones, (the diſcoveries hitherto made bearing no proportion to what remains to reward the diligence of future enquirers) the empty prejudices of the vulgar even find a ſanction in the opinions of the firſt legiſlative aſſembly in this kingdom, and, from the lips of one of the learned ſages of the law, we are inſtructed, that the diſſection of the body after death is an *addition to the puniſhment*

acquired by this means, he will reap another and very conſiderable advantage from it, which is, that frequent diſſection will make the uſe of the knife become eaſy and familiar, ſo that when he is obliged to apply it upon the living body, it will be done with greater dexterity, and conſequently much more to his own ſatisfaction, as well as to that of the byſtanders.

But the ſtudy of Anatomy does not ſtop here; it is an extenſive field, which, when diligently explored, opens a proſpect comprehending the whole unbounded hemiſphere of ſcience. It is not enough that we ſhould know the names, ſituation, and connection of the ſeveral arteries, veins, nerves, muſcles, tendons, and other conſtituent parts of the human frame, we muſt alſo learn their reſpective powers and uſes. We muſt be well verſed in the *Phyſiology* of the machine, for, if we are ignorant of this, how ſhall we be able to determine, when any of the functions of the animal œconomy are interrupted or deſtroyed, by contuſions, wounds, or other accidents, the particular part on which the injury has fallen? If, for inſtance, we are ignorant of the action of the Diaphragm in the office of reſpiration, how can we poſſibly have any conception of the ſymptoms attending a wound of that muſcle? Phyſiology therefore is of infinite uſe to a Surgeon, in indicating the diagnoſtic ſigns of the injuries the internal parts may have ſuffered; and by this he may be led, not only to form his prognoſtic with judgement and preciſion, but alſo to diſtinguiſh

*puniſhment* inflicted in criminal caſes. Much to his honour, a certain active, humane, and intelligent member, brought into the Houſe of Commons, a Bill, one clauſe of which would have rendered the practice of robbing the graves to ſupply the demands of the diſſecting room no longer neceſſary; a clauſe, which gave to the improvement of this important ſcience, the victims of public juſtice, but which was over-ruled in another place by the grave argument already ſtated. How ſhall we reconcile this conduct of the learned Lord with that admirable maxim in the Eſſay on crimes and puniſhments, which enjoins, that the law ſhould puniſh a culprit with the leaſt of real and *the moſt of ſeeming ſeverity*?—(ſee this Eſſay by the Marquis Beccaria, page 44.) Had not Anatomiſts laboured under theſe reſtraints in the early ſtate of medicine, our knowledge of the human machine and conſequently of the diſeaſes to which it is incident, would not have been ſo limited at this Day. H.

where

where the remedy ſhould be applied, if the caſe be within the aſſiſtance of his art.

Now that we have enumerated the ſeveral requiſites and accompliſhments which conſtitute a good Surgeon, what ſhall we think of thoſe perſons who have endeavoured to lower the rank of our profeſſion, by aſſerting that Surgery is a mere mechanical art, and improperly dignified with the appellation of a ſcience? Does then the penetration by which we diſcover injuries concealed from the ſenſes, does the knowledge which conducts our hands in the niceſt operations, does the ſalutary reſolution with which we ſeparate parts otherwiſe deſtructive to the whole machine, do all theſe wonderful aſſiſtances, ſo beneficial in preſerving the lives and health of mankind, entitle us only to be ranked among the meaneſt mechanics? Does the uſe we make of our hands depreciate the powers of our underſtanding? Or, are the actions of the body inconſiſtent with the powers of the mind? Surely no, Surgery and Science are inſeparable from each other. It is founded on principles, the application of which, in many inſtances, demands the utmoſt ſagacity and penetration; and after all, theſe are no more than elementary principles ſince the mind which has already aſſiduouſly collected and ſtored itſelf with theſe fundamental truths, has then a ſecond taſk to perform, to wit, the extenſion of its power in the application of them. Its utmoſt activity muſt here be exerted in ſeparating or combining theſe principles, and adapting them, with a variety of intentions ſuited to the different circumſtances of diſeaſe, and the complicated appearances which are liable unexpectedly to occur. Indeed, where nature and not the Surgeon, performs the work, a ſervile imitation of the practice of others may ſeem to ſucceed, and even abſceſſes, ulcers, and many other chirurgical diſorders, may yield to our applications as it were by chance; but, not knowing on what principles theſe cures take place, we cannot arrogate to ourſelves any merit on ſuch occaſions.

Since then our art is of ſo important a nature, and ſince it requires ſuch an extent and variety of knowledge, we ſurely have ſufficient reaſon

to

to reckon it among the ſciences; and thoſe who deſign to make themſelves thoroughly maſters of it, will even find it a ſcience not to be attained without great labour and perſeverance. It is neceſſary therefore to apply to it earneſtly, and with attention, not only becauſe our characters and fortunes are at ſtake, but becauſe the lives of our fellow creatures are in our hands, and we cannot but ſhudder to think what deſtructive conſequences may reſult from our ignorance or neglect. As an additional incitement to our induſtry, let it farther be remembered, that our operations, being always performed publickly, and the effects of them evident to all preſent; we are conſtantly expoſed to the cenſures of malignant and envious characters, who may poſſibly be diſpoſed to put the worſt conſtruction even on our beſt deſigns, and ſeize all occaſions that offer, to magnify our moſt trifling miſtakes, and repreſent all inaccuracies as much to our prejudice as poſſible. *

* The author might very properly have extended his admonition to another point not unworthy the attention of all deſcriptions of medical men, but more eſpecially deſerving to be inculcated into the minds of thoſe who are *about* to engage in practice. I mean their relative duties towards ſociety and each other, a ſubject which indeed forms a diſtinct ground of conſideration from that which regards only the direct exerciſe of chirurgical talents, but which certainly ought to have no inconſiderable ſhare in the completion of a good Surgeon's character. It is to be lamented, that the diſingenuous and unfair arts, which have been found to diminiſh the importance and blemiſh the reputation of other learned profeſſions, are ſometimes practiced to the extreme degradation and diſgrace of our own; and, I fear, it cannot readily be diſproved, that thoſe who are thus capable of treating each other illiberally, have, if poſſible, fewer ſcruples to preſerve their conduct to the community at large, within the ſtrict bounds of honour and rectitude. This being the caſe, it would have been a valuable addition to theſe pages, had the author attempted to ſtate the diſtinction between the way to an honourable pre-eminence in the profeſſion and the too prevalent mode of ſtealing into public notice by methods which are in themſelves unworthy if not diſgraceful; which tend to deſtroy the confidence of the public in all things that concern the profeſſion; and which induced an ingenious, yet ſometimes miſanthropical writer, to regard the medical art, as practiced in his time, with contempt and abhorrence; to repreſent phyſic as a trade, equally deſtructive to the intereſts and happineſs of mankind; and to inſiſt, that its boaſted advantages in relieving the diſeaſes of the body, are only obtained at the expence of all that is ſalutary to the mind. " Un corps débile," ſays M. ROUSSEAU, " affoiblit l'ame. Delà l'em-
" pire de la Médecine, *art plus pernicieux aux hommes* que tous les maux qu'il prétend guérir.
" Je ne ſais, pour moi, de quelle maladie nous guériſſent les Médicins, mais je ſais qu'ils
" nous en donnent des bien funeſtes, la lâcheté, la puſillanimité, la crédulité, la terreur de
" la mort: s'ils guériſſent le corps, ils tuent le courage. Que nous importe qu'ils faſſent

marcher

" marcher des cadavres ?—Ce ſont des hommes qu'il nous faut, et l'on n'en voit point ſortir " de leurs mains." EMILE, Liv. i. P. 60. Theſe cenſures, no doubt, too indiſcriminately affect the art and thoſe who practice it; yet it were well, if a liberal, diſintereſted and benevolent conduct, in medical men, more directly tended to contradict the truth of theſe very ſevere and pointed animadverſions. In a country where Medicine and Surgery are held in higher eſtimation than in any other, and where the practice of them meets the moſt liberal encouragement, there can be no excuſe ſhould they fail to benefit mankind in the moſt ample and eſſential manner. H.

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# ESSAY

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# INFLAMMATION and ABSCESS.

ONE of the leading principles in Surgery, and that, upon the due application and prudent modification of which, the cure of moſt chirurgical diſeaſes ſeems to depend, (excluſive of thoſe which are to be remedied only by extraction or extirpation) is Inflammation. It is a natural principle exiſting in every human body; a kind of ſymptom accompanying more or leſs almoſt every diſeaſe; and which, conſequently, if excited to a great degree, may itſelf become a diſeaſe, and dangerous to the machine.

In order to determine what inflammation is, let us lay aſide all hypotheſis, and confine ourſelves only to facts and appearances. Had this been done, I will venture to ſay, we ſhould not have had ſo many contending ſyſtems, reſpecting its nature and cauſes, as have prevailed at all times from the æra of Hippocrates to the preſent period; ſyſtems, the abſurdity

ſurdity of which, is particularly evident from the circumſtance of their having been moſtly adapted to the favourite ſtudy or purſuit of their ſeveral inventors. Thus the Chemiſts made an alembic of the human body, and have imagined the cauſe of inflammation to be ſome particular ferment, ariſing from the ſalt, ſulphur, and other chemical principles, in the blood; while the mathematicians, changing this laboratory into a ſtatico-hydraulic machine, have referred inflammation, as well as every other effect or action of the human body, to mechanical principles. Theſe theories of inflammation have likewiſe confounded it with that of fever, which we ſhall find to be a very erroneous poſition, for although inflammation may be, and often is the cauſe of fever, * yet we know from experience that many topical inflammations exiſt, and of conſiderable extent, without any ſenſible change happening in the general circulation. This difference in opinion prevails, even at this day; inſomuch that if we examine the doctrines of the ſeveral profeſſors, we ſhall not find any two of them perfectly agreeing in their ideas of inflammation. In this ſtate of uncertainty, let us, without attending to any of theſe ſyſtems, deduce our notions from circumſtances that are abſolutely evident to our ſenſes.

Inflammation then appears to be an increaſe of heat, action, and ſenſibility in a part; accompanied with a greater or leſs degree of acute pain, a redneſs, diſtention, and an unuſual pulſation, in the part.

Any cauſe therefore, whether external or internal, which increaſes the natural ſenſibility or irritability of a part, is capable of producing inflammation. We ſee this effect evidently produced by the ſtimulus of any irritating external application, ſuch as the bite of a venomous inſect, the action of cauſtic, &c. Theſe ſtimuli neceſſarily urge all the ſmaller veſſels of the part to more frequent and powerful contractions, and hence ariſes the increaſe of heat, friction and diſtention, and the derivation of a greater

* There are powerful reaſons for denying that the commotion excited in the ſyſtem, where local inflammation exiſts, ſhould be conſidered as Fever. Dr. George Fordyce aſſerts that "it is not Fever, but *a diſtinct diſeaſe* ariſing from Inflammation." H

quantity

quantity of blood into the veſſels of the part. Hence alſo the pulſation in a part which before did not pulſate. The increaſe of heat and action in an inflamed part, is generally ſuppoſed to imply or include a more rapid circulation in it, which is far from being the caſe, for this increaſe of heat and action in a part, may exiſt, without any increaſed rapidity of the circulation. I will allow, that a greater quantity of fluids circulates through a part that is inflamed, than through one in a natural ſtate, but they do not circulate with greater or even with ſo much rapidity. The derivation of a greater maſs of fluids, in conſequence of the irritation, cannot fail of diſtending the capillary arteries beyond their uſual diameter.

Hence we account for the redneſs which takes place, and alſo for the pain. But when the capillary arteries are diſtended beyond their uſual diameter by the acceſſion of more blood into them, it neceſſarily follows, that the circulation will be impeded in its progreſs through them, rather than accelerated; the fluids will be accumulated, and, whatever may have been ſaid to the contrary, an *obſtruction* will certainly prevail. By obſtruction however I do not mean a total ſtagnation, according to Boerhaave, though that perhaps may ſometimes happen; but a tardy or impeded circulation in the part.

Now let us trace the progreſs of inflammation, and endeavour to account for the remaining ſymptom ſometimes attending it, namely, a general fever in the habit or an increaſe of pulſe.

The progreſſive motion of the blood being then retarded in the capillary arteries, and that quantity which uſed to paſs at each pulſation, being no longer puſhed through them in the ſame given ſpace of time, a reflux of ſome of the blood muſt conſequently happen. This being urged on in a direction counter to that of the circulation, the velocity of the blood in all the parts in which this circumſtance obtains, is neceſſarily retarded, and thus the progreſs of inflammation is increaſed, the diſeaſe extending gradually to the neighbouring parts, and being continued to a greater or leſs extent. If this reflux ſhould increaſe, it will communicate itſelf

to

to the great veſſels; and, conſtantly oppoſing a retrograde motion to the fluids which are circulating through them, (or at leaſt a reſiſtance which they are not uſed to meet with in their progreſſion,) the effects of it will be conveyed through the great veſſels as far as the left ventricle of the heart. This ventricle, being then ſomewhat overloaded by the reflux of the blood, which has been conveyed to it, and partaking alſo of the increaſed irritability of the nervous and arterial ſyſtem, will be ſtimulated to more frequent contractions; theſe contractions will become more violent, the heat will increaſe, and a general ſymptomatic fever will prevail.

This idea of the reflux or retrograde motion of the fluids, is by no means imaginary; excluſive of the probability of its exiſtence from analogy, in the inverſion of the periſtaltic motion of the inteſtines, which is alſo the effect of ſtimulus, it is confirmed by a very curious experiment of that accurate obſerver, Lewenhoeck. That Philoſopher examined with a microſcope, in a Bat half dead with cold and hunger, that fine and delicate membrane which performs the office of wings in this animal. He perceived at firſt no motion in it, but five or ſix hours after, when the Bat had been recovered by warmth, he ſaw, with the aſſiſtance of a microſcope, in an artery, ſome globules of ſtagnated blood, which, by the oſcillations of the artery, went backwards and forwards, ſometimes retrograding and ſometimes advancing in theſe veſſels, till they were ſufficiently attenuated to paſs through them.

This Theory of Inflammation, independent of any other hypotheſis, though connected with ſome parts of moſt of the ſyſtems that have been formed, appears to me ſimple, and is deduced from and ſupported by facts, which, of themſelves, ſeem ſufficient to account for all the phænomena that require explanation. *

* The reader is left to make his own comments on this Theory of Inflammation, from which many will be diſpoſed to differ, and for different reaſons. It is a queſtion whether, either in point of argument or of fact, it will be thought ſufficient to invalidate the generally received opinions on this ſubject. H.

Let

Let us now proceed to conſider the different modes in which Inflammation terminates.

Inflammation is ſaid to terminate in five different ways; by reſolution, by ſuppuration, by adheſion, by ſchirrus, and by gangrene. Inflammation terminates by *reſolution* when it either goes off ſpontaneouſly, or yields to the means employed by art to get the better of it, or when it is removed from one part, by an inflammation being excited in another. The firſt is ſimple reſolution; the ſecond, reſolution by evacuations; the third, reſolution by metaſtaſis. As the ſecond mode of reſolution is the one in which our art is chiefly concerned, we ſhall deſcribe the manner of effecting it when we ſpeak of the treatment proper for inflammation.

Inflammation is ſaid to terminate by *ſuppuration*, when, the means to procure reſolution having failed, the diſorder increaſes in violence, the bulk of the part then becomes more conſiderable, and a more evidently circumſcribed red tumour is formed, in which, upon handling, we manifeſtly feel a fluctuation, indicating the exiſtence of ſome fluid within. This tumour is then what Surgeons diſtinguiſh by the name of abſceſs, or impoſthumation, and the fluid contained in it is diſtinguiſhed by the name of pus or matter; of the nature and formation of which we ſhall treat when we conſider the doctrine of abſceſſes.

The third termination of inflammation, namely, by *adheſion*, is when two inflamed or ſuppurating ſurfaces, are by any means brought into contact with each other, in conſequence of which a connection or adheſion is formed between them. This adheſion may take place either with ſuppuration or without it; in the cure of the Hydrocele, for inſtance, by ſeton and by cauſtic, we ſometimes ſee the inflammation excited by the former, merely to ſuch a degree as to bring on an adheſion without any deſtruction of parts. This indeed is the principle upon which the ſeton has been recommended, and when the inflammation goes beyond this, or proceeds to form ſuppuration, it fails in its intent. In the cure by cauſtic this adheſion is brought about by the ſuppuration of the whole ſac of the

tunica vaginalis, (and consequently the obliteration of its cavity,) and the subsequent adhesion formed between the inflamed or suppurating surfaces of the albuginea, and the cellular membrane of the scrotum.* The former kind of adhesion between inflamed surfaces without ulceration or suppuration, is also made by the transudation, or extravasation of the coagulable lymph. This is the case in those adhesions that are formed between the Pleura and the Lungs.

Inflammation is said to terminate in *schirrus*, when the obstruction in the vessels remains, after the inflammation has gone off either by resolution or suppuration. So, in glands, where the obstruction is double, namely, in the capillary arteries, and in the lymphatics, we often see that the suppuration is only partial, and that a slow indolent tumour remains, which, unless a fresh inflammation and suppuration can be excited, will terminate in a schirrus. But if by termination we are to understand, as most writers who mention this subject seem to do, that inflammation is the cause of schirrus in the same manner as it is the cause of suppuration, we shall perhaps find their conclusion erroneous. To illustrate the matter however, let us take a review of the progress and appearances of a schirrus.

A schirrus is, ab origine, an induration and enlargement of some of the glands of the body. This induration takes place without any of the concomitant symptoms except obstruction. But obstruction alone, without other symptoms, is not the character of inflammation. It is, to all

* The author seems here to have given too hastily into the late Mr. ELSE's first idea of the mode in which the cure of Hydrocele by caustic takes place. I have been favoured by my friend Mr. CLINE with an opportunity of examining several preparations, in the collection at St. THOMAS's HOSPITAL, which put it beyond dispute that the *whole* of the Tunica Vaginalis is *not* thrown off by suppuration. Indeed, notwithstanding the warmth with which Mr. Else defended this method of cure against the attacks of a very able antagonist, he is said in the latter part of his life to have relaxed in this particular point, and at length to have admitted, that the cure might, and frequently did take place, by mere adhesion of the sides of the Cyst, the sloughing of the Tunica Vaginalis being rather an accidental than a necessary circumstance. H

intents

intents and purpoſes, an obſtruction or filling up of the veſſels in the gland without any other of the ſigns of inflammation, and this is ſo evident, that enlarged glands will frequently ſubſiſt for years, and ſometimes during life, in a perfectly harmleſs and indolent ſtate, unleſs ſome irritating power ſets the morbid principle, dormant within them, into action. So far then from the inflammation cauſing the ſchirrus, it is rather to be ſuſpected, that the ſchirrus precedes the inflammation. In ſome inſtances therefore, where an inflammation and ſubſequent ſuppuation take place in an indurated gland, this inflammation is nothing more than an effort of nature to get rid of the diſeaſe. If this effort prove ſucceſsful, the whole gland falls into a laudable ſtate of ſuppuration, and the diſeaſe is cured. But if, on the contrary, the morbid principle, or obſtruction without inflammation, prevails in the gland in oppoſition to this inflammation or effort of nature to get rid of it, the ſchirrus is confirmed.

Inflammation is ſaid to terminate in *gangrene*, when the inflammation, as it were ſubſiding, the diſpoſition to gangrene prevails over it; for here again, as in the ſchirrus, the inflammation can ſcarcely be deemed the cauſe of the gangrene, ſince, as in the preceding caſe, the latter often exiſts before the former, and the former is alſo an effort of nature to overcome the latter.

For the better illuſtration of this, let us ſuppoſe a conſiderable injury to have been done to the ſoft and hard parts of a limb, by a very great act of external violence. Let us farther ſuppoſe, that the immediate effect of this ſtroke ſhall be a gangrene, a ſphacelus, or total loſs of life in ſome of the parts affected. This we frequently ſee in large lacerations of the ſkin, where the torn piece, though ſtill connected with the ſound parts in ſome points of contact, yet is itſelf ſo much affected by the bruiſe, that it ſhall be entirely deprived of life, ſo as that it ſhall not be able to recover itſelf but muſt be ſeparated from the ſound parts. This ſeparation can only be accompliſhed by an inflammation and conſequent ſuppuration being excited. So in all gangrenes, it may readily be ad-

mitted, that the putrid diſpoſition or tendency to diſſolution firſt prevails in the part, and that the inflammation is a ſubſequent exertion of the powers of nature to prevail over the diſeaſe. If this attempt be ſucceſsful the gangrened part is ſeparated from the ſound; if not, the diſeaſe gains ground, till a compleat Sphacelus brings on the diſſolution of the patient. This is particularly exemplified in that ſpecies of mortification which is called the dry gangrene, which we often ſee attacking the extremities of old people. Here there is no inflammation, but, on the contrary, a debility and want of heat in the part, from a tardy circulation brought on by the oſſification of the arteries * or other cauſes. Neither can it be ſaid that the great pain, which theſe patients ſuffer previous to the appearance of the gangrene, is a proof of a pre-exiſting inflammation; for pain is but one ſign of inflammation, the exiſtence of many other ſymptoms being requiſite to characteriſe this diſeaſe. We may alſo obſerve, that the pain in theſe caſes is of a kind very different from the throbbing pulſating pain of inflammation. It is a pain which ſeems to be excited, as it were, by the violent commotion raiſed in the whole frame, from the ſtruggle between the life and death of the part, and may not improperly be compared to that conflict in the human body which precedes a ſeparation of the animal from the ſenſitive principle. Beſides, this pain can only be relieved by a free uſe of the ſtrongeſt wines and moſt generous cordials, and by exceſſive doſes of that higheſt of all cordials, Opium; all means which would increaſe the pain of inflammation†.

Indeed whenever a gangrenous diſpoſition ſeizes a part, there ſeems to be a perpetual ſtruggle between that and the inflammatory diſpoſition. The

* Mr. Pott will not allow that this ſpecies of mortification is occaſioned by the *oſſification of the arteries*; and what few opportunities I have had of examining theſe parts by diſſection, have diſpoſed me to agree with him. Were the opinion well-founded, nothing certainly could be more demonſtrable. H.

† May we not call in queſtion the propriety of the Author's drawing arguments from the progreſs of a ſpecies of mortification which Mr. Pott alledges is "a diſeaſe ſui generis," when treating on inflammation in a general way? H.

latter

latter endeavours to increaſe the living principle or vital powers of the part, and either to put a ſtop to the progreſs of the gangrenous diſpoſition, or to throw off, from the reſt of the machine, thoſe parts that are totally affected with it; the former oppoſing its deſtructive and diſſolving tendency, to the vivifying powers of inflammation. Nor can it be urged againſt this doctrine, that the more heat is increaſed in animal ſubſtances the greater is their tendency to putrefaction, and conſequently that the increaſe of heat which we have laid down as exiſting in an inflamed part has the ſame tendency: for this effect of heat is applicable only to animal ſubſtances when deprived of the living principle. Now the living principle is increaſed in an inflamed part, by the greater afflux of thoſe vivifying fluids which convey and contain it; ſo that, in which ever way the matter be conſidered, the living principle muſt firſt be deſtroyed before gangrene or putreſcency can take place. I am aware too, that the extreme degrees of heat and cold, produce effects very analogous to each other; but if this circumſtance be admitted as an objection to the doctrine here laid down, we ſhall confound the heat of fire with that of inflammation, which are extremely different in their nature, for the one deſtroys the living principle while the other increaſes it; nor can it be ſaid with any propriety, that a man who is burnt to death, dies of an inflammation.

We now proceed to conſider the varieties of inflammation; and, in this view, a twofold diviſion has been made of them, by all writers, into phlegmonous and eryſipelatous. A diviſion however, which may be conſidered as totally improper, becauſe the phlegmon is in reality the only true inflammation. Eryſipelas, although it has ſome ſymptoms in common with the phlegmon, ſuch as redneſs and acute pain, yet is in fact a diſeaſe totally diſtinct from the latter; ſo much ſo, that, in general, it not only requires a different, but even a totally oppoſite treatment.

The characters of a phlegmonous, or true inflammation, are ſtrongly marked in our general deſcription of inflammation; to which we may add,

add, that the red colour is very deep, the heat very great, the tumour manifeſtly circumſcribed, and the pulſe frequently much raiſed. In the eryſipelatous inflammation, as it is called, the redneſs is not near ſo deep, and the ſkin inclines to a yellowiſh hue; the pain is ſometimes more acute, but of a different kind; not that throbbing pulſating pain, as has before been obſerved, but a conſtant, teizing, and acute ſenſation. There is no kind of circumſcribed tumour, nor does the ſkin reſiſt the touch as in the former caſe, but, on the contray, pits upon preſſure, and preſently riſes up again, ſo that an œdema almoſt always exiſts. Ophthalmies are moſtly inflammations of this kind, and accordingly, we often ſee them accompanied with an œdema of the eye-lids.

Theſe two diſeaſes then, it is evident, are very different in their nature. The eryſipelas ſeems indeed to be a putrid and not an inflammatory diſeaſe, and as we have termed the phlegmon the *true*, ſo we may properly enough term this the *ſpurious* inflammation. It ſeems to ariſe from a natural debility in the part, and we may account for the ſharp and intolerable pain, ſometimes attending it, from the effects of increaſed irritability, which are always moſt ſenſibly felt in proportion as that is greater. Thus, we ſee alſo, that weak and relaxed habits of body are always the moſt irritable.

As the diſeaſe is different, ſo are its terminations; for, the five terminations of inflammation mentioned above, refer only to phlegmon.

The eryſipelas may terminate in four ways, namely, by reſolution, by œdema, by ulceration, and by gangrene. An œdematous ſtate of a limb often ſucceeds an eryſipelas, and the patient is frequently troubled with it more or leſs through life. Ulceration likewiſe is a frequent conſequence of it; and theſe ulcers are as difficult of cure as the diſeaſe itſelf, diſcharging in general, a thin, ſerous ichor, which is frequently of ſo acrimonious a nature, as to corrode the neighbouring parts, and bring on freſh ulcers. We have inſtances of theſe eryſipelatous ulcerations in chilblains and kibed-heels. The termination of the eryſipelas by gangrene is natural to it, ſince it is a putrid diſeaſe, or with a putrid tendency at leaſt.

The

The firſt thing to be attempted in all inflammations is their reſolution. In the phlegmonous inflammation, this intention may be anſwered by bleeding, by warm relaxing means, by emollient, ſedative, anodyne applications, and by evacuations. With reſpect to bleeding, it ſhould not be uſed too largely and indiſcriminately even in the phlegmonous inflammation. Indeed we ſhould always regulate both the quantity and the repetition of it, by a careful attention to the ſtate of the pulſe; otherwiſe, by debilitating the ſyſtem too much, we may change the diſeaſe from an inflammatory diſpoſition in the part to a putrid one; and we ſhall find it difficult, after that, to recall the inflammatory diſpoſition again, however we may deſire and think it neceſſary.

Bleeding is of two kinds, either general or topical; general, when the blood is drawn from the ſyſtem; topical, when it is taken from the veſſels of the part. Bleeding from the ſyſtem may either be, by venæſection or phlebotomy, or by arteriotomy. Arteriotomy is confined to the opening of the temporal artery, and is particularly calculated for the cure of inflammations attacking the head or eyes, provided they be of the phlegmonous kind. Thus, in ophthalmies threatening ſuppuration within ſide the cornea, nothing will more effectually tend to prevent this miſchief than opening the temporal artery.* Topical bleeding is likewiſe of two kinds, to wit, by leeches, and by cupping. Leeches are applied to an

* It is very certain that *bleeding from the temporal artery*, in diſeaſes that immediately affect the head, is to be preferred to venæſection; yet we ſeldom ſee it very effectually performed, owing to the minuteneſs of the ramifications of the veſſel, their remote ſituation from the ſurface, the difficulty of making an orifice in a favourable direction, and (as is uſually done in opening a vein) by a *ſingle puncture*.—As this practice is of no ſmall importance, being calculated to afford relief in caſes of extreme danger, as in Phrenitis, Apoplexy, apparent death by ſuffocation, &c. it were to be wiſhed that the performance of arteriotomy were cleared of theſe difficulties and rendered more familiar to practitioners. Although many writers have inſiſted on its good effects in a variety of diſeaſes, yet few attempts have been made either to render it more acceptable to the mind of the patient, or more commodious to the hand of the operator; the former aſſociating the idea of danger with the opening of an artery, and the latter feeling a want of confidence as to the event of the undertaking. In a diſſertation by Dr.

an inflamed part frequently with advantage, and cupping glaſſes to the neighbouring parts are alſo of ſervice. This kind of topical bleeding is often

DR. BUTTER, on an IMPROVED METHOD OF OPENING ARTERIES, we have the following judicious directions for the performance of the operation.

1. " The patient being conveniently placed to the light, the operator ſits down fronting " the ſide which he intends to operate upon, ſhaves the temple, wipes it very dry, and then " rubs it over with powder of chalk."

2. " Having diſcovered the artery, by its pulſation under his finger, and made a dot with " ink on each ſide of it, (about the ſame height with the top of the ear) ſo as to leave the " diſtance of one half or three fourths of an inch between them, he directs the patient's " head to be held by an aſſiſtant."

3. " Then pinching up the ſkin with his finger and thumb below where he intends the in- " ciſion, while the aſſiſtant does the ſame above, he runs the lancet through the two menti- " oned dots, and cuts the ſkin over it quite through."

4. " The operator next compreſſes the artery with his left thumb a little farther up than " the wound; wipes the wound with a bit of ſponge wrung out of cold water; and, having " thus got a diſtinct view of the artery, opens it in a longitudinal direction, and with an ele- " vation of the point of his lancet."

5. " Having drawn the proper quantity of blood, he brings the lips of the wound together, " applies two or three folds of charpee to it, and fixes the bandage upon that; but ſo, that " the pulſation may be felt equally free through the ramifications of the temporal artery after, " as before, the application of the bandage."

Timid patients generally feel great reluctance in ſubmitting to a ſecond ſtroke with the lancet; but as, in attempting arteriotomy in the common way, this generally proves to be neceſſary, it is certainly better to ſecure the opportunity of making a fair and effectual opening by the methods recommended above. With regard however to the direction in which the inciſion is propoſed, I cannot help differing from the author, ſince an orifice, ſtrictly *longitudinal with reſpect to the artery*, has a leſs chance of giving a free vent to the blood than one that is made *obliquely*. This is very obſervable in opening a vein, where the inciſion, if made exactly in a longitudinal direction, is required to be far more extenſive than if made obliquely. It muſt be allowed indeed that the pulſation of an artery has a continual power of diſtending the orifice, a circumſtance that does not obtain in venæſection; yet, as the great objection to the operation here conſidered, exiſts in the difficulty of drawing blood in *ſufficien*

often very effectual, and as it does not weaken the ſyſtem ſo much as general bleeding, it may be uſed almoſt in every kind of inflammation, the eryſipelatous not excepted; * whereas, in this laſt kind, all bleeding from the ſyſtem ſhould be carefully avoided. Indeed, as bleeding from the ſyſtem is always to be determined by the ſtate of the pulſe, if we attend to this rule, we ſhall never find bleeding neceſſary in the eryſipelas; for the pulſe in ſuch caſes is uſually languid and low. In the eryſipelas which attacks the head and face, and which is accompanied with a great

*ent quantity*, it is highly neceſſary we ſhould avail ourſelves of every advantage that the caſe will admit of. H.

* The author, in allowing the application of leeches to a part affected with eryſipelatous inflammation, will be thought to have differed from what is the general practice. It is worth conſidering, in the firſt place, whether, if unattended with ſubſequent inconveniencies, this remedy can be employed with the ſame probability of advantage as in a caſe of phlegmon; and, ſecondly, reference ſhould be had to facts for information, how far the orifices made by leeches are or are not liable to degenerate into troubleſome ulcers, as has been commonly alledged. Excellent as this remedy has proved in the true inflammation, there is reaſon to conſider it not only as a very doubtful one as to its immediate good effects in allaying eryſipelatous inflammation, but alſo as being ſomewhat hazardous with regard to future conſequences. If however, we admit the poſſibility of *a mixture of the phlegmonous and eryſipelatous diſpoſitions*, which, though ſomewhat incompatible with our author's general doctrine, ſeems in part to be acknowledged by the caution he recommends reſpecting the change from one ſtate to the other, (ſee p. 79, l. 8,) we may account for the beneficial effects that in ſome inſtances have ſucceeded the application of leeches, by the circumſtance of their having diminiſhed the tendency to phlegmon. The ancients chiefly confined the true eryſipelas to the ſkin, and conſidered as an evidence of its intermixture with phlegmon, the ſwelling and ſenſe of throbbing in the "circumjacent fleſh." GALEN, in the following paſſage, ſtates the diſtinctions made by the Phyſicians of his time; which, it ſeems, were deduced from the predominance of one of the two ſpecies of Inflammation over the other.— "Quemadmodum "id, quod ſubjectam carnem attingit, neque ex tenui omnino fluxione fit, non ſolum eryſi-"pelas eſt, ſed *mixtus affectus ex eryſipelate et phlegmone*: in quo quandoque propria eryſipelatis "ſymptomata prævalent, et a recentioribus medicis vocatur talis affectus *eryſipelas phlegmo-"nodes*; quandoque autem phlegmones, et dicitur ideo *phlegmon eryſipelatodes*. Quod ſi neu-"trius (ſymptomata) evidenter prævalent, ſed æqualia videantur, *phlegmonem et eryſipelas* "*miſta* eſſe dicuntur." — In the uſe of topical bleeding, it ſhould ſeem moſt adviſable, to be guided by an attention to theſe circumſtances. The more evidently we ſee diſtinct marks of eryſipelas, whether locally or by ſymptoms affecting the conſtitution, the leſs ſhall we be juſtified in having recourſe to evacuations of any kind. H.

puffineſs or œdema of the whole countenance, one ſingle venæſection will bring on a delirium and the death of the patient*. By the way, it may be proper to obſerve, that, in this particular ſpecies of eryſipelas, though the patient uſually complains of great heat and burning in the face, yet the pulſe is generally very languid, and it is abſolutely neceſſary carefully to avoid uſing any cooling or aſtringent application; for, an error in this reſpect, will infallibly bring on phrenitis. Perhaps it would be beſt to uſe no topical application whatever in this caſe, or, if any, none but of the mildeſt and moſt innocent kind, ſuch as warm milk and water, merely by way of a waſh. This diſeaſe, indeed, is more the province of the phyſician than of the ſurgeon, for it is to be treated only by internal medicines: theſe ſhould be gently warm diaphoretics, with a free uſe of warm, diluting liquors. Towards the end of the diſeaſe, moderate evacuation, by gentle purging, is uſeful †. This diſeaſe, when properly treated, is not attended with any bad conſequences, and generally goes off in a few days; but when improperly treated, is almoſt always fatal. If any error of practice ſhall have been unwarily committed in the firſt inſtance, the beſt way to rectify it is, to endeavour to remove the ſtimulus from the brain, by ſetting up an artificial ſtimulus in other parts.

* This is ſo diametrically oppoſite to the ideas of Dr. CULLEN, that I think it highly neceſſary to tranſcribe the following paſſages from his PRACTICE OF PHYSIC, Book III. Chap. I.—" The *eryſipelas of the face* " ſays he" is to be cured very much in the ſame manner as " *phlegmonic inflammations*, by blood-letting, cooling purgatives, and by employing *every part* " *of the antiphlogiſtic regimen*; and our experience has confirmed the fitneſs of this method of " cure.—The evacuations of *blood-letting and purging* are to be employed *more or leſs* according " to the urgency of the ſymptoms, particularly thoſe of the Pyrexia, and thoſe which mark " an affection of the brain. As the Pyrexia continues and often encreaſes with the inflam- " mation of the face; ſo the evacuations mentioned may be employed *at any time* in the " courſe of the diſeaſe." H.

† I confeſs I am inclined to prefer purging, whenever thought expedient, at the *commencement* of the diſeaſe rather than at a later period. In many inſtances within my knowledge, mercurius dulcis ſublimatus, given with this intention, has proved ſingularly ſerviceable. In treating a diſeaſe where weakening the patient is to be avoided, purges of that claſs which act by encreaſing the periſtaltic motion of the inteſtines, rather than thoſe that augment their ſecretions, ſeem to deſerve a preference. H.

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This is only to be done by the repeated application of blifters, at the fame time that we fhould endeavour, by the moft powerful remedies, to induce a diaphorefis on the fkin; and thus, if poffible, procure a folution by metaftafis, when fimple refolution fails *.

The next intention confidered as neceffary to be attended to in procuring the refolution of phlegmonous inflammation, was the ufe of warm, relaxing means. This is to be attempted both by external and internal remedies: the internal are the free ufe of warm diluting liquors, affifted with fuch medicines as tend to keep up a gentle diaphorefis or moifture on the fkin. Relaxation is to be procured externally by fomentations made with the common fotus of the London Pharmacopœia, or by plunging the part into warm water, and keeping it there for fome time. Warm water itfelf is, perhaps, as powerful in forwarding this indication, as any other topic; and if perfons feized with flight inflammations, inftead of having recourfe to a bread and milk poultice in the firft inftance, as they ufually do, were to foak the part for half an hour or an hour in warm water, they would often immediately get rid of an inflammation, which, by a contrary treatment, frequently goes on to fuppuration. It muft, indeed, be evident, from the account we have given of inflammation, that nothing can act more powerfully againft it than warm water; for, as we have fuppofed the exiftence of an obftruction to the circulation and progreffive motion of the blood in every inflamed part, the continued ufe of this relaxing application, by taking off from the rigidity and tenfion of the veffels, will at leaft enable them to yield more readily, and with lefs pain, to the diftending fluids, and confequently promote a more free circulation through the part, a circumftance which will moft effectually remove the complaint by acting againft the very caufe of it. I have joined warmth with relaxation, becaufe warmth gives a gentle ftimulus which greatly affifts the intention.

* This little digreffion upon a difeafe which, though immediately connected with the prefent fubject, feems to be rather out of our province, will probably merit the reader's excufe, fince the obfervations made upon it are deduced from facts and obfervation, and may poffibly prove practically ufeful.

Warmth and moiſture may alſo be communicated in the form of vapour or ſteam to parts which cannot be plunged into water; ſuch, for inſtance, as the head, face, or neck; and although I am ſenſible of the ſuperior efficacy of ſteam to that of any other mode of applying warm water under ſome particular circumſtances of diſeaſe, yet, for the purpoſe of procuring the reſolution of inflammation, I know not, on the whole, any method ſo uſeful as long-continued immerſion.

As, in theſe caſes, there is nothing preferable to the uſe of partial warm bathing, ſo, in inflammations of the trunk, there is no remedy ſo uſeful as univerſal warm bathing. But, the conveniencies for a warm bath not being always at hand, while they are getting ready, it will be proper not to neglect the topical application of warm water, either by fomentation or by ſteam; for a great deal depends upon the *early* uſe of this important mode of relief. I have frequently ſeen an approaching inflammation ſtopped ſhort in its firſt advances, and when the exiſtence of it was only indicated by the pain, diſtenſion, and throbbing of the part*.

The

* In caſes where the neceſſity for *general warm bathing* has not been very urgent, or where the preparations for it have been peculiarly inconvenient or impracticable, very commendable effects have reſulted from the uſe of that ingenious contrivance of Mr. MUDGE, which he calls an INHALER; an inſtrument, eaſy, and requiring little or no delay, in its application.— In any caſe when *the full powers of ſteam* are required *topically*, there is ſcarcely any mode of application ſuperior to that ſomewhat inelegant one of a brick heated nearly red and gradually quenched with boiling water. A conſiderable quantity of moiſture being, in this proceſs, drank in by the brick, it is afterwards forcibly breathed through two or three wrappings of flannel upon the inflamed part, the patient regulating the cloſer or more diſtant application of it by his own feelings. A brick, however, being not only aukward and unmanageable, but of a ſhape ill adapted for approximation with the body, a piece of the ſame kind of clay, formed without any ſharp edges or angles, of an oval ſhape, ſomewhat bent, and afterwards burnt in the kiln, would probably prove more ſuitable for the purpoſe. Another remedy more pleaſant though leſs efficacious in local inflammations, may be had in the application of a bladder filled with hot water; but, to be of any material ſervice, this ſhould be applied without any intervening ſubſtance, (ſince the moiſture communicated through the bladder is very inconſiderable) and here it is impoſſible that the degree of heat can be at all uniform. If the whole be no more than ſufficiently hot to be of ſervice when firſt applied, its virtue will diminiſh from that inſtant; if it be hotter than neceſſary, the patient, of courſe, cannot bear

The third mode to be adopted in endeavouring to procure the resolution of an inflammation, is the use of emollient, anodyne, sedative, and even what are called discutient applications.

If we consult some chirurgical writers upon this point, we shall find such an infinite number of remedies proposed, and those of so opposite a nature, that it will be a difficult matter for us to make our choice; while others, on the contrary, treating all inflammations alike, have but one sovereign topic for them all, which is, a poultice of bread and milk, with the addition of oil or hog's lard.

If, however, we submit to be guided by experience, we shall find that the necessary topics for resolving inflammations are reduced to a very few, and that these must be varied only according to the nature, the degree, and the state of the disease. If we pursue the fore-mentioned indication of endeavouring to discuss the inflammation by warmth and relaxation, which by the way I think best adapted to the early stage of the disease, we must be consistent with ourselves, and join an emollient with a sedative application. The very worst of emollients is the bread and milk pultice, not only on account of the oil with which it is always mixed to preserve its fluidity, (for oil increases, in general, the pain of inflammation) but also, because it is a nasty composition, constantly turning sour upon the part when it has lain on for a few hours. The best emollient we have is linseed, in which, and the preparations of lead, we are able to compound a very good sedative and emollient at the same time. A poultice therefore, made of the Goulard water and linseed cake, is perhaps as good an emollient and sedative application as any we can use; only one thing should be attended to, which is, that the Goulard extract employed to

bear it. The chief defect in this remedy, to wit, the want of moisture, may, however, be compensated in some degree, by first applying to the part a cloth wrung out of hot water, and then the bladder over all.—These powerful kinds of fomentation are, indeed, most frequently directed by Physicians, in cases of spasm or inflammation of the Viscera of the Abdomen or Thorax; but, under proper regulation, their use in all external inflammations may be rendered fully equal to that of any other remedy with which surgeons are acquainted. H.

make

make the water, ſhould be mixed with ſpirit of wine and camphor inſtead of brandy *. The ſedative power of the application will be much increaſed by the addition of camphor, which is the moſt powerful ſedative in nature, as we ſhall have occaſion to ſhew hereafter †.

If, notwithſtanding the uſe of theſe relaxing, emollient, and ſedative means, the inflammation ſhould not only ſtill perſiſt, but ſhould alſo extend, become more intenſe and painful, and if no abſolute ſymptoms of approaching or exiſtent ſuppuration ſhould yet have appeared, we muſt alter our mode of practice, and totally lay aſide the relaxing and emollient plan, in order to ſubſtitute one more powerful and efficacious: for, we may obſerve, that if this plan does not ſucceed in the firſt inſtance, the diſorder will frequently be increaſed by perſiſting in it; and this is what was meant by the hint already given concerning the neceſſity of adapting our remedies to the various ſtages and circumſtances of the diſeaſe ‡.

* Camphor is certainly a moſt uſeful addition to the preparations of lead, *in many caſes.* It may not be unneceſſary to obſerve, reſpecting the mode of mixing it, that the extract and the camphorated ſpirit of wine ſhould be firſt put together before the water is added, otherwiſe a decompoſition will happen. I ſuſpect however, that camphor is more uſeful where a *perfect ſuppuration* is deſired, than in caſes where it is to be prevented. Much indeed depends upon the *proportion* of camphor employed; its proving a ſedative or a ſtimulant ſeeming wholly to depend on that circumſtance. H.

† The author has omitted to particariſe the *anodyne* relaxants, to which he juſt now alluded. They are certainly of importance, and have often been attended with effects, equal, if not ſuperior, to the remedy he has ſo ſtrenuouſly recommended above. A ſtrong decoction of poppy heads, firſt employed as a fomentation, and afterwards formed into a cataplaſm of ſufficient thickneſs with crumb of bread, not only tends to diminiſh inflammation, but alſo to abate pain, and is an admirable remedy. H.

‡ I confeſs I ſhould be inclined, in treating a phlegmonous inflammation, to reverſe the author's plan, and to try the claſs of cold applications firſt. When theſe have been fruitleſſly employed, the uſe of emollients and poultices ſeems to occur more naturally; their ſoothing and relaxing qualities being particularly well ſuited to accompany inflammation in its progreſs towards ſuppuration. The author calls the cold remedies "more powerful and efficacious"—ſurely that is a ſufficient reaſon why they ſhould be had recourſe to in the firſt inſtance. H.

In

In this ſtate of phlegmonous inflammation then, we muſt have recourſe to the moſt refrigerating, aſtringent, and anodyne applications that the materia medica will ſupply. And we ſhall find theſe properties, for the moſt part, united in the ſame topics. Vinegar, either alone or mixed with water, in which caſe it is called oxycrate; ſolutions of ſal ammoniacum, or nitre, in an aqueous menſtruum; or, the aqua ammoniæ acetatæ, which is analogous to the ſolution of ſal ammoniacum; and laſtly, ſpirit of wine ſtrongly impregnated with camphor. For an anodyne, the tinctura opii, or elſe opium diſſolved in any of theſe menſtrua. Of all theſe applications none are preferable to the aqua ammoniæ acetatæ, with the tinctura opii, or the ſolution of ſal ammoniacum in water, and opium diſſolved in it*. The ſpirit of wine impregnated with camphor, is an application well adapted to ſome particular inflammations, as we ſhall ſee hereafter.

All theſe topics, from their ſeveral properties, are wonderfully ſuited to counteract all the principles and ſymptoms of inflammation as we have deſcribed them. And firſt, as we have determined one of the ſymptoms of inflammation to be an increaſe of heat in the part, it is manifeſt that nothing can tend ſo much to allay this heat as the conſtant application of a cooling medium: in this light, no remedy in the whole materia medica can be near ſo powerful as the ſolution of ſal ammoniacum; for, in the midſt of the hotteſt day of ſummer, and in a room expoſed to the ardour of the meridian heat, by joining a quantity of ſal ammoniacum with water, the mixture will be reduced to a degree of coldneſs below the freezing point; neither will this effect be evident in near ſo great a degree on immerſing the bulb of the thermometer into a ſimilar ſolution prepared with ſalt of nitre. Secondly, a diſtention of the veſſels of the inflamed part beyond their ordinary diameter being another cauſe or ſymptom of

* This laſt is preferable in Hoſpital practice, as being much the cheapeſt. The proportions of the former are, an ounce and a half of *aqua ammoniæ acetatæ* to half an ounce of the *tinctura opii*; of the latter, two ounces of ſal ammoniacum to ſix ounces of water, in which we may diſſolve from half a drachm to two ſcruples of opium.

inflammation

inflammation, these refrigerating topics, by their astringency (which is always a property of cold) tend not only, by bracing the vessels of the part, to enable them better to resist the impetus of the distending fluids, but also by restoring, in some degree, the tone they had lost in consequence of that preternatural distention, enable them likewise to assist in propelling the fluids onwards, and consequently to overcome that impediment to the free progressive circulation of the blood which we have shewn to be a concomitant or necessary symptom of the too great influx and accumulation of fluids in an inflamed and distended part. Opium, as an anodyne topic, joined to the cooling and astringent lotions, is principally intended to alleviate the pain that always accompanies inflammation. It has been doubted indeed by some, whether the external application of opium has really the property of alleviating pain, as is the case when internally administered; but repeated experience has fully established the truth of this fact, and it is likewise farther confirmed by the well-known advantage which arises from the mixture of opium with caustics when applied with the chirurgical intention of making an opening in any part *. Neither is the failure, in some instances, of the external application of opium to alleviate pain, to be admitted as an argument on this head; because particular exceptions can never invalidate any general fact whatever. The same sort of reasoning might be applied to every remedy made use of in every disorder; for no mode of relief can be successful in every individual instance; but this is still no reason for calling in question its efficacy in a general way.

* The well-known experiment in which the hinder extremities of a frog became paralytic and insensible to the action of mechanical stimuli in consequence of a solution of opium having been gradually dropped upon them, seems very strongly to favour the general opinion concerning opium as a topic. Indeed it is extremely natural to suppose, that the nerves on the surface of the body are capable of being thus acted upon, since those of the stomach are so susceptible of the operation of narcotic substances as to induce a state of insensibility to pain in any distant part.—Where opium is employed under this idea, the *internal* use of it seems as likely to answer the end as any other, and is, perhaps, the most effectual way of rendering the application of a caustic easy to the patient. H.

The

The method of applying theſe topics, is to take pieces of ſoft rag, three or four times double in order that they may retain the moiſture longer, and to apply them wringing wet to all the inflamed ſurface. As ſoon as the rags begin to dry, they are to be wetted again, either by dipping them into the liquid, or by ſoaking them with a piece of ſponge fit for the purpoſe. The oftener this is done the better; for, however cold any topic may be when applied to an inflamed ſurface, it ſoon loſes that property and partakes of the heat of the part, and therefore ceaſes to act as a refrigerant. The cold principle muſt therefore be inceſſantly renewed in order that it may counteract the hot one. This is particularly evident, when, having burnt or ſcalded a finger, we dip it into ſpirit of wine and camphor, which we know is a certain method of relieving the inflammation in this caſe, and frequently of preventing the cuticle from riſing into a bliſter. The cold feel of the ſpirit of wine is extremely comfortable at firſt, but if the finger be kept in it for any length of time, the fluid ſoon grows as hot as the part, and therefore ceaſes to act as a cooler, ſo that the pain ariſing from the heat comes on again, and in order to relieve it we ſhall be obliged to change the hot ſpirit for ſome that is cold; thus ſhifting the fluid from time to time till the purpoſe be completely anſwered *.

It

* The employment of *ſpirit of wine* in theſe caſes, may be rendered much more effectual, by availing ourſelves of its power of producing cold by *evaporation*. Thus, inſtead of immerſing the ſcalded part in Spirit of Wine and Camphor, which perhaps is only equal in effect to a quantity of water of the like temperature, it would doubtleſs be better if the part were now and then wetted with, or occaſionally dipped into it, and afterwards expoſed to a current of air, ſo as to occaſion a quick evaporation. The cold thus produced, would probably do more in allaying the violent ſymptoms which ſucceed accidents of this nature, than could be expected from the *medicinal* properties of any common application. It is plain however that the author means to conſider the *action of cold* as having ſome ſhare in theſe advantages; and this affords me an opportunity of mentioning a mode of applying it, which, in ſeveral inſtances that I have witneſſed, has anſwered uncommonly well. This is nothing more than to keep the ſcalded part *for a length of time* in a large veſſel of *cold ſpring water*. I have ſeen an inſtance, where the whole leg having been dreadfully ſcalded, the pain has preſently been alleviated by the uſe of this ſimple remedy only, and the patient has recovered in two or three days from the conſequences of an accident, which, under a different management, would have confined him perhaps as many weeks. Even in *burns*, where there is an abſolute de-

 ſtruction

It may perhaps be urged that the free uſe of theſe cooling and aſtringent remedies, in the height of an inflammation which is perhaps tending to ſuppuration, may improperly check nature in her progreſs, and thus bring on ſome fatal diſeaſe. To this I anſwer, that when once the proceſs of ſuppuration is fairly begun, it does not ſeem to be in the power of man to put a ſtop to it, or even to check it by any topic whatever. The inflammation will ſtill go on to its termination by ſuppuration, notwithſtanding all our efforts to prevent it. Indeed it is an obſervation made long ago, by our ſagacious and accurate countryman Wiſeman, that the ſtrongeſt diſcutients ſometimes bring on ſuppuration; which in fact means nothing more, than that the proceſs of ſuppuration will continue notwithſtanding the application of the moſt powerful diſcutients. Since therefore the proceſs of ſuppuration cannot be checked by any artificial means, when nature is bent upon it, or when it is once begun, there can be no danger in uſing ſuch topics as I have inſiſted upon to be moſt effectual in conquering inflammation; were it otherwiſe, the attempt to cure inflammations by reſolution ought never to be made, but they ought all if poſſible to be forwarded to ſuppuration.

Though it has been laid down as a rule, that we ſhould always endeavour to cure inflammations by reſolution if poſſible, yet there is certainly one grand exception to this general doctrine, when, at leaſt, the application of cold to an inflamed part ſhould be carefully avoided. This is, in all inſtances where, after a long fever or other acute diſeaſe in the habit, a *critical* inflammation ſhall take place.

This however is a circumſtance very readily known by inquiring into the cauſe of the inflammation, and into the patient's ſtate of body, which

ſtruction of parts, theſe methods ſhould be taken, ſince there are none that can be more immediately had recourſe to, or that are more capable of affording preſent eaſe to the patient. When perſons are terribly burnt by having their cloaths ſet on fire, or from other like accidents, it ſhould ſeem the moſt rational mode of treatment to oppoſe the rapid progreſs of inflammation by keeping the whole body in a cold bath, inſtead of truſting to oily applications, which, far from being of ſervice, are abſolutely detrimental. H.

ſhould

ſhould always be done previous to our treatment of any complaint. Beſides, there is a peculiar character belonging to this critical inflammation. Though it be of the phlegmonous kind, yet the ſymptoms are not ſo rapid, nor ſo violent, as in other phlegmonous inflammations. The inflammation ſeldom appears outwardly on the ſkin, but is generally begun in the deeper ſeated parts, where the ſenſibility and irritability are not near ſo great as in the ſkin. The conſtitution being much worn out and exhauſted by the diſeaſe, has ſcarcely power enough left to excite, in the part, a ſufficient degree of action to bring about that ſuppuration by which it wiſhes to expel the diſeaſe.

A cold application therefore muſt be highly improper here, for nothing tends to diminiſh or weaken the action of a part more than cold. Bleeding would in all probability be death to the patient; and indeed the pulſe, which ought always to be conſulted before we perform venæſection, will be found not to indicate the neceſſity of it. It will be quick but low, the pulſe of irritation, not of inflammation. In a word, the treatment here muſt be totally oppoſite to that which is uſed for every other kind of phlegmon. The warmth and action of the part, as well as of the habit, muſt be increaſed, and the much-wiſhed-for end of ſuppuration muſt be forwarded by all poſſible means. The bark therefore and cordials internally; and the external uſe of warm, ſtimulating, aromatic applications are clearly indicated. The topics may be either the cataplaſma e cymino, the theriaca *, or plaſters made of galbanum, ſagapenum, frankincenſe, or any of the warm gums.

But though we have obſerved that the proceſs of ſuppuration when begun can ſcarce ever be interrupted by art, except in critical inflammations where there is a want of vis vitæ to form matter; yet there is alſo an exception to this rule, with reſpect to inflammations and ſuppurations ariſing from what are called ſpecific diſeaſes: for the medicine which acts as

* Of the old Diſpenſatory.

a ſpecific againſt the diſeaſe, if applied to the part, will effectually diminiſh the degree of ſuppuration, even after the matter is formed.

Thus, in venereal buboes, however far advanced, the conſtant application of mercury to the part, contributes greatly to leſſen the quantity of matter formed, and to diminiſh the ſize of the tumour *. This would alſo undoubtedly be the caſe if we could find ſpecific remedies for the inflammations excited by any other kind of virus. Thus the application of alcaline ſpirit acts ſpecifically againſt the ſting of a waſp.

The laſt circumſtance ſtated as neceſſary to be attended to in endeavouring to cure inflammations by reſolution, is the uſe of evacuating or purgative medicines. Theſe however ſhould be adminiſtered with caution, ſince ſtrong purgatives ſeem in general to be very improper in inflammations; they irritate the habit, by which they may alſo tend to increaſe irritation in the part. The only intention therefore with which evacuating

* Venereal buboes are certainly to be diminiſhed *in bulk* by the uſe of mercury, but whether this ariſes from "the quantity of matter" contained in them being "leſſened," or from *a diminution of the containing parts*, will admit of a queſtion. When a Gland is inflamed, there is not only a great enlargement and induration of itſelf, but alſo of the ſurrounding glands; the tumour being often made up of ſeveral ſmaller tumours. I ſuſpect that mercury reduces the bulk of the whole maſs, chiefly, if not ſolely, by reſolving the hardened parts, the ſuppuration ſeeming to become *more compleat* in proportion as this takes place. If we agree with the author however, and ſuppoſe that *the matter* within the bubo is *capable of being leſſened* by the employment of mercury, this circumſtance can only happen from the power of increaſing the action of the abſorbents which is commonly attributed to that remedy; and this, in a practical view, will hardly be found to deſerve our approbation, for reaſons almoſt too obvious to enumerate.—We have no cauſe to believe that venereal matter, when once formed, can be acted upon or altered, in its infectious qualities, by the operation of mercury: if this be true, it's abſorption into the ſyſtem is not only to be dreaded, but oppoſed by every method in our power, and I am ſtrongly inclined to believe, nay, I can almoſt ſay, it has been proved to me in ſome inſtances, that the recurrence of venereal complaints, ſo vexatious both to ſurgeons and their patients, has been occaſioned by an exiſting, but unſuſpected, ſource from whence the conſtitution has been contaminated afreſh, ſo as to render repeated and ſevere courſes of mercury inſufficient for the cure. Sinuſes formed in the neighbourhood of venereal abſceſſes, are exceedingly likely to retain virulent particles, capable of continuing, or rather renewing, the diſeaſe; and one of the caſes juſt alluded to, was of that kind. H.

medicines

medicines ſhould be recommended, is merely to counteract the effects of coſtiveneſs, which is apt to be brought on by the general increaſed heat of the habit in moſt inflammations, and which, itſelf, contributes to keep up that heat. The body ſhould therefore be kept cool and open, as nearly as poſſible in the natural healthy ſtate of one evacuation every day.

We have now gone through the doctrine of inflammations, and laid down rules for their general treatment, diſtinguiſhing the phlegmon from the eryſipelas, and pointing out the remedies to be employed for the cure of each. Theſe principles however muſt be varied according to the nature of the diſeaſe, and the appearance it takes on, at the diſcretion of the ſurgeon. With reſpect to the inflammations of particular parts, the treatment of them will be conſidered hereafter; at preſent we ſhall only add a few reflections on the eryſipelas, and on particular kinds of it.

The eryſipelatous inflammation ſeems, as far as my obſervation has carried me, to be in general exaſperated by the uſe of emollient applications. As the great principle of the diſeaſe appears to be an extraordinary increaſe of irritability in the part, ſedative applications to leſſen that tendency ſeem to be indicated. It is for this reaſon perhaps that we often find the Goulard water ſo peculiarly efficacious; yet, it muſt be allowed that its effects are not always thus beneficial, ſince many of theſe inflammations, far from yielding to ſaturnine topics, have been evidently exaſperated by them. Lime water, a ſolution of ſal ammoniacum or of nitre, have alſo been tried, and with as little ſucceſs. At length, after having had recourſe to a great variety of applications, ſpirit of wine ſtrongly impregnated with camphor has at laſt proved effectual. This remedy I have repeatedly known to be the only one, by which patients have experienced any kind of relief, in the excruciating torture which is ſometimes experienced, from a very high degree of irritation in an eryſipelas. It ſeems therefore to be a kind of ſpecific againſt this kind of inflammation, and if ſo, I apprehend it is only to be attributed to the highly ſedative powers of the camphor; for I have obſerved that the greater the proportion of that remedy contained in the application, the greater has been its effect. Camphor,

phor, we likewiſe know, is a medicine of conſiderable efficacy againſt thoſe inflammations of the fingers or toes which are called chilblains; and, if timely and carefully applied, will infallibly prevent this kind of eryſipelas from terminating in ulceration *.

It has been already obſerved that one of the terminations peculiar to inflammation, is *ſuppuration*, or the formation of pus. The ſigns of approaching ſuppuration are, a continuance and increaſe of all the ſymptoms attendant on inflammation, notwithſtanding all our endeavours to diſperſe it; a greater elevation and more palpable circumſcription of the tumour; and laſtly, rigors or ſhiverings, which are a certain indication of the forming of matter.

We will now ſuppoſe that matter or pus has collected, and that it is alſo evident to the touch from the fluctuation of it under our fingers. The tumour thus formed is called by ſurgeons an abſceſs, and the fluid contained in it, matter or pus. But by what proceſs is this fluid collected, in conſequence of previous inflammation exiſting in a part, in ſuch a quantity as to form an abſceſs; and what is the nature of the fluid itſelf? Theſe are objects that require to be very particularly conſidered, and many opinions have been formed concerning them.

Some have imagined that pus is produced partly by an alteration made in the fluids of the part, and partly by the breaking down of the over-diſtended capillary veſſels, the diſſolution of the fat, and of other ſubſtances about the tumour; all which, are ſaid to be blended with the altered fluids of the part. Others have ſuppoſed that ſuppuration is a kind of fermentative proceſs carried on in the fluids of the part affected; while others again conſider it (with DE HAEN) to be a ſecretion *ſui generis*. With-

* The author has ſaid nothing on the treatment neceſſary in *mixed caſes* of phlegmon and eryſipelas. But ſurgeons, knowing the remedies ſuitable for each ſpecies, will of courſe be guided, in this reſpect, by circumſtances. Where phlegmon is found to exiſt, it ſeems moſt requiſite to direct our attention to that in the firſt inſtance; at leaſt, we are warranted, in ſuch caſes, in having recourſe to a bolder treatment than might be proper where the eryſipelatous diſpoſition appears to predominate. H.

out

out dwelling upon this queſtion, which is more curious than uſeful, I ſhall juſt obſerve that at preſent I am moſt inclined to agree with the laſt opinion, that pus is a ſecretion*.

But

* The reader will probably not be diſpleaſed to have, inſerted here, an extract from a late ingenious Diſſertation ON THE PROPERTIES OF PUS, by Mr. HOME.

After a ſeries of well-directed and ſatisfactory experiments made with a view to aſcertain the truth of Mr. HUNTER's opinion on this ſubject, namely, that PUS *is a ſecretion, or at leaſt a fluid formed from a ſimilar ſtructure of veſſels as the ſecretions from the blood*, Mr. Home recapitulates the circumſtances, which, in his opinion, tend to eſtabliſh this theory. He obſerves, that,

1. " In its chemical analyſis, PUS is found to contain ſimilar ſubſtances with the blood."

2. " It is, in a recent ſtate, free from any tendency to putrefaction."

3. " It is always in harmony with the parts which form it, having no power of irritating " them, even when the ſurrounding parts are affected by it. This ſeems to be peculiar to " ſecretions; and may be illuſtrated by the tears excoriating the cheek, although no ſuch " effect is produced on the lachrymal gland or ducts."

4. " Its appearances vary according to the ſtate of the conſtitution at the time; and are " affected by very ſlight changes in the general habit, ſimilar to ſecretions; which could not " be made up of the ſolids and fluids of the part."

5. " It is readily abſorbed or taken back into the circulation, without producing any ill " effect upon the conſtitution."

6. " The parts which form it aſſume a ſtructure ſimilar to that of a gland, by becoming " exceedingly vaſcular: and what is curious, and deſerving of obſervation, is, that parts ap- " pear to require more time to be rendered fit for carrying on this proceſs in proportion as " they are different in ſtructure from a gland. In internal canals, which have naturally a " ſecreting ſurface, pus is formed in five hours. On the cutis, which is very vaſcular, in " leſs than twenty hours: and in common muſcles, nearly in forty-eight hours."

7. " It is compoſed of globules ſwimming in a tranſparent fluid; which is the caſe with " many ſecretions."

8. " It is thinner at the time of leaving the veſſels than afterwards, ſimilar to ſecretions " in general."

9. " It

But whatever may be the mode of this fluid being formed, the nature of it when once formed, is a circumſtance to be determined by our ſenſes. Pus, or what is called laudable or good pus, is a cream-coloured, bland, homogeneous fluid, ſomewhat ſalt to the taſte, and devoid of ſmell.

From this deſcription of good pus, ſuch as we find generally collected in well-formed abſceſſes, it is manifeſt that it muſt be a moſt harmleſs and inoffenſive fluid; and indeed, practice has afforded me a few inſtances, in which I have ſeen large collections of this fluid, or, in other words, large abſceſſes, which the ſurgeon intended to open the next day, but which have diſappeared entirely in the courſe of the night, leaving no traces behind. Neither has this ſudden abſorption of matter been attended with any inconvenience; for though care was taken to give the patient a few purges afterwards, it appeared that this was by no means neceſſary, not the leaſt ſymptom of danger or diſeaſe having ſucceeded.

This however relates only to pus in a ſound ſtate; but it may become altered or acrimonious in its nature, when it certainly cannot be ſo very inoffenſive a fluid. One of theſe alterations manifeſts itſelf by the ſmell; for if, in letting out the matter of an abſceſs, it ſhould have a putrid ſmell, which is often the caſe, that matter is certainly of an acrimonious quality. It is frequently found alſo mixed with blood and other fluids, when it loſes its cream colour and becomes of a dark, dirty, brown hue; in which caſe, it is called purulent ſanies. In other inſtances it loſes its conſiſtence, is much thinner than it ought to be, its colour inclining to yellow, ſomewhat reſembling ſerum, and in this ſtate it is termed ichor.

9. "It is highly probable, from what we know of the ſecretions in general, that they "muſt, in every inſtance, leave the terminations of the ſecreting veſſels in a very fluid ſtate; "and muſt take on the conſiſtence they are found to poſſeſs, either immediately, or ſoon af-"ter they are ſecreted, ſimilar to PUS."

To thoſe who are deſirous of carrying ſtill farther the inveſtigation of a ſubject ſo highly important to Surgery, the attentive peruſal of this very intelligent publication cannot be too ſtrongly recommended. H.

Abſceſſes

Abſceſſes may be divided, with reſpect to their ſituation, into internal and external. We call them internal, when they affect the cavity of the head, of the cheſt, of the belly, or of any of the joints; external, when they have their ſituation in any of the outer parts of the body. The external again, may be divided into deep ſeated, or ſuch as are under the faſcia of the muſcles; and ſuperficial, or ſuch as are ſituated in the cellular and adipoſe membrane, or among the common integuments under the ſkin; which diviſion will be found to require a conſiderable difference in their treatment.

Abſceſſes, with reſpect to their nature, may be diſtinguiſhed; firſt, into abſceſſes of the glands, which may take place in any of the lymphatic glands throughout the body, but which moſt frequently affect the parotid and ſubmaxillary glands, and are the uſual characteriſtics of the ſcrophula; and ſecondly, into critical abſceſſes, or ſuch as happen after any acute diſeaſe, and ſupply the place of that critical reſolution by which the diſeaſe, in its natural progreſſion, ſhould have been removed.

Theſe ſeveral diviſions of abſceſſes, from their ſituation and from their nature, we ſhall find uſeful in laying down general rules for the treatment of them, which we ſhall firſt proceed to do, and then mention the particular treatment proper for every abſceſs that may happen in any part of the body.

When we are convinced that pus is collected in any part, and forms what is called an abſceſs, that fluid muſt be conſidered as an extraneous body, and therefore the firſt general conſideration is to procure a ſpeedy vent for it. It is however a general rule, not to make an opening till we are perfectly ſure that matter is formed, and in many caſes not till we are certain of the abſceſs being come to maturity, as it is called; that is to ſay, not till it appears that the increaſe of the diſeaſe is ſtopped, and all the pus which we may ſuppoſe would be formed in the tumour is already collected there.

Now by what criterion ſhall we determine this? It has been already ſaid that when pus is forming in an abſceſs, the progreſs of the inflammation is increaſed, the tumour becomes more elevated and circumſcribed, rigors and ſhiverings take place, and laſtly, the fluctuation of the matter is evidently felt under the fingers. This holds good with reſpect to thoſe abſceſſes particularly that are ſeated in the ſuperficial parts of the body, in the cellular and adipoſe membrane. But in deeper ſeated abſceſſes, ſuch for inſtance as are formed under the thick faſcia of the muſcles in the thigh and in the back, theſe ſigns are not evident, and indeed many of theſe tumours are not attended with any kind of change of colour in the ſkin. Habit therefore muſt go a great way in aſſiſting us to form a determination here. By frequently ſeeing and touching deep-ſeated abſceſſes, we not only become ſenſible of the fluctuation, though deep, but the eye will be almoſt ſufficient of itſelf to fix the judgement. We muſt not however fail to attend particularly to the mode of their formation and progreſs. Whenever a tumour, though having no redneſs of the ſkin, ſhall have been formed with great pain, and when it has come on after ſome external violence, or after ſome acute diſtemper, and that moreover the patient ſhall have complained of irregular rigors or ſhiverings; from all theſe circumſtances taken together, we may have good reaſon to conclude that matter is at leaſt forming.

But there ſeems to be one farther point neceſſary to be conſidered, and that is, by what criterion we ſhall judge whether the matter in theſe deep-ſeated abſceſſes be completely formed, or in other words, whether it be the proper time, according to the general rule, for giving vent to it. And here if we conſtantly bear in our minds one of the axioms of that great and accurate obſerver of nature, Hippocrates, we ſhall have a geneneral rule to lead us in moſt inſtances. This axiom is, Περὶ τας γενεσιας τȣ πυȣ, ἐι πόνοι ϰ ὀι πυρεϛοί ξυμβαίνȣϛι μαλλον ἢ γενομένȣ, that is to ſay, *there is a greater pain and fever while pus is forming, than when it is formed.*

If therefore, after the fore-mentioned ſymptoms attending a tumour, and particularly after the ſhiverings, we ſhould perceive a remiſſion of the

the violence of the ſymptoms, without any ſenſible diminution of the volume of the tumour, or rather, perhaps, with an increaſe of it, we may then conclude that the matter is compleatly formed. This rule however, though very extenſive, is not, as we ſhall find, applicable to every poſſible caſe; ſince, when we come to conſider the treatment of each particular abſceſs, we ſhall find one or two inſtances, in which we have ſcarce any other criterion to judge of the exiſtence of matter, except the violence of the pain, and hardly any other motive to determine us as to the neceſſity of making a ſpeedy opening in the part.

Having thoroughly made ourſelves maſters of all the ſigns or indications of exiſting ſuppuration, the next buſineſs is to conſider of the mode of giving vent to it. This may be done in three ways; by nature, by inciſion, and by cauſtic; all of which it may be proper occaſionally to adopt, according to the different ſituation or nature of the abſceſs.

In all ſuperficial abſceſſes ſeated in the cellular or adipoſe membrane above the faſcia of the muſcles, particularly if they be not of any conſiderable extent, in general there can be no harm in leaving them to nature, ſo as to let them burſt of themſelves. The beſt application to an inflamed abſceſs advancing to ſuppuration is ſomething, of an emollient kind, that ſhall keep the part as ſupple and as eaſy as poſſible. Poultices made with the ſaturnine water and crumb of bread, or with the linſeed cake and water, I think preferable to the ordinary applications, as I have before had occaſion to obſerve.

In theſe ſuperficial abſceſſes the ſame application may be continued after the tumour has burſt, and if there be any induration exiſting in the ſurrounding parts which does not give way in a few days to emollient cataplaſms, the addition of a ſmall portion of mercurial ointment ſpread on the ſurface of the poultice will greatly aſſiſt in ſoftening it. This plan ſhould be continued till all the matter is evacuated, and all the inflammation and hardneſs are diſperſed; when it may be proper to lay aſide the emollients, to cover any little ſore that may remain with a pledget of cerate, and to

make uſe of gentle preſſure by bandage to haſten the conſolidation of the parts.

If the ſeat of the abſceſs be in the glands near the ſkin, (which is alſo a ſuperficial abſceſs) it may be neceſſary to make uſe of more ſtimulating cataplaſms; for, in theſe caſes, the ſuppuration is generally very tardy, and requires to be quickened. Some have recommended poultices of onions, figs, and lily roots, for this purpoſe; and the author of a late publication on this ſubject, ſtrongly adviſes an epithem made of honey, flour, and yolk of egg, which he ſays ſhortens conſiderably the duration of the diſeaſe. But if the ſuperficial abſceſs be of any extent, we ſhall find, that the opening made by nature will not be ſufficiently large to evacuate the pus. We ſhall therefore be under a neceſſity of making an artificial opening, and the beſt mode of doing this is by a free even inciſion with a clean-cutting knife. The opening ſhould be made without any regard to the direction of the muſcular fibres, and in the longeſt, not the longitudinal, axis of the tumour, unleſs that ſhould prove the longeſt, which is ſeldom the caſe, for in theſe ſwellings the tranſverſe axis is uſually the longeſt.

This kind of abſceſs, when it requires an opening on account of its ſize, may likewiſe be punctured as early as the matter is formed; and although there ſhould be ſome little hardneſs, it need not hinder the operation, for that will eaſily be reſolved in the courſe of the cure. In general I have obſerved, where it is neceſſary from the ſize of a ſuperficial abſceſs to open it, that the ſooner the opening is made the better. This practice ſaves the patient much pain, by putting a ſtop to the progreſs of the diſeaſe, and by preventing the ſkin from being thinned to a conſiderable extent, ſo as to occaſion the ſubſequent loſs and deſtruction of it. But when the abſceſs happens in the ſuperficial glands, it is much better, if poſſible, never to open it by artificial means; becauſe, as the cure of the diſtemper depends upon the melting down of the whole ſubſtance of the gland, the longer the pus is permitted to ſojourn in the part, the more compleatly will this effect be obtained.

As in the ſuperficial abſceſs which is not glandular, early opening is to be recommended, in order to ſtop the progreſs of the diſeaſe; ſo, in the glandular abſceſs, we interdict it with a view to encourage the progreſs of the diſeaſe on which the cure principally depends. Again, if the glandular abſceſs be ſo large as to require opening, it will be evident that the beſt mode of doing it will be by cauſtic, which will be found infinitely preferable to inciſion, becauſe the object is not to ſave, but to deſtroy the affected part. Thus in venereal buboes, when it is neceſſary to open them, the cauſtic will be found to be by far the moſt eligible mode.* But if the abſceſs be in the ſub-maxillary glands, where it is neceſſary as much as poſſible to avoid deformity, and conſequently the loſs of ſkin; if the ſwelling be ſo large as to require an artificial opening, it will perhaps be better to avoid the cauſtic and to make a ſmall opening with a lancet at each extremity of the tumour, by means of which, we may introduce a ſeton and, very poſſibly, deſtroy the gland without affecting the ſkin that covers it. Nor is even this rule of waiting as long as poſſible before we make an opening in abſceſſes of the glands, to be admitted without an exception; for, when we come to conſider the abſceſs in the lactiferous glands of the breaſt, we ſhall find that a contrary practice will be attended with the moſt ſalutary conſequences.

In the deep ſeated abſceſs, or that which is under the faſcia of the muſcles, where there is in general no inflammation of the ſkin, if the tumour does not advance kindly to ſuppuration, inſtead of the ſuppurative cataplaſm recommended in the other abſceſs, we may uſe with propriety and with good effect, any of the warm ſtimulating plaſters made of

* I confeſs I ſcarcely ever ſaw a *venereal* bubo that required this *extenſive application* of the cauſtic. The diſeaſe, in general, very rapidly removes the ſuperficies, and reduces the abſceſs to the ſtate of an ulcer, (if the previous uſe of mercury has not been ſo conſiderable as to oppoſe this proceſs;) in which caſe, there is no advantage to be expected from an opening that is more than ſufficiently extenſive to favour the free digeſtion of the wound. But the proportion of true venereal buboes, to the number of glandular abſceſſes which are generally deemed ſuch, is very ſmall; even though theſe may have owed their origin to ſymptoms palpably venereal in themſelves. H.

gum

gum ammoniacum, or galbanum. But in thefe deep feated abfceffes we muft purfue a very different mode of treatment from that which we have juft recommended for the fuperficial abfcefs. In the latter, although, when an opening is required, it may be ufeful to have recourfe to it early, yet no great danger can attend a little delay, efpecially fince it has been obferved, that fome of them might be left to burft of themfelves: but, in the deep feated abfcefs, however fmall the extent of it, not only the cafe can never be cured without an artificial opening, but it is likewife of the utmoft confequence that this opening fhould be made as early as poffible, and as foon as the Surgeon's knowledge and penetration lead him to judge, by attending to the circumftances already mentioned, that the pus is formed.

Let us confider a little, the nature of the parts furrounding the matter. In the fore part of the tumour there is a ftrong inelaftic tendinous expanfion, forming a confiderable refiftance to the diftending power of the fluids within; fo that, until this refifting fafcia be ftretched to fuch a degree as to break, the matter cannot poffibly come forward to the fkin. But the back part and fides of the abfcefs are of a very different nature: they confift either of foft mufcular fibres connected with yielding cellular membrane, (proper fubftances either to be deftroyed by the preffure of the incumbent fluid, or to tranfmit that fluid through all the interftices of the mufcles, fo as to form burrows, holes or finuffes for the matter which extends the mifchief to the neighbouring parts, or perhaps diffufes it through the whole of the limb) or elfe thefe parts may be thin membranes, as in the inftance of the abfcefs under the fafcia of the abdominal mufcles, where, fooner than the ftrong tendinous expanfion will burft, the matter will be more likely to pierce the peritoneum and evacuate itfelf into the cavity of the abdomen, where it muft generally prove fatal. Or laftly, the matter may be feated near the furface of fome bone, where if it be fuffered to remain, a caries may be the confequence. From all thefe circumftances the neceffity of making an early opening will appear; and it will likewife be evident, that the opening fhould be made, not by cauftic but by incifion. It is proper indeed that thefe deep feated abfceffes fhould be

be opened very largely, and that the fascia covering them should be freely divided, in order that the Surgeon may get fairly at the bottom of the abscess, so that if there be any sinusses running among or between the interstices of the muscles, he may either be able to lay them open, or by tracing the direction in which they run, make counter-openings wherever they may be required.

In the inside of most abscesses we likewise meet with portions of the cellular or adipose substance, or perhaps of separated coagulable lymph, which do not make part of the parietes of the cavity, but run through the middle of it, forming so many little bars of flesh, passing across from one side of the abscess to the other. These must be searched for with the finger, and wherever we find them, they must be cut through with the knife. Sometimes we shall meet with them of considerable thickness, and much indurated.

Nor should it be conceived, though this rule of early opening in the deep seated abscess is founded on theory, that it is wholly unsupported by practice. On the contrary, by opening these abscesses early, they have sometimes been cured, though extremely large, and containing very large quantities of matter, in a month or six weeks; while other tumours of this nature, which, from their slow progress in the early stages, have been either neglected by the patient, or suffered to come forward, or ripen, as it is commonly called, have kept the patient six months under treatment; during which time, he shall have been in imminent risque of his life. This tedious prolongation of the complaint has been entirely owing to the matter being suffered to remain longer in the part than was necessary, by which sinusses have been formed, the number and direction of which, it was, at first, perhaps impossible to discover, and which, having manifested themselves with painful and aggravated symptoms in the course of the cure, have at length required a separate and particular treatment. In general, when once matter is formed in a tumour, it may be considered as ripe enough, and therefore fit to be opened.

But this rule of opening deep ſeated abſceſſes as early as poſſible, is not without its exception. The only circumſtance however, which may be ſaid to form a general exception, ariſing from the nature of the diſeaſe, is in the caſe of critical abſceſſes, or tumours formed to carry off the remains of ſomething morbid from the ſyſtem. Here nature, exhauſted by the violence or continuance of the diſeaſe, and exerting her laſt efforts to expel the enemy from the conſtitution, is ſometimes deficient in powers to produce that degree of inflammation ſufficient to prepare or to ſecrete the fluids in a proper manner, ſo as to form well-concocted, good pus. If we open theſe critical abſceſſes too early, we ſhall diſturb nature in her operations, and ſhe may never after be able to execute them compleatly. We ſhall give vent to crude, unconcocted, unprepared fluids as it were, and only carry away a part of what the conſtitution wiſhes wholly to get rid of.

It is moſt adviſable therefore, in theſe caſes, to wait till the inflammation appears to be raiſed pretty high, and till the diſeaſe of the habit ſeems to be all transferred to the part; and this an accurate obſerver may diſtinguiſh in the appearance of the patient's countenance, which, from being very morbid and ſickly, puts on a more healthy and promiſing aſpect.

In theſe critical abſceſſes, we may therefore, in general, wait to obſerve the turn and progreſs of the diſeaſe; unleſs there ſhould be ſome circumſtance, of material conſequence, which indicates a contrary intention: as when we have reaſon to apprehend that the matter may make its way either into the cavity of the thorax or abdomen, or when it may injure ſome part of conſequence; or laſtly, in critical abſceſſes after the ſmall pox, which I have learnt from experience, are, in general, fatal, unleſs they be opened early. There may be ſome caſes likewiſe, where the critical ſuppuration is going on very ſlowly, to the utmoſt hazard of the patient's life, and when the part ſeems to require an additional ſtimulus. To ſuch a kind of ſlow critical tumour, a prudent Surgeon may even venture the application of a cauſtic, by which means, he may be likely to aſſiſt the powers of nature in haſtening the formation of the matter, and

and expelling the diſeaſe. But if he propoſes to open ſuch kind of tumours with this intention and in this ſtate, it is plain, he ought not to prefer the mode by inciſion to that by cauſtic; for the latter, while it is acting, may, by its ſtimulus, produce the deſired effect. *

It is alſo another general rule in the treatment of abſceſſes, to lay open all the ſinuſſes and cavities we may find belonging to them. However judicious and ſalutary this practice may be, there are ſome caſes in which it is needleſs, and others where it is impoſſible. For inſtance, it is ſcarcely ever neceſſary to open ſuperficial or cutaneous ſinuſſes, from which the matter may be readily expreſſed, and which may afterwards be cured by proper compreſſion; unleſs it ſhould ſo happen that the bottom of the ſinus is ſituated in a depending part, and the opening of it above, when it may be impoſſible to force out the matter by compreſs and bandage, and when we may be obliged either to lay open the ſinus through its whole extent, or to open the bottom of it and paſs a ſeton through the reſt.

Nor need we in general to lay open ſinuſſes, whoſe opening is in a depending part, for in theſe, the matter, finding a ready iſſue of itſelf, the ſinus will ſoon be cloſed. Neither is there uſually any neceſſity for opening ſinuſſes which are ſituated in ſuch a manner that a counter-opening may be made with facility, and the lodgement of the matter prevented.

Whenever ſinuſſes are ſo deeply ſituated, that they cannot be opened without the riſque of injuring ſome part of conſequence to the machine, large inciſions are to be avoided. But, in this caſe, we muſt examine the parts with great attention, in order to judge whether any benefit can ariſe from a counter-opening or not. Indeed the proper management of counter-openings, is a circumſtance which evinces the ſkill of the Surgeon

* One effect attending the application of a cauſtic, is plainly that of rendering *ſuppuration more compleat*; an additional reaſon why, in opening abſceſſes, this mode ſhould be preferred to inciſion. H.

on as much as any one point of the art. In compound fractures particularly, I cannot help obſerving, that many limbs may be ſaved by counter-openings, judiciouſly made, and with attention; for the direction of ſinuſſes, in theſe caſes as well as in abſceſſes, muſt be carefully traced and noticed, otherwiſe the counter-openings, as I have often ſeen, will be made in vain.

When a ſuperficial abſceſs is opened, the pus is to be preſſed out of it very gently; for it is bad practice, to ſqueeze all the parts of an abſceſs with violence, in order to preſs out every drop of matter contained in it. The Surgeon, in doing this, counteracts the views of nature; for ſtrong preſſure, upon parts which are ſtill in a ſuffering ſtate, increaſes the inflammation, and renders the ſuppurating proceſs longer. The complete evacuation of pus from an abſceſs, rather retards than accelerates the cure; ſince, in moſt abſceſſes that have been opened, there are ſtill ſome of the ſurrounding parts in an inflammatory ſtate and tending to ſuppuration, to which nothing can encourage them more, nor of courſe tend to relieve them ſooner, than the contact of that mild, bland fluid, called laudable pus.

In the ſuperficial abſceſs too, when the matter is evacuated, the dreſſings applied ought always to be ſuperficial. In compliance with cuſtom I uſed formerly to inſinuate a ſmall bit of dry lint, or a pledgit ſpread with ſome digeſtive ointment between the lips of the diviſion, to keep them gently aſunder; but experience has taught me that this is not neceſſary, ſince ſuperficial abſceſſes of no inconſiderable extent, may ſometimes be cured by a ſimple puncture without laying open the whole cavity of the abſceſs. At any rate, I would avoid putting dry lint to the divided lips, becauſe however great the diſcharge, it is very apt to ſtick to them, and prove uneaſy. One would therefore either dip the lint in oil, or ſpread it with ſome ſoft ointment. How improper then muſt it appear, to fill an abſceſs quite full of dry lint, as has, I fear, been much too generally practiſed.

In

In deep ſeated abſceſſes, it is not quite the ſame thing. In theſe, we have laid it down as a neceſſary rule, to get at the bottom of the abſceſs; and it may be alſo proper to keep the wound open for a longer time, in order to facilitate the free evacuation of the pus from any ſinuſſes that may be found. Some ſort of dreſſing muſt therefore be introduced into the cavity of the abſceſs in order to keep it open as much as poſſible, and dry lint is as good as any other; for, as the opening is in general large, and the diſcharge very great, the dry lint may be introduced beyond the lips of the wound, where it will not ſtick, on account of its being continually moiſtened with matter. Care ſhould be taken however, to inſinuate the lint very lightly, not to ſtuff it in with force to fill up the cavity of the abſceſs; nor ſhould we even ſuffer it to extend to the edges, which ought always to be defended by ſome ſoft ointment. An attention to all theſe minutiæ, will ſpare our patients much pain.

Having thus conſidered the treatment of abſceſſes in general, we proceed to give an account of thoſe that may be formed in different parts of the body, and of the treatment peculiar to each. In this detail we ſhall ſee more particularly, the various exceptions to the general rules we have formerly laid down. We begin with the Panaris, or *whitloe*, which uſually attacks the extremities of the fingers, and is the moſt frequent of all abſceſſes.

## PANARIS OR WHITLOE.

The panaris or whitloe, called by the Greeks *Paronychia*, is a phlegmonous abſceſs appearing about the nail, (as the Greek term expreſſes it,) or at the extremities of the fingers. This diſeaſe is claſſed into four kinds from the different ſeats of it, and it is particularly neceſſary to diſtinguiſh each ſpecies from the other, on account of their different degrees of importance, and the neceſſity of treating them differently.

The firſt ſpecies is ſituated round the nail, immediately under the cuticle or epidermis. It is in general a diſeaſe of little conſequence, but may be made troubleſome by ill treatment.

It begins by forming a little ſwelling, attended with a degree of redneſs, and ſome pain at one corner of the nail. A linen compreſs dipped in ſpirit of wine and camphor, applied moderately tight round the finger, and kept conſtantly moiſt, very frequently proves ſufficient to cure the complaint in a few hours, and prevent the formation of matter. I knew a lady who was very ſubject to frequent attacks of this diſeaſe. She had been taught always to treat it with the good old woman's remedy, a bread and milk poultice, and by this means the complaint frequently laſted a fortnight, and proved extremely worrying and troubleſome. I directed her, as ſoon as ſhe felt the leaſt pain in the finger, to dip the part and wrap it up in ſpirit of wine and camphor. By this management ſhe never afterwards had a whitloe that proceeded to ſuppuration.

But if, notwithſtanding theſe precautions, matter ſhould ſtill make its appearance, which it generally does at firſt, by one white ſpot under the cuticle, we muſt not delay cutting off the cuticle from that ſpot immediately, and from every part of the finger where it is raiſed. The application of a piece of rag, wet in the Goulard water, and renewed when dry, is then ſufficient to cure the diſeaſe in four and twenty hours. But if, on that evening, we delay opening the cuticle, which is eaſily ſeparated from the ſubjacent ſkin, it becomes looſened by the matter, which extends perhaps round the finger, and ſometimes a conſiderable way down it, and what is worſe, deſtroys the adheſion of the nail to the cuticle from which it is produced. Hence there is a neceſſity for caſting off the old nail, and conſequently waiting for the growth of a new one, which makes a tedious and troubleſome diſeaſe of one that would have been well in a few hours if properly treated at the outſet. We ſee therefore, even in the moſt trifling caſes, how much miſchief may be prevented by a little timely attention and obſervation*.

The

* Sometimes the firſt appearance of matter is *under* the nail. In this caſe the diſeaſe will grow conſiderable, and the nail will infallibly be ſeparated unleſs a piece of it be cut out with a penknife ſo as to give a free vent to the matter. Of the firſt ſpecies of whitloe, this is the moſt unfavourable, on account of its ſituation, and requires more attention in the after-

The ſecond ſpecies of whitloe is ſeated immediately in or under the cutis, in the adipoſe membrane about the end of the finger.

The inflammation, being greater here, and alſo the pain, from the greater ſenſibility of the parts concerned, the diſeaſe becomes of a little more conſequence. There is a ſtrong throbbing and pulſation in the part, and a conſiderable elevation of the ſkin. We may attempt to diſperſe this abſceſs by immerſing the finger for half an hour at a time in warm water, and by keeping rags, wet with the ſaturnine water, conſtantly applied to the part; but if theſe attempts ſhould fail, the ſooner the matter finds an iſſue outwardly, the better; every thing therefore, that tends to remove the obſtacle to the exit of the matter, ſhould be ſpeedily attempted. The cuticle in theſe parts is very thick, and it often happens that the matter ſhall have got through the ſkin, and ſhall not be able to make its way through the epidermis. For the natural thickneſs of the cuticle is here increaſed by the inflammation, and by the practice of ſoaking the part conſtantly in a bread and milk poultice. This is evident to the ſenſes, for the cuticle becomes white and perfectly opaque, reſembling that of waſherwomen who have been ſoaking their hands all day in water*.

In ſlight caſes of this ſort, I have known the ſeparating of the lamellæ of the cuticle from each other, or, in other words, the thinning of the cuticle, prove ſufficient to afford an outlet, either at the time or in a few hours after, to the matter, and to cure the diſeaſe. In ſeveral inſtances,

after-treatment, than might be expected. The uſe of a poultice, prepared with lead water, ſhould be perſevered in till the diſeaſe is *wholly* at an end, and the opening in the nail afterwards protected with adheſive plaſter. H.

* The author ſeems here to be a little inconſiſtent, and to have forgotten the advice he has juſt given to attempt the cure of this kind of whitloe, while in an incipient ſtate, by ſoaking the part "for half an hour at a time, in *warm water*." Nor, does his *objection* to a poultice, upon his own principle of *relaxation*, ſeem leſs contradictory. It is an obvious fact that the cuticle of a waſherwoman's hand becomes *greatly relaxed* by long immerſion in water; how elſe ſhould it become wrinkled, as we commonly ſee it? H.

where

where there exiſted an evident tumour, with no fluctuation, but, from all appearances, a tendency to ſuppuration, I have ſucceeded, in preventing farther miſchief, by plunging a knife into the prominent part through the ſkin and fat; which effect, I imagine, can only have been produced by unloading the veſſels of the part, in the ſame manner as topical bleeding cures inflammation.

The third ſpecies of whitloe is ſeated underneath the ſheath of the flexor tendons of the fingers.

This is a diſorder infinitely more violent and dangerous than either of the two former. The matter being deeper ſeated, under ſtrong ligamentous parts, ſuch as thoſe thick bands placed at intervals over the flexor tendons to confine them in their poſition, meets with ſtill more difficulty in finding its way outwards. It therefore inſinuates itſelf under and along the ſheath of the tendons, and gets into the hand, where the fluctuation is generally firſt felt in the palm, under the aponeurotic expanſion of the palmaris muſcle. From thence, the matter ſometimes proceeds along the palm of the hand, and having reached the annular ligament of the carpus, paſſes under that into the fore-arm.

The pain of this diſeaſe is moſt excruciating, not only from the inflammation of theſe ſtrong parts, but alſo from the very great reſiſtance they make to the diſtending power of the matter. A great degree of fever is conſequently excited, the patient can have no reſt, and a greater or leſs degree of delirium enſues, according to the greater or leſs violence of the complaint.

To prevent all the fore-mentioned evils it would perhaps be only neceſſary to make an early inciſion, into the part firſt affected, through the ſtrong ligamentous bands confining the tendons; but one thing is to be obſerved, that if we make a ſimple inciſion, the great ſwelling and diſtention of the parts prevents that inciſion from having any effect, and the

the wound appears closed almost as soon as it is made. I therefore make it a rule, in such cases, to cut off a portion of the integuments and thus make a large and evasated wound, which admits of a free discharge of all the matter, and procures immediate relief to the patient. If the tendon itself be diseased, or the ligamentous bands which confine it, it will be necessary, not only to make an incision through them, but to remove part of the ligament, and even part or the whole of the tendon; for that, if it be diseased, will infallibly slough away. In a word, at all events, a free opening is to be made; otherwise we might as well make none.

If this opening be made very early, all the dreadful mischiefs we have been describing, and which sometimes lead on to amputation, sometimes even to the destruction of the suffering patient, might be prevented. However, in whatever stage of the disease the opening may be made, it is right to follow it up as far as the matter reaches. If it should extend through the palm of the hand, the aponeurosis of the palmaris must not only be simply cut through, but freely divided or set loose in various directions, that there may be no tightness or tension remaining. It is even necessary to follow up the matter through the carpal ligament and into the arm, if it should have reached so far. But all these evils may in general be prevented, as we have before observed, by an early opening; and it is rather a matter of surprize, that this salutary and effectual mode of treatment should ever have been neglected, because there is one symptom which is peculiarly characteristic of this disease, and distinguishes it from every other species of paronychia. This is, a violent pain which the patient complains of in the internal condyl of the humerus, and which happens in consequence of the two muscles, called profundus and sublimis, terminating in the flexor tendons of the fingers, which are the parts immediately affected in this complaint.

The best dressing for this kind of whitloe when opened, is oil of turpentine, or some such stimulating and spirituous dressing. Greasy and unctuous compositions generally increase the evil, and should only be used as retentives to other dressings.

The

The fourth ſpecies of whitloe, is when the matter is formed under the perioſteum, between that and the bone, or in the body of the bone itſelf.

In this, the pain is much more deep ſeated, and is not felt at the internal condyl of the humerus, as in the former ſpecies. The pain is very violent, but, in the beginning, not quite ſo much ſo as in the third kind. The ſwelling and tenſion of the finger are much leſs; and are, in general, confined to the part itſelf; but the pain ſoon increaſes ſo as to bring on fever and delirium as in the fore-mentioned caſe. The finger frequently becomes livid and is covered with little bliſters containing a bloody ſerum, and threatening a mortification.

This is a caſe which demands the Surgeon's utmoſt ſagacity and reſolution; yet we may venture to ſay, if theſe be properly exerted, that the reſult will generally be the preſervation of the finger, which otherwiſe would infallibly be loſt.

When a violent pain therefore rages at the extremity of the finger, cauſing fever and delirium, though there may be no other ſymptoms to lead us, we are warranted in plunging a biſtoury (in by the *ſide* of the finger to avoid the tendons) through the perioſteum, and down to the bone. I have frequently done this to very great advantage, and have given vent to a ſingle drop of brown-coloured matter or purulent ſanies, and this has commonly been ſufficient to cure the patient; all the violent ſymptoms having preſently diſappeared.

We are apt to feel doubtful as to the propriety of attempting this operation, from the uncertainty of meeting with and giving iſſue to matter. But I have found from experience, that, whether matter be formed or not, (in which however we can ſeldom be miſtaken) the relief will be the ſame; ſo that nothing ought to deter us from the undertaking.

If

If it ſhould be found, that the inciſion recommended does not produce the deſired effect within four and twenty hours, and that the diſorder ſhould continue raging with as much violence as ever, the amputation of the finger muſt take place, and as we are certain that we muſt come to that at laſt, the ſooner we do it the better; for we ſhall ſhorten the duration of the diſeaſe much by it, ſince all the violent ſymptoms will ceaſe almoſt immediately upon the amputation of the finger, and therefore the patient will be relieved much ſooner, than if we had waited the event of the diſeaſe.

We have an inſtance upon record of this being done without the aſſiſtance of a Surgeon. A miller, ſeized with a whitloe of the third ſpecies, had ſuffered ſo cruelly for a fortnight, that he was grown quite furious with the pain. The inflammation of his finger had extended to the bend of the arm, and even to the arm pit, where ſome very painful tumours began to be formed. In this ſituation he was reſolved, without conſulting any one, to cut off his finger with a hatchet. He placed the inſtrument a little below the articulation of the firſt with the ſecond phalanx, and ordered his wife to ſtrike upon it, which ſhe, from fear of her huſband's deſperate ſituation, as well as from the hope of putting an end to his torment, executed. From that inſtant, all the ſymptoms were aſſuaged, the tumours began to diſperſe, and in a very few days all the pain was gone, and the patient experienced no kind of inconvenience during the reſt of the cure. A methodical inciſion however, made by a Surgeon, might perhaps have afforded as much relief, and the finger might alſo have been ſaved.

The neceſſity and utility of early opening in the two laſt ſpecies of whitloe, is confirmed by another circumſtance, which experience has given me an opportunity of aſſerting with ſome degree of confidence. When, after having made a deep inciſion into theſe parts, with an intent to let out matter, it has ſo happened that no matter has followed the inciſion; I have notwithſtanding ſeen it flow plentifully, on the following day, from the orifice I had made.

Let us now paſs on to abſceſſes that happen in or about the joints, and as the one which affects the knee is by far the moſt common, let us take the treatment of that as a model for proceeding in all other caſes of the ſame kind. The matter in theſe caſes is either collected externally, in the parts ſurrounding the joint, or it is ſeated within the cavity. The firſt caſe is always curable by proper treatment, the ſecond is infinitely more dangerous.

Collections of matter externally, in the tendinous and ligamentous parts, are often the conſequence of contuſions, of punctures, or ſmall wounds made into them by inſtruments which rather bruiſe than cut; ſuch as glaſs, a nail, or a ſtone, while, in collections of matter in the cavity of a joint, the cartilages themſelves which concur in its formation, the capſular ligament, and the fat within, have all been affected by the injury done, and are brought into a ſtate of diſeaſe.

Here again, the neceſſity of making early openings is evident. If the matter be formed externally, the early opening will be neceſſary to prevent, if poſſible, the pus from corroding the ligaments of the joint, and inſinuating itſelf into the cavity, which it will infallibly do, if left there too long. In theſe deep ſeated abſceſſes, if the Surgeon timidly waits till the fluctuation becomes evident, which may not happen of a long time, he will expoſe his patient to infinite danger, which a bolder practice would almoſt entirely avoid. As ſoon therefore as there are any rational grounds for ſuppoſing the exiſtence of pus in the part, we ſhould let it out. Theſe may be determined by the preceding inflammation, by the continuance of pain, and particularly by the œdematous feel of the integuments ſurrounding the joint, which is a characteriſtic ſign almoſt always attending and diſtinguiſhing theſe deep-ſeated abſceſſes.

But it is not alone ſufficient in theſe caſes to make an early opening, it is alſo neceſſary that the opening ſhould be extremely large and free, that all the aponeurotic parts, which particularly oppoſe a firm reſiſtance to the iſſue of the matter, ſhould be freely divided and ſet at liberty. The matter,

matter, too, always ſurrounds the forepart of the joint, ſo that after having opened on one ſide of the patella freely, and in the moſt depending part, I always lay it down as a rule to make a counter-opening of the ſame kind on the oppoſite ſide of the patella. It is never neceſſary to open the upper part of the abſceſs running over the patella; for as there are two depending openings, one on each ſide of the patella, a linen compreſs placed upon that bone, and preſſed moderately with a roller, will effectually prevent any lodgement, and anſwer every purpoſe. By this ſimple management, I have cured great numbers of theſe caſes, which at the time of their coming into the hoſpital appeared very formidable. But above all things it ſhould be obſerved, by thoſe who wiſh to meet with uninterrupted ſucceſs in the treatment of theſe abſceſſes, not to be ſparing of inciſions.

I ſhall take this opportunity of relating a ſingular caſe of a complaint on the patella, from which it will appear that inciſions may ſometimes be neceſſary and uſeful, to give us an inſight into ſome diſeaſes the nature of which we cannot readily determine, and alſo to relieve the ſymptoms attending them. A young woman had received a blow on the patella, from which ſhe experienced much pain, and which in proceſs of time, was augmented to ſuch a degree as to deprive her almoſt entirely of the uſe of the leg. When ſhe firſt applied for advice, namely, about ſix months after the accident, there was a ſmall elevation of the ſkin about the center of the patella, in which a very ſmall quantity of fluid was evidently contained, and the ſurface of the patella itſelf felt in general rough and uneven, the ligamentous parts cracking as it were under the finger, as they always do when labouring under the effects of contuſion. When ſhe came into the Weſtminſter Hoſpital, which was about three weeks after her former application, I found upon examination that the fluid had been abſorbed, but the complaint ſtill exiſted as formerly, and the diſtempered feel, if I may ſo call it, of the patella, was exactly the ſame. As the external appearances, however, were not ſuch as to enable me to account for the importance of the ſymptoms, I was willing to try every poſſible mode of relief that topical applications could ſupply, and

therefore had recourſe to warm and ſtimulating fomentations and embrocations, and to preſſure; but none of theſe anſwered any good purpoſe. At length, wearied with theſe ineffectual endeavours to relieve the patient, and concluding that there might poſſibly be ſome miſchief brooding about the patella, I made an inciſion upon it down to the ligament, in hopes, at leaſt, of diſcovering the nature of this myſterious complaint, and of being able to apply the proper remedy. This opening led me into a ſmall cavity in which I could find no other diſeaſe, except a few globules of hardened fat, which ſeemed, as it were, to be inſulated from the reſt of the adipoſe membrane. I thought it neceſſary to diſſect theſe out wherever I could feel them, and I then kept the wound a little open in order to excite a degree of inflammation, for it ſtruck me at the time, that this had been originally an attempt of nature to form an abſceſs here, which, for want of ſufficient vis vitæ in the habit, had proved abortive; and that the cavity which had at firſt contained the fluid, had ſtill remained after the fluid had been abſorbed, and I was confirmed in this idea by the pale, weak, and languid countenance of the young woman. Two or three days after this operation, a ſmall abſceſs was formed upon another part of the patella, at the diſtance of about half an inch from the former inciſion. This matter I gave vent to with a ſcalpel, the pain is now greatly diminiſhed, the uſe of the leg returning, and every thing ſeems to promiſe a ſpeedy, and a fortunate termination of this unaccountable diſeaſe.*

## ABSCESSES WITHIN THE JOINTS.

If it be neceſſary to open early and freely in abſceſſes ſeated in the external parts ſurrounding the joint, this neceſſity becomes ſtill more abſolute and indiſpenſable when the pus is originally formed *within the cavity*. We muſt therefore make one or more inciſions through the capſu-

* The author's papers do not ſupply any farther information reſpecting this caſe, the particulars of which were committed to paper before the event could be finally aſcertained. H.

lar

lar ligament of the joint, in order to give a free vent to the pus, whenever we have any reaſonable ground for ſuſpecting that it is collected there; and we muſt more eſpecially avoid waiting till the ſigns of ſuppuration are manifeſted externally. Without this precaution, the matter deſtroys entirely the cartilages covering the extremities of the bones, penetrates into their ſubſtance and renders them carious, before it can poſſibly have made its way through the ſtrong capſular ligament, and the other tough parts ſurrounding the joint. Nor is the ſuppoſed danger of expoſing cavities to the air, to deter us from opening the articulation in theſe inſtances; for, not to mention the various inciſions that have ſeveral times been made into the joints, without producing the leaſt bad ſymptom, it is evident, that the pernicious effects of a fluid deſtroying and corroding the parts within, muſt be infinitely more fatal than any that can be produced by expoſure to air.

The fact, as far as I can collect from obſervation and experience, ſeems to be, that the bad ſymptoms which frequently ariſe after openings made into the joints are not ſo much owing to the inciſion itſelf, as to the violence of the diſeaſe exiſting there at the time of its being made.

It is inconceivable indeed, unleſs we were witneſſes of the fact, how extremely rapid the progreſs of theſe articular diſeaſes is. In leſs than ſix weeks after an accident, I have known the neceſſity of amputating appear, upon making an inciſion into the knee and elbow joints. This I have accordingly performed a few days after, when, in that ſhort ſpace of time, I have found all the cartilaginous ſurfaces both of the femur, tibia, and patella, as well as of the ulna, humerus and olecranon (where the elbow has been the ſeat of the diſeaſe) totally eroded, and the bones all carious. Whatever precipitation therefore we may uſe, it is very poſſible that we may ſtill be too tardy; and it is alſo evident, that the ſooner the fluid be let out, the leſs liable will the joint be to be injured; or at leaſt the injury may not be ſo conſiderable, and may ſtill be within the reach of our art.

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I would not however be underſtood to adviſe a wanton expoſure of the articular cavities of the body; ſuch things are not to be done without ſtrong reaſons, the validity of which no man can properly judge of who is not extremely converſant, not only with the examination of theſe complaints, but alſo with treating them himſelf. This rule by which the neceſſity of opening diſeaſed joints early is to be determined, ought only, with reſpect to the young practitioner, to apprize him of the danger of temporizing and delaying, and ſhould therefore prompt him to call in the aid of more mature experience, in order that every poſſible aſſiſtance the art can afford, may be timely applied, with the laudable intention of ſaving a life or a limb.

When we are under the neceſſity of cutting into any joints, I would alſo recommend, that every poſſible care ſhould be taken, to prevent them from being long expoſed to the atmoſpheric air. If the joint be diſeaſed, the dreſſing ſhould be applied as ſpeedily as poſſible; and if the joint be not diſeaſed, and the inciſion has been made into it merely to extract ſome extraneous body, the wound ſhould be kept quite cloſe with the dry ſuture, the limb perfectly at reſt, and the part not looked at, unleſs ſome bad ſymptom acceding ſhould oblige us to it, till we may ſuppoſe it to be nearly united by what is called the firſt intention. This was the precaution I uſed in a ſingular caſe of looſe cartilage in the knee joint which terminated favourably.

But to return to the diſeaſed joint; when that is opened, ſome people adviſe us to paſs a ſeton through it, in hopes of inducing a ſeparation of the morbid parts of the bones, and a ſprouting of granulations from the upper and under ſurfaces, ſo as to bring about an anchyloſis or ſtiff joint, by the coalition of the bony ſurfaces. Others attempt this by injecting ſpirituous and ſtimulating fluids into the cavity. Preſerving the limb with a ſtiff joint is certainly preferable to amputation; but the proper method of bringing about an anchyloſis is ſtill a deſideratum in Surgery. Nature will ſometimes accompliſh this taſk of herſelf, though very rarely; but I have not been ſo happy as to find the efforts of art ſucceſsful

in theſe attempts. Where the joint is but ſlightly affected with diſeaſe, the parts will ſometimes recover themſelves; but where the joint is thoroughly diſeaſed, we have little reſource left but in amputation, which, by the way, confirms ſtill more the neceſſity of early opening in theſe deplorable caſes. Counter-openings are as abſolutely neceſſary here as in the abſceſs on the outſide of the joint; and it is often proper to make more than one, though that is generally ſufficient in the other caſe.

Abſceſſes are ſometimes formed under the perioſteum, and wherever we have reaſon to ſuſpect that this is the caſe, the neceſſity of early opening will be evident, from what has been already ſaid of the treatment of the fourth ſpecies of paronychia, and from the immediate relief which, in thoſe caſes, enſues from letting out only a drop or two of purulent ſanies. The particular parts in which we are moſt likely to meet with this abſceſs, are the tibia and the cranium, where, the membrane being nearer to the ſurface of the ſkin, is more liable to external injury, and therefore to inflammation and abſceſs. The nearneſs of the part to the ſkin alſo prevents us from miſtaking the caſe in theſe inſtances, ſo that the fluctuation of the matter is evidently, though perhaps obſcurely, felt.

We muſt not be ſatisfied with a ſimple inciſion here, but muſt divide the perioſteum freely, throughout the extent of the inflammation, or elſe the diſeaſe will go on after the abſceſs is opened. Thus, in injuries of the ſcalp, I have often ſeen the matter make its way for a conſiderable extent through the pericranium over the ſurface of the ſkull, frequently bringing on a caries of the bone, all which miſchief is effectually prevented by a large and free diviſion of the ſcalp and pericranium, even beyond the place to which the injury or inflammation ſeems to extend. With reſpect to abſceſſes forming in the body or ſubſtance of the bone, though the ſame neceſſity of opening early would hold good to prevent the farther progreſſion of the miſchief, yet the ſigns are ſo equivocal, that we can ſcarcely ever expect to be ſufficiently aſſured of this circumſtance

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to warrant us in making an opening into the bone and letting out the matter, till the diſeaſe has made its appearance outwardly.

This point would lead us to the mode of treating diſeaſed bones, which, though a material part of operative Surgery, does not come within the limits of our preſent plan. We ſhall therefore proceed to ſpeak of other abſceſſes happening to different parts, both external and internal, and of the treatment of ſeveral other kinds of tumours which may affect the machine.

## PSOAS OR LUMBAR ABSCESS.

The abſceſs next to be conſidered, is that which is called, though improperly, the *Pſoas Abſceſs*, but which in fact is originally a caries and abſceſs of the vertebræ of the loins, and therefore may be termed the *lumbar* abſceſs.

This abſceſs manifeſts itſelf either by a tumour on the inſide of the thigh under Poupart's ligament, or externally on the ſide of the foramen magnum Iſchii, but much more frequently in the former place. This is the ſtate in which we generally ſee this deplorable diſeaſe, which, in the ordinary mode of treatment, is moſt commonly fatal. It is wonderful to obſerve from what apparently trifling beginnings this diſeaſe frequently originates. It is very often the effect of a counter-ſtroke received by a fall on the nates, or a violent ſhock on the feet in jumping, in which caſe, the vertebræ of the loins are the parts on which the ſhock muſt neceſſarily fall; and the diſeaſe is ſo ſlow and ſo inſenſible, as it were, in its progreſs, that it is only from very attentive experience we can be able to diſcover its tendency.

It is upon this ground, that I would propoſe the probable means of ſtopping its progreſs, if we are happy enough to diſcover it in the firſt inſtance, and the beſt mode of treating it when it is far advanced. In order

order to make the whole of my doctrine, upon this important point, evident, let me trace the progreſs of the diſeaſe from the beginning, and ſhew the effects which attend the uſual mode of treating it. In a ſhort time after ſuch ſhocks as I have been deſcribing, as alſo after violent and painful efforts to raiſe too heavy loads, the perſons who have been expoſed to theſe accidents, complain of a dull pain in the region of the loins, accompanied with a difficulty in walking, or a lameneſs and hitch in the gait. Theſe complaints increaſing gradually, without ever cauſing any very acute pain, end at length, in ſo great a debility of the ſpine, that the patients are no longer able to ſupport themſelves, but are obliged to keep in bed. The thigh in ſome inſtances, grows waſted and extenuated, and a pain is felt from the loins to the inſide of the thigh, with a foreneſs to the touch, preciſely in the direction of the tendons of the Pſoas and Iliacus internus muſcles, where the matter is probably attempting to paſs.

At this period, which is at the diſtance of from ſix, to nine, ten, or more months after the accident, we generally begin to perceive a tumour which moſt commonly makes its appearance, as we before obſerved, on the inſide of the thigh, juſt below Poupart's ligament, and which increaſes ſlowly, without being painful to the touch. When the tumour has acquired a certain ſize, and the matter which forms it is ſufficiently advanced towards the ſkin, a manifeſt fluctuation is obſerved in it, which ſeems to furniſh a poſitive indication for the opening of it.

The Surgeon therefore thinks himſelf obliged to open the tumour, and this he generally does largely; and giving iſſue to a large quantity of matter, which has been confined for a long time, he now imagines that he muſt have contributed to the advantage of his patient. But let us trace the fatal change which ſoon takes place, and we ſhall be convinced of the contrary.

The patient, who for ſome months paſt had experienced no evident degree of fever, who ſuffered but little, who had perhaps preſerved his

appetite, who ſlept, and who had complained of no other ſymptom but that he could not keep his back upright, is far from being relieved by this operation; at leaſt if he be, the relief is not of long continuance; for the matter forming the tumour, which, at the time of the opening, was as white as milk and perfectly devoid of ſmell, ſoon contracts a conſiderable ſtench, and becomes intolerably offenſive; a fever comes on, the pulſe becomes quick and ſmall; in a word, a hectic ſupervenes, and the patient dies not unfrequently towards the thirteenth day. Sometimes indeed, patients in this diſeaſe may live longer, but they only drag on a miſerable exiſtence, and a fatal termination almoſt always ſucceeds.

Upon opening the body after death, a caries of two or three of the lumbar vertebræ, and often of part of the Os ſacrum preſents itſelf to our view; and from ſeeing ſo much miſchief, the Surgeon is far from ſuſpecting that the diſſolution of the patient has been haſtened by his management.

It is proper however to obſerve, that the patient had lived ſeveral months, without any conſiderable inconvenience, with this caries and this tumour. Though it contained a large collection of matter, his ſtate would not have been ſo ſuddenly changed, if an opening had not been too precipitately made. We ſhall be convinced of this by attending to what happens when theſe tumours are left to nature. If they burſt of themſelves, the opening is made much later, and in this caſe the matter preſerves its original mildneſs and inoffenſive ſmell much longer, or perhaps is never altered. If however it ſhould alter, it does not happen ſo ſoon as when the abſceſs has been opened; and though ſome alarming ſymptoms ſhould come on at this period of the burſting, they are much leſs rapid in their progreſs, and ſeldom riſe to ſuch a height as when the opening has been made by art.

The reaſon of this ſeems to be, becauſe nature procures no more than a very ſmall iſſue to the matter, and that too in her own way, by which perhaps the eaſy introduction of atmoſpheric air into the center of the cavity,

cavity, where her operations are ſtill going on, (and which in theſe caſes, ſeem particularly apt to be diſturbed,) is greatly impeded. If the patients die too, when nature makes the opening, they periſh much later than in the other inſtance.

This difference in the event of the diſeaſe, and theſe ideas which were firſt ſuggeſted to me from a very ingenious performance of my friend, M. DAVID, Surgeon of the *Hotel Dieu* at ROUEN; and having alſo ſeen the good effects of his doctrine applied to practice while I was in that city, have taught me never to meddle with lumbar abſceſſes, nor to apply any thing to them that may tend to haſten their burſting. Whatever may be the ſize of the tumour, and however pointed the fluctuation from the matter endeavouring to form itſelf an iſſue, it is a rule with me, never to employ a cutting inſtrument, nor to open them by cauſtic. I have repeatedly deſired my profeſſional friends to take notice of the event of theſe caſes, and to compare it with that in others, where the opening had been made by art. Theſe gentlemen can witneſs that in every inſtance they have obſerved the ſame thing; that is, when theſe tumours have been opened by art, the matter, at firſt totally bland and inoffenſive, has become, upon the third or fourth day at fartheſt, moſt abominably fœtid; but, on the contrary, when they have been ſuffered to burſt of themſelves, this unfavourable event has not taken place.

I do not ſay that all patients infallibly die by the firſt mode of treatment; nature and the ſtrength of the conſtitution ſometimes get the better of the diſeaſe, and convey our patients ſafely through the very imminent riſque of life to which they are always expoſed. Nor will I, on the other hand, affirm, that patients will always recover by leaving the caſe to nature.

Thus far I can venture to ſay, that out of four caſes which I have treated within theſe four years, but one has proved unſucceſsful. One of theſe laſted for above two years; repeated openings formed in different parts of the thigh, both externally and internally, from which the

patient ſuffered much at intervals, and was expoſed to ſome alarming ſymptoms. I was obliged to make uſe of all my perſuaſion, to prevail upon the mother of this child not to have any thing done, but to leave the whole to nature. I ſpoke ſo ſtrongly however, that ſhe at laſt complied with my wiſhes, and by obſerving to keep the patient as much as poſſible from motion, ſhe perfectly recovered from one of the worſt of theſe caſes I ever ſaw. Another inſtance is that of a young man, whoſe complaint alſo laſted a very long time. It was opened by nature, under Poupart's ligament, and as there was a large quantity of matter continually attempting to burſt forth, yet unable to force its way through an opening ſo very ſmall, (from which the patient ſuffered much pain,) I introduced a ſmall piece of gentian root into the opening. He was relieved by this, and I had then an opportunity of injecting and cleanſing the cavity of the abſceſs with myrrh water; from which, in this long treatment, he experienced much advantage. At one period of the diſeaſe, there was ſo large a piece of exfoliated bone preſented itſelf at the orifice, that it was with much difficulty I could extract it, although the orifice was full large enough to admit my finger. This patient recovered perfectly, as indeed the viſible improvement of his health had previouſly indicated.

The unſucceſsful caſe, out of the four inſtances I have mentioned, was one, where the tumour was external upon the buttock, and of an immenſe volume: and indeed, I have in general obſerved, that thoſe lumbar abſceſſes which burſt externally, are more certainly fatal than thoſe which burſt under Poupart's ligament.

The alarming ſymptoms which patients experience in the courſe of this melancholy diſeaſe, whether it be treated by art, or left to nature, are of the feveriſh or hectic kind; and they uſually take place at different intervals, except where an artificial opening has accelerated the progreſs of the complaint. It is the buſineſs therefore of the Surgeon, beſides preſcribing abſolute reſt, to underſtand what are the beſt means of counteracting theſe hectic paroxyſms when they affect the patient. The Bark

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is uſually thought the beſt medicine in ſuch caſes, and indeed the adminiſtration of it ought not to be neglected, but we ſhall find its powers wonderfully aſſiſted by ordering the patient to take twice a day, ten grains of powdered myrrh, with three grains of powdered rhubarb. The antiſeptic quality of this medicine will be found particularly uſeful in abating the violence of hectic ſymptoms.

The neceſſity of ſuffering theſe abſceſſes to burſt of themſelves will farther appear from conſidering, that this ſpontaneous opening ſeems to be an extreme reſource of nature, to which ſhe is rather compelled from the incumbent weight of a great quantity of fluid. It ſhould ſeem to be a termination by no means conſonant to her wiſhes, ſince, whether it happens by her own proceſs or by art, it always excites alarming ſymptoms, though in a leſs degree in ſome inſtances than in others. But, before the period of burſting, no alarming ſymptoms of hectic, ſuch as happen afterwards, are obſerved; and the chief ſymptom then is debility and inability of motion, which naturally lead to the grand intention of cure, abſolute reſt.

This I ſhall illuſtrate by two caſes, one recorded in the performance above mentioned, and the other ſupplied by my own practice.

" A young woman of twenty-two years of age," ſays M. DAVID, " having fallen down ſtairs, felt, for a conſiderable time, a pain, more or " leſs acute, in the region of the loins, and was likewiſe gradually " ſeized with a weakneſs in that part, which, in a ſhort time, prevented " her from walking, and even from ſupporting herſelf. At this period of " the diſeaſe ſhe applied to me. Revolving in my mind theſe ſymptoms " and the cauſe that had produced them, I imagined her caſe to be a " diſeaſe of the lumbar vertebræ, and the beſt means of cure that could " be preſcribed, were reſt and lying in bed. I explained to her the im- " minent danger of her ſituation, and engaged her punctually to follow " my advice. This ſhe did very exactly, by going to bed, and remain- " ing there conſtantly, taking care to exert as little motion as poſſible,

" agreeably to what I had recommended. Notwithſtanding theſe precautions, " the diſeaſe continued to advance. The weakneſs of the loins, and the " pain ſhe felt there upon motion, were accompanied with a tumour which " began to make its appearance under Poupart's ligament. This became, " in proceſs of time, as large as one's fiſt; and at length manifeſted an " evident fluctuation. Warned by the melancholy end of thoſe in whom " ſuch tumours had been opened, I carefully avoided applying any thing " that might haſten the burſting of it, and abſtained ſtill more religiouſly " from opening it with a cutting inſtrument. This tumour with fluctua- " tion, after having acquired its full ſize, remained nearly in the ſame ſtate " during four months, and at that period began to be inſenſibly diſſipa- " ted; ſo that in four months after this, there remained not the leaſt " veſtige of it. The patient felt, from one week to another, that the " ſpine was recovering its former ſtrength; ſhe began to ſit upright in " her bed, while her back was ſupported; ſhe then made a ſhift to walk " with a ſtick; and was at length capable of walking alone, and unſup- " ported, with as much firmneſs and confidence as ever. But this happy " termination of the diſeaſe, was owing to her perſevering near a twelve- " month in keeping her bed, and in a ſtate of reſt."

This, it muſt be allowed, is a great leſſon in Surgery, and one which the judicious obſerver will not fail to apply to practical advantage. It invites him to contemplate the courſe of nature, and teaches him to ſuſpend the uſual exertions of his art, whenever they are likely to diſturb her intentions. It ſhews him a large collection of matter, to the evacuation of which, in conformity to the moſt received and ſoundeſt principles of the ſcience, he would have proceeded, as ſoon as the fluctuation had been evident; apprehending, that a longer confinement would produce miſchief. Yet we ſee, that this ſame matter, after having been collected in a large quantity and in a diſtinct cavity for ſeveral months, was received again into the courſe of the circulation, without occaſioning the leaſt inconvenience; and that the principal diſeaſe produced by it, was cured without the aſſiſtance of art, otherwiſe than in enjoining the patient a long and perſevering abſtinence from motion.

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Let us now inveſtigate, and endeavour to explain, in what manner this great effect has been brought about. The diſeaſe exhibits to us, in the firſt inſtance, a diſturbance of the organization in the bodies of the lumbar vertebræ; by means of a ſhock conveyed to them, or a forcible divulſion of the ligaments that unite them. The ſwelling of the parts being the conſequence of theſe firſt accidents, and a ſlow inflammation coming on, this at length cauſes a ſuppuration, and an abſceſs, which forms in the neighbourhood of the parts firſt affected.

The organization of the bodies of the vertebræ being depraved, it follows, that ſmall ſeparations or ſcales muſt be thrown off from theſe bones; which circumſtance is accompliſhed as much by the organic action of the inflamed parts as by the matter they furniſh. The matter itſelf, after having been efficaciouſly employed in ſeparating the corrupted from the ſound parts, is alſo the medium or agent to which nature intruſts the care of expelling and carrying them out; but this purpoſe is effected very ſlowly. Bony fragments, of greater or leſs dimenſions, being detached by means of the matter, float in that liquid, to which they preſent a greater extent of ſurface, in proportion as they are more divided. The pus itſelf in which they are ſteeped, becomes a menſtruum proper to diſſolve them, and its quantity increaſing in proportion to the continuance and extent of the ſuppuration that ſeparates the looſe piece of bone, it at length makes a paſſage for itſelf towards the depending parts, and thoſe which afford the leaſt reſiſtance.

But the matter, ſtill ſheltered from the external air, and undergoing no change, produces no miſchief in the parts that contain it. The fragments of bone which float in this quantity of pus, may at length be totally diſſolved in it, ſo as to form an homogeneous maſs, which perhaps may not then in any wiſe differ from our moſt elaborate nutritive juices. This being premiſed, we need not be aſtoniſhed, if nature, after having, at this period, employed the pus as a menſtruum to diſſolve the bony fragments to the ſeparation of which it has contributed, ſhould reſume it into the general courſe of the circulation, by taking it up from its cavity

vity, through the means of the ſeveral abſorbent openings on the ſurface of that cavity. The return of the matter being then effected as ſlowly as its collection was formed, the parts which compoſe the cavity muſt return to their proper ſtate, as gradually as they were diſturbed from it, without accident and without inconvenience.

With reſpect to the bones that are primarily affected, and which have almoſt adopted the nature of fleſh, during the long and important proceſs of exfoliation, no ſooner are they diſengaged from theſe looſe pieces than they begin to recover their ſolidity; and if ſeveral vertebræ for inſtance, have partaken of the injury, they form among themſelves a common maſs of oſſification that in ſome meaſure ſupplies their bodies, and terminates this great caſe, which, as we have obſerved, can only be the work of nature, time, and reſt.

The infinite importance, as well as novelty of theſe doctrines, induces me to confirm them ſtill more by an account of the caſe before alluded to, which happened under my own obſervation at the Weſtminſter Hoſpital. I never could account ſatisfactorily to my own mind for the cure of this caſe; and in the conducting of it, I candidly acknowledge, that I was far from being guided by thoſe great and new ideas of my friend concerning reſt, which I have ſince adopted with ſo much advantage.

A young woman, ſeemingly healthy in other reſpects, came to the Hoſpital, with a tumour nearly as big as two fiſts, on the upper part and towards the inſide of the thigh. There was not the leaſt diſcolouration of the ſkin, nor any fluctuation. It was however the opinion of all the Surgeons preſent, that it contained ſome fluid, and that there was an abſceſs ſeated underneath the faſcia, which time would bring forward. Though there was ſome pain attending this tumour, yet that was inconſiderable, and the patient was rendered unable to walk about with it, rather by debility than any other apparent cauſe. Though the ſwelling was ſomewhat lower than the ſpot where the lumbar abſceſs uſually makes

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its appearance, yet, for my own part, I could not help ſuſpecting the caſe to be of that kind, more eſpecially as it was accompanied with ſome pain in the loins. I cannot indeed even now take upon me to ſay that it was ſo. The fact is however that the tumour remained for ſix weeks or two months exactly in the ſame ſtate, the patient keeping her bed conſtantly, not indeed from any direction of mine, but merely from her inability to motion.

I ſaw, or perhaps fancied that I ſaw, a ſmall diminution of the bulk of the ſwelling, and thinking it then likely that it might be diſperſed, and there appearing to me no reaſon againſt this termination, I endeavoured by outward applications to forward what now appeared to me to be the intention of nature. I therefore cauſed ſome compreſſes, dipped in ſpirits of wine and camphor, to be applied to the ſwelling, and directed theſe to be maintained by a pretty long bandage rolled moderately tight on the ſwelling, and on the whole limb. By this method, and by the patient's continuing ſtill in bed for a time, I had the ſatisfaction to ſee this large tumour gradually diſappear. It was entirely gone, in about five months after her admiſſion into the Hoſpital, and the limb was reſtored to its natural firmneſs; ſo that the patient went out perfectly cured of a complaint, the true nature of which had never been known, but which from its ſize, ſituation, and the debility attending it, ſeemed to threaten a much leſs favourable iſſue, than that which was thus fortunately brought about. It is probable that this caſe was of the ſame nature as that of the young woman quoted from the fore-mentioned eſſay, but not ſo far advanced; and we may preſume that reſt was, in this inſtance alſo, the principal agent that effected the cure.

ABSCESSES

* The generality of lumbar abſceſſes may be traced to the cauſes pointed out by our author, as well from the violence which the diſeaſed part may have immediately ſuffered, as perhaps from a determination of conſtitutional indiſpoſition thereto. This latter is more eſpecially the caſe in ſuch inſtances of the diſeaſe as have originated from very trivial accidents, and hence, in ſcrofulous habits, we may expect it to advance more rapidly.

Where, then, the firſt cauſe appears to have been a degree of violence which ſimply weakened the part, the mode of cure by long-continued reſt ſeems highly deſerving of our attention;

# ABSCESSES OF THE ABDOMEN.

We now proceed to abſceſſes formed either without or within the cavity of the abdomen.

With reſpect to the former, or abſceſſes formed under the faſcia of the abdominal muſcles, we have already pointed out the neceſſity of opening them as early as poſſible, in order to prevent the matter from piercing the peritoneum, and penetrating into the cavity of the abdomen.

But

tion; but where there is likewiſe reaſon to apprehend the exiſtence of a ſpecific diſeaſe, the caſe certainly claims other aſſiſtances to diminiſh or counteract the force of theſe combined cauſes. Hence the exerting a different action, as near the part as poſſible externally, by means of ſetons, cauſtics, &c. promiſes to be attended with every advantage.

The early ſtage of this complaint may be remarked by a particular debility in the region of the loins, attended internally with ſome occaſional pains or uneaſineſs in the bowels near the ſame part. The motion of the thigh and leg on the affected ſide, is frequently impeded by a want of its uſual progreſſive power, particularly in walking over irregular ground, or going up and down ſtairs; to which we may add, an occaſional dragging of the limb, even over a level ſurface. The pulſe is in general quickened, and as the internal affection makes its progreſs, the glands in the groin of the affected ſide become enlarged in various degrees. When this latter appearance has exiſted for ſome little time, the upper part of the thigh is ſoon found to increaſe in ſize, particularly on the inſide; and in the courſe of a few weeks, a fluid may be more or leſs diſtinctly perceived. This is found to accumulate very faſt, and in proportion to the reſiſtance it meets with in the cellular membrane, becomes more or leſs confined, forming a projecting tumour anteriorly, or diffuſed, paſſes between the muſcles ſo as to bring on a general enlargement of the thigh; or forcing its way towards the nates, it has been known, on many occaſions, to burſt near the rectum, forming ſinuſſes all round the lower part of the pelvis. In two female caſes, I knew it eſcape at the labia pudenda.

The invariable ill effect of openings made into theſe tumours to diſcharge the fluid, which is by much more frequently a kind of curds and whey, than a thick true pus, (or as the author has ſtated, page 122, *white as milk*) are too well known to require any farther comment, and

But there is another circumſtance alſo to be attended to. The integuments of the abdomen are ſo looſe, that it will not be ſufficient to open the cavity of the abſceſs in its whole extent. We muſt likewiſe lay open any ſinuſſes that may accompany it, whatever may be their extent and direction. There is no opportunity here of curing the ſinus by means of compreſſion, as may be ſafely and properly done in other abſceſſes, where

and very few are the inſtances, I believe, to be depended on, of a cure from a ſpontaneous giving way of the integuments, though it is certain the patient lives much longer in that caſe, than where a free opening has been made by the Surgeon. The effects therefore to be expected from a ſtate of abſolute reſt, as propoſed by the author, certainly demand our particular attention.

From ſuch circumſtances however, as have fallen within my own obſervation, I am led to ſuſpect, that many abſceſſes in this part which have been conſidered as depoſits from the loins, and cured by free openings, have been merely ſuppurations from enlarged glands under Poupart's ligament, or in the courſe of the pſoas muſcles. In diſſections, I have frequently met with glands, in theſe ſituations, of very conſiderable ſize.

But ſeveral inſtances have happened where the matter, collected very largely in the upper part of the thigh, under every preceding ſymptom of a lumbar abſceſs, has been abſorbed; in ſome without any knowledge by what outlet it paſſed off, in others where it has appeared in and been depoſited from the urine in a moſt fœtid ſtate. Some of theſe patients remained well ever after. Others have fallen into a decline at ſome diſtance of time; and in one inſtance where the tumour was of an enormous ſize, and the fluid entirely abſorbed, the man continued well for ſeven years, when it returned again. The tumour at length broke, and the patient, as is uſual, ſunk under the diſcharge.

As it is obvious, in conſidering theſe facts, that great advantage would be derived from any means of promoting the cure by abſorption, may not mercurial frictions (from the known peculiar action of mercury on the abſorbent veſſels) be well worth joining to the author's plan of reſt? Some good effects have been obſerved on a trial of this remedy; ſo that a farther attention to it ſeems highly worthy to be recommended. It may perhaps be objected, that mercury cannot long be confined to its topical action, and that when its powers are exerted on the ſyſtem, as muſt ſooner or later be the caſe, the hectic ſymptoms will probably be aggravated. But experiment only can decide this, and conſidering in how large a proportion are the number of victims to this diſeaſe, to thoſe who recover from it by the preſent mode of treatment, we are certainly juſtified in making trial even of an hazardous remedy. H.

the ſituation of the ſinus, according to the rules we have formerly laid down, is favourable for ſuch an attempt. This rule however, of opening all the ſinuſſes of external abſceſſes in abdominal muſcles, is not wholly without its exceptions.

Abſceſſes or extravaſations of fluid, either diffuſed into the cavity, or formed in ſome of the viſcera, are caſes very frequently mortal, owing in a great meaſure to the difficulty of aſcertaining their exiſtence.

If great tenſion and ſwelling of the belly ſubſiſt after gun-ſhot or other wounds, and continue for a length of time, or come on at ſome diſtant period; theſe may be reckoned the leading ſigns of evaſated fluids in the cavity. Theſe collections of matter though recent, have been found, after death, not abſolutely flowing looſe in the cavity, but confined to a particular pouch or cell of their own.—A ſmall opening in the peritoneum, is ſufficient to give vent to the fluid. Where the abſceſs is ſeated in the inteſtines, it ſeldom diſtinctly manifeſts itſelf, till by an adheſion formed to the peritoneum, about the ſpot where the abſceſs makes its appearance outwardly, it, at length, burſts through the integuments.

## ABSCESSES OF THE LIVER AND GALL BLADDER.

The moſt frequent of the abſceſſes that happen within the cavity of the abdomen, are thoſe which are found to exiſt in the liver and gall bladder. Negroes are known to be remarkably liable to the former. Writers upon this ſubject ſay, that the abſceſs of the liver may be formed in any part of the epigaſtric region; but this does not agree with my obſervation, for in all the caſes of abſceſſes of the liver which I have ſeen, the tumour was always ſituated anteriorly, under the margin of the thorax, by the ſide of the linea alba, between that and the part where the gall bladder is placed.

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If, on the contrary, matter be produced in the gall bladder itſelf, it is evident that the tumour will be formed at the ſpot where the gall bladder is naturally ſituated; and this we know to be at that part which is called the thin edge of the liver, at ſome diſtance from the linea alba; ſo that if we ſee a ſwelling formed at that particular ſpot, with an evident fluctuation, we muſt be very careful in endeavouring to diſtinguiſh whether it be an abſceſs in the liver or gall bladder, or merely a preternatural diſtention of the gall bladder with bile.

The former tumour or abſceſs is always accompanied with adheſion, on account of the preceding inflammation, and therefore may be opened with ſafety; and indeed this ſtep is abſolutely neceſſary to be taken. But in the latter tumour, which is nothing more than a mere preternatural diſtention of the gall bladder with bile, there is no adheſion; ſo that an opening into the gall bladder will occaſion an evacuation of the bile into the cavity of the abdomen, and therefore will always prove fatal. Many miſtakes of this ſort have been committed, and are upon record. Though it be a taſk of ſome difficulty, let us endeavour to aſcertain how theſe errors may be avoided.

In the firſt place it muſt be obſerved, that all abſceſſes either of the liver or gall bladder, as well as retentions of bile in the latter, are in the beginning attended with much pain, colicky ſpaſms, and other ſymptoms of inflammation. We muſt therefore, in the firſt inſtance, carefully attend to the common ſigns of the formation of the pus, ſuch as have been already laid down.

The exiſtence of the tumour after the remiſſion of the ſymptoms, is one of theſe; but in ſuch caſes particularly, this ſign being ſomewhat equivocal, (becauſe it may be equally attendant on the reſolution as on the ſuppuration of the tumour,) it is to be obſerved,

Firſt, that ſuppoſing the pain equal in the firſt ſtage of the diſeaſe, it will have increaſed while the abſceſs was forming, and, on the contrary,

will have diminiſhed while the reſolution was going on, and that the bile was accumulating in the gall bladder.

Secondly, the pain accompanying ſuppuration, is uſually attended with pulſation; a ſymptom which does not attend tumours of the gall bladder, unleſs they be of the abſceſs kind.

Thirdly, the pain diminiſhes much more rapidly when the tumour terminates in reſolution than in ſuppuration; in the latter inſtance it is only a remiſſion of ſymptoms, in the former it is a total ceſſation of them. And laſtly, the ceſſation of pain in conſequence of reſolution, leaves the patient perfectly at eaſe; while the diminution of pain, in conſequence of the pus being formed, ſtill leaves the patient in a ſtate of languor and uneaſy ſenſation.

In the abſceſs of the liver or gall bladder, the ſwelling is moſt frequently accompanied with an œdema of the ſkin; a ſymptom often attending, as we have before obſerved, deep ſeated abſceſſes.

If the tumour appears in the region of the gall bladder, there are ſtill further and leſs equivocal ſigns to determine whether it be adhering or not. We muſt carefully handle the tumour, and perhaps by preſſing it in various directions, we may be able to make it partially diſappear, in which caſe, there is no adheſion.

If the point cannot be determined by this experiment, we muſt place the patient on his left ſide, with his thighs bent and puſhed up towards the belly; and if, in that caſe, we cannot diminiſh or remove the tumour from the place where it projects, and beſides that theſe ſigns are accompanied with all thoſe we have before mentioned, we may venture to conclude that the ſwelling of the gall bladder is phlegmonous, and therefore accompanied with adheſion.

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In this caſe, we are to open the tumour throughout its whole extent, as far as the adheſion will permit; and then paſs a probe or proper ſearching inſtrument into the gall bladder, in order to diſcover whether there be any gall ſtones collected in it, by which means we may extract them, and cure the diſeaſe without leaving any fiſtulous opening.

In abſceſſes of the liver, as well as in all internal abſceſſes of the viſcera, if we are reduced to the neceſſity of making an opening, we ſhall always find it abſolutely neceſſary alſo to make that opening large; for beſides the great ſize of theſe abſceſſes, the quantity of the matter they contain, and the impoſſibility of acting upon them by compreſſion, we ſhall likewiſe find that the pus they contain, is always of a very viſcid nature, ſo that not only it cannot be evacuated by a ſmall opening, but we ſhall alſo find it neceſſary to dilute the matter by injecting the cavity of the abſceſs, or to ſeparate the ſtrings of coagulable lymph, which are in general found ſticking to the inſide of the cavity.*

We ſhall conclude this eſſay with an account of other tumours affecting the machine in general, which though not to be ranked among the claſs of abſceſſes, are not wholly unconnected with the ſubject.

## ANTHRAX, OR CARBUNCLE.

Of theſe the firſt that preſents itſelf to our conſideration, is the Anthrax or Carbuncle, a dreadful tumour, which, although it frequently

* The original manuſcript proceeds thus—" This obſervation holds equally good therefore with reſpect to the empyema or abſceſs in the cheſt; but we ſhall poſtpone the farther conſideration of that diſeaſe, till we come to treat of the operation peculiar to it. So we ſhall treat of the quinſey or abſceſs of the tonſils under the operation of bronchotomy; of the abſceſs round the rectum, and in the perinæum, under that for the fiſtula in ano and perinæo: and of the abſceſs beneath the cranium under the operation of the trepan." It is to be regretted that the author's papers do not afford matter to compleat the ſubject of abſceſſes, ſo far as relates to the points here ſpoken of. H.

contains matter, is ſtill very different from an abſceſs; ſince the matter is extremely different from that bland fluid which we call laudable pus, and which we find in a well-formed abſceſs.

The Anthrax is a putrid, not an inflammatory tumour, as it has been reckoned, ſince it has many characters which clearly diſtinguiſh it from the true inflammation or phlegmon, and which render it much more ſimilar to the eryſipelas, or what we have called the ſpurious inflammation.

It is a hard circumſcribed tumour, ſeated in ſome part of the cellular or adipoſe ſubſtance, accompanied with a violent ſenſation of burning heat, inſtead of a throbbing or pulſative ſenſation, and attended with, and ſurrounded by, a diſcolouration of the ſkin, which inſtead of being red, as in the true inflammation, is of a livid purple hue, and has moſt commonly one or more black ſpots upon its ſurface. It is a peculiar character of this diſeaſe, as well as of the eryſipelas, that the patient is always very languid, and the pulſe ſo low, that it is very difficult to raiſe it by the freeſt uſe of the moſt cordial remedies.

It has been the practice of ſome Surgeons to treat this diſeaſe by extirpation; but nothing ſurely can be more injudicious than to attempt to ſtop the progreſs of a diſeaſe ſo nearly allied to gangrene, by an ill-timed operation. Our chief dependence ſhould be on the exhibition of medicines internally. The bark in large quantity, opium, and proper cordials, as Madeira wine, &c., ſhould be given. Externally, to the part, lime ſhould be applied, and all round it lint moiſtened in vinum chalybeatum. When the tumour is of the red kind, and breaks in ſeveral places, we may very properly dilate theſe orifices, and lay them into one; but our inciſions ſhould extend no farther than juſt to remove the ſlough, without penetrating the ſound parts.*

ENCYST-

* In ſeveral caſes of this diſeaſe, I have ſeen extraordinary good effects follow the uſe of a poultice, compoſed of fermenting materials, calculated to generate *fixed air* in large quantity.

# ENCYSTED TUMOURS.

We now come to the conſideration of encyſted tumours, or tumours containing fluids different from pus, and incloſed in a bag, or cyſt, and which may be formed in any part of the cellular membrane.

Authors have divided theſe into three kinds, from the difference of their contents; the *Meliceris*, the *Atheroma*, and the *Steatoma*.

The Meliceris is an encyſted tumour, containing a half tranſparent fluid, reſembling honey in colour and conſiſtence; the contents of the Atheroma are like a bread and milk poultice; and thoſe of the Steatoma reſemble ſuet. From the difference in theſe fluids, and in their conſiſtence, it is evident that the feel of them will be very different, and that

tity. This cataplaſm is known to moſt Surgeons, and conſiſts of a mixture of oatmeal with ſtrong infuſion of malt. To this, when cooled to the degree moſt favourable to the intended proceſs, is added a ſpoonful or two of yeaſt. This is one of the moſt effectual and eaſy modes of applying fixed air topically.

The author has not ſufficiently explained *in what way* the lime is to be employed. If he deſigns it as a *cauſtic* he very probably follows the ideas of CELSUS, who adviſes the free uſe of the *actual* cautery.

It ſhould alſo have been obſerved that the degree of danger attending a carbuncle depends greatly on the part of the body attacked by it. On the head and face it is generally mortal. On the neck it is likewiſe exceedingly dangerous. But in the back and lower parts of the body, it is a common circumſtance, when proper care is taken, for the patient to recover. In ſuch caſes the mode of treatment ſhould be much the ſame as that of a common furuncle; and ſhould conſiſt of emollient poultices with the previous inunction of camphorated ointment. A carbuncle on the head or neck is, with great difficulty, brought to ſuppuration, and hence the diſeaſe ſoon becomes highly malignant and dangerous. H.

 although

although a degree of fluctuation may be felt in each of them, yet this will be more obſcure in the Atheroma than in the Meliceris, and ſtill more in the Steatoma. Whenever we ſee, however, any tumour formed in any of the ſuperficial parts of the body, increaſing gradually almoſt without pain, entirely without diſcolouration, or any other ſymptom indicating ſuppuration, and in which we feel a fluctuation, we may conclude it to be a ſwelling of one of theſe kinds.

They are perfectly devoid of danger, and generally very ſmall in their firſt appearance; ſo that although there be, in general, little hope of ſucceeding in our attempt to cure them by reſolution, yet the attempt may be made properly and with ſafety. The beſt application for this purpoſe, is either crude ſal ammoniacum diſſolved in an aqueous or ſpiritous menſtruum, and applied to the part; or the volatile ſpirit ſo far diluted as to prevent it from fretting the ſkin. Theſe applications may likewiſe be aſſiſted by preſſure, where the tumour is in any part that will admit of it, and I have known theſe means to ſucceed in ſome few inſtances, in an early ſtate of the diſeaſe. I have alſo now and then, cured the little encyſted tumour that happens frequently in the ſkin of the eyelids, and which I have always found to be a Steatoma, by the application of mercurial ointment.*

We may therefore, unleſs they ſhould acquire ſuch a volume as to prove troubleſome, wait with ſafety to obſerve what turn theſe tumours will take, although they will not yield to reſolutive means; for the cyſts will ſometimes fall into ſuppuration, particularly that of the Meliceris, and will come away by a ſimple opening of the ſkin.

* I have lately ſucceeded perfectly in the cure of one of theſe tumours on a lady's eyelid, by the uſe of mercurial ointment with camphor. It was thought neceſſary, however, to employ a much ſtronger compoſition than that of the London Pharmacopœia, ſince its diſcolouring the part, neceſſarily prevented its application at any other time than in the night. I am inclined to think that the early application of this remedy would prove more ſucceſsful than any other, in incipient tumours of the encyſted kind. Many of them, it is ſaid, have been removed by electricity. H.

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At all events, the cyſt muſt be entirely deſtroyed, by ſome means or other, before a cure can be obtained; ſo that if after ſimply opening them, the cyſt does not ſlough away with the ſuppuration, it will be neceſſary to deſtroy it by eſcharotics, more or leſs powerful, according to the degree of thickneſs and indolence which the bag may have acquired. The cyſt of the Atheroma is often found extremely hard, ſo that it becomes neceſſary to extirpate the whole of this ſwelling together; and this will be found, in almoſt all caſes, by much the moſt expeditious, as well as moſt certain mode of proceeding.

In the ſmall Steatoma that affects the eyelids, it will generally be neceſſary, carefully to diſſect out the whole tumour with its cyſt. But, in cutting through the ſkin at the forepart of the tumour, we ſhall find it extremely difficult to avoid puncturing the cyſt itſelf, which is uſually very thin here; and if we do this, the ſuetty matter will ooze out, and make it very troubleſome for the operator to get compleatly round the diſeaſe, ſo as to extirpate it entirely. In diſſecting the back part of the tumour, we muſt take care to avoid cutting through the internal cartilaginous border of the eyelid, which, though not a dangerous circumſtance, will give a good deal of pain, and excite more inflammation than is neceſſary.

When theſe tumours manifeſt themſelves upon the ſkin of the ſcalp, where they are ſeldom ſolitary, and where they are in general very hard, they yield to nothing but complete extirpation.

## W E N S.

The Wen, or tumour of fat, which may alſo happen in any part of the body, and which modern writers have conſidered in the claſs of encyſted tumours of the ſteatomatous kind, is, in my opinion, a very dif-

ferent diſeaſe, and requires a very different treatment. It is, to all intents and purpoſes, nothing more than a tumour, or increaſe of the volume of the fat in a part. It is therefore perfectly ſolid, having no kind of fluctuation, as we have obſerved is the caſe with encyſted tumours, and is much more moveable and looſe than they are ever found to be. Beſides, theſe tumours have another diſtinction which reſpects their treatment, they never terminate as the others do, in ſuppuration; at leaſt, I never ſaw an inſtance of it.

Preſſure applied, when they are as yet ſmall, ſo as to compreſs the fat which already diſtends them, and to oppoſe the farther increaſe of its bulk, I have known ſometimes, though rarely, to be effectual. When that fails, there is no other remedy but extirpation. It is ſurprizing to ſee what an immenſe volume theſe wens will ſometimes acquire. I have taken off ſome of them, which when ſeparated from the body, have compleatly filled a large waſh-hand baſon.

There are three ways ſuggeſted for extirpating or deſtroying theſe tumours; namely, by cauſtic, by ligature, and by the knife. The uſe of the firſt is entirely inadmiſſible, unleſs the ſwelling be very ſmall, ſo that a ſingle application ſhall be ſufficient to deſtroy the whole of it at once. If this be not effected by the cauſtic, it is apt to be the means of ſetting up an irritation in the part, which makes theſe tumours degenerate into cancerous ones, to which, too frequently, they have, of themſelves, a tendency.

Again, it is pretended by ſome, that when the baſis of a wen is very ſmall, in proportion to its bulk, (which, by the way, ſeldom or never is the caſe) it may eaſily be extirpated by a ligature paſſed round it. But this, at beſt, is a very painful mode, and what is worſe, moſt commonly proves unſucceſsful; ſo that it puts the patient to very great torture to no purpoſe. It very ſeldom happens, indeed, that patients apply for relief, in theſe caſes, till the wen is grown by much too large for this mode of extirpation to be in the leaſt adviſeable. They bear the diſeaſe

for

for a great length of time, whilſt its growth continues without much inconvenience, and at laſt are only induced to obtain aſſiſtance in conſequence of the increaſed bulk, and unmanageable weight of the tumour; except it happens to be of a cancerous nature, in which caſe it becomes very painful.

Theſe wens ought never, therefore, to be extirpated by ligature, unleſs they be of a pyriform ſhape, that is, ſmall, and hanging only by a ſlender ſtalk, in which inſtance we may comply with the apprehenſions of timorous perſons, and ſubſtitute the ligature for the knife.

I ſaw an abſurd attempt once made by an empiric, to tie one of theſe enormous wens, ſituated on the belly of a woman, and the baſis of which, meaſured at leaſt fifteen inches round. He had been at this work about a fortnight, when, although he had aſſiſted his ligature with eſcharotics, he had got no farther than about a quarter of an inch into the whole circumference of this immenſe tumour. The poor woman's tortures were, all this while, inexpreſſible, and ſhe had only abſtained from ſooner applying to me, through the ſhame of having put herſelf into ſuch improper hands. I immediately extirpated the whole with the knife, and diſſected it from the tendons of the abdominal muſcles, to which it was fixed for a conſiderable extent. The operation was much more painful to her, than if ſhe had ſubmitted to it in the firſt inſtance, becauſe of the great inflammation raiſed upon the ſurface of the abdomen, in conſequence of the previous treatment, and which might have proved fatal had it gone on much longer.

I have ſeen two caſes of this wenny, or fatty diſeaſe, which had ſeized the breaſts of women. In each, the breaſt was attacked through its whole ſubſtance, which was ſwelled to an enormous ſize, and was, by ſome, miſtaken for cancer. But the diſtinction was very evident, for beſides their being free from that kind of pain which diſtinguiſhes cancer, there was one remarkable circumſtance attending them, which is, that notwithſtanding the immenſe ſize of the breaſt, yet there was not the

the leaſt ſwelling or induration in the glands of the axilla; a circumſtance which, had the complaint been cancerous, would certainly have accompanied it.—I never ſaw a cancerous breaſt of ſuch a ſize without it. One of theſe tumours was taken off by Mr. John Hunter, the other by myſelf, and both with equal ſucceſs. The knowing theſe circumſtances, is very neceſſary to guide us in our prognoſtic of ſuch caſes; for the wenny tumour, however large and formidable it may appear, never gives us reaſon to apprehend thoſe miſchievous conſequences which but too frequently attend the other kind of diſeaſe, though ever ſo well extirpated.

It muſt, however, be obſerved, that theſe wens themſelves, (though the circumſtance happens very rarely) after they appear to have been fully extirpated, ſhall puſh out a fungous excreſcence, which, in ſpite of all the Surgeon's efforts to prevent it, ſhall ſoon grow to the ſize of the original tumour. I have ſeen lately, a deplorable caſe of this kind, where, though the tumour was extirpated a ſecond and a third time by the knife, and repeatedly by the ligature, while conſtant and perſevering attempts were made to deſtroy and keep it down by powerful eſcharotics,* the patient died a miſerable victim to the diſeaſe, and the torture ſhe ſuffered from it. It therefore behoves the Surgeon to be very attentive to the firſt ſproutings of this fungus, and, in the firſt inſtance, if it will not immediately give way to firm preſſure, to apply the arſenical cauſtic to it, which, in my opinion, is the only effectual cauſtic, in the whole materia medica, in ſuch caſes.† I experienced the happy effects of it in that

* I am in doubt whether the ſucceſs attending *powerful* eſcharotics when applied to exuberant parts, ſhould not make us heſitate to adopt the author's idea, to the extent he has urged. As far as I have ſeen, I have been rather led to approve of the mildeſt and leaſt active cauſtics in the treatment of all excreſcences; nay, I apprehend the claſs of aſtringents is more likely than either to afford us the means of curing theſe diſeaſes. I have learned from the author to employ the *tinctura martis cum ſpiritu ſalis* with this view, and confeſs I have great and numerous obligations to it. H.

† The *arſenical cauſtic* was firſt recommended to the author by my friend Dr. Cheston, under whoſe direction I ſaw it very extenſively uſed, during my attendance, ſome years ago, at the Glocester Infirmary. It conſiſts of two parts crude antimony, and one part arſenic, fluxed

that immenſe wen which I extirpated from the abdomen, and where by putting the arſenical cauſtic upon ſome of this fungus, as ſoon as it began to ſprout, I inſtantly put a ſtop to its progreſs.

The laſt circumſtance remaining to be conſidered with reſpect to the extirpation of theſe wens is, whether the ſkin which covers them ſhould be removed, or whether it ſhould be diſſected, the tumour taken out, and the ſkin left. It is evident that where the tumour is very large, which it is in moſt of theſe caſes when Surgeons are applied to, that the idea of ſaving the ſkin is a very abſurd one. In ſo doing, we ſhould have a great quantity of ſkin, looſe and detached from the body, which we ſhould not know what to do with, and in this reſpect too, wens differ from other encyſted tumours, the latter being ſeldom ſo very large, but that if we wiſh to extirpate the cyſt, we may do it without removing any of the ſkin.

## GANGLIONS.

The next kind of tumour I mean to ſpeak of, is the *Ganglion.* It is a kind of encyſted circumſcribed ſwelling, either of an oblong or circular figure, which is formed in the ſheaths of the tendons, and contains a glarey ſort of fluid reſembling the white of an egg.

Theſe encyſted tumours ſometimes give way to preſſure, made with a piece of lead, fixed upon them by a tight bandage. I knew an inſtance

fluxed together in a crucible, and when cold, reduced to powder. It is one of the moſt uſeful cauſtics known, being remarkably well calculated for the deſtruction of excreſcences, as well as extremely convenient for the removal of parts, in ill conditioned ulcers, which ſeem to obſtruct their healing. It may be reduced to any degree of mildneſs by the addition of opium, which, in ſome meaſure, alſo acts ſpecifically in abating the violence of the pain. H.

of a gentleman who had ſeveral of them, upon the flexor and extenſor tendons of the wriſt, and who was cured of them, although ſome were very large, merely by the application of Canada balſam ſpread upon leather. If they will not yield to theſe means, the next buſineſs is to open them. I was formerly perſuaded that no good was to be done in theſe caſes, unleſs the whole cyſt were extirpated; but, upon attempting this operation, I found it ſo difficult, not to ſay indeed impoſſible to perform, that I was reſolved afterwards to try the effect of ſimple inciſion. This I have practiſed ever ſince, and always with ſucceſs, having only found it neceſſary, in ſome inſtances, to ſprinkle a little precipitate powder on the cyſt, in order to make ſome part of it ſlough away, and procure the re-union of the reſt, by the adheſive inflammation.*

## RANULA.

The laſt encyſted kind of tumour I ſhall take notice of, and which contains much the ſame kind of fluid as the Ganglion, is that which is called by the Latins Ranula; and by the French Grenouillette; † and for which I do not know that we have any name.

It is a little tranſparent tumour ſeated under the tongue, by the ſide of the ranular artery; of greater or leſs ſize, yet ſometimes of ſuch magni-

* The author has not noticed a common mode of reducing Ganglions by ſtriking them violently, ſo as to burſt the cyſt. It is indeed, a clumſy and harſh operation, but it is more commonly ſubmitted to than any other, and with a degree of ſucceſs that ſatisfies the minds of the generality of patients. Electricity is particularly ſucceſsful in the cure of theſe tumours. H.

† It ſeems rather to be called by the French "*Grenouille*," as appears by the following quotation from the *Manuel Lexique des mots Francois dont la ſignification n'eſt pas familiere a tout le monde.* "En termes de medicine, on nomme *Grenouille*, une petite humeur froide et "viſqueuſe, qui, tombant du cerveau, ſe ramaſſe ſous la langue, dont elle rend l'uſage diffi-"cile." H.

tude,

tude, as to impede the motions of the tongue, and obſtruct the patient's ſpeech. Although this cyſt be divided throughout its whole length, in order to let out the fluid, the diſeaſe will be very likely to return, unleſs ſome care be taken to prevent it. One of the modes recommended for this purpoſe, and which I have known to be effectual, is to mix a quantity of mel roſarum, with as much ſpirit of vitriol as will make it very acid, to dip a probe in this liquid, and to rub the cyſt with it. I once ſucceeded in curing this little diſeaſe by a different contrivance. As the patient would not ſuffer me to put a lancet into it, I directed her to make a ſtrong ſolution of alum, and dipping a piece of lint faſtened to the end of a ſkewer, to rub the tumour ſmartly every day, as long as ſhe could bear it. By following theſe directions, ſhe got rid of the Ranula in a few days, though ſhe had been troubled with it a long time; and latterly, it had grown exceedingly alarming and inconvenient to her.*

* Wiſeman treats on this diſeaſe very fully. He ſays—" It is a ſoft tumour without pain " or alteration of colour in the ſkin. It yieldeth to the impreſſion of your fingers, but ri- " ſeth upon the taking them off, and containeth a matter not unlike the white of an egg, or " ſuch as we meet with in *Atheroma*. It is alſo diſcovered by a croaking in the ſpeech." He ſays the cure is difficult, that the treatment ſhould be ſimilar to that of *Strumæ*; but if topics prove ineffectual, then recourſe muſt be had to the actual cautery. H.

# III.

ON THE

# EFFECTS

OF

# MOTION AND REST.

# THE SUBJECT PROPOSED FOR THE PRIZE

BY THE

# ROYAL ACADEMY OF SURGERY AT PARIS,

FOR THE YEAR 1778.

## TO EXPLAIN THE EFFECTS OF MOTION AND REST, AND THE INDICATIONS ACCORDING TO WHICH THE USE OF EITHER SHOULD BE PRESCRIBED IN SURGICAL DISEASES[1].

MOTION and reſt are certainly two methods of cure, the rational employment of which may contribute to enlarge the bounds of ſurgical knowledge, ſince the Academy, ever intent on the improvement of this ſalutary art, propoſes for the ſubject of the prize they mean to diſtribute, to deſcribe their effects, and to ſhew the indications which direct the uſe of them in ſurgical diſeaſes. The diſcuſſion of a queſtion of this nature, which is more intereſting than it may appear at firſt ſight, muſt neceſſarily ſuggeſt intentions of cure, which this celebrated body alone can perceive, and the expoſition of which they may, perhaps, expect in vain from

from thoſe who ſhall employ themſelves on a ſubject ſo important. To treat it properly would require the united genius and knowledge of thoſe learned men of which the ſociety is compoſed; how is it poſſible then, that one man alone, left to his own powers, can flatter himſelf, that on ſo intricate a queſtion, he ſhall be able to ſatisfy judges, before whom, moderate talents cannot appear without dread? This humiliating reflection would prevent me from entering the liſts, were I not encouraged by the conſideration of their indulgence, the inſeparable attendants on learning. In granting the prize to the moſt ſkilful, they do not always deſpiſe the labours of thoſe whom an honeſt confidence engages in the competition. Beſides, if I have laboured unſucceſsfully, my excuſe will be in the greatneſs of the taſk, which, as it aſtoniſhes without diſcouraging me, I will proceed to exert my utmoſt efforts to fulfill.

The effects of motion in the animal œconomy are evident, but motion itſelf is an effect produced by its own cauſes. In order therefore to give as much clearneſs to the diſcuſſion of this queſtion as it is capable of, it ſeems to me of ſome utility, to conſider the ſource from whence motion is derived.—This may enable us to explain its effects with ſome preciſion, in conſequence of which the application of them to ſurgical diſeaſes, will become more methodical and certain. Such is the plan I propoſe to follow; the propriety of which will, I hope, appear in the unfolding of it.

It is to motion that the univerſe owes that life with which it is animated. Man, the epitome of the univerſe, diſcovers, in all the faculties which conſtitute and characteriſe him, the produce of an uniform and regular motion, ſubordinate to powers, the admirable mechaniſm of which will ever be unknown to us. But, without endeavouring to form conjectures concerning this mechaniſm, we may reaſonably preſume, that motion is the effect of a general active principle, diſperſed throughout the univerſe, by that Being who created it. This principle is undoubtedly material, and among the ſeveral ſubſtances that conſtitute our globe, and the beings that adorn its ſurface, there ſeems to be but one that poſ-

ſeſſes

ſeſſes in itſelf this property of motion; that is FIRE; all the reſt are in a ſtate of inactivity.

This active principle, united to ſome of our fluids, conveys motion into the machine, and tranſmits it by means of organs appropriated to this effect [2]. Theſe organs are the muſcles, of which there are two kinds; ſome which are not ſubject to the controul of the will, and whoſe motion begun at the firſt moment of exiſtence, is uninterruptedly continued to its end; ſuch are the heart, the arteries, the ſtomach, the inteſtines, &c. There are others whoſe motion is ſubject to the will, and which ceaſe to act whenever they are not determined by that principle, either for the wants or pleaſures of the individual; ſuch are the muſcles deſtined for the motion of ſome of the parts of the human body, and employed in conveying us from one place to another.

This diviſion determines two kinds of motion, which are diſtinguiſhed from each other by very palpable lines of ſeparation. — The one is employed in entertaining the vital principle, the other does no more than ſupply its exigencies and its pleaſures; a difference ſo remarkable, that it neceſſarily implies one in the ſource from whence theſe motions are derived.

The nerves are the viſible canals through which the active fluid we attribute theſe two kinds of motion to, is conveyed throughout the whole extent of the animal œconomy. Their origin is well known: they are all derived from the organs contained within the cavity of the ſkull; and amidſt the numerous canals which take their riſe from the medullary ſubſtance of the brain and cerebellum, we may diſtinguiſh thoſe which are diſtributed to thoſe important organs whoſe action, independent of the will, is abſolutely eſſential to life; theſe are particularly the intercoſtal nerve and the eighth pair, which evidently ariſe from the proceſſus annularis, or Pons Varolii [3], formed, as it ſeems, by the union of the peduncles of the cerebellum, while no part of the medullary ſubſtance of the brain ſeems to enter into its compoſition. The nerves, on the contrary,

 which

which are diſtributed to organs deſtined to leſs important functions; to ſuch, for inſtance, whoſe province it is to direct our loco-motive powers, ſubject to the controul of the will; theſe, I ſay, are all derived from the medullary ſubſtance of the brain, or from the ſpinal marrow which is the continuation of it.

From this obſervation we may be convinced that the fluid ſeparated by the cerebellum is of a ſuperior quality to that furniſhed by the brain, and that the functions of the firſt of theſe organs, are infinitely more important than thoſe which are aſſigned to the latter. This ſuperiority ſeems to be indicated by nature in the precautions ſhe has taken to ſecure the cerebellum from external injuries. The brain, it is true, is likewiſe protected from them; but the anxiety of nature in her precautions to prevent the injuries the brain might be expoſed to, are infinitely leſs remarkable than thoſe ſhe has employed in ſheltering the cerebellum from any hurt that might befall it from without. In fact, the ſituation of the cavities occupied by the cerebellum, the thickneſs of the occipital bone, in thoſe parts where external ſhocks might take place, the quantity of muſcles that ſurround that part of the baſis of the ſkull where the bone is thinneſt, the tentorium which covers the cerebellum, and prevents it from ſuffering compreſſion from the poſterior lobes of the brain; the conſtruction of this tentorium, made with a ſagacity which cannot be ſufficiently admired; the ſpeedy death which is the conſequence of wounds inflicted on the cerebellum, while very material wounds of the brain are ſometimes not mortal[4]; all theſe circumſtances, I ſay, contribute to give the ſtrongeſt degree of evidence to the ſuperiority we have eſtabliſhed.

But the brain and the cerebellum are not the only preparers of animal ſpirits; we find other organs in the cavity of the ſkull, which leave us no room to doubt, that in her preparation of the nervous fluid, nature hath eſtabliſhed a difference relative to the end ſhe means to accompliſh. The corpora ſtriata, for inſtance, placed in the midſt of the brain, are they not particular organs which diſplay the whole apparatus for ſecretion;

tion; to wit, a greyiſh ſubſtance, the ſecretory organ[5], and a white or medullary ſubſtance, the union of which forms the origin of the firſt pair of nerves, deſtined to convey that particular fluid fitted to the purpoſes of ſmelling?

Do not the ſecond pair of nerves, which become the immediate organ of viſion, take their riſe from a particular ſubſtance, diſtinguiſhed by the name of *thalami nervorum opticorum*, and which ſeems to form a kind of ſmaller, in the midſt of the larger brain? The medullary ſubſtance, which their external ſurface preſents, is probably impregnated with a fluid already ſecreted in ſome other part, and which, in its paſſage through the greyiſh ſubſtance of theſe *thalami*, receives a higher degree of elaboration before it reaches the medullary ſubſtance, which is in their center, and which is the origin of the optic nerves, continually replete with a particular fluid, calculated ſolely to receive the impreſſions of light.

The pineal gland compoſed of a grayiſh ſubſtance, and which has two medullary threads produced from it, is it not alſo the ſtrainer of a fluid deſtined to ſupply ſome important functions? The pituitary gland, the uſe of which we are as little acquainted with as with that of the former, may it not likewiſe be the elaboratory of ſome particular fluid abſolutely neceſſary to life? This may, at leaſt, be preſumed, when we conſider all the precautions nature has taken to ſecure it from outward injury, and from being compreſſed by the parts that ſurround it; for nature does nothing without neceſſity or without a motive, and wherever we can follow her ſteps, or diſcover them by conjecture, we find that her choice is always ſupported by reaſons which compel us to admire and be ſilent[b].

The third pair of nerves gives us another proof that nature does not make an indiſcriminate uſe of the two ſources we have indicated. It is from the medullary ſubſtance of the brain, that this pair draws the fluid it ſupplies to the muſcles that are governed by it, which are the movers of the eye, an organ endowed with automatic motions, produced by the

fluid of the third pair, and with motions of expreſſion which certainly require fluids derived from other ſources. It is for this reaſon we ſee that the fourth pair, a ſmall nervous filament, goes to receive the fluid it is to convey to the external oblique muſcle of the eye, from the poſterior and inferior part of the tuberculi quadrigemini (6). The ſame thing may be obſerved of the branch of the ſixth pair which goes to the *abductor*, and whoſe origin is at the Pons Varolii (7).

Had the globe of the eye wanted nothing more than a change of poſition, the third pair ſupplies it with filaments of a ſufficient ſize to have produced this effect for as long a continuance, and as frequently as the functions of this organ might require, or otherwiſe this third pair would have been made more conſiderable at the expence of the large medullary maſs of the brain; but the fluid ſupplied by this pair could not, probably, in many circumſtances, have anſwered all the deſigns of nature for want of ſufficient activity and energy. Love, anger, joy, ſorrow, pride, and contempt, which are ſo ſtrongly expreſſed by the eye, that it is with reaſon conſidered as the mirror of the ſoul, are undoubtedly affections which cannot be expreſſed by the powers of that groſſer fluid which is ſecreted from the great reſervoir.

It is true, that the two laſt branches of the fifth pair of nerves, as well as its ophthalmic branch which contributes to form the intercoſtal nerve, the remainder of the ſixth pair which has not been employed in this foundation, and the ſeventh pair, derive the fluid they are deſtined to convey, from the medullary ſubſtance of the cerebellum, in common with the intercoſtal nerve and the eighth pair. But although the functions of the parts on which they are beſtowed, do not immediately ſeem of ſo great importance as thoſe of the parts to which the intercoſtal nerve and the eighth pair are diſtributed, yet it is no leſs certain that the ceſſation of their action would very ſoon be followed by death.

Were the ſecretion of the ſalivary fluid, were maſtication, or deglutition, interrupted for a certain ſpace of time, in vain would the heart, the lungs,

lungs, the ſtomach, the inteſtines, &c., enjoy the power of fulfilling the offices aſſigned to them; the animal would ſoon ceaſe to live. If the ſmell, the ſight, and the hearing, be not abſolutely eſſential to life, they are, at leaſt, ſenſations which conſtitute the only pleaſures of our exiſtence, and the man, who ſhould be deprived of them, would probably be ranked among the moſt ſtupid animals; it is even to be preſumed that if the deficiency of the ſenſes were not then filled up by ſome particular inſtinct, he would be unable to miniſter to his own wants, even in the midſt of thoſe productions which might be ſufficient for the purpoſe.

From what has been ſaid, we are obliged to allow, that the fluid which makes of man a living and thinking being[c], which renders him capable of all thoſe improvements that embelliſh his nature, is derived either from the medullary ſubſtance of the cerebellum, or from particular and very diſtinct organs of the brain itſelf; and that the loco-motive faculty which completes the animal machine, by adding greatly to the pleaſures of its exiſtence, is derived from the fluid furniſhed by the medullary ſubſtance of the brain. This preſents to us two kinds of motion, as diſtant from each other as the ſprings from whence they are derived. One kind, which eſſentially conſtitutes life, over which the will exerts no empire, and which is produced by the fluid ſeparated from the cerebellum; ano-another kind, not of ſuch abſolute neceſſity, ſubject to the controul of the will, and effected by the fluid ſeparated from the brain.

Theſe preliminary notions concerning the origin and the diſtinctions of motion being acquired, its effects on the animal œconomy will more eaſily be perceived, and the indications which direct the uſe of it, will be more readily ſuggeſted. Theſe two points of diſcuſſion form a natural diviſion of this eſſay into two parts. The object of the firſt will be to demonſtrate the effects of motion and reſt, and the ſecond will diſcover the indications which preſcribe the uſe of either in ſurgical diſorders.

# PART I.

## AN EXPLANATION OF THE EFFECTS OF MOTION AND REST.

THOUGH the motion of the organs eſſential to life, may, of itſelf, maintain the vital principle in man for a conſiderable time, yet this motion is not beſtowed upon an individual deſtined to live by himſelf; for, in man, the loco-motive faculty is almoſt as neceſſary to his exiſtence, as that kind of motion on which life more particularly depends. This is ſo true, that a paralytic perſon left to himſelf would ſoon periſh, although his organs of circulation, reſpiration, digeſtion, and thoſe of the other ſeveral ſecretions, &c., ſhould have preſerved the faculty of performing their reſpective offices. Indeed, what ſort of life is it that the unfortunate claſs of men enjoy who are afflicted with this diſeaſe, even when they are provided with all the helps which perſons who feel for their ſituation can ſupply them with? Some few individuals only excepted, they continue to exiſt, and that is all. If, therefore, the action of the external muſcles, or the exertion of the loco-motive faculty,



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be not abſolutely neceſſary to life, they do, at leaſt, contribute in a very evident manner, not only to its ſupport, but alſo to its energy.

The effects of the exertion of this loco-motive power cannot, therefore, be indifferent in the cure of ſurgical diſorders; they may facilitate or diſturb this end as they are properly or improperly applied. The academy certainly expects from thoſe who ſhall diſcuſs the queſtion propoſed, an explanation of the caſes and the times when it is neceſſary to forbid or to adviſe the exertion of this power. But to proceed with order in ſo intereſting a ſubject, after having briefly expoſed the effects of the motion of thoſe organs whoſe action conſtitutes life, it will be proper to explain the ſhare which the motion of thoſe on which life does not immediately depend, has in the preſervation, and if we may be allowed to ſay ſo, the perfection, of the vital principle.

The heart is moved and exhibits a ſucceſſion of dilatations and contractions, by means of which the circulation of the blood is carried on. The arteries deſtined to convey this fluid, preſent the ſame phœnomena to our view. But theſe actions diminiſh as they proceed, ſo that the contracting power which belongs to the arteries, and which is ſtill ſo viſible in ſmall arterial branches, is, at length, reduced in their laſt ſubdiviſions, in the lymphatic and ſerous veſſels[8] that are continued from them, and in the origin of the veins in which they terminate, into a kind of elaſtic power which conſtitutes the tone or ſpring of all our parts. This laſt is an imperceptible action, ſufficing only to keep up the motion of the fluids, to preſerve them in a fluid ſtate, and to maintain life, which is the conſequence of this fluidity.

The cheſt dilates and contracts itſelf alternately by the action of muſcles, over which the will has but a very limited power of ſuſpenſion or acceleration; ſo that reſpiration is habitually carried on without the concurrence of the will. The ſtomach is poſſeſſed of a power of contraction proper to the fibres that compoſe it; the inteſtines are endowed with a vermicular motion which is particular to them; in theſe viſcera,

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as in the liver, the ſpleen, the pancreas, the kidneys, the organs of generation, the brain, and moſt of the other glands, there are neceſſary ſecretions carried on, which are as much the product of the motion impreſſed by the heart on the fluids it ſupplies them with, as of that which they receive from the contracting power of theſe viſcera themſelves, which are far from being paſſive. It is indeed by their combined action that life is continued and maintained; but this is upon the ſuppoſition that the ſtomach is conſtantly receiving ſubſtances, proper to furniſh materials, for the repairs required to ſupply the loſſes and decays that are the neceſſary conſequence of excretion and motion. Under this ſuppoſition, each of the organs eſſential to life will ſeparate, from the primary fluid, thoſe liquids that are neceſſary for its ſupport, and for the ſecretion it muſt perform, if it be a ſecretory organ. But in order that the primary fluid may ſupply materials fit for the repairing of the machine, and for the various ſecretions that are to be carried on throughout the animal œconomy, it is neceſſary that the crude materials extracted from the aliments by the juices ſubſervient to digeſtion, and introduced by the lacteal veſſels and the thoracic duct into the general courſe of the circulation [9], ſhould undergo ſome previous elaborations. Theſe are brought about by the agitation of thoſe materials, and by the friction and trituration that are its effects, and which fit them, at length, to aſſociate themſelves with other analogous materials, for the repairing of the machine in which they are deſtined to be employed. But in order that theſe elaborations may be ſuch as are required, and that they may preſerve in the animated machine the principle of life in its full vigour, it is neceſſary that the motion ſhould be regulated at a certain medium indicated by nature [10]. Below this medium, the elaborations produced can only furniſh thick, ill-concocted materials for the purpoſe of repairing the cauſe of numberleſs obſtructions, which, after they have gradually embarraſſed the motions of the machine, at length deſtroy it. Above this medium, motion gives the reparatory ſubſtances a haſty elaboration, that brings them too ſpeedily to that putrid decompoſition which is their laſt period, and which conſequently does not allow them to be employed for a ſufficient length of time in the ſupport of the machine. From which

which it follows that an excefs of motion is liable to inconveniences directly oppofite to thofe that are the effect of its deficiency; fuch are the diforders arifing from the diffolution of our fluids, and the difunion of the globules that compofe them, together with the various difeafes and accidents that may fpring from this general caufe.

Nature, ever attentive to the prefervation of that machine, in the conftruction of which fhe hath appeared to take fo much delight, has provided for it in a manner as wife as it is admirable. Motion being the only way of preferving it, fhe hath at firft given it a primitive, effential kind of motion diffufed throughout the whole animal œconomy, over which the will has no power, and which can alone entertain the vital principle in man; but if he were reftrained to this motion alone, his life, far from being a bleffing to him, would have been a fatal gift. The loco-motive faculty fubject to the controul of the will, comes very feafonably to the affiftance of this firft kind of motion, the effects of which it is to complete, by exalting it to that medium which can only produce the proper elaborations for the fupport of the animal œconomy [11]. As the will is capable of putting this loco-motive faculty into action, it might alfo render it ufelefs; but nature has provided againft this, by fubmitting the animated machine to the imperious voice of want, in giving it paffions and fenfations. By thefe it is folicited, it is compelled to move, to direct itfelf towards the objects it feels itfelf inclined to, to fearch for them, and to labour in order to procure to itfelf the enjoyment of them. Thus it is by the fenfe of want that nature has chofen to furnifh the machine fhe meant to preferve, with a fupply of motion, abfolutely neceffary to maintain it in its entire ftate, during as long a continuance as it was defigned for at its firft conftruction.

The law of labour impofed upon us by the Author of nature, was therefore connected with the plan of our prefervation; and that we might not infringe this law, he has made labour abfolutely neceffary for us. Unhappy are they who attempt to elude it! The numberlefs difeafes they are afflicted with, and which are the characteriftic of a life reduced

reduced within narrower bounds[e], expoſe them to a very ſevere penalty for the infringement of this ſacred law.

But this ſecondary motion, ſubject to the controul of the will, and which comes ſo ſeaſonably to the aſſiſtance of the firſt in perfecting the functions of the animal œconomy, may deprave them when it is carried to exceſs; it might even deſtroy them very ſpeedily, had it no other reſtraint beſides that of the will. For the imperious will, ſolicited by paſſions it is eager to gratify, and ever intent upon its object, would ſoon carry to exceſs the motion which is ſubordinate to it, and would imperceptibly ſtrike the fatal blow to that machine for the preſervation of which it was inſtituted.

But here again nature, as in every other inſtance, has been watchful to prevent the abuſe; for, after motions too violent, or too long continued, ſhe hath made the powers that execute them, diſobedient to the call of the will. A kind of palſy, the effect of the animal ſpirits being exhauſted, follows the too forcible exertion of the muſcles, and makes reſt neceſſary. Reſt may be compleat or incompleat; compleat, when the loco-motive faculty ſeems to be in a perfect ſtate of annihilation, and that the organs of the ſenſes require to be excited by a ſtimulus more powerful than uſual, from the ſubſtances which ought to affect them; this it is that conſtitutes ſleep: incompleat, when the organs of the ſenſes, reſtored, at the time of waking, to their natural ſenſibility, the loco-motive faculty, without being exerted, may be put into action by the ſlighteſt impulſe of the will. This incompleat kind of reſt is divided into general and partial; general, when this faculty is not exerted on any of the parts of the machine; partial, when it is put into action, to move only ſome of its parts.

Reſt, as we ſee, is ſuſceptible of many degrees, and hath advantages as real and as efficacious as thoſe that reſult from motion. Reſt is, indeed, the regulator of motion, and is intended to keep it in that ſtate of equilibrium which conſtitutes health; or rather it is the loco-motive fa-

culty, which being ſometimes exerted, and ſometimes ſuſpended, becomes the eſſential regulator. What motion has deſtroyed or corrupted, is repaired by reſt, and the diſorders which may be occaſioned by a too long continuance of reſt are relieved by motion. It is during the intervals of inaction, or of ſleep, which neceſſarily ſucceeds to labour, that the vital fluid, exhauſted or corrupted by the effects of motion, is repaired and reſtored after all its loſſes; and that the liquids, too much agitated and attenuated by muſcular action long continued, reſume their former degree of conſiſtence. From motion carried beyond the degree required, there muſt follow a diſſolution, or a premature decompoſition of the humours neceſſary for the ſupport of the animal œconomy; and from exceſs of reſt they muſt become too much thickened. Some reflections and facts will give the higheſt degree of evidence to theſe two aſſertions.

While motion, by the combination of its two kinds above mentioned, is kept in its due medium, the repairing materials conveyed every day into the general courſe of the circulation, are not more agitated and attenuated than they ſhould be to unite themſelves with others ſimilar to them, and to be conveyed with theſe to the parts where they are to be employed. They do not mix or contract adheſions with materials of a different kind, except as far as is neceſſary to accompliſh any views nature may have in bringing about ſuch combinations. Each of theſe materials, which hath not contracted any improper connection, is readily and eaſily admitted into the ſtrainers deſtined to receive it; all the ſecretions are properly carried on, and harmony reigns throughout the machine.

It is in this ſtate of health, or of moderate motion which conſtitutes it, that ſome part of the fat and oily ſubſtances conveyed by the primary fluid, is continually depoſited in particular diviſions of the cellular ſubſtance, to form and keep up what we call a natural plumpneſs (9). It ſhould ſeem indeed, when motion is carried beyond this medium, that the repairing materials, undergoing a more powerful trituration, ought ſooner to acquire that degree of elaboration which makes them fit to be

employed in repairing the machine; but, on the contrary, excessive motion destroys this useful end, by forming between these materials that are of a different nature, cohesions and connections which prevent them from being deposited in a sufficient proportion for the support of the machine; and such of them as may be deposited in a sufficient proportion, will too soon have attained that period which requires their being replaced.

In this state of excessive motion, which discovers, at least, a kind of dissolution in our juices, the oily part of the blood is either deposited in a very small quantity in the adipose cells, or is perpetually re-absorbed into the general course of the circulation, either to avoid the pernicious effects of too great a friction, or, in mixing, by the means of trituration, with certain depraved humours and materials, to facilitate their expulsion; and that by reason of its oily smooth particles, which prevent the corrugation and contraction of the strainers through which these corrupted juices must pass. Thus we see that leanness is usually the attendant of excessive labour; the continuance of it would necessarily bring on a complete dissolution of our juices; but nature has put insurmountable obstacles to this fatal effect; to wit, lassitude, and sleep which succeeds to it. During the latter, which is an image of the most perfect state of rest, the mass of humours, being only affected by that motion which is produced by the action of organs not subject to the will, the particles of similar materials, diffused throughout this mass and which have experienced a kind of separation, are endeavouring to reunite themselves, and to contract a new degree of coherence that may enable them to sustain the efforts of that motion which must increase at the time of waking. Fresh food, by furnishing recruits of crude and glutinous materials, contributes to strengthen this salutary cohesion, and to weaken the pernicious effects of motion too long continued.

It is so true that rest increases the consistence of our juices, that when it is excessive, by carrying this consistence too far, it produces evident marks of inspissation in some of our humours. It is chiefly among men

who live in a ſtate of inaction and indolence, that we find that exorbitant fatneſs which beſpeaks an habitual depoſit of glutinous and oily juices in the diviſions of the cellular ſubſtance. In ſuch perſons it is not neceſſary that this juice, in many reſpects ſo pernicious, ſhould be taken up into the general maſs to avoid the pernicious effects of friction, which they are far from carrying to exceſs by muſcular action. It is among ſedentary and idle perſons that we uſually obſerve thoſe inſpiſſations of the lymph, which occaſion obſtructions ſo difficult to conquer; and thoſe nervous diſorders ſo common in the preſent age, and which are evidently produced by the thickening of ſome of the juices of the animal œconomy. This may the more reaſonably be preſumed, as theſe affections are mitigated by the continued uſe of diluters, of warm bathing, which ſupplies a greater quantity of fluid to theſe inſpiſſated juices, and of cold bathing, which, while it aſſiſts in this firſt intention, encourages, at the ſame time, their ſeparation, by ſtrengthening the tone of the ſolids that are to act upon them. We may add that theſe diſeaſes are cured by a vigorous and continued exertion of muſcular action, which, after it has reſtored theſe inſpiſſated juices to their natural fluidity, is alone capable of maintaining them in it.

From what has been ſaid, it follows, that motion has the property of attenuating our fluids, and of keeping them in a ſtate of fluidity proportioned to the active cauſe. This fluidity may be either too great from the too violent and too long continued exertion of the agent that produces it; and, in this caſe, it is called diſſolution, and the machine is expoſed to thoſe diſorders which ariſe from this kind of cauſe; or elſe this fluidity may be leſs than the neceſſary degree, which may proceed from the weakneſs or inaction of the agent that ſhould keep it up. In this inſtance, the want of fluidity takes the name of inſpiſſation, and the diſorders manifeſted in the animal œconomy, are ſuch as are produced from this kind of cauſe.

PART

# PART II.

## EXPLANATION OF THE INDICATIONS WHICH ARE TO LEAD US IN PRESCRIBING THE USE OF MOTION AND REST IN SURGICAL DISORDERS.

FROM the ſhort account we have been giving of the neceſſity of motion, and of its effects, it will not be difficult to diſcover the indications which are to lead us in preſcribing or forbidding the uſe of it in ſurgical diſorders. If it be required to reſiſt or prevent the inſpiſſation of the fluids in the cure of theſe diſorders, it will be neceſſary to call in the aſſiſtance of motion, provided there be no particular circumſtance that may render the uſe of it improper. If, on the contrary, the plan of cure require to give a better conſiſtence to the fluids, and if the effects of motion ſhould counteract this plan, we muſt have recourſe to reſt. We ſhall be in no danger of making an improper application of theſe two curative methods, if we can ſettle our ideas upon the advantages that attend them, by facts and inſtances ſupported with proper reflections; and in order to throw this part of our eſſay into ſome method, we will divide it into two ſections. In the firſt we ſhall expoſe the indications which are to determine the uſe of motion; and in the laſt, thoſe in which reſt is to be preſcribed.

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## SECTION I.

### EXPLANATION OF THE INDICATIONS WHICH ARE TO LEAD US IN PRESCRIBING MOTION FOR THE CURE OF SURGICAL DISEASES.

AMONG the ſeveral ſurgical diſeaſes in which experience has eſtabliſhed the neceſſity of motion, we find, that they are all produced by the inſpiſſation of ſome of our fluids. The gout, the rheumatiſm, anchyloſes beginning or formed, ſtiffneſſes of the joint, all proceed from this cauſe. The gout indeed, that cruel and common diſorder, which ſcarce ever viſits the cottage of the poor man, but whoſe ordinary reſidence is in the midſt of luxury and opulence, diſcovers, in all inſtances, an evident inſpiſſation of the lymph. The kind of ſerum which circulates, being no longer able to preſerve, in a ſtate of diſſolution, all the earthy particles it conveys through the lymphatic veſſels of the ligaments and aponeuroſes that ſurround the extremities, as the feet and the wriſts, depoſits there ſome of theſe materials. Theſe, loſing that globular form which they had in common with the fluid that ſerved as their menſtruum, become irritating bodies, the action of which, upon aponeurotic parts of extreme ſenſibility, occaſions thoſe acute pains that

characterize

characterize this diſeaſe. Nature, it is true, generally ſucceeds in diſſipating its paroxyſms by a proceſs of greater or leſs continuance; but this proceſs is nothing more than an increaſe of motion, which manifeſts itſelf, firſt, in the part affected, by the ſwelling, pain, and inflammation we obſerve in it; then in the whole habit, by the fullneſs of the pulſe, and the evident fever that often accompanies this diſeaſe. It is by means of a ſimilar increaſe of motion, that nature, at length, prevails, in comminuting and attenuating the earthy materials that are depoſited, ſo as to render them fit to be remixed with the fluids accumulated in great abundance about the ſeat of the pain, and thus to facilitate their expulſion through all the natural channels of excretion. Nothing can be more eaſily proved than that theſe diſorders proceed from want of motion, nothing is more evident than that they are relieved by an increaſe of it; and I ſhall now proceed to ſhew that increaſe of motion will alſo prevent them.

The rich, over whom the gout more particularly exerts its dominion, living in the midſt of idleneſs and luxury, ſeem to be affected with a demi-palſy; though they are in poſſeſſion of the loco-motive faculty, they do not put this power into action; the law of labour ſeems not to have been impoſed upon them, at leaſt it is become a habit with them to elude it. Theſe beings are therefore almoſt reduced to that radical kind of motion which is independent of the will; the other kind which is ſubject to its influence, and which ought to compleat the effects of the former, ſo as to give the repairing ſubſtances the neceſſary degree of elaboration to maintain health, is never ſufficiently exerted by them to obtain this effect. The imperious call of want, which urges this ſecond kind of motion, is never heard by them, and deprived of this ſalutary incitement, they live in a ſtate of indolence, the ſweets of which are deſervedly embittered by their effects.

With theſe Sybarites, accuſtomed to high living, motion is, in general, not ſufficiently exerted, to give to the quantity of crude materials conſtantly admitted into the courſe of the circulation, a degree of elabora-

tion perfect enough to form none but proper nutritive juices, and to expel the remains of those that have been spoiled by time and friction; from which, it necessarily follows, that there must be some depraved humours remaining. These being deposited upon certain parts, produce in them diseases more or less acute, and more or less dangerous, in proportion to the difference of the texture and sensibility of those parts. These deposits usually taking place in the feet, the wrists, and the knees, form the gout, which, as we see, is the evident consequence of motion not being sufficiently exerted to keep up that fluidity of the humours which constitutes health. If old people be more tormented with the gout, it is because gluttony and indolence usually increase in an advanced age, and that at a time when the suppleness of the parts and the diameter of the lymphatic vessels are diminished, circumstances which contribute to encourage those deposits of cretaceous matter that are the evident cause of this disease.

Young men, though rich and voluptuous, are exempt from the gout. For, besides the natural suppleness of the fibres in early life, the faculty of motion is excited in them by such a variety of passions, that it supplies that action which want renders necessary in less fortunate persons. The game of tennis, dancing, hunting, fencing, and riding, are exercises which prevent the bad effects of the want of motion among persons of this description; but, at the age of thirty, these wholesome exercises no longer make a part of their plan of amusement. On the contrary, their present games scarce require that they should speak or move their fingers; and accordingly the gout was never so general as at present, even at a time of life when it was formerly unknown. It is evident from what has been said, that want of motion is the principal cause of this disease; the work of nature, in relieving its paroxysms, allows us no room to doubt that the salutary crisis which dissipates them is owing to an increase of motion. This must therefore certainly be the best method of resisting or preventing the gout, and the indications which direct the employment of it in the cure of this disease, are too precise to be mistaken. Besides, experience has so frequently established

the efficacy of this method, that it would be almoſt uſeleſs to bring facts in ſupport of the truth of this aſſertion; yet as theſe carry with them complete conviction, and as they are the touchſtones of juſt or falſe reaſoning, I ſhall produce ſome inſtances, in which this mode of relief has been employed with a ſucceſs ſo pointed, that it is impoſſible we ſhould not diſtinguiſh the views of nature in the uſe of it[10].

A man who had led a very active life till he was thirty years of age, was, at that period, engaged in a ſedentary employment. A few years after he felt ſome ſlight attacks of the gout which ſeized him every ſix months. Theſe became afterwards ſo ſharp and ſo laſting, that at fifty years of age he was cruelly tormented with it. The fits laſted five or ſix weeks, and returned three or four times in the year; neither had the remedies he had tried at different times procured him any ſenſible relief. The feet, the wriſts, and the knees were the ordinary ſeats of the diſeaſe, which, at fifty five years of age, notwithſtanding he led a very ſober life, had reduced him to a very miſerable ſtate. Being ſtrongly perſuaded that the painful life he had experienced for twenty years paſt, was owing to the little exerciſe his employment admitted of, he purchaſed at that time a garden out of town, fully determined to be his own gardener. As he delighted in flowers, he employed himſelf in the cultivation of them, and laid a plan of hard work for himſelf during ſeveral hours every day. He kept his reſolution, ſo that for a number of years there were few days in which he was not obliged to change his linen ſeveral times in the day, in conſequence of the profuſe ſweats he was thrown into by his ſtrong and continued exerciſe.

The firſt year he felt a change which encouraged him to proceed; and at the ſecond year, ſound and quiet ſleep, a conſtant appetite, and an uncommon agility, the inſeparable attendants on health, ſucceeded to all thoſe infirmities he had before experienced. He arrived to the age of fourſcore without bearing any marks of decrepitude, and ſtill continued to work in his garden, even in winter time. But a ſore leg, in conſequence of a burn, having confined him for a long time to his room in

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the year 1776, he has ſince been attacked with a terrible jaundice, which has terminated in a herpes that may probably be ſtill diſſipated by motion and the labour he is beginning to reſume.

A young man, very fond of tennis, and who frequently indulged in this exerciſe, having quitted it almoſt entirely for ſeveral years, to follow a profeſſion which was rather inconſiſtent with this kind of diſſipation, was ſeized at the age of thirty with pretty ſmart fits of the gout, and which returned at very ſhort intervals. Theſe fits became more and more continued and painful, notwithſtanding he obſerved the moſt regular conduct and the ſtricteſt regimen. I adviſed him to play again at tennis, to the leaving off of which I attributed the appearance of this diſeaſe at an age when one is uſually exempt from it. He contrived his buſineſs ſo as to be able, three or four times a week, to allot two or three hours to this exerciſe. This ſucceeded at firſt in lengthening the intervals of the fits, and diminiſhing their violence, and at laſt made them totally diſappear; for during ſome years paſt he has not felt any return of them. It would be needleſs to alledge any other facts to prove the neceſſity of motion in the cure of the gout; the inſtances which eſtabliſh the advantage of this method are too numerous and too well known to leave us any room to doubt of the propriety of employing it in this caſe [11].

The rheumatiſm differs from the gout merely in the ſeat of the obſtruction, which takes place in the aponeuroſes of the muſcles in their ſheaths, and in the ſtrainers of thoſe membranes that ſurround and connect them. This obſtruction being, as in the gout, the effect of an evident inſpiſſation of the lymph that is conveyed through the channels of theſe parts, motion muſt neceſſarily be alſo the proper agent in this caſe. It muſt therefore be employed to reſtore theſe inſpiſſated humours to the degree of fluidity required for their free circulation. Accordingly we ſee, that if the perſons who are attacked with the rheumatiſm, have reſolution enough to bear the very ſharp pains always occaſioned upon firſt moving the part affected, they ſoon contrive to get rid of them en-

tirely by very powerful and long-continued exercise, which putting the part affected in action, produces in it a salutary agitation and attenuation of the humours forming the painful obstruction [12]. Even in those cases where the pains are too violent, and muscular action too much benumbed to admit of vigorous motion in the part affected, the best curative means are still to be chosen from among those that stimulate the solids and fluids of the part. These are, either warm or cold bathing, which, besides facilitating the attenuation of the humours by the introduction of aqueous particles that may possibly be conveyed so as to mix with them, do also excite motion in them; cold baths, by increasing the tone of the solids; warm ones, by the rarefaction they produce in the fluids. Stupes add to these effects, already so efficacious in themselves, the power of breaking mechanically the inspissated juices by the shocks and strokes they carry along with them. The juices are, as it were, kneaded by this agent, which from its soft, mild, and uniform method of acting, is much to be preferred to the other external methods employed to produce this effect; such, for instance, as dry frictions upon the part, flagellation with nettles, &c. — If these kinds of means are sometimes attended with success, it is evident this must happen by their conveying into the painful part a degree of motion fit to attenuate the humours that formed the obstruction, and induce them to a change of place. This reasoning may be extended to those large blisters successfully applied to limbs affected with the rheumatism; it is as much by the motion they excite in the part, as by the discharge of serum, and the suppuration they occasion, that they produce those salutary effects they are often attended with.

An anchylosis appears to be nothing more than a gradual inspissation of the synovia, by which, bones originally designed to move freely upon one another, become consolidated. The curative indication that presents itself here is to counteract this inspissation while it is forming, and to restore the synovia to its first state of fluidity, when it hath acquired a preternatural consistence which confines and even destroys the motions it was destined to facilitate: but what are the means by which this indication

cation is to be fulfilled? Which is the kind of remedy that experience hath determined to be the moſt ſucceſsful in theſe caſes? It is the motion of the parts compoſing the joint, which by acting upon the thickened ſynovia, by rubbing and triturating it, reſtores to it that fluidity it had loſt. The indications for the uſe of this method are indeed ſo pointed in this ſort of anchyloſis, that it cannot be ſupplied by any other; but there are other kinds of this diſeaſe in which there are evidently counter-indications that oppoſe themſelves to the application of it; and in others again, there is as much precaution as ſkill neceſſary to direct the employment of it. A haſty review of the chief cauſes of this diſeaſe will be ſufficient to direct the proper application of motion in its cure.

The anchyloſis may be the effect of too long-continued reſt, of too great inaction of the bones deſtined uſually to move on one another, and then it will be ſufficient to reſtore by degrees theſe bones to their ordinary motion, either by the action alone of the muſcles that are inſerted into them, ſupported with a degree of firmneſs neceſſary to overcome the painful ſenſation of the firſt motions, or by increaſing that action by external powers. It ſeldom happens, however, that inaction alone, even though continued for a conſiderable length of time, can produce this diſeaſe. Its moſt uſual cauſes are, the diſeaſed ſtate of the bones, either on their articular ſurfaces, or in the neighbourhood of the articulations, the inflammation and tenſion of the ligaments that ſtrengthen them, and of the muſcular aponeuroſes that cover them. It may be obſerved indeed, that in the diſeaſed ſtate of the articular ſurfaces of the bones, the anchyloſes may frequently be conſidered as the reſource of nature for the preſervation of a limb ſhe is not willing to loſe; and in theſe caſes we ought to be ſo far from reſiſting the progreſs of this diſeaſe, that our art muſt be exerted in encouraging it by every poſſible means[13]. It may here well be preſumed that motion is not to be employed to bring about this ſalutary end, as I ſhall ſhew hereafter, when I ſhall expoſe the indications which direct the uſe of reſt in ſurgical complaints. But ſetting aſide theſe circumſtances in which an anchyloſis may be conſidered as an advantage, motion muſt be the curative medium moſt to be depended

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upon in thefe cafes, if we employ it with all the precautions required by the difference of circumftances. We may even have recourfe to it with confidence in thofe cafes which feem more particularly to forbid the ufe of it.

Fractures of the joints, for inftance, by occafioning an extravafation of bony matter into their cavity, feem at firft fight to make an anchylofis unavoidable, and yet, in thefe cafes, motion employed with fkill may frequently prevent it. To be convinced of this from theory, we have only to trace the mechanifm by which this extravafation is made in moft circumftances. If the bones, fractured at their extremities in the joints, have not experienced any evident change of pofition, or if they have been replaced in their original fituation by the Surgeon's art, the bony matter exfuding from the furfaces of the folution of continuity, tends, as in other inftances, to confolidate the divided parts, in order to reftore them to their functions. It is true, indeed, that the bony matter, being extravafated, exceeds the level of the parts brought into contact, and that as it thickens, it forms a folid mafs on the divided part, and that this mafs, on the fide of the cavity of the joint, muft be fo much the more confiderable, as the bony matter muft have met with lefs oppofition in its growth; but it by no means follows that an anchylofis muft be the neceffary confequence of this. Motion may be employed with advantage to prevent this accident, and the bony projection which threatens the joint with it, indicates, by its very formation, the employment of this method, which can never act more effectually than while the callus is ftill foft. For this reafon, when we may prefume that the fractured pieces have begun to acquire a certain degree of coherence among themfelves, by means of the bony matter that muft confolidate them, it will be neceffary to give gentle motions to the joint, and to repeat them as often as circumftances will permit. It is evident that the projection of the callus, which is ftill yielding, will be reftrained, and that at length the play of the articulation will be perfectly reftored. Suppofing however that the projection had acquired a confiderable degree of confiftence, we muft not, on that account, abandon the joint to the anchylofis that may threaten

threaten it. This circumſtance can only render the uſe of motion more painful and more difficult; but by perſevering in the uſe of it, and by combining it with that of diluting and relaxing applications, calculated to diminiſh the force of the preſſure of the articular ſurfaces one againſt another, we ſhall at length ſucceed, if not in levelling entirely the bony projection, at leaſt in rendering it ſo ſmooth and poliſhed that the motion of the joint ſhall no longer be impeded by it.

What is thus dictated to us by reaſon, I have obſerved more than once confirmed in fractures of the olecranon, which is evidently adapted to the articulation of the arm with the fore-arm. If an anchyloſis be frequently the conſequence of this accident, this is leſs to be aſcribed to the nature of the fracture, than to the want of ſkill in thoſe who treat it. It is true, that if, in this caſe, we put the fore-arm in a bent ſituation, and in a ſling, the olecranon being then fixed by the extenſor muſcles that are inſerted into it, while the reſt of the cubitus forms a right angle with the humerus, there will neceſſarily remain a conſiderable interval between the two fractured pieces. In theſe caſes, the exſudation from the fractured ſurfaces being diſcharged into the cavity of the articulation, and afterwards conſolidated there, would, from this reaſon alone, deſtroy the power of its motion; but even if this exſudation, without ſtretching into the cavity of the joint, ſhould only fill up the ſpace between the cubitus and its apophyſis, and that ſimply by moulding itſelf on the correſpondent part of the humerus, the anchyloſis would no leſs be the neceſſary conſequence of an addition that ſhould have lengthened the natural unciform proceſs formed by the olecranon; for the extremity of this proceſs, reſting then upon the bottom of the cavity that is found in the poſterior part of the humerus, we never can hope to make any extenſion of the fore-arm, and it muſt therefore neceſſarily remain in the ſtate of flection in which it hath been placed (f); but if, inſtead of uſing this manœuvre, ſo oppoſite to all the rules of art and of common ſenſe, we keep as much as poſſible the fractured parts in a ſtate of approximation, by a conſtant and moderate extenſion of the fore-arm (g), and by a ſuitable bandage, then the exſudation which proceeds from

the correſponding bony ſurfaces, as it condenſes, does nothing more than unite the olecranon to the body of the ulna from whence it was ſeparated, and that without any viſible increaſe of length. In this caſe, the callus would only form a trifling projection on the ſide of the articulation, which might, however, confine the motion of the joint, if it were not kept under. But if we give the joint a little motion towards the twenty-fifth day (4) after the accident, before the callus be completely hardened, and if we increaſe this motion by degrees, this projection will give way, and in a few months the joint will recover all its motions, as I have been convinced by ſome caſes of this kind in which I have followed the practice here laid down.

It may, however, be obſerved, that after the olecranon has been united by the ſkilful methods required in fractures of that bone, any difficulty of motion that may exiſt, may proceed either from the maſs of the callus on the ſide of the articulation, or from the projection of one of the pieces of the bone itſelf, by reaſon of the difficulty, not to ſay the impoſſibility, of keeping them on a level. But whether it be that theſe cauſes act ſeparately, or in combination, to reſtrain the motion of the joint, we may readily conclude from what has been ſaid, that motion is the only power that can be employed with advantage, in removing theſe inconveniences, and in reſtoring the joint to its original freedom. This is effected, at length, by poliſhing and wearing down, either the hardened callus itſelf, or the bony particles projecting in the cavity of the joint. The only circumſtance to be attended to is, that in the laſt caſe, as the firſt motions muſt neceſſarily be more painful and difficult, it will be proper to be more careful in the employment of them, than in the other inſtance.

If motion be almoſt a certain remedy againſt an anchyloſis threatening the joint in moſt of the fractures incident to it, we are not to expect leſs effect from this remedy, when a rigidity is likely to enſue from a compound fracture, with ſplintering of the bone, in the neighbourhood of an articulation. As the ſtiffneſs of the joint, in this caſe, can only proceed

ceed from an inſpiſſation of the ſynovia, and from a rigidity, the ligaments and aponeuroſes ſurrounding the joint may acquire, motion may be conſidered here too as the means to prevent an anchyloſis. But if we conſider that the ſtate of the parts which leads us to apprehend this inconvenience, is the conſequence of their tenſion, inflammation, and diſpoſition to ſuppuration, as alſo of the long inactivity they muſt be kept in, in order to accompliſh the firſt indication which is the cure of the fracture, we ſhall conclude that the anchyloſis, in this caſe, is but a ſecondary accident which muſt not be attended to, at leaſt, for ſome time. Motion is undoubtedly the proper remedy in this caſe too; but previous to our having recourſe to it, it is neceſſary that the conſolidation of the bony parts ſhould be conſiderably advanced; and that the inflammation and irritation of the ligaments and aponeuroſes ſhould ſo far be overcome, that motion may not produce in them a painful extenſion which might tend to excite the inflammation afreſh, and to form abſceſſes in the part. As ſoon as theſe chief indications are obtained, we muſt call in the aſſiſtance of motion to prevent the anchyloſis with which the joint is menaced. If the articulation be ſtill ſuſceptible of an evident degree of mobility, its own motion alone excited and increaſed by degrees, will, in time, reſtore to the ligaments and aponeuroſes their flexibility; and to the ſynovia its ordinary fluidity. But if the ſynovia have acquired too much conſiſtence, and that the inſpiſſation of the fluids which fill the canals of the ligaments and aponeuroſes, ſhould have made them too rigid to admit of being put in motion without cauſing very great pain, we muſt then avoid perſiſting too obſtinately in the uſe of this method. I have ſeen conſiderable ſwellings and ecchymoſes brought on after an inconſiderate uſe and exertion of motion under ſuch circumſtances; theſe have made it neceſſary to poſtpone for a long time the uſe of this efficacious method, which had failed only from the neglect of precautions proper to have inſured its ſucceſs. In theſe caſes the motion of the joint muſt be prepared and preceded by oily and ſaponaceous embrocations (15), by warm and emollient baths, and eſpecially by ſtupes. Theſe remedies, by tranſmitting a gentle motion among the inſpiſſated juices, and even by beginning their liquefaction through means of the penetrating particles

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they may convey to them, are capable of ſupplying the ligaments and aponeuroſes, and are therefore excellent means to be employed previous to that motion which is to reſtore to the joint its free play, and get the better of the anchyloſis.

Stiffneſſes of the joint which continue for a long time after ſprains, luxations, and fractures, even at a diſtance from the articulations, are alſo produced by an inſpiſſation which is the effect either of the compelled ſtagnation of the fluids during the obſtruction of the parts affected, or of the continued reſt to which they have been confined in order to fulfil the moſt urgent indications which theſe diſorders preſent. In theſe caſes too, motion either alone, or combined with other auxiliary methods I have before mentioned, is the effectual remedy to remove theſe rigidities[16]. In a word, whatever may be the diſtant cauſe from which theſe accidents may be produced, their apparent cauſe conſiſts always in inſpiſſated juices, which cannot be reſtored to their firſt ſtate of fluidity without the aſſiſtance of motion; either internal motion excited by remedies adapted to the cauſe of the inſpiſſation, or external motion produced by muſcular action.

From the facts already recited, which are well known to all the profeſſion, we are ſufficiently authorized to conclude, that wherever there is any diſeaſed inſpiſſation, we muſt have recourſe to motion to correct it; but other facts will give the higheſt degree of evidence to this aſſertion. Every thing perſuades us that the ſcrophula, for inſtance, one of thoſe diſeaſes in which this inſpiſſation is moſt remarkable, is produced by want of motion in the perſons who are affected with it.

Infancy, which is uſually the ſeaſon of this diſeaſe, is indeed the time when motion is moſt exerted in the machine; but it is not without neceſſity that this principle is carried ſo high at this period. The nature of the food of a new-born infant, the rapid growth he is to experience, the extent of ſurface he preſents, in proportion to his ſize, to the fluid in which he lives; all theſe circumſtances require in him a

much greater degree of motion than at any other age. The only nourifhment nature has provided for him, muft be of an acefcent quality, fo that to keep the fibres in a ftate of fupplenefs favourable to their extenfion, a confiderable degree of motion was required in this living machine, in order to animalize, as it were, this kind of food, and to extract from it the materials proper for the growth of the body. This fame motion was not lefs neceffary to fupply a degree of heat that fhould enable the child effectually to fupport the frefhnefs of the air with which he is furrounded. For thefe reafons, the contractions of the heart and arteries in earlieft infancy are extremely frequent, and mufcular motion very quick. At this period then, as at every other time of life, there exifts no greater degree of motion than is requifite for the wants of the animal œconomy; and therefore this principle cannot be interrupted or exerted above its powers without producing an alteration in its effects.

While the child draws from his mother's breaft the food nature has allotted to him, while he freely enjoys the faculty of moving as much as his mufcular powers will allow, his fluids are neither altered by infpiffation nor diffolution, and he remains in health. But if for this wholefome food we fubftitute one that is made with unfermented flour, and if this aliment, pernicious in itfelf, be alfo given to excefs, the child will not then enjoy a degree of motion fufficient to give the nutritive juices, extracted from fuch glutinous food, the elaborations neceffary to maintain health. Hence will at length refult a fault of infpiffation, the progrefs of which will be more rapid, as external or mufcular motion fhall have been more confined by fwaddling cloaths, and therefore lefs able to fecond the effects of that motion which is primary and effential to life.

Under thefe circumftances nature feems indeed herfelf to have recourfe to motion in order to reftore the humours to their proper fluidity. Reftleffnefs, agitations, pain, and fever, which befpeak an increafe of motion, are fo many means fhe often employs with fuccefs in children to refift the acefcent property of their fluids, and the infpiffation produced by it. But thefe means are far from being always effectual; there

are children who perish speedily after such exertions; others, after having languished a long time under obstructions of the mesaraic glands, die at last of the suppurations that are formed in them: others again, are seized with obstructions in the glands of the neck, or other external signs which indicate a scrophulous habit. This disease, as terrible from the difficulty of cure as from the accidents that attend it, seems, from the symptoms that manifest it, to be produced by too great a degree of acescency in the humours, which not being sufficiently agitated to correct this disposition, an inspissation of the lymph is produced, which forms the characteristic of the scrophula. Nature seems of herself to point out the remedy, by manifesting an increase of motion in all the efforts she makes to counteract this disease. It is therefore by consulting this wise directress, who never deceives us when we understand what she intends, that we may presume, that motion is one of the means, the efficacy of which is most to be depended upon in the cure of scrophulous complaints. Facts, far from invalidating our ideas upon this head, seem to add a fresh degree of probability to them. Do we not indeed observe, that all dissolvents of the lymph (such as *Rotron*'s) composed of alkaline, absorbent, and gently irritating substances[17]; that repeated purgatives, that mineral and saponaceous waters, &c., which succeed best in the treatment of this disease; in a word, that all these remedies act no otherwise than by increasing the motion in the machine to a higher degree than before their use? Some of them too, it is evident, tend to subdue the acescent quality of the liquids, which is one of the principal causes of the inspissation of the lymph, as much by the motion they excite, as by the alkaline and absorbent particles they contain[18].

The topics also applied with success upon scrophulous tumours, and distinguished by the name of dissolvents, such as the *Emplastrum de Vigo*, *Diabotanum*, *&c.*[19], seem to act no otherwise than by increasing the power of motion in the obstructed part. Nature herself, when she cannot by her own powers, or with the assistance of art, dissipate these tumours in an insensible manner, doth she not effect the dissolution of them by calling in the aid of inflammation, and suppuration[20], which is the conse-

quence of it? Theſe two agents which ſhe employs to complete her purpoſes, are they any thing more than the produce of an increaſe of motion? But the circumſtance which evidently demonſtrates the efficacy of that principle in the cure of this diſeaſe, is, that the remedies adapted to it are never more ſucceſsful, than when they are combined with ſtrong and continued exertions of muſcular motion. This is ſo true, that with the uſe alone of ſome common diſſolvent, and a few purgatives adminiſtered now and then, joined to that of vigorous exerciſe taken in the country and in the open air, I have ſucceeded in curing ſeveral young perſons affected with ſcrophulous tumours in the neck, feet, or fingers, ſome of which, in the latter inſtances, were attended with fiſtulous ulcers and caries of the bones. But theſe means muſt be continued for a ſufficient length of time, to enable the lymph to be reſtored to its natural ſtate of fluidity, and to be maintained in it; and during the employment of them, we muſt forbid the uſe of milk, and all kinds of acid food.

The venereal virus alſo, which, from every circumſtance, ſeems to be a coagulater of the lymph, and which bears ſome analogy to the ſcrophula, ſince it frequently degenerates into this, appears to require no other remedy than a certain degree of motion excited and kept up for a ſufficient length of time to deſtroy and annihilate the effects of this poiſon. Mercury uſed in frictions, the aquila alba, the panacea, the ſublimate, and all the other preparations of this mineral internally taken, the ſudorific woods, &c., do not exhibit in their effects any thing elſe but an increaſed degree of motion throughout the machine. Nor can the volatile alkalis, propoſed by Mr. PERILHE [21], be uſed upon any other principle in the cure of this complaint. Nature ſeems not to proceed any otherwiſe in her efforts to deſtroy the virus, and to prevent its being communicated to the general maſs, when it hath originally been confined to ſome part. Inflammation, and pain that attends it, and ſuppuration, which is the effect, are the means ſhe oppoſes to the propagation of this terrible diſeaſe.

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I have ſeen gonorrhœas ceaſe of themſelves, and venereal buboes, abandoned totally to nature, perfectly healed after a plentiful ſuppuration, and the perſons affected with theſe complaints have not afterwards experienced the leaſt venereal ſymptom, though they had not made uſe of any mercurial remedy. I have ſeen a man radically cured of the moſt dangerous venereal ſymptoms, for which he was intending to undergo a ſalivation, at the end of a putrid fever that laſted forty days, and the criſis of which was obtained by very copious and long-continued ſweats.

Mercury and its preparations are not then the only antidote to the venereal virus; every thing that can exalt the motion of the machine to a certain pitch, and maintain it there for a ſufficient time, may be uſed with effect in this caſe to reſiſt the inſpiſſation of the lymph, and the cauſe which produces it. Muſcular motion, as it cannot be continual, is ſcarce able to have this effect; but though it may not, of itſelf, have power to deſtroy the virus, it is no leſs certain that it may aſſiſt in preventing the progreſs of it. It is from obſerving its good effects, in venereal affections, that I ſcruple not to combine it with the uſe of mercurial medicines, which increaſe internal motion. I therefore always deſire my patients to uſe a great deal of exerciſe, while I treat them with mercurial frictions. Though the weather may be rather cold, I do not confine them to their rooms, and have never had any reaſon to repent of this method. There have been ſome patients even, who though they went out every day, and took a long walk, morning and evening, have never had the mouth heated, notwithſtanding they had uſed as much as eight ounces of ointment in the uſual quantities.

The ſcurvy not being entirely a ſurgical diſorder, ought not, perhaps, to be noticed here; yet let me be permitted to expoſe ſome of the phœnomena this diſeaſe preſents us with in its various ſtages; becauſe they will form, in regard to what has been ſaid concerning motion and its effects, an additional degree of probability by which it would be difficult not to be convinced. In the firſt and ſecond periods of this diſeaſe, every thing indicates too great an inſpiſſation in the fluids of the perſons who

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are attacked with it. Laſſitudes, languor, ſwelling and hardneſs of the lower extremities, are all ſymptoms that characterize ſuch a ſtate of the fluids; and cold and damp weather, inactivity, and the uſe of groſs glutinous food, which are the diſtant cauſes of this diſeaſe, can ſcarce produce any other kind of vice in the habit. Accordingly in ſuch a ſituation, what are the curative intentions, and by what means are they to be fulfilled? They conſiſt evidently in exciting the tone of the ſolids, attenuating the fluids, and reſtoring them to their uſual fluidity. Internal motion, increaſed by certain remedies that have the power of exciting it, and the exertion of external motion, ſeem to be the proper means of obtaining theſe ends.

Now, if we conſult facts, we ſhall find that daily and moderate exerciſe, exerted ſo as to bring on a gentle perſpiration, that the juice of plants which contain a volatile alcali already formed, that the Peruvian and Winter's bark, that wine and antiſcorbutic ſyrups compoſed of theſe plants and of alcaline ſalts, that bliſters, in a word, are all remedies of remarkable efficacy in the firſt and ſecond ſtages of the ſcurvy. It hath even been obſerved that all the ſymptoms that denote this diſeaſe, have not unfrequently diſappeared after a fever continued for a few days. It is evident then that motion is the means employed by nature and by art in oppoſing this diſeaſe; but to that ſtate of inſpiſſation which is the character of the firſt and ſecond degree of the ſcurvy, there frequently ſucceeds a ſtate of evident diſſolution in all the fluids. In this caſe the curative intention and the means of accompliſhing it muſt be adapted to the change the diſeaſe hath undergone. Hot antiſcorbutic medicines, and bliſters, ſo efficacious in the firſt and ſecond ſtages of the ſcurvy, become prejudicial in this more advanced ſtage, in which diſſolution hath ſucceeded to inſpiſſation; and a fever is then the moſt dangerous accident that can happen to the patient; for a diſſolution carried to its utmoſt height, and death which follows it, are the ſpeedy conſequences of ſuch an event.

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The remedies that ſucceed beſt, at this period, are derived from the claſs of ſubſtances which contain a mucilaginous principle, ſuſceptible of a ſlightly acefcent fermentation, calculated to give ſome degree of conſiſtence to the liquids, and to reſtore the ſolids by degrees to their proper tone. Oranges, lemons, freſh vegetables ſlightly acidulated, new bread, ripe fruits, grapes, warm wine, honey, &c., are the remedies which ſeem more particularly to poſſeſs this property. Motion, ſo ſalutary in the firſt ſtages of the ſcurvy, becomes now very dangerous; for it hath been obſerved in the third, and more eſpecially in the fourth, ſtage of this diſeaſe, that ſeveral patients have died of internal hœmorrhages, after having inconſiderately uſed exerciſe which, though moderate in itſelf, was ſtill above their ſtrength; after having made ſome ſudden motion, or after having been only ſtirred with quickneſs, and moved incautiouſly from one place to another.

But this ſtate of extreme diſſolution that the ſcurvy offers at this period, is ſeldom found among perſons who live upon land, except in priſons and dungeons, where inaction, cold, dampneſs, bad food, and affliction, often contribute to carry this diſeaſe to its higheſt period; for among the common people, even among thoſe who live moſt poorly, the ſcurvy ſeldom ſhews us any thing more than a vice of inſpiſſation, againſt which external motion, combined with warm antiſcorbutics, may be employed with ſucceſs. Accordingly in thoſe obſtructions of the legs, which have a purple caſt, with hardneſs, and which are deemed ſcorbutic, ſo far from its being neceſſary to preſcribe reſt, as in other obſtructions of theſe extremities; exerciſe, on the contrary, and walking in dry and warm weather, combined with the remedies ſuitable to the ſcurvy, have always appeared to me the moſt proper means of relief; and I have often obſerved that theſe obſtructions were leſs conſiderable, and leſs ſhining towards the evening, after a good deal of walking, than two or three hours after the patients had got out of bed.

From what has been ſaid, it appears, that the indications which lead us in the application of motion to the cure of ſurgical diſorders are evi-

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dent. If we muſt attenuate and divide the fluids, if their too great inſpiſſation ſhould produce a real diſeaſe, or form an obſtacle to the cure of any one; motion becomes one of the moſt certain curative methods, the efficacy of which is eſtabliſhed by experience.

## SECTION II.

### TO SHEW THE INDICATIONS WHICH ARE TO LEAD US IN PRESCRIBING REST FOR THE CURE OF SURGICAL DISORDERS.

THE effects of reſt and motion being, as we have obſerved in the firſt part of this eſſay, as diametrically oppoſite as their cauſes, and the too great inſpiſſation of our fluids affording us a preciſe indication for the employment of motion, we might immediately conclude from hence, that whenever it becomes neceſſary, in the cure of ſurgical complaints, to increaſe the thickneſs of theſe ſame fluids, or any of them, it will be proper to call in the aſſiſtance of reſt. This is a very natural conſequence which ſhould ſeem to point out both the caſes which require the uſe of this method, and the indications which are to lead us in preſcribing it. But in order that this conſequence may be admitted, it becomes neceſſary to ſupport it by facts, which preſent themſelves in great numbers. In all fractures, for inſtance, where the advantages of reſt are ſo evident, nature ſeems to require nothing but an inſpiſſation of ſome of

our liquids. Is it not by the gradual concretion of a juice originally fluid, that ſhe unites in the moſt ſolid manner, the bony parts that have ſuffered a ſolution of continuity? Is not this deſired effect chiefly brought about by reſt, and doth not motion put the greateſt impediment to it? This circumſtance is univerſally known, and not contradicted by any fact; but there are many other caſes, in which nature appears to have the ſame views as in fractures, and in which the indications for reſt are as preciſe as in theſe accidents. Theſe caſes, though not unfrequent, require a degree of attention and penetration to diſtinguiſh them, and it is by taking a review of them, that we ſhall find reſt to be frequently the moſt certain method that art can furniſh to the ſurgeon who knows how to apply it.

In my firſt anatomical purſuits, I had ſeen ſome ſpines of crooked perſons, that preſented three or four dorſal vertebræ, the bodies of which were ſoldered and confounded together, without having paid any particular attention to this diſeaſe, and without having reflected on the accidents it might have produced during its continuance; but a patient whom I ſaw at the Hoſpital in 1766, fixed my obſervation upon this object. Having been violently beaten, at the age of thirteen, by his father, he felt, a few months after, a weakneſs in the ſpine, attended with pain and a difficulty of keeping an upright poſture. He at firſt walked with great difficulty, and afterwards could not walk without leaning upon a ſtick, with his body bent forwards. Theſe firſt ſymptoms which continued more than ſix months, were followed by a fever accompanied with difficulty of breathing, and pain in the middle of the back, without any very apparent ſwelling externally. Theſe ſymptoms were relieved by bleeding and other remedies, and the patient ſeemed reſtored to his former ſtate; but the difficulty of walking and of ſupporting himſelf increaſed by degrees, and, at length, a tumour was formed towards the lateral and poſterior part of the laſt falſe ribs, the increaſe of which was very ſlow, and made no change in the colour of the ſkin. This tumour extending itſelf gained the region of the loins, and more than ſix months after its appearance, the ſkin became inflamed, grew thin, and

by the aſſiſtance of maturating poultices applied to the tumour, a fiſtulous opening was made in it, from whence there iſſued, according to the patient's account, more than a quart of matter as white as milk. This diſcharge having continued very plentiful for three months without hopes of cure, the parents, tired with the length of the diſeaſe, took the reſolution of ſending this young lad to the Hoſpital. When he came there he had a fiſtulous opening on the right ſide of the lumbar region, which furniſhed an ichorous and plentiful diſcharge; a ſlow ſuppuratory fever accompanied, and every appearance ſeemed to ſhew that death would ſoon terminate this diſorder. A pledgit of ſoft ointment only was put upon the fiſtulous orifice, and the diſeaſe was left to nature.

I frequently ſaw this patient, who being better fed, and more attended to than at home, began to recover a little from the deplorable ſtate to which he had been reduced. He particularly kept very quiet in his bed, and his ſpine was then incurvated with an evident projection outwards, towards the laſt dorſal vertebræ. About two months after he came into the Hoſpital, the matter which oozed from the fiſtulous opening, grew thicker and leſs plentiful, the countenance appeared better, the pulſe leſs frequent, and he began to give ſome hope of recovery. This hope was more confirmed ſix weeks after, for the diſcharge was ſtill leſſened, and the patient began to feel ſome degree of ſtrength in the ſpine. Two months after this laſt period, the fiſtulous orifice was cloſed, and the patient began to walk with a ſtick; but he was crooked, and ſeemed to have loſt much of his former height.

From the accidents this patient had undergone, and the deformity the ſpine had contracted during the courſe of his diſeaſe, I imagined that ſome of the dorſal vertebræ had been affected with caries; that the remains of them after being confounded together, and after having been in a ſtate of granulation, had at length acquired a degree of ſolidity ſufficient in ſome ſort to ſupply the bodies of theſe bones. I could not but conſider reſt as having been the chief promoter of this ſalutary end; and

and ſubſequent facts appear to have completely confirmed my conjectures on this point.

Firſt, the patient who had been the ſubject of the preceding obſervation, and whom I had always kept within my notice, having been ſeized in 1769 with a peripneumony of which he died, I was allowed to inſpect the body, and my firſt care was to take notice of the diſorders the ſpine had experienced three years before. I found, as I ſuſpected, ſeveral vertebræ, the bodies of which were confounded with each other; theſe were the ninth, tenth, and eleventh, of the dorſal vertebræ, which had loſt at leaſt half of their longitudinal dimenſions, while their ſpinal proceſſes which had not ſuffered the leaſt alteration, formed a projection and a remarkable convexity outwards. This firſt part of my conjectures being verified, I have neglected no opportunity of informing myſelf, what ſhare reſt might have had in theſe ſort of cures. Accordingly I have queſtioned all deformed perſons, whenever I could do it with propriety, and deſired them to give me an account of the accidents that had happened to their ſpine previous to its deformity. Thoſe who are become ſo, merely from a lateral projection of this column, without having had any collection of matter during the growth of this projection, or after it was formed, have ſcarce complained of any thing more than a gradual weakneſs of the part affected, and have never been obliged to keep from motion entirely. They have almoſt all been able to riſe out of bed at all times, and even to walk with a ſtick without experiencing any very acute pains. But thoſe in whom marks of former abſceſſes were to be obſerved, who in ſome ſmall part of the ſpine have an evident projection and convexity outwards, have all been obliged to keep their bed for ſeveral months, ſometimes for whole years; and it was never till after a long-continued reſt, that the ſpine began to recover, at the part affected, a ſufficient degree of ſolidity to allow them to ſupport themſelves and to walk.

If reſt, ſuch as it might be, without being ſubjected to any rule, hath produced good effects in theſe caſes, we may readily conceive that it would

would have been attended with much greater advantage, had it been prescribed and employed with discernment; still however this kind of disease presents us with precise indications to determine the use of it. It may even be presumed, that it would prove one of the most certain means that could be employed to prevent deformities of the spine[22], for it is not at the time this column discovers a tendency to projection, that we ought to leave it oppressed by the weight of the superior parts which it should naturally sustain. We should wait, till by rest and a horizontal position, the pieces that compose the column shall have lost, by the use of proper remedies, that morbid state of softness which had disposed them to be thrown out. These two means, of rest and a horizontal posture, are equally indicated whether the progress of the disorder be assisted by a weakness of the ligaments connecting the vertebræ, or by the action of the muscles. But these unions of the vertebræ, after a greater or less destruction of their bodies, which we have observed to happen in the dorsal vertebræ, may also take place in the lumbar vertebræ; and might not rest contribute to effect this salutary purpose in cases of caries with which the vertebræ of the loins are so frequently affected? Let us consult facts, that we may know how far this remedy is to be depended upon in the cure of so terrible a disease.

I have seen many of these carious vertebræ, and the death of all those who have been attacked with them, seems to proclaim that they are an incurable complaint. But before we lay down this dreadful prognostic, let us trace the disease throughout its progress, and let us consider the phœnomena it presents to us during its long continuance; these may suggest some ideas from whence a more comfortable prognostic may be deduced, and which future facts may perhaps justify. We frequently see, after a fall on the buttocks which shall have occasioned a concussion in the lumbar vertebræ, after a blow received on these parts, after a violent and painful effort made to raise too heavy a load &c., after such accidents, I say, we frequently see that the persons who have suffered them, complain, some time after, of a dull pain in the region of the loins, with a difficulty of walking, which increasing gradually, without ever

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caufing any very acute pain, ends, at length, in fo great a weaknefs of the fpine, that they are no longer able to fupport themfelves, and are obliged to keep in bed. At this period, which is often nine or ten months after the accident, we generally begin to perceive a tumour which makes its appearance either underneath Poupart's ligament, or on the fide of the great ifchiatic foramen, and which increafes flowly without being painful to the touch. When the tumour hath acquired a certain fize, and that the matter which forms it is fufficiently advanced towards the fkin, a manifeft fluctuation is obferved in it, which feems to furnifh a pofitive indication for the opening of it [h].

The Surgeon who makes this opening, and who fees that he has given iffue to a great quantity of matter, confined for a long time in fwellings of this kind, congratulates himfelf upon an event which he thinks cannot but turn out for the good of his patient; but the patient, who for fome months paft had experienced no evident degree of fever, who fuffered but little, who had perhaps preferved his appetite, who flept, and who had complained of no other fymptom but that he could not keep his back upright, is far from being relieved by this operation, at leaft if he be, the relief is not of long continuance; for the matter forming the tumour, which at the time of the opening was white as milk and without fmell, foon contracts a confiderable ftench, a fever comes on, the pulfe becomes quick and fmall, and the patients pretty frequently die towards the thirteenth day [i]. The body is afterwards opened, when a caries of two or three of the lumbar vertebræ, and often of part of the os facrum, prefents itfelf to the view; and after this difcovery, the Surgeon is far from imputing to his own management the fpeedy death of the patient.*

It is proper, however, to obferve, that this patient had lived feveral months, without any confiderable inconvenience, with this caries, and

* Many of thefe and fubfequent obfervations have been adopted by Mr. JUSTAMOND, in his *effay on abfeeffes*, as containing that gentleman's entire fentiments on the fubject. H.

with

with this tumour though it contained a large collection of matter: his ſtate would not even have been changed ſo ſuddenly, if an opening had not been too precipitately made. We ſhall be convinced of this by attending to what happens when theſe tumours are left to nature; if they burſt, the opening is made much later, and it is only at this period that patients are ſeized with any alarming ſymptoms, and that too in a much leſs degree than after the opening has been made by art[k]. The reaſon of this is certainly becauſe nature procures no more than a very ſmall iſſue to the matter. If the patients then die, they periſh much later than in the other inſtance. This difference in the event teaches us at leaſt that we muſt not meddle with theſe tumours, that we muſt apply nothing to them to haſten their opening, ſince nature appears to diſapprove of their burſting, as a termination that is not uſually according to her wiſhes. But here ſome one perhaps may ſay, that a diſeaſe of ſo terrible a kind is beyond the reſources of art and the efforts of nature. Let us beware of deciding this matter ſo lightly; and of aſſigning limits to nature which ſhe hath not preſcribed to herſelf; for ſince we have inſtances of caries of the dorſal vertebræ cured by her aſſiſtance alone, why ſhould not her power be extended to the cure of caries of the lumbar vertebræ, if her operations were not diſturbed by improper meaſures? At leaſt the following is a fact which ſeems to prove, that this diſeaſe is not beyond her power of relief.

A young woman of twenty-two years of age, after having fallen on the bottom of her back, down a ſtaircaſe, felt, for a conſiderable while, a pain, more or leſs acute, in the region of the loins, and was ſeized with a gradual weakneſs in that part, which, in a ſhort time, prevented her from walking, and even from ſupporting herſelf; at which period, ſhe applied to me. Revolving in my mind theſe ſymptoms and the cauſe that had produced them, I imagined her caſe to be a diſeaſe of the lumbar vertebræ, and the beſt means of cure that could be preſcribed were reſt, and lying a bed. I explained to her the imminent danger of her ſituation, and engaged her punctually to follow my advice. This ſhe did very exactly, by going to bed and remaining there conſtantly, taking

care to exert as little motion as poſſible, agreeable to what I had recommended. Notwithſtanding theſe precautions the diſeaſe continued to advance; the weakneſs of the loins, and the pain ſhe felt there upon motion, were accompanied with a tumour that began to make its appearance under Poupart's ligament, which became, in proceſs of time, as large as ones fiſt, and which at length diſcovered an evident fluctuation. Warned by the melancholy end of all thoſe in whom ſuch tumours had been opened, I carefully avoided applying any thing that might haſten the burſting of it, and abſtained ſtill more religiouſly from opening it with a cutting inſtrument. This tumour, with fluctuation, after having acquired its full ſize, remained nearly in the ſame ſtate during four months, and at that period began to be imperceptibly diſſipated, ſo that in four months afterwards, there remained not the leaſt veſtige of it; the patient felt from one week to another, that the ſpine was recovering its former ſtrength; ſhe began to ſit upright in her bed, while her back was ſupported; ſhe then made a ſhift to walk with a ſtick, and was at length capable of walking alone and unſupported with as much firmneſs and confidence as ever; but the happy termination of this diſeaſe was owing to her perſevering for near a twelvemonth in keeping her bed, and in a ſtate of reſt.

This is one of thoſe ſurprizing caſes that ſeem to be an open page preſented to the practitioners of our art, in which nature invites them to meditate her walks, and teaches them to do nothing that may diſturb her intentions. She ſhews us here a large collection of matter, to the evacuation of which, in conformity to the principles received, we ſhould have proceeded as ſoon as the fluctuation had been evident, apprehending leſt a longer confinement of it ſhould produce miſchief. And yet we ſee that this ſame matter, after having been collected for ſeveral months in a diſtinct cavity, has been received again into the courſe of the circulation without occaſioning the leaſt accident; and that the principal diſeaſe produced by it has been cured, without the concurrence of art, otherwiſe than in preſcribing reſt, already ſo loudly called for in this inſtance, by that ſame nature who has directed the cure (U). Inſtead of

ſilently admiring ſuch a phænomenon, it is the province of a man, intent upon the improvement of his art, to endeavour to give ſuch an explanation of it as ſhall not be diſavowed by nature, whoſe interpreter he is to be.

Let us conſider what this diſeaſe exhibits to us in the firſt inſtance. A diſturbance of the organization in the bodies of the lumbar vertebræ, by means of a ſhock conveyed to them, or a violent divulſion of the ligaments that unite them. The ſwelling of the parts being the conſequence of theſe firſt accidents, and a ſlow inflammation coming on, this at length cauſes a ſuppuration and abſceſs, the ſeat of which is in the neighbourhood of the parts affected. The organization of the bodies of the vertebræ being depraved [m], it follows, that ſmall ſeparations or ſcales muſt be thrown off from theſe bones, which is as much effected by the organic action of the inflamed parts, as by the matter they furniſh. This matter itſelf after having been efficaciouſly employed in ſeparating the corrupted from the ſound parts, is alſo the medium to which nature intruſts the care of expelling and carrying them out; but this purpoſe is effected very ſlowly. Theſe bony fragments, of greater or leſs dimenſions, being detached by means of the matter, float in that liquid, to which they preſent a greater extent of ſurface in proportion as they are more divided. The pus itſelf in which they are ſteeped, becomes a menſtruum proper to diſſolve them, and its quantity increaſing in proportion to the continuance and extent of the ſuppuration that ſeparates the looſe pieces of bone, it at length makes a paſſage for itſelf towards the depending parts which afford the leaſt reſiſtance. It is generally underneath Poupart's ligament that theſe tumours manifeſt themſelves; but the matter is ſtill ſheltered from the external air, and undergoing no change, produces no miſchief in the parts that ſurround it. The fragments of bone which float in this quantity of pus, may at length be totally diſſolved in it, ſo as to form a homogeneous maſs, which perhaps may not then in any wiſe differ from our moſt elaborate nutritive juices [n]. This being premiſed, we need not be aſtoniſhed, if, at this period, nature, after having employed the pus as a menſtruum to diſſolve

the bony fragments to the ſeparation of which it hath contributed, ſhould reſume it into the general courſe of the circulation, by taking it up from its cavity, through means of the ſeveral abſorbents that open on the ſurface of that cavity. The return of the matter being then effected as ſlowly as its collection was formed, the parts which compoſe the cavity, muſt return to their proper ſtate as gradually as they were diſturbed from it, without accident and without inconvenience.

With reſpect to the bones that are primarily affected, and which have almoſt adopted the nature of fleſh during the long and important proceſs of exfoliation, no ſooner are they diſengaged from theſe looſe pieces, than they begin to recover their ſolidity; and if ſeveral vertebræ, for inſtance, have partaken of the injury, they form among themſelves a common maſs of oſſification that in ſome meaſure ſupplies their bodies, and terminates this important cure, which, as we may obſerve, can only be the work of nature, time, and reſt (23).

But however advantageous reſt may be, however pointed may be the indication for it in the inſtances before mentioned, there are ſtill other caſes of caries in which this indication is more preciſe, and leſs liable to be miſtaken, than in thoſe of the dorſal and lumbar vertebræ; theſe are the caries affecting the joints. The ligaments, or the articulating ſurfaces of the bones, often ſuffer injuries in their organization, which cannot be removed by the uſual remedies employed in the beginning, in caſes of concuſſions, wounds, fractures, &c.; or where theſe injuries ariſe from a fault in the habit, they oftentimes will not yield to the remedies proper to reſiſt the action of any acrid irritating principle that may have been fixed upon theſe parts. In theſe inſtances nature, who always tends towards a cure, hath a very great labour to perform, in the proſecution of which we muſt be careful not to diſturb her by any indiſcreet manœuvres; in order that this labour may turn to the advantage of the patient, nothing is required but time and reſt. Here, as in the other caſes, nature avails herſelf of the uſual reſources; ſhe forms pus, by means of which fluid ſhe ſeparates from the whole, the bony, ligamentous, and cartilagi-

nous parts that are vitiated, from whatever cauſe; and ſhe depoſits, in the cavity of the joint, theſe fragments, together with the pus that has ſeparated and conveyed them there. This pus, after having employed more or leſs time in melting down theſe fragments, might poſſibly, as in the inſtance above cited, be re-abſorbed into the general maſs without inconvenience. My practice has not furniſhed me with any inſtance in which nature hath followed this plan in ſuch caſes; but the following is the moſt ordinary way ſhe chuſes, and which ſhe alſo frequently adopts in caries of the dorſal as well as of the lumbar vertebræ.

The pus, which till the time of the complete diſſolution of theſe fragments, ſeemed to exert no ſenſible corroding power upon the texture of the ſkin that confines it, after coming nearer and nearer to this external covering, at length raiſes in it an inflammation of a very ſmall extent, and by means of the ſuppuration ſet forward in it, a fiſtulous opening is made, which gives vent to a large collection of matter that hath often been from ſeven to eight months, and more, in forming. By this contrivance the pus being evacuated by degrees, and the air not having acceſs to its cavity, it doth not acquire that ſtate of decompoſition which makes a deſtructive principle of it. The irritating faculty of the pus ſcarce ſhewing itſelf till all the fragments, as well bony, as ligamentous and cartilaginous, are completely melted down, it may reaſonably be preſumed, that the pus is as it were neutralized by the principles they impart to it, and that they are theſe fragments which maintain it in that mild and unctuous ſtate we obſerve it to be in before this perfect diſſolution. What I have ſaid upon this point becomes ſo much the more probable from the circumſtance of my having rarely found any bony fragments in the matter of thoſe abſceſſes that have opened of themſelves, and that I have always ſeen them in thoſe collections which have been opened before the time intended by nature. It is plain however, that during a work ſo long continued, and ſo prudently directed, nature muſt have been in particular want of reſt in the part where ſhe was carrying on theſe operations, and that motion could only interrupt and trouble them. But if reſt have been hitherto uſeful, it is no leſs neceſſary to conduct

conduct a cure, so happily and so wisely begun, to its end; for the bony and cartilaginous surfaces being now disengaged from all the fragments nature hath chosen to separate, presents us with lively and fleshy granulations, which are in that state of inflammation proper to contract an adhesion with contiguous granulations of the same kind. This adhesion consolidates itself by degrees, and forms at length a compleat union between two bony surfaces, destined originally to move one over the other. But in order to obtain this salutary anchylosis, nature requires rest, and rest continued with the greatest perseverance. In this great and admirable operation, she hath lost nothing but motion; and by this indispensable sacrifice, she has preserved a limb with part of its functions, and prevented the mutilation of the machine.

The description I have here given, is not a romantic idea of physiology and pathology; it is a truth founded on fact, of which I can myself give many instances. I have got a preparation by me in which the thigh bone is soldered with the os innominatum, and the polished ossified surface of which, together with the solidity of its union, leave me no room to doubt that the subject it had been taken from, had survived a long time the formation of this anchylosis. Not having known the person, nor been acquainted with the history of his case, I can only form conjectures upon this subject. But the neck of the thigh bone being extremely shortened, it is to be presumed, that its anchylosis with the os innominatum has been produced by a caries, which may have attacked the head of the bone and the cotyloide cavity in which it was lodged; and that this union has been preceded by abscesses, and other symptoms common to a caries of the joints. The following fact will contribute to support this opinion.

A poor beggar who has an anchylosis of this nature, and in whom I had frequently noticed scars at the upper part of the thigh, as well on the inside as on the outside, hath assured me, that after a fall upon the great trochanter, he had for a long time suffered extreme pains, which had been at length terminated by successive abscesses, that had kept him

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in hoſpitals for ſeveral years, and had frequently brought him into a very dangerous ſtate. His thigh, which forms almoſt a right angle with the trunk, being evidently much ſhorter than the other, there is no reaſon to doubt that this effect has been produced by the deſtruction of the head of the thigh bone, by a caries which nature muſt have ſucceeded in the cure of, by following the track I have juſt been deſcribing.

But what I have not had an opportunity of obſerving myſelf with reſpect to the articulation of the thigh with the os innominatum (o), I have obſerved in articulations of the thigh with the leg, and of the leg with the foot. I have ſeen in theſe joints, abſceſſes attended with caries, which after having made for themſelves, in a long courſe of time, fiſtulous openings, and after having furniſhed, for years, a diſcharge more or leſs plentiful, have at length ceaſed to ſuppurate; and have left nothing more than a complete union of the articulating ſurfaces that had been deſtroyed. But theſe great cures have all been owing to nature, and art has concurred in them no farther than in preventing every kind of motion, every change of poſture, which might keep up the irritation of the parts affected (p). Dreſſings ſeldom, very ſeldom renewed, and an attention to place the limbs at reſt between junks, as in fractures, have been the only means employed (q).

I might poſſibly have obtained the ſame termination in a caries, with an abſceſs, in the articulation of the os humeri with the ſcapula, had I not yielded to the temptation of giving vent to a large collection of matter that began to ſhew itſelf by an evident fluctuation. But at that time I had not been ſufficiently informed by my own miſtakes. The event was fatal to the patient, who died of a ſuppuratory fever, after having fallen into a maraſmus; and though on examining the part, I found a caries of the head of the os humeri, and of the glenoide cavity of the ſcapula, a diſeaſe hitherto deemed incurable, I have not been the leſs perſuaded ſince, that the operation I had performed, if it had not immediately cauſed, had at leaſt haſtened the death of him whom it had been

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intended to relieve. Some ſubſequent facts have entirely confirmed me in this opinion.

A man about fifty years of age applied to me in 1770, with the bones of the wriſt ſo carious, that in two or three places one might paſs a probe through them, by following ſome fiſtulous openings that preſented themſelves on the outſide. The wriſt and the hand, which were œdematous, conſiderably ſwelled, and of a dark blue colour, ſeemed to require amputation ſo much the more urgently, as the patient was tormented with a ſlow ſuppuratory fever; it was even the advice of a man very ſkilful in the profeſſion, not to defer having recourſe to this laſt reſource. Notwithſtanding this, I ventured to temporize, and after having applied the uſual dreſſings for two days, I carefully cloſed all the fiſtulous openings with dreſſings that were not irritating, and the hand and wriſt being covered with compreſſes dipt in a balſamic and ſpiritous embrocation, made with the yolk of an egg, oil of roſes, and brandy, I placed them in junks. The parts being thus kept in a perfect and conſtant ſtate of reſt, I made no ſcruple of leaving the firſt dreſſings on for ten days without a renewal, more eſpecially as neither the pain nor the diſcharge required them to be removed ſooner; and at this time, it was curioſity, rather than any abſolute neceſſity, that was the motive of my doing it. As I found the diſcharge leſs in quantity, thicker, and leſs fœtid than when the patient was dreſſed every day. I judged it proper to put off the removal of the ſecond dreſſings for twenty days; and at this period the ſwelling of the hand and wriſt were half reduced, and every thing ſeemed to beſpeak, as much from the patient's countenance and pulſe, as from the nature of the diſcharge, that hopes might already be entertained of a fortunate termination of this dreadful diſeaſe. In about two months and a half after this, theſe hopes were completely realized; for at this time all the fiſtulous orifices were perfectly cicatrized, and the cure was terminated, with no other inconvenience to the patient, except loſs of motion in the wriſt, which has not ſince prevented him from doing his uſual work (r).

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But what abſolute reſt and unfrequent dreſſings have effected in combination with nature in the inſtances juſt mentioned, they have alſo done under my inſpection, in two caſes of caries of the articulation of the arm with the fore arm. One of the patients in whom this diſeaſe had come on after fracture, with ſplinters and abſceſs in the joint, had even been ſent to me in order that I might amputate the limb; the ſurgeon who had taken care of him for ſeveral months paſt, judging there was no other way of putting a ſtop to the ſymptoms which attended this caries. And indeed, a very conſiderable and œdematous ſwelling of the elbow joint and neighbouring parts, a plentiful and offenſive diſcharge, a total loſs of appetite, a ſlow and ſuppuratory fever, two fiſtulous openings that penetrated into the cavity of the joint, and through which a probe being introduced, diſcovered a very extenſive caries, were all ſymptoms ſufficient to juſtify the operation. Yet in this caſe, dangerous as it was, a few months of total reſt, joined to long intervals between the dreſſings, having aſſiſted the ſalutary formation of an anchyloſis intended by nature, have made all the ſymptoms diſappear, and have effected a perfect cure of this diſeaſe, with no other loſs than that of the motion of the joint.

Here are already a number of facts brought in ſupport of what I have advanced, that whenever the inſpiſſation of any of our fluids is required in the cure of any ſurgical diſeaſe, reſt muſt be called in for this purpoſe; but there are other facts, and of a very different kind from thoſe I have here alledged, which confirm the truth of this aſſertion. Wounds and ulcers, for inſtance, in the cure of which reſt is preſcribed with ſo much efficacy, do they preſent any other indications for the employing of this method, than ſuch as are derived from the neceſſity nature is under of giving the gelatinous liquid that oozes from their ſurface a ſufficient degree of conſiſtence? This conſiſtence is not only neceſſary that it may be enabled to ſupply, in ſome ſort, the place of the ſkin that is deſtroyed, by forming the external ſcar that completes the cure; but alſo, that in the part beneath this artificial covering, it may ſupply the want of the cellular ſubſtance, that natural connecting medium of our

parts, which has been deſtroyed by the ſuppuration. For we are not to imagine that the gelatinous concretion which we obſerve in ſcars, is confined to what we ſee of it outwardly. Motion, far from aſſiting in this good effect, cannot but prevent it, by deſtroying the adheſions already begun underneath the part where the ſcar is to be made, by putting an impediment to the neceſſary concretion of the gelatinous fluids that are to form it, and even by deſtroying it when it has not acquired its utmoſt degree of ſolidity, as we are taught by experience, particularly in the cure of ulcers of the legs. Here the indication for reſt to the part affected is ſo poſitive, that they never can be firmly healed without the help of this method, and that exceſs of motion alone, without the concurrence of any other circumſtance, often makes them burſt out again after they have been completely healed.

From hence it may be concluded, that we muſt be careful to preſcribe reſt for the part affected, during the cure of wounds and ulcers (f). This attention muſt even be continued beyond the time of the complete formation of the ſcar, in caſes where the muſcular parts underneath it are expoſed to frequent motion; and it muſt be carried ſtill farther when theſe ſame parts have been affected by the diſeaſe, becauſe the gluten, ſupplying the place of the cellular ſubſtance which connected the muſcular fibres, may not have acquired at firſt a ſufficient degree of conſiſtence, to reſiſt the efforts it muſt then be expoſed to by a ſtrong contraction of theſe parts. The following fact will evidently prove how uſeful ſuch a precaution is in this laſt circumſtance.

A Journeyman Taylor, after having had an abſceſs by congeſtion, came to me in 1776 with a fiſtulous opening, which was already of ſome continuance in the upper, external, and rather poſterior part of the thigh, about two inches below the great trochanter. I paſſed a probe into the fiſtula, which furniſhed a large quantity of ſerous, and ſomewhat fœtid, diſcharge, and found that it paſſed under the external and anterior muſcles of the thigh, pretty near the bone, and that it extended about ſix inches beyond its external opening, taking its courſe towards the joint.

joint. At firſt, I apprehended ſome caries of the bone, but having met with bony particles in the way of my probe, I thought it proper to treat this fiſtula by laying it open through its whole extent, by which I might be at liberty to act as circumſtances ſhould require, if, at the time of the operation, I ſhould find that the diſeaſe was complicated with caries. The fiſtula being opened through its whole extent, and appearing confined to the fleſhy parts, I ſhould only have made a ſimple inciſion, had I not been aſſured from experience, that in two or three days, notwithſtanding all my endeavours to the contrary, the bottom of the diſeaſes would have been concealed from me by the diſtention, and even by the re-union of ſome of the ſound divided parts. But foreſeeing this inconvenience, which I had before experienced ſeveral times in ſimilar caſes, I removed ſome portions of the fleſhy parts, and dreſſed the wound to the bottom and rather cloſe. I continued this precaution during the whole of the cure, which went on as uſual in other ſimple wounds. The fiſtula began to fill up, and to conſolidate itſelf gradually, the edges of the divided parts ſunk by degrees, and in two months, formed almoſt a complete cicatrix, which ſeemed to promiſe a certain and ſpeedy cure. But at the time when the ſcar was juſt cloſing, the patient, who had conſtantly kept his bed, having riſen and walked more than he ought to have done, felt, a few days after, ſome pain; a redneſs appeared through the whole length of the ſcar, with a ſmall projecting blueiſh point in the middle, which having burſt with my nail, a ſmall opening preſented itſelf, from whence there iſſued a kind of bloody and ſerous diſcharge. I thought at firſt that this opening was not deep, but having probed it, I had the chagrin to find, that all I had done was in vain, and that there was now a fiſtula almoſt as extenſive as when I firſt undertook the caſe.

This diſcovery ſoon made me ſuppoſe, that the action of the muſcles, at a time when the ſcar was yet recent, might poſſibly have deſtroyed the adheſions formed between the parts that anſwered to the channel of the old fiſtula. I propoſed therefore to confine this action, and even to annihilate it in thoſe parts, till they ſhould have acquired a ſolid coherence

between themſelves. To effect this, I placed on the channel of the fiſtula a thick roll of wetted lint, and applied over it, thick, graduated compreſſes, exactly maintained, and ſtrongly bound on the part by means of a bandage carefully rolled on. This precaution, continued for ſome time, made me hope that I might cure this complaint without having recourſe to a freſh operation; but the patient riſing out of bed, inſtead of uſing a bed pan, and the motion he gave to the part looſening the bandage, I obtained only a partial ſucceſs from it.

The fiſtula indeed cloſed itſelf, but this was frequently only for a few days, and though it was not ſo deep as before, yet ſtill the little ſinus that remained, made me always apprehend a return of the complaint. To get rid of this anxiety, I determined to paſs, for two days, into the ſinus, a piece of lint impregnated with ſome digeſtive ointment animated with precipitate. At the end of two days I omitted this tent, and renewed my bolſtering and compreſſion on the whole extent of the ſinus as before, with the additional precaution of placing the limb in junks and other ſupporters, as I ſhould have done for a fracture of the upper part of the thigh bone, or of its neck. By all theſe attentions, I at length ſucceeded in obtaining a perfect cicatrix; but that I might not be expoſed to a relapſe, I continued them perhaps beyond the time neceſſary to effect my purpoſe, chuſing rather to uſe too much precaution in this caſe then to neglect any.

By judging from this fact, it ſhould ſeem that nothing is required in the cure of ſinuſſes, except the contact of the parts which form the channel, and a perfect ſtate of reſt for as long a time as is neceſſary, that they ſhould contract ſolid adheſions between themſelves. Are there not a variety of cures, effected in theſe complaints by exact and well-maintained compreſſions, which confirm this truth? Even the precautions by which I ſucceeded in the cure of the caſe above mentioned, do they not almoſt argue the inutility of the great operation I had at firſt attempted [1]? At leaſt they tell us very plainly, that we muſt not re-

ſort to ſuch an operation, till compreſſion, employed with all the ſagacity which different caſes may require, has been found inſufficient [a].

Even fiſtulas of the anus preſent ſome preciſe indications for the employment of reſt. The diviſion of the nooze or bridge of fleſh that lies between the two openings forming the fiſtula, does nothing more than protect the parts forming the nooze, from that habitual motion which prevented their re-union. When they are once divided, they enjoy, in compariſon with their former ſtate, a degree of reſt ſufficient to allow the cicatrix to be formed throughout the whole ulcerated extent that formed the ſides of the fiſtula. We may even obſerve, that the healing of the wound is never more ſurely and more ſpeedily effected, than when by means of a ſoft tent, we make our dreſſings preſs a little upon all the diſeaſed part; for they are not the ointments with which theſe tents are covered that perform the cure, ſince I have often effected this without their aſſiſtance. Neither is it the paſſing of the excrements that puts an obſtacle to the cure; ſince I have ſeen perfectly cicatrized in a ſhort time, fiſtulas, in which the wound was conſtantly covered with fœces. But the uſe of the tent is ſo far from being an indifferent matter, that I have often obſerved the fiſtular canal to become ulcerated again, when this compreſſion was left off too ſoon after the formation of the cicatrix.

From theſe obſervations, the propriety of which muſt be evident, it follows, that it might perhaps be poſſible to cure fiſtulas of the anus without either inciſion or ligature. A careful compreſſion, made by means of a pretty firm tent, introduced much beyond the internal orifice of the fiſtula, might be the more likely to ſucceed in the cure of this diſeaſe, if by previous evacuations and a ſtrict diet, the firſt diſcharge of excrement could be delayed till the ſides of the fiſtula ſhould have acquired an adheſion ſufficiently ſtrong and firm, not to be deſtroyed by the contraction of the ſphincter. Theſe are trials to be made, if they have not yet been attempted, and the effect of them I ſhall ſoon have an opportunity to determine.

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But if reſt of the parts concerned, be indicated in the cure of fiſtulas, of which there is no doubt, it ſeems not leſs ſo in the prevention of them. Abſceſſes which happen in the circumference of the cheſt, and which ſo frequently remain fiſtulous, whether they burſt of themſelves, or whether they be opened by ſmall inciſions, become ſo merely from the continual motion annexed to the parts in the extent of which they are formed. But there are means of reſtraining this motion, and of keeping theſe parts in a ſtate of reſt neceſſary to bring about their coheſion. A free inciſion, carried even acroſs the muſcles that cover theſe abſceſſes, openings extended according to the direction of the ſinuſſes they preſent, compreſſions diſpoſed with ſkill, &c., are the means by which we obtain this deſirable effect, which is almoſt a certain warrant of a radical cure. It is indeed conſtant, that compreſſive dreſſings, ſo efficacious in the cure of moſt wounds and ulcers, are in theſe caſes of ſtill more remarkable advantage than in any other; and that the ſtate of reſt in which they maintain parts naturally moving on each other, by enabling nature to work with effect in uniting them, prevents fiſtulous ulcers, which would often have been the conſequence of not attending to reſtrain the natural motion of the parts.

From what has already been ſaid, it appears how numerous the indications are for the preſcribing of reſt in ſurgical diſorders; though we have only mentioned thoſe in which nature requires an inſpiſſation of ſome of our juices. But the indications which call for the uſe of this principle are not limited here; they are applicable to ſo many ſurgical diſeaſes, that we may conſider it as the moſt extenſive curative medium the art can employ. The caſes we have already gone through will impreſs an idea of the truth of this aſſertion, and thoſe which remain ſtill to be explained, will give it the higheſt degree of evidence. But we ſhall go through them in a ſummary manner, becauſe the indications which moſt of theſe caſes preſent for the application of this method, are too poſitive to be miſtaken; and the employment of it then becomes a precept of the art.

Is it not, in fact, an eſtabliſhed rule, that we muſt have recourſe to reſt in all ſurgical diſorders, where motion may impede any ſalutary coheſions, or may occaſion pains, irritations, or friction that may bring on disagreeable conſequences, or may diſplace parts that ſhould be kept in the ſituation they are, or may produce dangerous effuſions of blood, &c.? Therefore, in caſes of recent wounds we wiſh to re-unite, in diſlocations newly reduced, in ruptures attended with bad ſymptoms, and which have been juſt returned by the taxis, in loſſes of blood which come on during geſtation, in caſes of wrenches and forcible extenſions of the ligaments, in ruptures of theſe parts, as of ſome muſcles and tendons, in contuſions of the joints; in all theſe caſes, it being evident that motion indiſcreetly employed is liable to bring on great miſchiefs, theſe miſchiefs themſelves are ſo many abſolute indications which direct the preſcribing of reſt. Beſides, experience has ſo fully proved the neceſſity and advantages of this method in all ſuch caſes, that it would be needleſs to inſiſt any longer upon it.

We ſhall only obſerve, that in caſes of ſhocks in the joints, and of divulſion, and contuſion in the ligaments that ſurround and ſtrengthen them, as motion neceſſarily produces pains which cannot but increaſe the irritation, tenſion, and inflammation which uſually attend theſe accidents from the firſt, reſt preſents itſelf as the moſt efficacious method of cure that nature can furniſh under ſuch circumſtances. We ought then to rely upon it the more, as it cannot be ſupplied by any thing elſe; for all that art ſhould attempt, is only to mitigate the pains, to aſſuage the irritation and tenſion of the parts, and to prevent inflammation and the fatal ſuppurations it may occaſion. Now, amidſt all the methods that art can ſuggeſt to counteract theſe effects, reſt is the moſt powerful; bleeding, diet, and external applications being only acceſſory helps, the efficacy of which is ſo much the more evident as they are combined with this principal agent [w]. But ſuppoſing that theſe means ſhould have been neglected in the firſt inſtance, or that notwithſtanding the application of them, abſceſſes ſhould be formed in the cavities of the joints, and that the ſurface of the bones deſigned for their motion ſhould be affected

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with caries; reſt, at this period, and in the ſubſequent treatment of the diſeaſe, as we have before proved, is one of the chief methods of cure

We cannot likewiſe but be ſenſible of the efficacy of reſt in inflammatory tumours of the teſticles, and in a falling down of the womb. Is it not alſo evident in caſes of commotion, either of the ſpinal marrow, or of any of the important viſcera that are contained in the abdomen, the thorax, and the cranium? The accidents which follow theſe commotions, being always the effect of a violent degree of motion communicated to theſe parts, do they not preſent us with poſitive indications for the preſcription of reſt [x]? I have ſeen a young lady of nineteen, who, after having by chance jumped ſome few ſteps off a ſtaircaſe, remained ſenſeleſs for ſeveral hours. She afterwards fell into ſwoonings every time ſhe wanted to ſit upright in her bed; and it was only by reſt and a horizontal poſture, perſevered in for ſeveral months, that ſhe was completely cured of this accident.

From what has been already ſaid, therefore, we may be convinced that reſt, as well as motion, is indicated on ſo many occaſions, that we might ſtrictly affirm theſe two means of cure to be univerſal and excluſive; and, what is more, there are infinite numbers of reaſons that preſent themſelves in ſupport of this concluſion. The diſorders which the animal œconomy may experience, are, in fact, nothing more than the produce of an exceſs or deficiency of motion [y]; and nature and art cannot really ſucceed in repairing theſe diſorders, but by increaſing the power of motion when it is too weak, and diminiſhing it when it is too ſtrong. Nature, indeed, in all her efforts to cure, clearly ſhews us theſe two points of view, to which all that medicine and ſurgery can preſcribe, in the diſorders belonging to their reſpective province, is obliged to conform itſelf. But amidſt the ſeveral curative means, to be able to chuſe thoſe which can produce either of theſe effects, in the exact proportion required for the recovery of health, would be the utmoſt perfection of our art; to which human ſkill, however, can never expect

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to attain. In endeavouring, therefore, to ſhew, in this eſſay, the advantages that may be derived from motion and reſt in the cure of ſurgical affections, I have, indeed, only given a ſketch of the ſubject. May the other competitors give complete ſatisfaction to the members of the academy upon this point, and preſent them with performances worthy of themſelves!

# N O T E S

## BY THE AUTHOR.

*(a)* To the obſervations contained in Monsieur Quesnay's *Memoir upon Wounds of the Brain*, (printed in the firſt volume of the Memoirs of the Academy of Surgery,) where this fact is eſtabliſhed, may be added, the obſervation of a rod of iron having paſſed through the brain, without cauſing the death of the patient—*Journal de Medecine*, Auguſt 1777.

*(b)* The ganglions of the cervical and intercoſtal nerves, and of thoſe which are placed in the cavity of the abdomen, are they not, as Mr. Le Cat has aſſerted, with ſo much probability, in his diſſertation on the nervous fluid, which obtained the premium at Berlin, in 1757; are they not particular organs, in which the fluid undergoes elaborations, and receives qualities relative to the functions of each of the viſcera, to which the nervous filaments proceeding from theſe ganglions are diſtributed?



*(c)* I mean

*(c)* I mean the fluid which forms the connection between the material and ſpiritual parts of our being.

*(d)* This medium comprehends a certain latitude, within the limits of which, health is included.

*(e)* By theſe bounds we are to underſtand the *quantity* of life, not the *duration* of it. A valetudinarian lives, but he enjoys a leſs degree of life than the man who is in full health.

*(f)* The following fact will prove, that however inconſiderate ſuch a practice may be, there are ſtill many perſons who follow it.—A country ſurgeon, being called ſome years ago to reduce a fracture of the olecranon, did nothing more than place the fore-arm in a ſtate of extenſion, and maintain it there by a bandage and ſome ſplints. Twenty days after the accident, the parents of the patient called in the aſſiſtance of two ſurgeons from a neighbouring epiſcopal city. They exclaimed openly againſt the practice that had been purſued, and decided, that as an anchyloſis was the unavoidable conſequence of ſuch a fracture, the bent poſture of the fore-arm ſhould be preferred to its extenſion. Accordingly they exerted all their efforts to ſeparate the union already begun, and placed the fore-arm in a ſling. This fact was told me, a few months after, by one of the ſurgeons concerned, who related it as a proof of his own judgment, and of the unſkilfulneſs of the firſt ſurgeon employed, who probably had not been directed in his practice by reflections drawn from the nature of the diſeaſe; otherwiſe he would not have ſuffered practices ſo repugnant to the good principles he would have adopted: for to place the fore-arm in a bent poſture in a fracture of the olecranon, is the ſame thing as bending the leg upon the thigh in a fracture of the patella.

*(g)* I ſay a moderate extenſion, becauſe a too ſtrong one, eſpecially if the olecranon were fractured near its origin, would puſh the cubitus too much forward, and prevent the fractured ſurfaces from being adapted to each other. This would occaſion, after the union was completed, a bony

bony projection on the ſide of the joint, which might totally impede its motion. If the fracture ſhould have happened nearer to the extremity of the olecranon, the forcible extenſion of the fore arm would make a gap between the fractured pieces on the ſide of the cavity of the joint; the olecranon would conſequently become ſomewhat lengthened, and thrown up, and the effect of this injudicious practice would at leaſt be a difficulty and a decreaſe of motion.

*(h)* Upon this ſubject may be ſeen the ſecond part of my Eſſay on Counter-ſtrokes in other Parts of the Body beſides the Head, which obtained the prize in 1771, under the the name of John Martin Bazille. *Prix de l'Académie*, Vol. IV.

*(i)* I have ſeen ſome perſons attacked with this diſeaſe, in whom the ſymptoms, before the opening of theſe abſceſſes, had not been more intenſe than thoſe here mentioned; and who, after the evacuation of the matter, have periſhed at the period I have marked.

*(k)* I have at preſent under my notice a very ſtriking inſtance of what is here advanced. A young man of four-and-twenty years of age, who has an abſceſs in the loins after a diſeaſe of the ſpine, ſo evident, that it forms a pretty conſiderable projection, had experienced, during the formation of this abſceſs, no other ſymptoms than a debility of the ſpine, attended with a dull kind of pain, without any remarkable fever or loſs of appetite, &c. But this abſceſs having at length burſt itſelf, the patient was ſeized a few days after with a ſtrong fever, and a total loſs of appetite and reſt, which gave reaſon to apprehend that the diſorder would ſoon terminate fatally. But after he had continued a fortnight in this alarming ſtate, he began to grow better; the diſcharge, from being ichorous and offenſive as it was, loſes daily its bad ſmell, and acquires a better conſiſtence; the pulſe becomes more regular, and every thing ſeems to promiſe, that with time and reſt, the patient will eſcape with no other inconvenience than that of being a little deformed.

Such

Such was the ſtate of this patient, when this eſſay was ſent to the Academy; and it had been ſo much mended ſince that time, that the cure appeared certain. The patient had recovered his appetite, digeſted well, the matter which iſſued from the fiſtulous opening was thick, and leſs in quantity, the ſpine gathered ſtrength daily, and the patient began to walk with a ſtick. But the ſpine being more crooked than I at firſt imagined, I thought that by bringing it gradually to a ſtate of extenſion, while the intermediate ſubſtance which was to ſupply the place of the bodies of the vertebræ was ſtill capable of yielding, the deformity might at leaſt be partly corrected, or its farther progreſs prevented. With this view I ordered him to lie on his back, and placed a ſmall bolſter under the part of the ſpine that projected. The deſire the patient had of being cured without deformity, induced him to bear the pain this brought on, without complaining. He no longer ſlept at night, and though I made him change his poſture, and removed the bolſter as ſoon as he had told me of the pain he ſuffered from it; yet I had the mortification of ſeeing, that the ſymptoms which had diſappeared, immediately after this trial, returned. The diſcharge became more and more plentiful; a ſlow fever appeared and continued; a tumour even, but very deep ſeated, manifeſted itſelf on the loins oppoſite to the fiſtulous opening; and there came on at intervals, a loſs of appetite, a diarrhœa, and after ſix months gradual decay, the patient died. Though I found, on opening him, the bodies of the two laſt dorſal vertebræ entirely deſtroyed, and an incompleat union between the bodies of thoſe vertebræ that were in contact, I am not the leſs perſuaded that the patient would have been cured, had it not been for that unſeaſonable extenſion of the ſpine, which brought on the return of the pain, and of the other ſymptoms. When nature, for the preſervation of an individual, makes a ſacrifice of the motion, or of the figure of any part, it is often neceſſary that art ſhould not ſtrive againſt her in attempting to reſtore what ſhe gives up, but ſhould only be the ſpectatreſs of what is going forward. This fact, and ſome others which will be recorded in a collection of obſervations I am preparing to give to the public, will furniſh ſufficient proof of this aſſertion; and in this reſpect I ſhall not

heſitate

hesitate to confess my mistakes. The history of these, oftentimes proves more instructive to others, than that of our successes.

*(l)* The impossibility of walking, and the necessity of keeping in bed, which attend this disease, are a proof of this.

*(m)* It is always the depraved organization of the bones that causes the caries and the desquamations; but this depravity may be produced, not only by the action of some power on the bones themselves, but also by injuries affecting either the cartilages that line, or unite them; or the ligaments which form and strengthen their union; or, lastly, the periosteum which covers them: for the affections of these parts which are essential to the bones, are often transmitted to them, and occasion the caries.

*(n)* I might alledge in support of this, the white colour, due consistence, and total inoffensiveness of smell, in the matter discharged from these abscesses at the time of their being opened. See the first part of my Essay on Counter-strokes, &c. already referred to in note *(h)*.

*(o)* In saying this I have suppressed a fact which might have discovered me to be the author of this essay. For in the essay before referred to, may be found an instance of an anchylosis of the thigh with the os innominatum, after a caries. See page 590 of the fourth volume of the prizes of the Academy of Surgery [25]. I shall even observe here, that that patient experienced the last symptoms which brought him to the hospital, merely on account of a fresh fall on the part.

*(p)* I have at present under my care, a young man who has the joint of the ancle completely anchylosed, in consequence of a caries of the astragalus, the os calcis, and the articulating extremity of the tibia. This case promises a speedy cure, as there are now but a few fistulous orifices open, through which some few small exfoliations, still to be made, will pass.

*(q)* The

*(q)* The following are facts, ſupplied me by the practice of the hoſpital, ſince I ſent this eſſay to the academy, and come very concluſively in ſupport of the curative means, the efficacy of which I have eſtabliſhed. Peter le Leu having fallen, on the 22d of December 1777, on his right knee, felt a ſharp pain, but ſtill took ſo little notice, that he continued his work the next day. Two days after, the pain increaſed ſo as to make it impoſſible for him to work; a conſiderable ſwelling, attended with much fever, came on, and an abſceſs was at laſt formed in the joint. A fluctuation, at a projecting point on the inſide of the knee, became evident five weeks after the accident; and the pus collecting more and more, at length formed an external and very apparent tumour. The ſurgeon propoſed opening it, but the patient not ſubmitting, he was left to the care of nature alone. Towards the end of March, the matter made two openings for itſelf, from which there iſſued at firſt a matter without ſmell, and in very great quantity. But the pus ſoon changed its nature, becoming in a few days bloody and fœtid, and the patient then found himſelf in a much worſe ſtate than before the vent of the matter, which had been encouraged by all kinds of maturating applications. Nevertheleſs, the patient, left totally to himſelf about this time, confining himſelf conſtantly to his bed, and avoiding all motion of the part to ſave himſelf from the pain that attended it, the diſcharge began to loſe its fœtid ſmell and to become leſs plentiful. The articulating ſurfaces of the thigh bone and the tibia were afterwards gradually ſoldered together, ſo that when the patient came into the hoſpital on the 15th September, 1778, he had nothing more than a ſmall fiſtulous opening at the upper and internal part of the leg, from which only a ſmall quantity of pus was diſcharged, the good condition of which beſpoke the ſpeedy termination of this diſeaſe. It has ended in a complete anchyloſis, with a projection of the tibia backwards, ſuch as would be obſerved in a luxation of the bone towards that part, and which is probably as much owing to the deſtruction of the crucial ligaments at the time of the ſuppuration of the joint, as to the poſition the patient may have kept the part in during his long continuance in bed.

The following fact furniſhes another inſtance in which nature ſeems to be preparing the ſame kind of termination. A ſoldier named Pecquigni, in the regiment of Touraine, having marched ſome days after he had received a wrench, has ſuffered all the accidents that can poſſibly follow ſo imprudent a ſtep. A pain and inflammatory ſwelling came on, the ſuppuration of which being long delayed, it was reſolved to remove him to another place. The tumour having at length ſuppurated and opened itſelf by five or ſix fiſtulous orifices, which, on being probed, evidently diſcovered a very extenſive caries of the bones of the tarſus, and of the joint of the leg with the foot. The patient was ſent back to the hoſpital at Rouen, where he came on the 14th of Auguſt. He had a ſlow ſuppuratory fever, which grew higher every night, and was attended with cough and a hoarſeneſs. The foot and lower part of the leg were extremely ſwelled, and at the circumference of the tarſus and the joint, there were ſeveral fiſtulous openings which furniſhed a great quantity of ichorous, bloody, and very fœtid pus. The ſtate of ſtupidity in which I found the patient the next day and the day after, a colliquative fever, with a diarrhœa, an aſh-coloured and emaciated countenance, made me conſider amputation as a very uncertain method of preſerving his life. This, joined to the averſion I have for theſe mutilations which are ſo often ineffectual, led me to entertain hopes, even in this caſe, critical as it was, of the effects of reſt and infrequent dreſſings, which I had ſo effectually employed for three months in a caries of the wriſt, which I ſhall mention hereafter. Accordingly I covered the fiſtulous openings with pledgits dipt in the commanders balſam [26], and put over them large plaiſters of diachylon, reſolving to dreſs my patient only every five or ſix days, and putting the part between junks. Since five weeks that I have perſiſted in this method, the diarrhœa has ſtopped, the countenance and the pulſe are infinitely mended, the diſcharge is thicker, leſs in quantity, and leſs fœtid; the patient ſleeps, and has recovered ſome appetite, ſo that we may already indulge in the hope of ſeeing this malady terminate by a ſalutary anchyloſis.

 (r) To

*(r)* To this fact I can add another of the ſame nature, in which the miſchiefs, though carried to a much higher degree than in the fore-mentioned obſervation, are evidently yielding to the method I have been deſcribing.—Michael Davoux came into the hoſpital in May, 1778, with a compleat caries of the whole carpus, accompanied with three fiſtulous openings, communicating with each other on the inſide and outſide of the joint, the parts in the neighbourhood of the caries were œdematous, and ſwelled to ſo conſiderable a bulk, that moſt of the fingers meaſured more than five inches in circumference. If we add to theſe circumſtances a ſlow colliquative fever, with a fœtid and plentiful diſcharge, we ſhall have an idea of the diſeaſe. The amputation of the fore-arm ſeemed indeed the only reſource of the art in this caſe; but before I determined on this operation, I was deſirous at leaſt of giving a trial to the methods that had ſucceeded ſo well to me in ſimilar caſes. Pledgits dipt in the commanders balſam, placed upon the fiſtulous openings, and confined by diachylon plaiſters and compreſſes dipt in a balſamic embrocation, have been the only remedies uſed for this patient, ſince the time of his coming into the hoſpital, to the end of September. Theſe have been aſſiſted by intervals of ten, fifteen, and twenty days between each renewal of the dreſſings, and by maintaining the part in the moſt conſtant ſtate of reſt, by means of falſe junks. Theſe means have brought this terrible diſeaſe into a ſtate that enables us to prognoſticate its cure; for at the time I am writing, all the fiſtulous orifices on the back part of the hand are cloſed; and of theſe, which anſwered to thoſe on the inſide, there now remains but one, which furniſhes nothing but matter of a good conſiſtence, and in ſmall quantity. Theſe circumſtances, added to a very conſiderable diminution in the bulk of the parts affected, ſeem in fact to be the forerunners of an approaching cure.

*(ſ)* It is ſufficiently known, that a whole limb may be put in motion, while the circumference of a wound or ulcer, upon ſome part of that limb, may be in a perfect ſtate of reſt. It is not therefore this ſort of motion, that we mean to forbid here; it is that kind that ſhould be exerted ſo as to bear upon the injured part itſelf, and ſo as to deſtroy in it, the arrange-

arrangement and adhesion of the nutritive particles nature has brought there for the formation of the scar. (24)

*(t)* It is however to be presumed, that when fistulous openings extend underneath aponeuroses so strong and so tense, as the fascia lata, compressions can scarce ever be made, so powerful and so exact as to effect the proposed union throughout the whole extent of the sinus.

*(u)* If the fistulous opening be produced by a deep-seated caries, it will be readily conceived, that any compression which should re-unite the sinus, before the caries were cured, would prove both useless and pernicious.

*(w)* In the memoir referred to above, and which I had not quoted, lest I should have been discovered, it may be seen, how much I insist upon rest, as a mean of cure in most disorders that are the effect of counter-strokes in the joints, extension of the ligamentous parts, &c.

*(x)* The same memoir above quoted, in representing these different accidents as the natural consequence of counter-strokes in these parts, proves also, that rest is the method of cure chiefly pointed out in these cases. We may even conceive that the prescription of that, as well as of motion, is as much the province of the physician as of the surgeon; and that it would be rendering a very important service to the art of healing, to explain the indications which should lead us, either to prescribe or forbid the use of these two means, in diseases which are more properly belonging to medicine; for it must be acknowledged, they are too indiscriminately ordered in the cure of internal complaints. I have several facts by me which prove, that exercise, and pretty strong exertions of motion, have been very indiscreetly recommended in cases which, had they been properly distinguished, ought to have directed the exclusion of this kind of remedy, the effect of which could not but be, as it proved, very prejudicial; and I have other instances, in which rest has been prescribed from fallacious indications, which, if better understood, should have de-

termined the employment of motion. But the conditions of this thesis, not allowing me to make any excursions foreign to my subject, I have only judged it right to mention this, as one of the most interesting questions that can be discussed.

*(y)* Every thing in nature is motion; it is the universal restorer and destroyer. Absolute rest, especially in animated beings, is an imaginary thing; for rest can only be relative, since it implies only a degree of motion reduced below a certain term of comparison.



NOTES

# N O T E S

## BY THE TRANSLATOR.

(1) THE author has prefixed an advertiſement to this eſſay, in which he mentions his reaſons for publiſhing it himſelf. Though this detail is here omitted, as being in no wiſe eſſential to the point in queſtion, or intereſting to an Engliſh reader, yet I have judged it moſt proper to keep the performance in the form it was deſigned by the writer to appear.

(2) This ſuppoſes the nervous fluid, (if even there be ſuch a thing exiſting) to be *fire*. I mean not to diſpute this point with my friend. I would only obſerve, that this, as well as the reſt of the introduction to this eſſay, is entirely conjectural. However ingenious it may appear to be, it cannot ſerve as the baſis of thoſe great truths, with which this valuable, though ſmall performance, abounds, and which are founded on experience alone. This introduction therefore, might perhaps have been left out without any detriment to the ſubject. But as I hope it will be found entertaining, and full of new ideas, I ſhould not have done juſtice

to my friend's public appearance in this country, had I altered his dreſs, or pared off any of its embroidery.

(3) The general opinion of anatomiſts is, that the Pons Varolii is formed, by the union of the peduncles of the brain, with thoſe of the cerebellum. Theſe peduncles ſeem evidently to be productions of the medullary ſubſtance of each of theſe parts.

(4) If the grayiſh or cineritious colour of the brain, be the diſtinguiſhing character of a ſecretory organ, it ſhould ſeem, that the whole cortical ſubſtance of the brain ſhould be the glandular part of it, or that part in which the fluid deſtined to be conveyed by the medullary ſubſtance is ſecreted. This, indeed, is generally ſuppoſed to be the caſe. Nature however ſeems to have placed the medullary ſubſtance more out of the reach of external injury, than the cineritious ſubſtance; for the former is deeper ſeated, and the latter, (from whence it is alſo called cortical,) is every where placed on the outſide of the medullary ſubſtance, ſurrounding it on all ſides, and ſeeming to protect it. Accordingly, in wounds of the brain, it is the cineritious ſubſtance which is firſt affected, and more of that is always neceſſarily deſtroyed than of the medullary ſubſtance. This laſt indeed has been conſidered, by all writers, as the moſt important part of the brain, and that chiefly from its more internal poſition. On the contrary, it may be urged in favour of our author's hypotheſis, that the cortical ſubſtance of the brain, being only deſigned to ſecrete thoſe fluids that are to put our loco-motive powers in action, it was not neceſſary that it ſhould be ſo particular an object of nature's care. It ſhould ſeem indeed, in general, that nature is more anxious to place the organ which conveys the ſecreted fluid, out of the way of danger, than that in which the ſecretion is performed. For the ſecretion may ſtill be carried on in one part of that organ, though another part of it ſhould be diſeaſed, or even deſtroyed. The inſtances of this are ſo common, that it is unneceſſary to mention them. But if the channel which conveys the fluid be cut off, and the fluid ſo ſecreted ſhould be neceſſary to life, the communication between the ſecretory or-

gan and the vital principle, would be intercepted. If, for inſtance, one part of the inteſtinal canal, or ſome of the lacteal veſſels, ſhould be incapable of ſecreting and abſorbing the chyle, this proceſs may be carried on by the reſt; but if the thoraic duct be injured, the animal muſt unavoidably periſh, becauſe no more nouriſhment can be conveyed into the machine *. Accordingly, the thoracic duct is placed with ſo much care, that it is almoſt impoſſible it ſhould ever ſuffer from external injury. But this is all, as was before obſerved, the field of conjecture, in which, any man who wanders, muſt unavoidably loſe himſelf.

(5) Theſe tubercles ſeem to be entirely compoſed of the medullary ſubſtance of the brain. This does not appear to agree with our author's ſyſtem.

(6) The lymphatic veſſels, are not continuations of the arteries. They are a diſtinct ſet of veſſels, whoſe origin is throughout the whole ſurface of the body, and from the ſurface of every cavity in it; and the termination of which is in the thoracic duct. They conſtitute the ſyſtem of abſorbents throughout the animal œconomy; and, as it appears from the late diſcoveries made concerning them, by anatomiſts who have been, and ſome of whom are happily ſtill the light of the preſent age, their functions are as important, and as ſurprizing, as thoſe of any other veſſels in the body.

(7) We have a deciſive proof of the poſſibility of nutrition without the aid of the thoracic duct, in the caſe related in Vol. LXX of the Philoſophical Tranſactions, by Dr. CHESTON of GLOCESTER. In this inſtance the duct was rendered impervious by the accumulation of oſſific matter within its cavity, ſo as to render the paſſage of any fluid from thence to the ſubclavian vein, a matter of abſolute impoſſibility.

(8) As theſe two kinds of motion, deſcribed by our author, are very diſtinct, ſo do the effects they each of them produce, ſeem to be.

* In oppoſition to this opinion, ſee the caſe of an oſſified and impervious thoracic duct, related in Vol. LXX of the Philoſophical Tranſactions, by Dr. CHESTON. H.

The

The excefs of inteftine motion produces all thofe general difeafes in the habit, which are the effect of any univerfally irritating caufe whatfoever; fuch as inflammatory fevers, epileptic fits, univerfal fpafm of all kinds, apoplexies, violent and fudden hæmorrhages, with many other diforders that fall chiefly under the province of the phyfician, and were therefore out of our author's difcuffion. A deficiency of inteftine motion, on the contrary, produces all thofe complaints that are the effect of a general relaxation and debility, throughout the animal œconomy. Under this clafs may be ranged all putrid fevers, dropfies, &c. There is another furgical difeafe which may likewife be referred to either or both of the above caufes combined; I mean true or mixed aneurifms of the larger arteries, that are not the immediate effect of external injury. Although thefe complaints manifeft themfelves in fome particular part, as in the thigh, leg, or arm, and therefore put on the appearance of local difeafes, yet the fatal event that almoft conftantly follows any operation performed in thefe cafes, feems to indicate a general difeafe of the whole arterial fyftem. This may proceed either from the inteftine motion of the heart and arteries being too ftrong for the refiftance of the arterial coats, or from a want of inteftine motion in the arterial coats themfelves, which, preventing them from reacting properly on the fluid thrown into them by the force of the heart, occcafions them to give way, and to fwell out into aneurifmal tumours; or, which is moft probable, both thofe caufes combined may produce this difeafe. However this may be, it is no lefs apparent, that this is fome peculiar difeafe of the whole habit; for among the feveral inftances of this kind that I have feen, I never faw one recover after amputation, which is generally the only operation that can be performed in thefe cafes *. In one of them that was under my care at the Weftminfter Hofpital, I had flattered myfelf with fome hopes of fuccefs. It was a very large aneurifm of the femoral artery, for which I was obliged to amputate the thigh, very near the groin, becaufe the difeafe ran far up the limb. The wound, from the beginning of the fuppuration,

* A cafe of popliteal aneurifm, which was treated by amputation in the Glocefter Infirmary, proved fuccefsful. H.

appeared

appeared florid and well; the patient was in good health and ſpirits, and for more than three weeks, every appearance was as favourable as I could wiſh. This was a longer time than I had uſually known patients to live after amputation in theſe caſes; moſt of thoſe I had ſeen, having expired within a fortnight. The ſtump was now nearly healed over, when, all on a ſudden, a total languor came on, and a ſphacelus of the ſtump, which carried off my patient in four-and-twenty hours after its firſt appearance. Muſt theſe deplorable caſes then be left to themſelves? or are the very rare inſtances of ſucceſs, which ſome perſons ſay they have ſeen in them, ſufficient to juſtify us in running the immenſe riſque we do in meddling with them? It muſt be owned, indeed, that theſe patients, if not relieved, will at length of themſelves become victims to the diſeaſe; but, as we know not how long they might live under it with care and quiet, why ſhould we venture to riſque haſtening the death of twenty perſons, let us ſuppoſe, for the bare poſſibility of ſaving one? A dreadful alternative indeed! but let us hope that ſome method may hereafter be found out, to render the aſſiſtance of art leſs precarious in theſe caſes. It may not be improper to add, as a farther proof of this diſeaſe being a general one of the whole habit, that in recent, and, as they uſually are, ſpurious aneuriſms of the arteries in the extremities, from bleeding or other external injury, the operation of tying up the artery as practiſed in theſe caſes, is itſelf ſometimes ſucceſsful; and even when that fails, the ſubſequent amputation of the limb, which then becomes neceſſary, moſt commonly ſaves the life of the patient; but theſe are only local diſorders, in which the reſt of the arterial ſyſtem is not in the leaſt concerned *.

* The improvements ſuggeſted by Mr. Hunter in the treatment of aneuriſms, were ſubſequent to the annotator's obſervations on the ſubject, as here ſet down. They afford proper matter for the reader's conſideration, ſince the trials hitherto made, have, happily, tended to contradict the opinion, that the diſeaſe is a general one of the habit, and therefore not curable by any operation. Some valuable communications on this ſubject are to be found in the London Medical Journal; in the 7th volume of which, is a deſcription of Mr. Hunter's operation, and an account of its ſucceſs. H.

Such is the nature of the diſorders proceeding from the exceſs or deficiency of inteſtine motion, or of that which is independent of the will, and eſſential to life. On the other hand, the exceſs of the loco-motive faculty, produces a great number of local diſeaſes, ſuch as external inflammation, abſceſſes, &c., and is one general cauſe of fractures, luxations, and ſprains in the extremities; while the deficiency of it, occaſions rigidities of all kinds in the limbs and joints, local obſtructions, rheumatiſm, gout, &c. Thus we ſee, that diſorders produced by the exceſs or deficiency of inteſtine motion, are general as their cauſe: thoſe brought on by the ſame errors in the loco-motive faculty, are partial as their principle. I have conſidered fractures and luxations as being produced by exceſs of the loco-motive power, for it has always appeared to me, that moſt bones were broken by the ſtrained action of the muſcles upon them, rather than by the application of external force. In caſes where the limb is quite paſſive at the time of receiving the accident, as where a coach or cart wheel paſſes over it, it is indeed evidently otherwiſe. But when the accident happens by ſome ſlip or ſudden effort, the muſcles, inſerted in the bone, are then excited to their greateſt power of action, in order that we may be kept, if poſſible, from falling. It is at this inſtant, I ſuppoſe, that the bone breaks. In fractures of the patella, this manifeſtly appears to be the caſe. This bone is ſo thick, and its texture ſo firm and compact, that any outward force applied that ſhould be ſufficient to break it, would infallibly ſhatter the joint, and, perhaps the whole limb, to pieces: for external force cannot be confined immediately to the ſpot on which it is exerted, but neceſſarily extends itſelf in proportion to the weight, velocity, and other advantages it may act with. We may conceive then, that fractures of the patella, always happen while the knee is bent, which it generally is, when the foot ſlips in any manner. The ſtrong extenſor muſcles inſerted into the patella, then exert all their power to bring the leg to the ſtraight line, which would prevent the body from falling; but as they cannot overcome the ſudden effort which determines the fall, all their force muſt neceſſarily be ſpent on the patella, which being then preſſed acroſs a fulcrum, formed in the ſtate of genu-flection, by the condyles of the thigh bone being puſhed forward,

forward, muſt the more readily give way; and thus the knee pan is broken before the patient falls to the ground. That the cylindrical bones of the extremities may alſo be broken in this manner, is probable, from the great difference of fractures happening while the limb is in a paſſive, or in an active ſtate. In the former caſe, there is generally a much greater comminution of the bones, the neighbouring parts are more injured, and the fractures for the moſt part are compound. In the latter caſe, or when the limb is broken by ſome ſudden ſlip or effort, the miſchief is frequently nothing more than a ſimple fracture of the bone. Both theſe cauſes, it is true, (to wit, a too ſtrong exertion of muſcular action, and a violent concuſſion from external force,) may concur in producing fractures, diſlocations, and ſprains. Theſe muſt neceſſarily be of the worſt kind; and accordingly we ſee, that in fractures from ſudden leaps, in which the force of the muſcles of the foot is exerted in its higheſt degree, and in which the part muſt alſo receive a very powerful external ſtroke, proportioned to the height and velocity of the fall, and to the nature of the bodies on which the foot may light; in theſe caſes, I ſay, we generally find the ancle joint torn to pieces, and that a mortification, the conſequence of this complicated injury, deſtroys the patient in a very ſhort time, unleſs this fatal event be prevented by immediate amputation *.

Theſe

* The following very remarkable accident happened to a traveller on the box of a ſtage coach. He was thrown on the ground with great violence, by the overturning of the carriage, and was ſoon afterwards taken to a neighbouring houſe, with his ancle in a very deformed ſtate. Two gentlemen of the faculty, who were immediately called, finding a great degree of miſchief done to that joint, and that, from a preternatural fullneſs of the poſterior parts, ſome of the tarſal bones were diſplaced, took no ſmall pains to reſtore to its proper ſituation, what was evidently much out of it. Their endeavours, however, were fruitleſs; ſo that after a conſiderable time ſpent in the attempt, (as well as at the deſire of the patient himſelf,) they were obliged to deſiſt. The joint was then poulticed, with a view to reduce the tenſion, which, by this time, was become very conſiderable. Three days afterwards, it appeared, that an extraneous body had been forced in, between the inferior part of the tibia, and the tendo Achillis. The violent preſſure, which had been made uſe of to return this ſubſtance to its place, produced a mortification of the integuments, and theſe ſloughing off in the courſe of a few days, afforded an opportunity of extracting, what was before ſuſpected to be, a

 portion

Theſe reſearches into the mode by which different accidents can be produced, may be thought more curious than uſeful; but it muſt be conſidered, that, in many ſurgical diſorders, great ſtreſs is deſervedly laid on the manner in which an injury happens, on the nature of the inſtrument it was made with, and even on the ſituation of the patient when he received it. In the preſent inſtance, theſe different accidents may ſuggeſt very different indications of cure. But this point cannot be diſcuſſed here, for I would not anticipate my friend in bringing forward obſervations, which are peculiar to him, and which will ſhortly come from himſelf *.

(9) A fat perſon might therefore ſubſiſt longer, with a leſs proportion of nouriſhment, than a lean one; for while there is any fat remaining in the cells of the cellular ſubſtance, it will neceſſarily be abſorbed, for the nutrition of the animal.

(10) Vide Dr. CAVERHILL's treatiſe on the *gout*, relative to the cure of that diſeaſe by motion.

(11) The gentleman who is the ſubject of this remark, is my intimate friend. Juſt after this performance was printed, he had a pretty ſmart attack of the diſeaſe, in his foot. He attributed the return of this complaint, to his having again neglected his uſual amuſement of tennis, for two years paſt. When he was ſeized with this fit, which, from its firſt violence, ſeemed as if it would laſt ſome time, I adviſed him to riſe conſtantly from his ſeat, notwithſtanding it put him to great pain, and by degrees, to move his foot as much as poſſible. I alſo directed ſoft and dry friction, to be uſed frequently in the day. By theſe means, and by

portion of the aſtragalus, ſeparated by the fracture of that bone. The patient, by proper care, afterwards recovered. An inſtance ſimilar to this happened to a poor man's leg, owing to the falling in of a ſtone Quarry; by which accident it had been moſt terribly ſhattered, and a large fragment of the aſtragalus forced into the ſame ſituation with the above. H.

* This alludes to the Memoir on Counter-ſtrokes, annexed to the preſent publication. H.

keeping him in a conſtant copious perſpiration, the fit laſted no longer than three or four days. After it went off, he had a large boil formed on the upper and back part of the thigh, which ſuppurated very plentifully, and confined him for about a week longer.

(12) In ſupport of this opinion, it may be added, that all perſons ſubject to the rheumatiſm, are always more affected with the pain, in the morning, at their firſt riſing, after they have remained for ſeven or eight hours in a compleat ſtate of reſt. The pain is ſcarcely ſupportable at their firſt getting out of bed, but, with the exerciſe of the day, and gently uſing the part to motion, it always grows more tolerable. From this it ſhould appear, that the advantage of warmth, however great it may be in this diſeaſe, cannot be comparable to that of motion; ſince the ſuperior warmth of the bed and of a ſtate of ſleep, cannot compenſate for the want of motion.

(13) Perhaps it is one of the greateſt deſiderata in ſurgery, to be able, either to aſſiſt nature in the formation of an anchyloſis, or to form one artificially when nature does not ſeem to be diſpoſed to it. Let me be permitted to obſerve here, that all the means which the ingenuity of ſurgeons has hitherto contrived, to effect this purpoſe, ſeem totally contrary to the method laid down, in the courſe of this eſſay, for bringing it about, by abſolute reſt and total inaction. It has been thought, indeed, that the exciting of inflammation, would be likely to procure adheſions between theſe ſolid parts. This reaſoning has been founded on analogy, from conſidering the effects which inflammation frequently has on the fleſhy parts. Injections, cauſtics, and ſetons paſſed through the joint, in caſes of diſeaſed articulations, have all been tried upon this principle. I muſt, indeed, confeſs, that I have tried them myſelf, and ſeen them often tried by others, without ſucceſs. If the author's ideas of forming an anchyloſis are juſt, as we may conclude they are from the facts he adduces hereafter in ſupport of them, (ſome of which I have been witneſs to,) it will appear, that all the methods before propoſed for this purpoſe, have rather impeded than forwarded it; ſo difficult is it to know,

know, how to direct the operations of nature. If the method here proposed ſhould hereafter prove generally ſucceſsful, many limbs will probably be preſerved, as will appear from that part of this eſſay which treats on the effects of reſt in ſurgical diſorders.

(14) The practice of uſing motion in fractures of the patella and olecranon, in order to prevent an anchyloſis of the joint, which was almoſt always the conſequence of the old method of treating theſe complaints, was firſt made uſe of, as I believe, by Mr. WATSON, *Surgeon to the Weſtminſter Hoſpital*, though I know not that he has ever laid any claim to this very great improvement in the art of Surgery. So far I am certain, that I have ſeen him follow this practice above five and twenty years ago. Let me however be permitted to obſerve, that there is no neceſſity for waiting till the twenty fifth day, in order to begin moving the joint. Mr. Watſon's method, in fractures of the patella, which I have always followed ſince I have been in practice, is to bring the fractured extremities as near as poſſible to each other, and to put on ſuch a bandage as ſhall only allow of a very obſcure degree of motion in the joint. But this obſcure motion he permits his patients to exert on the third or fourth day after the accident, by directing them to riſe out of bed, and walk gently about the room, with crutches, a little every day, till the union is ſufficiently firm to allow them to bear on the ground. From following this method, I never ſaw the leaſt inconvenience; but, on the contrary, the motion of the joint became perfectly free, after the conſolidation of the fracture, even though there were a conſiderable interval between the fractured extremities. Let me be allowed to adduce a caſe, in confirmation of the utility of this practice. About two years ago, I attended the ſon of Sir Arch. Ed——, who had accidentally fractured the upper part of the olecranon; a caſe which does not occur near ſo often as the fracture of the patella, and that for obvious reaſons. The fracture was attended with much ſwelling and contuſion, which prevented me from diſcovering it till ſome days after the accident, though I ſuſpected what had happened from the firſt. When the ſwelling and tenſion were removed, the bones, in this young habit, had already begun to ſhoot out

ſome

ſome callus, which prevented me from carrying the arm back to its full degree of extenſion. I brought it however, on the firſt time of applying the bandage, as near to a ſtraight line as I could, and maintained it in that poſition, by ſupporting it cloſe to the ſide of the body. In three days time, I took off the bandage, and found I could extend the arm much ſtraighter than at firſt; I therefore gave the joint a very gentle degree of motion, for the ſpace of a quarter of an hour, and then applied the bandage again. In this manner I proceeded every ſecond or third day, renewing the bandage, and giving, each time, more and more motion to the joint, as the danger of diſplacing the fractured parts diminiſhed. At length I ſucceeded in bringing the arm perfectly to the ſtraight line, and when the young gentleman got well, which was in about ſix weeks after the application of the bandage, he had as free a motion and uſe of the joint as ever. I am apt to think the cure, in theſe caſes, will be much more ſpeedily performed, by adopting this method, than by waiting till the twenty-fifth day, before we begin moving the diſeaſed joint.

(15) Spirituous liniments almoſt ſaturated with ſoap, and united to the active volatile alcaline ſpirit, have always ſucceeded beſt with me, in preventing or curing diſeaſes of the joint. If camphor be united with them, it ſeems to make them infinitely more efficacious; for camphor, beſides the great volatility of its particles, ſeems to poſſeſs a peculiar ſedative quality, which renders it a very proper application in all inflammations, and in all caſes where pain muſt be mitigated.—This method indeed, joined to fumigations, fomentations, and ſtupes, with vinegar, ſeems, as Dr. CHESTON has very well obſerved in his PATHOLOGICAL OBSERVATIONS AND ENQUIRIES, to be the moſt likely way to ſucceed in the cure of thoſe dreadful diſorders the knee joint is ſubject to, and which, when they are incipient, are termed white ſwellings. One circumſtance may perhaps be added, which is, that friction itſelf, *gentle* friction I mean, may be as efficacious in bringing about the deſired end, in theſe caſes, as any of the other methods. This indeed is a circumſtance very neceſſary to be attended to, for which reaſon, I always direct

rect the embrocations made uſe of, to be employed very freely, and the friction exerted with them to be continued for a long time, and very frequently renewed. It ſeems to be as neceſſary, in the practice of Surgery, to know for how long a time, and how frequently we ſhould employ the means we may propoſe for the cure of any ſurgical complaints, under different circumſtances, as it is in phyſic, to aſcertain the proper doſes of medicine, and their repetition, for the relief of internal diſorders, in various conſtitutions. 'Tis much to be lamented, that both medicine and ſurgery are ſtill very imperfect in this particular.

(16) In caſes of rigidity alſo, moſt commonly remaining in the tendinous parts, after violent contuſions or fractures, I cannot too much recommend the uſe of frictions, with oily, volatile, and ſaponaceous applications, and a ſteady perſeverance in the uſe of them. I have frequently ſeen fractures and contuſions about the wriſt, which, after a long time, have left the flexor tendons of the fingers, in particular on the inſide of the fore arm, in a ſtate of conſiderable ſwelling, pain, and ſtiffneſs, inſomuch, that after all the bones were firmly and evenly conſolidated, there has appeared as great a degree of deformity as if a luxation or fracture ſubſiſted ſtill*. The embrocations before mentioned, are uſually

* This deformity of the wriſt does not ſeem to be properly underſtood. It is much more frequently met with, among people advancing in years, (particularly women) after falls, than in the earlier part of life, and ſeems to me to ariſe from a rupture of the ligaments, which, in a natural ſtate, preſerve the ſymmetry of this joint. Hence the radius drops inwards, while the carpal bones ſeem to be thrown outwards. Whoever has ſeen the true diſlocation of this joint, which however is always to be reduced with the greateſt eaſe, will readily diſtinguiſh the two caſes. From repeated experience I have found, that the beſt method to prevent this deformity is, after making a moderate extenſion, and bending the hand inwards, ſo as to relax the palmaris muſcle, &c., to paſs a bandage, pretty tight, round the lower part of the arm and wriſt, and then over the back of the hand, ſo as to put the latter into a declining ſtate; by this means the radius, which cauſes the greateſt part of the deformity, is raiſed to its proper place. If, afterwards, a ſplint of ſome ſtrength be applied on the back of the arm, and extended about two inches over the joint of the wriſt, it will ſerve as a fulcrum, by being incloſed in another roller, to keep the parts in a proper ſituation. It is frequently proper to include a compreſs, in this latter bandage, on the projecting part

uſually ordered, to relieve theſe troubleſome and diſagreeable complaints, but I think, ſufficient ſtreſs is not at the ſame time laid upon the free uſe of theſe liniments, and the long continuance, as well as frequent repetition, of the friction that is to be uſed with them. This I believe to be the reaſon why theſe complaints generally laſt ſo long, and are ſometimes never removed. The patient, wearied out with the inefficacy of means, which ſeem to fail merely from being improperly uſed, grows importunate with the ſurgeon, to try ſomething elſe. The ſurgeon, unwilling to ſee his art baffled, and not perhaps attending to the true reaſon of it, frequently changes his beſt methods for others infinitely leſs likely to ſucceed; but to which, report, and the experience of others, ſeem to have given a ſanction. The officiouſneſs of idle people, who are continually talking of the numberleſs fine cures they have ſeen effected by gooſe greaſe, ſteeping in bullocks' paunches, and other ſuch methods, often induce patients to try them, in preference to a better method, ordered by a ſkilful ſurgeon, which, had they perſevered in, or uſed it properly, would, in all probability, have had the deſired effect. Time alone ſometimes gradually brings about the recovery of the parts.

(17) ROTROU'S SOLVENT—The compoſition of ROTROU'S *ſolvent* is given as follows: "Crude antimony, mixed with three parts of nitre, "and expoſed to the fire in a crucible, loſes all its phlogiſton by the "action of the nitre. The mixture enters into a paſte like fuſion, it is "then poured on a marble, pulveriſed, and kept in a bottle." *Baumé's Manual of Chemiſtry*, p. 206 *.

(18) Burnt

part of the radius, taking care, however, that it ſhall not preſs on the radial artery. The back of the hand, and the arm, above the bandage, in general, ſwell pretty much; but, to prevent inflammation, the bandage ſhould be conſtantly moiſtened with Goulard water or ſome other topic. It ſhould farther have been obſerved, that the radius is frequently fractured in this caſe, but not always in the ſame place. H.

* In the account of ROTROU'S *Medicines* given by ASTRUC, at the end of his fourth book, is the following combination of nitre and antimony, under the name of PULVIS LIQUANS:

(18) Burnt ſponge is one of the remedies that ſeem to act in this manner, in the cure of this diſeaſe. If perſevered in for a long time, and uſed very freely, I am inclined to think it one of the moſt uſeful alcaline and abſorbent medicines againſt this complaint, and alſo againſt the bronchocele, in which latter inſtance, I have ſometimes uſed it with ſucceſs. But to do any good in theſe laſt caſes, it muſt be uſed much more freely than it generally is. I have had patients who have taken more than an ounce of it every day.

(19) I find, in LIEUTAUD's *Synopſis*, and WECKER's *Antidotarium ſpeciale*, the following plaſters of VIGO.

EMPLASTRUM DE RANIS, vel DE VIGO, *cum mercurio*, maxima rerum copia exſurgit. Primo, coquuntur in vino & aceto ranæ & lumbrici, cum radicibus ebuli & enulæ, floribus chamæmeli, lavandulæ, &c. Dein ſeorſim liquantur cera & axungiæ, ſtyrax & terebinthina, cum oleis ranarum, lumbricorum, liliorum, &c. Quibus fuſis adduntur olibanum myrrha, euphorbium & crocus, cum oleo eſſentiali lavandulæ. Tum decocto & liquamini, ſimul mixtis, & ulterius coctis, adjicitur mercurius ope terebinthinæ & ſtyracis extinctus ; ut ex omnibus notiſſimâ arte ſubactis emergat emplaſtrum, quod inter eximia reſolventia & incidentia haud immerito decantatur. Ideo conducit in tumoribus cyſticis & anomalis ; gummata venerea evincit ; glandulis ſcrophuloſis opitulatur, &c. Poſtremo nonnunquam adhibetur amplitudine congruâ, ad movendam ſalivationem, vel oppugnandum virus venereum adhibetur, atque in hunc finem paratur cum duplicato vel quadruplicato mercurio, ut ad hoc opus efficacius evadat. LIEUTAUD, p. 897.

℞ *Reguli antimonii optime preparati et in pulverem triti.*
*Nitri purificati et in pulverem ſeorſim redacti ana* lbiſs.

Theſe two powders being mixed, throw a ſpoonful at a time into a red hot crucible, and let the whole calcine for ſix hours. This is afterwards to be pulverized and kept in a glaſs veſſel. To complete the proceſs, we are directed to add to each pound of the powder, warmed over the fire, ſix ounces of ſtrong cinnamon water, drop by drop, ſtirring it continually till the whole is evaporated. H.

DIACHYLON

DIACHYLON CUM GUMMI VIGONIS.—℞ Rad. Althæ. ℔ss—Semin. Lini Fœnigræci ana ℥j, Violarum—Sem. Malvæ—Sem. Althæ—Sem. Cydoniorum ana, ℥ss—Sem. Psyllii ʒij—Rad. Ireos ℥ij—Olei Chamæmelini—Olei Anethini—Olei Liliorum—Olei Lini—Olei Irini ana ℥iij—Pingued. Gallinæ—Pingued. Anatis—Pingued. Anseris ana ℥iij—Olei Amygd. dulc.—Oesypi humidi—Succi Glycerrhizæ ana ʒx—Terebinthinæ ℥iss—Sevi vituli ℔ss—Lithargyri auri ʒx—Bulliant omnia simul baculo agitando, usque ad consumptionem mucilaginis. Deinde cum cera alba, quantum sufficit, fiat ceratum molle addendo Sagapeni—Opoponaci—Bdellii mollis—Galbani ana ℥iij—Hammoniaci ʒv dissoluta in aceto, fiat Emplastrum.

EMPLASTRUM DE MINIO VIGONIS—℞ Olei rosati adorati ℔iss—Olei Myrtini—Unguenti Populeonis ana ℥iv—Pinguedinis Gallinæ ℥ii—Sevi Castrati—Sevi vaccini ana ℔ss—Pingued. Porcinæ ℥vij—Lithargiri auri—Lythargiri argenti ana ℥iiiss—Minii ℥iij—Cerussæ ℥iv—Terebinthinæ ℥x Ceræ q. s. Fiat emplastrum secundum artem, tendens ad nigredinem. WECKER, *Antid. Spec.* Lib. II.

EMPLASTRUM DIABOTANUM.—Forte plus æquo celebratum, nomen sortitur ab ingenti plantarum copiâ, quæ ejus compositionem ingrediuntur; inter quas notandæ veniunt; cicuta, valeriana, chamæpithis, angelica, raphanus rusticanus, cucumis, schrophularia; chelidonium, gratiola, &c. quorum decoctum, addito nonnullarum succo, evaporationi committitur; ut adjiciatur gummi ammoniaci, galbani &c. in aceto scillitico solutio. Dein admiscentur lythargyrus; olea lumbricorum, catellorum, &c. in aqua cocta. Quæ omnia mixta posteà recipiunt sulphur, ceram, styracem & picem; non secùs ac pulverem radicum ireos, cyclaminis, serpentariæ, hellebori, ari, aristolochiæ, &c. baccarum lauri & nonnullorum seminum; varia gummata, camphoram, oleum caryophillorum, &c. Quid emergat e tanta rerum farragine vix definiri potest. Huicce tamen emplastro insulæ compositionis, tribuuntur vires resolventes, emollientes & demulcentes; nec refragatur experientia: præcipuè depræedicatur adversus tumores cysticos, glandulas induratas, ganglia, &c. LIEUTAUD, p. 810.

(20) In ſcrophulous ulcers attended with caries, I have uſed, with good ſucceſs, a ſmall portion of the magnes arſenicalis, which I have applied to the foul ulcers and carious bones. The idea of uſing this medicine in ſcrophulous ulcers, was ſuggeſted to me, from a ſurgical manuſcript I found at the Britiſh Muſeum, which adviſed it, as a ſpecific in thoſe caſes. But though apparently a very uſeful application, and indeed more ſo than any other topic I have ever tried, yet I cannot take upon me to ſay, that it deſerves this appellation. There were alſo ſome other curious matters I extracted from manuſcripts in that collection, and of which a full account has appeared, in the work which I have publiſhed, on the treatment of cancerous diſeaſes.

(21) I knew not, till I read this pamphlet, that volatile alkalis had been propoſed by Mr. Perilhe in the cure of this diſeaſe; but, for ſome years paſt, it has been my conſtant practice, both in private, and at the Weſtminſter Hoſpital to give ſtrong volatile medicines in the cure of the venereal diſeaſe. The volatile I uſed formerly to preſcribe, was the volatile tincture of guaicum; and this I did with a view to aſſiſt the action of mercury; for I have always held, that in order to render mercury more efficacious in the cure of the venereal diſeaſe, it was neceſſary to excite the powers of it by warm and ſtimulating medicines. By this combination, I have ſucceeded in curing ſeveral venereal complaints, which ſubſiſted after the patients had been ſalivated, and had perſevered in a courſe of mercurial medicines for a very conſiderable length of time, I conſider ſalivation, indeed, merely as an overdoſe of mercury, and cannot think it contributes the leaſt, in itſelf, to the expulſion of the virus. But theſe, and ſeveral other obſervations, which reading and a careful practice has ſupplied me with, on the venereal diſeaſe, would lead me too far here. I ſhall only hint at one particular caſe, of a terrible venereal cancer, that had eaten away the greater part of the penis, and the cure of which ſeemed to prove, that the cancerous ulcer, ſometimes ſucceeding to this diſeaſe, requires a different treatment from the venereal virus itſelf; and that, although the cancer ſhould be cured, the virus ſtill remains in the body. The patient I allude to, had taken

a prodigious quantity of mercury before I ſaw him. He had had many univerſal ſymptoms of the diſeaſe, which had all yielded to this treatment; and there remained only, when he applied to me, this terrible cancerous ulcer before mentioned, which had already eaten away one half of the penis, and was ſpreading very faſt on the prepuce towards the integuments of the abdomen. With great difficulty, I ſucceeded in putting a ſtop to this cancer, without a grain of mercury, by methods which I ſhall give a full account of on another occaſion. To my great ſurprize, however, no ſooner was the cancer healed, than my patient was ſeized with venereal ſymptoms all over the body, viz. ulcers in the throat, univerſal pains, ſwelled legs, and nodes upon the bones. All theſe, however, yielded readily to a prudent adminiſtration of mercury, joined to active volatile ſtimulating medicines and the warm bath; and the patient, at this day, three years from the time of his being under my care, enjoys a perfect ſtate of health.

(22) The beſt inſtrument ever invented for theſe caſes, is that publiſhed in the Memoirs of the Academy of Surgery, under the name of Mr. VACHER, and it ſeems to act entirely upon theſe principles; for, by keeping the ſpine, as much as poſſible, in one continued ſtate of extenſion, it not only prevents the vertebræ from preſſing upon each other, but likewiſe hinders them from moving one upon the other, and conſequently in ſome meaſure maintains them in a ſtate of reſt.

(23) It is needleſs to expatiate upon the novelty and excellence of all theſe obſervations reſpecting abſceſſes proceeding from carious vertebræ of the back or loins, or, in other words, of what we familiarly call *pſoas caſes*, which deſtroy ſo many patients at all periods of life. But theſe call to my remembrance a remarkable caſe, which fell under my care in the *Weſtminſter Hoſpital*, and the event of which I could never ſatisfactorily account for. This caſe is related at large in my *Eſſay on Abſceſſes*, page 128.

(24) From

(24) From this obſervation of the poſſibility of a limb being in motion, while the circumference of an ulcer or ſore in it, may be at reſt, we may account for the utility of bandage, in the cure of ulcers of the legs. Proper bandage anſwers the very purpoſe of keeping the ulcer, and the parts about it, ſteady and at reſt, notwithſtanding the motion that may be given to the limb. But we muſt obſerve, that an upright poſture, by forcing the lower extremities to ſupport the whole weight of the trunk, counteracts the good effects of bandage; ſo that whatever lateral motions of the limb we may allow our patients, in ulcers of the lower extremities, we muſt take great care to confine them to a horizontal poſture. It is evident this cannot extend to ſores in the upper extremities, for the weight of the body not preſſing upon them in an upright poſture, the reſt of the part is only to be attended to in theſe caſes.

(25) The reader will find in the annexed *Memoir on Counter-Strokes*, all the different caſes to which the author alludes.

(26) BALSAMUM COMMENDATORIS, *Beaume du Chevalier*, vel, a nonnullis, *Beaume univerſel*, eſt tinctura ſpirituoſa radicum angelicæ & florum hyperici; in qua peracta digeruntur primò myrrha & olibanum; dein ſtyrax, benzoinum, balſamum tolutanum, aloe & ambra cineritia. Crebo in uſum venit illud balſamum; ac pro exquiſitiore ſtomachico & carminante habetur; roborantium, & præſertim cephalicorum claſſem ſubit. Idcirco confert in cardialgiâ; dolores a flatulentiâ compeſcit; ſomnolentiam arcet; diureſim movet, &c. Doſis a guttis quatuor, ad viginti, in juſculo, vino, ſyrupo, aliove hauſtu. Inſuper eximium vulnerarium & anteputridum externum cenſetur; nec infimum locum tenet inter reſolventia: ideò fauſtè admovetur vulneribus recentibus, contuſioni & gangrænæ: nec minus auxiliatur partibus paralyticis. LIEUTAUD, p. 673.

IV. ON

# IV.

ON THE

# EFFECTS

OF

# COUNTER-STROKES.

# AN ESSAY

ON THE FOLLOWING

# PROPOSITION.

## TO EXPLAIN THE EFFECTS OF COUNTER-STROKES ON THE SEVERAL PARTS OF THE BODY, EXCLUSIVE OF THE HEAD, AND THE METHODS OF RELIEVING THEM.

A THEME ſo intereſting, could only be propoſed by the ACADEMY OF SURGERY: and it required the ſagacity of that celebrated body, to perceive, in the diſcuſſion of a queſtion, which to ordinary ſurgeons may poſſibly appear barren of matter, a ſeries of facts and practical inferences, well calculated to extend the boundaries of an art, the improvement of which is their ſole object, and the rational exerciſe of which, tends greatly to relieve the ſufferings of mankind. Powerful motives theſe, to excite emulation among competitors for a prize, to be awarded by the hand of Science!

To aſk an explanation of the effects of counter-ſtrokes on the ſeveral parts of the body, excluſive of the head, is to beg the queſtion concerning the exiſtence of theſe counter-ſtrokes, and of the miſchiefs that enſue from them. To demand an expoſition of the means of relieving them, is to require of thoſe who may attempt to ſolve this important queſtion, a methodical and conſiderate application of the means which the art may ſuggeſt to a man of knowledge, who, in the effects of counter-ſtrokes, perceives at once, both the connection between the cauſe and the effect, and the mechaniſm by which the injuries he ſees have been produced.

If it be a matter of ſurprize, that the exiſtence of counter-ſtrokes in the head, ſhould have appeared problematical, even at a time when ſupported by reaſon and experience, it is ſtill infinitely more aſtoniſhing, that the efforts of counter-ſtrokes on other parts ſhould have been in ſome ſort overlooked, and that no writer ſhould refer, at leaſt explicitly, to this kind of cauſe, numbers of accidents which he muſt have ſeen [a]. Although it muſt be acknowledged, that practice is not ſo much affected by this omiſſion, as might be imagined, on account of the number of caſes in which a knowledge of the mechaniſm by which the accident was occaſioned, could have little influence on the mode of cure to be purſued, yet there are caſes in which a knowledge of this mechaniſm can only ſuggeſt, with propriety, the curative means to be employed. This is ſufficient to render a ſolution of the propoſed queſtion very intereſting, although it ſhould not even convey to the mind that degree of ſatisfaction, which we always experience, when we are convinced of having diſcovered the immediate relation of the cauſe to the effect.

Counter-ſtrokes, in the ſeveral parts of the body, excluſive of the head, are ſo frequent, that diſeaſes of the utmoſt importance in ſurgery, may be conſidered as being produced by them. I ſhall endeavour to prove this propoſition by facts, rather than by argument. Beſides thoſe which I have collected from the experience of ſome great maſters in the art, whom I have attended, there are no inconſiderable number which have occurred in my own practice, and which all contribute in the moſt palpable man-

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ner to evince the pernicious effects of these counter-strokes. If therefore, I can only give a rational analysis of these facts, accompanied with a mode of cure, adapted to the nature of these accidents and their cause, I flatter myself that I shall answer the two requisites of the proposition; but, sensible as I am of the difficulty of the undertaking, of my own insufficiency, and of the discernment of those who are to decide upon the subject, I am excited to engage in the attempt, rather by a desire of shewing my zeal for the improvement of the art, than by any hope of success in the enterprize.

A counter-stroke, taken in the most extensive sense, is a shock, which, from the part immediately stricken, is transmitted to a greater or less distance, and which produces, in its progression, mischiefs more or less evident; while the part which first received the shock, often remains uninjured.

In a more confined sense, as we generally consider it in the first instance, a counter-stroke is a shock which is conveyed from the part immediately stricken, to other parts, and produces in them the same mischiefs, which the body giving the shock would have occasioned, if these parts had been immediately exposed to its action [b].

When we are once acquainted with the laws, according to which, motion communicates itself and is lost, and with the circumstances necessary to occasion a congeries of solid fibres, to yield more easily in one place than in another, we may form a sufficiently exact theory of the effects of counter-strokes on the hard parts. Several facts will afford me the opportunity of elucidating the mechanism of these counter-strokes; which will be better understood, when it shall only be an explanation of the manner in which such and such mischief may have been produced, in a part distant from that which has received the first shock. Thus, after having pointed out the effects of counter-strokes on the different parts of the body, exclusive of the head, I shall speak of the proper mode of treating them, according to the nature of the mischief

which may have been occaſioned; and that I may proceed with order, this eſſay ſhall be divided into two parts.

In the firſt, I ſhall explain the effects of counter-ſtrokes on the ſeveral external parts ſubject to the action of this cauſe, and ſhall point out a method of cure adapted to the cauſe, to its effects, and to the accidents which are, or may be, the conſequence of it.

In the ſecond part, I ſhall treat of the effects of counter-ſtrokes upon ſeveral of the viſcera contained in the cavities of the human body, beſide that of the cranium; and ſhall indicate the mode of treatment that may be uſed, with the greateſt probability of ſucceſs, againſt the injuries that are occaſioned by them.

PART

# PART I.

IT is evident from facts, that the principal pieces which enter into the compoſition of the trunk, and of the extremities of the human body, are ſubject to the effects of counter-ſtrokes. Thoſe eſpecially which conſtitute the lower extremities, are the moſt liable to them, for which reaſon, we are naturally led to begin with examining the miſchiefs that may be produced in them by ſuch a cauſe, and the mode of relieving them. But before we proceed to this part of the queſtion, it may be proper to notice ſome preliminary facts, calculated to explain, almoſt intuitively, the mechaniſm of counter-ſtrokes, and the connection between their effects and the cauſe that produced them. Any part of the machine may ſuſtain a ſhock, whether a body put in motion ſhall ſtrike againſt the part, or whether the part itſelf ſhall ſtrike, with a certain velocity, againſt a body at reſt. This being premiſed, let us obſerve,

1ſt. That the feet, at every ſtep of progreſſive motion, receive ſhocks which are conveyed, without any ſenſible effects, along the inferior extremities, the ſpine, &c.

2dly. That theſe ſmall ſhocks, which are nothing in the inſtance of habit we have been mentioning, are more ſenſibly felt in leaps, and may be

be attended with many mischiefs in passing through the parts to which the shock is conveyed.

3dly. That in falls on the feet, it often happens, that the shock is sufficient to produce accidents, which require the assistance of art; but in this respect, the accident is always in proportion to the height of the fall, and to the state of the parts which receive the motion, as we shall make it appear in a future discussion.

Man is destined to walk upright, to run, to leap; and is therefore exposed to all the bad effects that may result from the kind of shock we have been speaking of. Accordingly, we cannot behold, without admiration, the precautions which nature has employed, in the manner by which the pieces that compose the lower extremities and the trunk, are articulated with each other, in order to prevent the invincible resistance which the feet meet with on the ground, from producing (at least in ordinary instances) any mischief in the bony parts constituting either these extremities or the trunk; and also in order that the important viscus contained in the cavity of the cranium should be preserved from any shock sufficient to disturb its organization. A cursory review of these objects will enable us the better to understand all the contrivances of nature to elude the effects of counter-strokes that may be transmitted through this channel.

The bones of the tarsus and metatarsus, are formed and articulated in such a manner, as to leave a hollow of a certain depth in the sole of the foot; a cavity from which nature derives other advantages beside that of making a passage for tendons, blood-vessels, and nerves; for this hollow forms a kind of arch, the parts of which being moveable upon each other, may give way a little in yielding to the motion of the upper parts that press upon them; the motion, therefore of these parts being in some measure destroyed here, they retain the less of it.

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The cartilages with which the articulating ſurfaces of the bones of the foot and leg are covered, deſtroy alſo a part of this motion, ſo that it is much weakened when ſent away from thence, or when we conſider it at the articulation of the leg with the thigh; where the cartilages covering the extremities of theſe bones, and the intermediate ſemilunar cartilages, evidently concur in the ſame effect. Hence it may be concluded, that the motion communicated to the upper parts reſting upon the thigh, hath already loſt much of its force, when we conſider it in the articulation of the thigh with the os innominatum, where we meet with freſh cartilages, which abſorb ſtill more of the motion. But the circumſtance which abſorbs the moſt of it in this place, is the obliquity with which the head of the thigh bone bears upon its neck; for by means of this diſpoſition, the two oſſa innominata, by the quantity of motion ſtill remaining in the upper parts, preſs upon each other forwards at the ſymphiſis of the pubis, and laterally upon the os ſacrum, at the point of their articulation with this bone. Now, we know, that at theſe points of union, there are ſome very thick cartilages; and by tracing the motion along the ſpinal column, we obſerve with what art nature hath articulated and arranged the pieces which compoſe it, to diminiſh the violence of this motion; ſo that we are no longer ſurprized, that the motion of ſo large a maſs as the human body, accelerated even during the time of a fall from a conſiderable height, ſhould be reduced almoſt to nothing, when tranſmitted to the brain, by the reſiſtance which the feet have met with.

We are not to ſuppoſe, however, that the cartilages of the joints, the ligaments that ſurround them, and the motion of the bones over each other, are the only circumſtances that concur in this matter; the muſcles have alſo their ſhare in deſtroying the motion of the upper parts over the lower ones, ſtriking againſt the ground: for notwithſtanding the admirable arrangement of the pieces that compoſe the ſpine, the brain would receive, in the moſt common leaps, a commotion ſufficient to diſturb its organization, if, at the inſtant of the ſhock, the motion were conveyed in ſuch a direction, as that the trunk and extremities ſhould be in a ſtraight line; but fortunately this is a circumſtance which

which cannot often happen. The lower end of the thigh bone, is generally forced to make an angle, more or leſs obtuſe, with the tibia, according to the violence of the fall; which angle would even become ſo far acute, as that the buttocks would come to the ground, unleſs the muſcles, known by the name of extenſors of the leg, exerted themſelves to oppoſe this, or rather, unleſs they gave way only by degrees, and to a certain point[c].

This firſt flexion neceſſarily brings on another, that of the trunk forwards on the thigh; a flexion which is moderated by all the muſcles fixed in the tuberoſity of the iſchium, otherwiſe the head would ſtrike againſt the knees.

It is ſufficiently evident from what has been ſaid, that in all inſtances of leaps or falls upon the feet, the ſpinal column muſt be bent forwards, and that the head then tends to fall downwards and forwards, by deſcribing a curve; but the muſcles which ſerve to extend the head, the back, and the neck, are at this inſtant thrown forcibly into action, and retain the trunk and head in ſuch a manner, that the motion remaining in them can only (except in falls from a very great height) bend the head and trunk forwards to a certain degree; from whence it is evident, that in caſes of leaps or falls upon the feet, moſt of the muſcles of the human body are employed in deſtroying the greateſt part of the motion, by allowing the bones to which they are attached, to yield only by degrees, and ſucceſſively, to the impulſe, or action of the weight.

Notwithſtanding this admirable arrangement, nature is ſtill frequently in default. The direction of the ſhock, though a moderate one, is ſometimes ſuch as to elude the action of moſt of the agents which have been prudently employed to leſſen it; or elſe the motion is too violent to allow theſe agents to abſorb a ſufficient quantity of it to prevent miſchief in ſome of the part through which it is tranſmitted. This fatal truth is

but too well evinced by numbers of facts; but as, in the inſtances above mentioned, the lower extremities are the parts that receive the firſt ſhock, which is conveyed by them to the trunk, we ſhall firſt examine the effects of counter-ſtrokes on the ſeveral pieces which compoſe them. We ſhall then trace the effects of a ſimilar cauſe upon the bones which concur in forming the trunk; and laſtly, we ſhall explain the miſchiefs that may be produced from counter-ſtrokes on the ſeveral parts that conſtitute the upper extremities. In treating each of theſe points ſeparately, we ſhall point out the method of cure adapted to the nature of the miſchief produced by the counter-ſtroke, and to the accidental circumſtances attending it. This mode of proceeding preſents us with a very natural diviſion of the firſt part of our eſſay.

## SECTION I.

### TO EXPLAIN THE EFFECTS OF COUNTER-STROKES ON THE SEVERAL PIECES CONSTITUTING THE LOWER EXTREMITIES, AND THE MODE OF CURE ADAPTED TO THEM.

FALLS upon the feet, and leaps, being the moſt ordinary cauſes of the violent counter-ſtrokes which the lower extremities ſometimes ſuffer, it is natural that the effects which this cauſe may produce upon the parts moſt contiguous to thoſe which receive the ſhock, ſhould firſt engage our attention; ſuch as thoſe which concur in the formation of the ancle joint.

The manner in which the lower extremities of the bones of the leg are articulated laterally with the aſtragalus, the extent of ſurface which this bone preſents to the articulating cavity which receives its upper part, the motion of the other bones of the tarſus with which it is articulated, the great number of ligaments which unite theſe bones to each other, every circumſtance ſhews us, on the part of nature, a multiplicity of contrivances employed to elude, in the beſt manner, the effects of counter-ſtrokes in the articulation of the leg with the tarſus; inſomuch, that although, in leaps or falls upon the feet, it be the joint neareſt to the part

part receiving the ſhock, it ſeldom ſuffers any injury from it, this joint hath ſometimes, however, experienced miſchiefs originating from ſuch a cauſe.

A young man, in leaping from about eight feet high, having reſted much more on the left, than on the right foot, felt, at the inſtant, a pain, which though not violent, was ſucceeded by a numbneſs, and a little difficulty in motion. The vivacity of youth made him pay little attention to theſe ſymptoms which were at firſt ſlight; but the pain, as well as the difficulty of motion afterwards increaſing, and the foot being much ſwelled about the joint, he applied to a ſurgeon, though not till about two months after the accident. Every mode of relief ſuppoſed to be beſt adapted to the caſe was tried in vain for four months; the miſchief increaſed. Several abſceſſes were formed in the vicinity of the joint, which being opened, were found to communicate with the inſide of the articular cavity, into which the probe might be eaſily paſſed. The remedies moſt proper for the patient in his preſent ſtate, having been tried without effect, and the fever increaſing, it was reſolved to amputate his leg. Upon examining the joint, I found the aſtragalus, and the articulating ſurfaces of the bones of the leg, affected with caries.

A few bleedings in the firſt inſtance, above all things reſt, and the application of reſolutive ſpirituous topics to the part, would certainly have prevented thoſe ſymptoms which led to the amputation of the limb; theſe are the means at leaſt, which I have always employed, with the greateſt ſucceſs, in ſimilar caſes. It muſt, however, be acknowledged, that ſpirituous reſolutive topics are not always proper. They ſhould be laid aſide whenever the pain is conſiderable, and cataplaſms made of the pulp of emollient plants ſhould be ſubſtituted for them; and when the pain is aſſuaged, embrocations with the ſaturnine ſoap may be uſed, or compreſſes dipt in water quickened with ſea ſalt, and with ſalt ammoniac, to which a little brandy being added, may be applied to the part. It is very unfrequent in leaps or falls on the feet, attended with bad ſymptoms, that the foot ſhould have borne perpendicularly enough on the ground, to occaſion theſe ſymptoms always to ariſe from the effects of counter-

counter-ſtrokes in the joint: if the foot be twiſted ever ſo little to one ſide, there will be, an extenſion of the ligaments on the oppoſite ſide; there will be, what is called a wrench, and this accident can at moſt only be reckoned an effect of the counter-ſtroke taken in its moſt extenſive ſenſe: the curative indications are, however, the ſame as thoſe which have been juſt mentioned.

I ſhall only obſerve, that whenever, notwithſtanding the uſe of theſe means, there ſhall remain, after the ſhock in the joint with extenſion and bruiſe of the ligaments, a permanent ſtiffneſs and ſwelling of the ſurrounding parts, oily and mucilaginous liniments, ſuch as thoſe of the unguentum althææ, animated however with a ſmall quantity of brandy, may be tried with effect; or liniments made with the marrow of animals, quickened alſo with the addition of ſome ſpirituous topic. The part may likewiſe be bathed in tripe liquor, or in warm animal blood; and if all theſe remedies ſhould prove inſufficient to reſtore the joint to its ſupplenefs, and to diſſipate the ſwelling of the ligamentous and tendinous parts that ſurround it, no delay muſt be uſed in pumping artificially upon the part with hot water animated with ſea ſalt and ſalt ammoniac; or in ſending the patient to the waters of Aix-la-chappelle, Bourbon, Bourbonne, or any other of the ſame kind. In caſes of relaxation of the ligaments, and habitual pain in the parts about the joint, with a partial anchyloſis, complaints which are alſo often the conſequence of counter-ſtrokes, I have likewiſe uſed the following remedy with much ſucceſs. Let the joint be ſurrounded with a bag full of plaiſter of Paris in powder, to which a fourth part of ſea ſalt and of ſalt ammoniac muſt be added, taking care to heat the bag before its application, which muſt be frequently renewed. I have alſo employed with effect, a cataplaſm made with the pulp of the roots of the conſolida major, mixt up with honey, in equal parts, and ſpread upon tow. What is here preſcribed for the ancle joint, is equally proper for the other parts of the body, whenever the effects of counter-ſtrokes ſhall leave ſymptoms behind them which may require the uſe of ſuch means. I ſhall therefore avoid repeating them, and ſhall only hereafter indicate thoſe remedies that are the beſt calculated to relieve the urgent

ſymptoms,

ſymptoms, taking it for granted, that the caſes, in which the application of any of the different topics here propoſed may be of advantage, will not be overlooked.

The counter-ſtroke in the ancle joint, may alſo give riſe to a fracture of the fibula, the lower extremity of which, being forced a little to one ſide in an oblique fall on the feet, reſiſts, while the weaker part of the bone gives way and is fractured, without however occaſioning a luxation of the foot ſideways. I have met with more than one inſtance of ſuch fractures; for which reaſon, in all accidents of a fall upon the feet from any height, or even of a wrench, we muſt always examine whether the injury we perceive about the joint, be not complicated with a fracture of the fibula. It is rather difficult to diſcover this accident, when the lower part of the leg has begun to ſwell; the turning of the ſole of the foot a little inwards, may be the effect of the extenſion of the ligaments, or of a diaſtaſis, and not be an indication of the fracture of the fibula, which we muſt endeavour to find out by ſome more certain ſigns. The beſt way of doing this, is to graſp the lower part of the leg with one hand, while, with the other, we move the tarſus to each ſide; and with a little patience and habit, we ſhall diſtinguiſh the crepitation of the bone, which is the pathognomic ſign of the fracture. The following fact will ſhew how neceſſary it is to make this diſcovery. A maſon, having made a falſe ſtep, felt an acute pain about the external ancle, which he thought to be merely the conſequence of a ſlight ſprain, and paid no great attention to it; he even continued to work, notwithſtanding the ſwelling which came on the part, and the increaſe of the pain, which however became at length ſo violent, that he was forced to give over work on the third day after the accident; but not having recourſe to any chirurgical aſſiſtance, he abſtained only partially from motion, and applied, merely according to his own ideas, different poultices upon the part. At length being obliged to come to the hoſpital, he met with every aſſiſtance which his caſe required; but it was no longer time to think of diſcovering the fracture, the ſwelling was conſiderable, and already announced a ſuppuration formed about the joint, which ſoon manifeſted itſelf on the application of remedies proper

per to forward it. The abſceſs was properly opened, and the ſurgeon, examining with his finger the bottom of it, found that the external ancle was broken off. Notwithſtanding the good conſtitution of the patient, the free openings that were made, and the careful uſe of all the means that were the beſt calculated for his relief, yet he went through a ſeries of accidents, which obliged him, about two months after, to ſubmit to the amputation of his leg, as the only way to ſave his life.

But let us ſuppoſe that we ſhould be called in time, and that the fracture of the fibula ſhould be diſcovered, the treatment proper for ſuch an accident is too well known for me to dwell upon it here. Let me only be allowed to obſerve, that in the firſt inſtance, we muſt carefully avoid applying a circular bandage on the fractured part. It is, indeed, evident that ſuch a mode of proceeding tends only to puſh the fractured parts of the fibula inwards againſt the tibia, which is by no means the intention we ſhould have in view: on the contrary, we muſt endeavour to keep them in appoſition to each other, by preſerving the natural diſtance between the two bones; and in order to effect this, we muſt firſt place, both on the outſide and on the inſide, on the ſpot that anſwers to the interoſſeous ſpace, a ſlip of linen of a certain thickneſs, or a narrow ſplint well covered, in order that the circular bandage to be applied immediately over, may preſs a ſufficient quantity of fleſh between the tibia and fibula, to keep the fractured parts of the latter in exact appoſition, and at a proper diſtance from the tibia. This mode of binding up the limb, anſwers nearly the ſame purpoſe, as if the circular bandage were put round the ſingle bone fractured, which cannot be done. It is from having been witneſs, both to the accidents which have ſometimes ſucceeded the immediate application of the circular rollers in fractures of the fibula [d], and to the good effects of ſplints firſt applied, that I inſiſt upon this precaution, which is alſo indicated in compound fractures of the leg, which are themſelves often the reſult of counter-ſtrokes.

A man carrying a load, upon a ſloping ground, made a haſty ſtep, or rather a kind of ſpring, in which the whole weight of his body bore

almoſt entirely upon the right leg; the motion, loſing itſelf in the ancle-joint, produced no apparent miſchief there; but the tibia, the fibres of which are naturally rather arched forwards, gave way, and was broken juſt below its middle. The upper end of the fractured bone pierced the integuments, and purſuing the oblique direction of its motion, fixed itſelf in the ground.

This was a kind of counter-ſtroke, the mechaniſm of which is very evident, and for which it is eaſy to point out the means of cure; they are the ſame as thoſe that are proper for every compound fracture of the leg, though ariſing from another cauſe. Accordingly, without conſidering the mechaniſm or cauſe of the fracture, I only attended to the circumſtance of reducing it properly; this was done very exactly, after having previouſly ſet the integuments free, which were much upon the ſtretch. After this, the eighteen-tailed bandage was applied according to the rules of art; the patient was blooded, and reſtrained to a proper diet. At the uſual period the ſuppuration came on, which from the fourth to the eleventh day, was plentiful. The portion of the tibia that was bare, had no unfavourable aſpect; the patient's pulſe and countenance were good; notwithſtanding which he began to experience ſome ſhiverings; on the eleventh day he grew delirious; and on the twelfth, he had ſome convulſive motions in the lower jaw; a fever came on; a change took place in the limb; the ſymptoms were all aggravated, and he died on the fourteenth day from his accident [c].

A ſtudent of ſixteen years of age, in leaping a ditch, fractured his leg by the ſame mechaniſm as the man who was the ſubject of the preceding obſervation. The bones had alſo pierced the ſkin, and the youth being carried home to his parents, the fracture was very exactly reduced; he was blooded, and confined to a proper diet. He was attended very aſſiduouſly by one of my brethren in the profeſſion, and myſelf; on the twelfth day, he was again ſeized with convulſive ſpaſms in the lower jaw, accompanied with an obſcure delirium; and on the thirteenth, he died. He is one of the three patients ſpoken of in the preceding note.

The

The tibia, in particular, may experience, from the effects of a counter-ſtroke, another kind of fracture, of which the other bones are certainly but little ſuſceptible. At leaſt it does not appear impoſſible to me, but that, in a violent ſhock on the tibia, the compact ſubſtance of this bone may reſiſt, while there may be a fracture in the tranſverſe bony fibres, which compoſe either the ſpongy or the reticular ſubſtance. May not a rupture of ſome of the fibres of this laſt ſubſtance be occaſioned by a fall on the feet, or by leaping from a certain height, while the body of the bone ſhall remain entire? May not an injury of this kind give riſe to an abſceſs in the cavity of the bone, and to all the miſchiefs which muſt attend ſuch a complaint? The following fact ſeems to ſpeak in favour of what is here advanced.

A young man, of five and twenty years of age, having received a violent blow on the broad ſurface of the left tibia, had nothing more than a contuſion externally without fracture, which ſoon gave way to ſpirituous topics that were applied to it. He ſtill continued, however, to feel an obtuſe kind of pain, which ſeemed to come from the inſide of the bone. He paid little attention to it for four or five months; but the pain, which then became more acute, was accompanied with a ſwelling of the bone, which increaſing gradually, produced an inflammation of the perioſteum and integuments, the matter of which burſting of itſelf, left a fiſtulous opening externally (f). By paſſing a probe into this opening, it was found to penetrate into the cavity of the bone. The patient being properly prepared, the exoſtoſed part of the tibia was laid bare throughout its whole extent; the crown of a trepan was applied over the fiſtulous orifice in the bone, and the parts ſurrounding the exoſtoſis, were removed by the gouge, chiſſel, and mallet. By theſe different proceedings, an opening was made through the bone, (which, though exoſtoſed, was very hard) ſufficiently large, to enable the operator to extract a piece of bone, eighteen lines in length, which being inſulated in the medullary cavity, afforded us an inſtance of a true internal exfoliation (g).

With respect to simple and compound fractures of the leg, they are most commonly the effect of counter-strokes, since all those which happen in the instance of falls, are seldom the result of a blow immediately applied to the part of the bone that gives way. But as they require no other treatment than that which is equally applicable to fractures in general, I shall proceed immediately to consider the effects of counter-strokes on the joint of the knee.

Although this joint may sometimes be exposed to the effects of counter-strokes, it must however be acknowledged, that, in cases of falls on the feet, the great surface by which the os femoris and the tibia are in contact with each other, and the intervening cartilage which is met with in the joint between these two bones, are contrivances well calculated to elude the effects of counter-strokes which the joint might suffer. The circumstance which renders these effects less frequent, and less to be apprehended, is, that the shock must be very violent in order to produce any mischief; and this could not be in the instance of leaps, or falls on the feet, unless the whole weight of the trunk bore directly upon the articulating surfaces of the tibia; that is to say, unless the thighs and the trunk, at the instant of the shock, should maintain that rectilinear position which would make the line of gravity of the upper parts bear upon the articulating surfaces of that bone. It is evident that such a position must be very difficult in a part which has so many joints and bendings as the trunk, and the inflections of which depend upon such an infinite number of muscles. But supposing even this position to exist, the effects of it would not be felt in the knee joint; they would rather take place in the articulation of the thigh with the os innominatum: the head of the thigh bone might be separated, and its neck fractured, on account of the oblique direction with which the weight of the body bears upon these parts; or if the shock were not violent enough to produce such effects, it might occasion a contusion in this joint. It might even happen, from the position above supposed, that the motion of the head upon the spinal column being suddenly stopped, might occasion a mortal commotion in the brain, even in those cases where the shock of the

the os femoris upon the tibia would not be ſufficient to produce the leaſt miſchief at the part where theſe bones are connected. Notwithſtanding this, the knee joint is much expoſed to the effects of counter-ſtrokes; but they are chiefly occaſioned by falls upon the knee, or blows upon the patella.

Reaſon admits the poſſibility of counter-ſtrokes with bad conſequences, in this part, and facts confirm it.

A lad, of thirteen or fourteen years of age, having received a blow with a wooden ſhoe on the knee, while the leg was half bent, the contuſion was ſcarce felt externally, notwithſtanding which, he experienced at the inſtant, a ſharp pain, which ſeemed to come from the inſide of the joint. This pain was ſoon relieved; but he ſtill continued to feel it in ſome degree, and a tumour appeared, which increaſed gradually, with a difficulty of walking. A fever came on, and the pain grew more violent about a month after the accident. It was at this period that the patient, who had hitherto received ſcarce any aſſiſtance, came into the Hoſpital, and was under my care. A few days after, the fluctuation being evident in a certain extent of the tumour, it was opened, and a conſiderable quantity of very fluid matter was diſcharged. It was thought at firſt, that it came only from under the integuments; but becoming more and more ſerous afterwards, and the wound not healing, miſchief was ſuſpected within the joint; and in order to determine the point, the bottom of the abſceſs was completely laid open; upon which a ſmall ſinus, leading into the joint, manifeſted itſelf. In vain, after this diſcovery, were all poſſible means tried to cure this young man; deterſive injections, a proper poſition of the limb, dilatation and opening of the capſular ligament, every thing proved unſucceſsful. It being no longer poſſible to preſerve the patient's life without amputating the thigh, which his parents would not conſent to, he died ſome time after. The joint being opened, manifeſted a very advanced caries of the articulating condyles of the leg and thigh, with an almoſt total deſtruction of the crucial ligaments. The internal ſurface of the patella was affected only with a ſu-

perficial caries; and its external ſurface, which had received the ſtroke, had experienced no kind of alteration.

Effects ſimilar, or nearly ſo, of counter-ſtrokes in the knee joint, would undoubtedly occur more frequently, after violent falls on the knees, or ſharp ſtrokes on the patella, if proper means, which readily preſent themſelves to the ſurgeon, were not uſed to prevent theſe conſequences. Reſt is the firſt of the remedies which it is proper to have recourſe to in theſe caſes; and the ſingle precaution of avoiding, for a few days, every kind of motion of the knee joint, aſſiſted with two or three bleedings, and the uſe of ſome emollient and anodine embrocations, ſuch, for inſtance, as the balſamum tranquillum, or the application of ſome reſolutive cataplaſms, would probably have prevented the miſchiefs which I have juſt been giving an account of.

But the following caſe, is one, which more particularly proves, that falls upon the knees, do not always confine their effects to injuries within ſide the joint.

A woman, about fifty years of age, was brought to the Hoſpital after a fall upon the right knee; the patella was not fractured, but the parts ſurrounding it were much ſwelled; and the pain ſhe felt in the motions of flexion and extenſion [b], might have been ſuppoſed to ariſe only from the violent contuſion which the external parts had ſuffered. By careful examination, however, and repeated trials, I diſcovered an evident fracture of the lower part of the thigh bone, or rather a ſeparation of its condyles. Fractures of the thigh very often ariſe from a ſimilar cauſe; the kind of arch formed by the thigh bone, renders it, notwithſtanding its ſtrength, very liable to fracture, when in falling from a certain height, the inferior extremity of this bone is ſuddenly checked, while its upper part is ſtill preſſed upon by the weight of the whole body in motion. The mechaniſm of the fracture which then takes place, is eaſily underſtood; and the method of cure which it requires. It is exactly the ſame as if the fracture had been produced by a blow applied immediately to the

the broken part. The treatment proper for theſe accidents is too well known, to make it neceſſary for me to enter into any details upon the ſubject. There is one obſervation, however, to be made; which is, that in a fracture from a counter-ſtroke, the bone being broken at the inſtant that the force which occaſions the fracture, is ſuperior to the reſiſtance of the bone, the reſt of the motion may be ſpent on other parts; while there are caſes, where the ſhock, being applied immediately to the part where the fracture happens, continues to exert all its action upon the ſpot itſelf, after having produced the principal injury we have been mentioning. This circumſtance may deſerve ſome conſideration reſpecting the cure of theſe accidents.

Although moſt of the fractures happening to the body of the thigh bone may be the effect of counter-ſtrokes, they are not, however, always owing to this cauſe. But the ſame cannot be ſaid of fractures which happen to the neck of this bone, ſince theſe are never the conſequence of a blow received immediately upon the part. The circumſtances under which this fracture uſually occurs, demonſtrate ſufficiently that it muſt always be the effect of a counter-ſtroke. It hath often been produced by a fall upon the great trochanter; and it is ſometimes occaſioned by a fall on the feet, or on the knees. It may be obſerved however, in this reſpect, that the fracture of the neck of the thigh bone will ſcarcely happen, if the two knees, or the two feet, bear at once and equally upon the ground, even ſuppoſing the body to be maintained in that ſtraight line which would make the whole weight of the upper parts preſs upon the heads of the thigh bones; and this, 1ſt, becauſe the effect being divided between the two thigh bones, would be leſſened; and 2dly, becauſe this effort being conveyed obliquely over each of the heads of theſe bones, the oſſa innominata may, in ſome meaſure, glide over them [i]; a circumſtance which will render the fracture of the neck of the thigh-bone more difficult. But when the weight of the body bears only upon one extremity, although the fall be not even from any great height, yet the motion of the upper parts being entirely ſpent upon the neck of the thigh bone, which is in an oblique direction to the line of gravity paſſing through

through the head of that bone; and the os innominatum not being able to glide over that head, becauſe it preſſes upon it perpendicularly, this gives us the reaſon, why the neck of the thigh bone is more readily broken, under this circumſtance than under the former. Suppoſe the quantity of motion to be abſorbed were the ſame in both inſtances, a fall, or a violent blow on the great trochanter, may likewiſe, and in fact often doth produce this fracture. In the accident of falling on the feet or on the knees, the inferior extremity of the thigh bone being ſtopt, while the head of it is greatly preſſed by the upper parts in motion, tends more and more to form the arch, and breaks the bone at its neck, where the arch is already begun. In the inſtance of a fall on the great trochanter, on the contrary, the head of the bone reſiſting in its cavity, while the moſt prominent part is ſtricken externally, the intermediate piece, which is the neck, tends to reſume the ſtraight line, and is fractured by a mechaniſm the reverſe of the former. But ſtill the accident is the ſame in both caſes, and requires the ſame treatment. The proper modes of reducing this kind of fracture, and thoſe which can beſt maintain the reduced pieces in their ſituation, are then to be adopted. Theſe are fully diſcuſſed in Mr. SABATIER's paper in the fourth volume of the Memoirs of the Royal Academy of Surgery, at Paris. I ſhall only add to the wiſe precepts contained in this paper, that beſides the junk placed on the internal part of the thigh, it will be proper to place two other junks on the outſide, which extending from beyond the feet, proceed far above the hips, paſſing one above, the other below the great trochanter. The upper extremity of theſe junks being faſtened by a bandage paſſed round the body and the hips, the motions of the thigh are by this contrivance admirably well confined. By this additional precaution, accompanied with the moſt abſolute reſt, I have ſucceeded in curing, with tolerable eaſe, ſome fractures of the neck of the thigh bone, which have left only a very ſlight degree of lameneſs after them. It will be proper alſo to recollect, that this fracture may be complicated with contuſion in the joint, or on the great trochanter; and that this complication requires attentions which I ſhall have occaſion to ſpeak of hereafter.

It

It muſt not however be ſuppoſed, that a fall, or even a conſiderable ſhock on the great trochanter, are always capable of producing a fracture of the neck of the thigh bone. In order to accompliſh this, it is neceſſary that the direction of the ſhock ſhould coincide with the force of the motion impreſſed upon the part, if this motion be made in the direction of the fibres of the neck of the thigh bone; otherwiſe, the head of this bone would ſooner be cruſhed againſt its cavity, or the cavity itſelf would be broken, rather than the neck of the bone. But if the direction or ſum total of the motion be ſuch, that the fracture cannot be the reſult, then the counter-ſtroke produces another kind of injury, frequently more dangerous than the fracture; that is, the contuſion of the joint, and particularly the ſqueezing or bruiſing of ſome of the parts that are contained in it. The round or inter-articular ligament, which, in progreſſive motion, is never ſqueezed, may become ſo in a fall, or in a ſhock upon the great trochanter, when the direction of the motion tends forcibly to puſh the head of the femur immediately upon the part from whence this ligament proceeds. The ſynovial glands, which form a conſiderable maſs in this joint, may alſo be roughly ſqueezed, between that part of the cavity which they occupy, and the head of the bone driven with force againſt them; hence will ariſe accidents proportioned to the nature of the injury done to the joint.

In the firſt inſtance, pain, ſwelling and inflammation of the parts contained within the joint, always manifeſt themſelves, accompanied with a difficulty of motion in the limb; and the intenſeneſs of the ſymptoms is proportioned to the violence of the ſhock, and to the greater or leſs irritable ſtate of the patient. The pain is often acute in the beginning, and is attended with a total inability to move the limb. At other times, the pain is dull, ſo as, at firſt, ſcarcely to engage the attention of patients: they continue to walk, though with ſome difficulty; yet ſtill they keep upon their feet, and ſometimes perſiſt in hard labour. This difference may ariſe from the nature of the parts bruiſed. I ſhould imagine, that when the ligament is bruiſed, the pain and other ſymptoms are more violent, and that the contrary happens when the ſynovial glands have

have partaken of the injury. The complaint which is the consequence of this last accident, may be ranked in the class of chronic disorders. The glands tumefy, and sometimes secrete a synovia, which partaking of the distempered state of the organs that supply it, is not entirely absorbed, and may produce a dropsy of the joint, a partial anchylosis, or a luxation from relaxation [k]; or else this liquor degenerating, becomes acrimonious, destroys the cartilage lining the surface of the joint, and the head of the bone; the articular and capsular ligaments are corroded with caries, and in process of time, an abscess is formed externally, the opening of which serves only to hasten the death of those who are affected with it.

It may also be presumed, that the contusion of the cartilages themselves, and that of the bones, which may very possibly be the consequence of a violent shock in the joint, may sometimes be the cause of all the mischiefs within. Those cases, undoubtedly, in which the progress of the symptoms is very slow, afford us instances of similar contusions. The following fact seems to corroborate the preceding observations.

A woman, about eight and twenty years of age, laden with a basket full of bottles, having jumped down a few stairs in going into a cellar, preserved the center of gravity of the upper parts upon the left thigh and leg so well, that she kept herself from falling; but she experienced, in the inside of the joint of the hip, a violent shock, which was, however, attended only with a very bearable degree of pain, since she was able to continue her ordinary work for more than a fortnight, without complaining. But she still felt, in walking, a pain which gradually increased, from the continual exercise she was obliged to use in her capacity of servant: the difficulty of motion increased with the pain; and both the one and the other, three months after the accident, were grown so much worse, that the woman was no longer able to support herself upon that limb. At this period she came into the hospital where I attended; different embrocations were used to the upper part of the thigh, but without any effect; resolutive, anodyne, and maturating cataplasms were then applied, because a tumour manifested itself at the upper posterior, and

external part of the thigh, which ſeemed tending to ſuppuration. A fever came on; and when the abſceſs became evident, all the openings and counter-openings were made, which the ſinuſſes the pus had formed, required; the matter which came out, had no kind of offenſive ſmell: it brought away along with it ſome ſmall bony particles, and an oleaginous fluid floated on the ſurface; the inciſions were lengthened as much as it was thought neceſſary, ſetons were paſſed, and during the courſe of the treatment, vulnerary and deterſive injections were tried, ſuch as were imagined to be beſt ſuited to the ſtate of the parts. At different intervals, ſmall portions of bone came away, ſeparated either from the head of the thigh bone, or from the cavity of the joint, into which ſeveral of the ſinuſſes penetrated. A ſlow fever, and a maraſmus, which is its uſual attendant, deſtroyed the patient, between three and four months after her admiſſion into the hoſpital. Upon examining the ſeat of the diſeaſe, I found the capſular ligament almoſt deſtroyed, the round ligament totally conſumed, the head of the thigh bone carious in all its ſurface, and even to a conſiderable depth in its center; the cavity of the joint was alſo attacked with caries throughout its whole extent; and laſtly, its cartilaginous border was completely deſtroyed. The following is an inſtance of miſchiefs nearly ſimilar, produced by a fall upon the great trochanter.

A man about forty years of age, having ſlipt down upon the great trochanter, felt a ſharp pain which obliged him to ſtay at home for a few days; but the pain being relieved, he choſe to return to his buſineſs, and walk about, which however he could not do without pain, or without ſome kind of difficulty, which he endeavoured to ſtrive againſt for about a fortnight; but the pain encreaſing, he was obliged to take to his bed, and to apply for relief in the country where he was. All the means employed during three months, were ineffectual; the upper, poſterior, lateral, and external part of the thigh was much ſwoln; and every motion attempted to be given to this extremity, was very painful to him. When he was brought into the hoſpital, it was ſoon perceived that there was matter formed in the vicinity of the joint; ſo that the ſurgeon formed a very unfavourable prognoſtic of the caſe. Several inſtances having ſhewn

him, that these diseases were incurable, in which ever way they were treated, he had almost resolved to leave this case to the efforts of nature alone. The fluctuation of the pus being, however, manifest, he determined to give vent to it by a suitable opening; the pus which came out at first, had no sort of bad smell, as in the preceding observation; but that which flowed at the subsequent dressings, was both great in quantity, and offensive; several sinusses led to the head of the thigh bone, and into the inside of the joint. The patient did not long survive this opening; the fever increased, the discharge became serous and very fœtid, and he died three weeks after the operation. Upon examining the joint, the same mischiefs nearly were found as in the preceding observation; only the capsular ligament still existed entire, at the internal part of the thigh; but it was much thickened and inflamed there.

In 1762, a man, of forty-five years of age, having fallen upon his right knee, at the time that he was heavy laden, could neither rise up again, nor support himself upon his thigh. Being carried home, some means were tried for his relief, notwithstanding which, the pain, with the inability of walking, still subsisted. After he had kept his bed about a month, he began to walk with crutches; a swelling came on in the neighbourhood of the joint, which terminated in an abscess that burst of itself, about a year after, and left two fistulous openings, which gave vent to a greater or less quantity of matter; frequently these orifices were even closed, and only burst open again, when there was a certain quantity of the pus collected. Three years having elapsed in this state, without his having been able to make any use of his limb, he came to the Hospital, having at the upper and back part of the thigh, a very considerable collection of matter, which not finding an issue through the openings already mentioned, was let out by a simple puncture with a lancet, that the patient might, if possible, avoid the melancholy fate of those who had been treated in a contrary manner. The matter, which flowed in great quantity, brought away with it, several fragments of bone; and the new opening added to the former, another fistulous orifice, which favoured the habitual discharge of the matter. The patient survived

vived the operation ten months; and upon examining the part, the head of the thigh bone was found completely ſoldered with its articular cavity; each of them preſenting alternate aſperities and cavities, which formed reciprocal indentations, as was evident, in ſeparating this connection by force. I ſhall farther obſerve, in this reſpect, that the thigh bone was anchyloſed at a right angle with the trunk; a circumſtance which had undoubtedly proceeded from the ſituation of the patient, whoſe head and trunk had been always much raiſed. I could adduce ſeveral other inſtances of ſimilar diſeaſes of the joint of the thigh with the os innominatum, which had been the conſequence of falls, either on the feet, or on the great trochanter, if theſe inſtances could give us any better information reſpecting the treatment neceſſary to be followed in ſuch caſes: the account of miſchiefs that have been obſerved, is undoubtedly uſeful, inaſmuch as it may ſuggeſt a rational and more certain plan of cure. But there is no need here of a greater number of facts, to determine the curative method to be purſued, in all circumſtances analogous to thoſe which I have juſt ſubmitted to the conſideration of the Academy.

When once we are acquainted with the mechaniſm of the counter-ſtrokes which the inſide of the cotyloide cavity may experience; when we know the direction of the motion which has been impreſſed on the parts by the body producing the ſhock, and can eſtimate nearly the quantity of this motion; and when we are converſant with the nature of the different parts which may be injured, contuſed, and ſqueezed by the ſhock; we are then able to determine, for the caſe that preſents, a method of cure founded on rational principles. Beſides, the accidents which the three patients have ſuffered, of whoſe diſeaſe I have given a ſuccinct account, are fully ſufficient to explain the curative indications to be purſued in all caſes of a ſimilar nature.

All the miſchiefs conſecutive to the counter-ſtroke in the joint, whenever it doth not produce fracture, can only proceed from the contuſion and colliſion of the parts contained in it; but this colliſion and contuſion can only give riſe to a pain more or leſs acute, to a ſwelling and an in-

flammation more or leſs conſiderable. The methods of cure to be employed in ſuch circumſtances, will be every thing that can alleviate the pain, and prevent the ſwelling and inflammation of the injured and bruiſed parts. Bleeding, reſt, and a regimen, are very proper to fulfill this double indication ; but the bleeding muſt be repeated ſeveral times, and even at ſhort intervals, if the pain ſhould be violent. Reſt muſt be abſolute, that is to ſay, that all kind of motion of the thigh upon the trunk, or of the trunk upon the thigh, muſt be prohibited till the time for the coming on of the bad ſymptoms be paſt ; becauſe however ſlight may be the friction of the contuſed and inflamed parts upon each other, it cannot but be extremely painful. With reſpect to the diet, that muſt be very ſtrictly obſerved.

It is undoubtedly for want of having taken theſe precautions in the firſt period of counter-ſtrokes in the joint of the thigh, that ſeveral patients have experienced that long ſeries of accidents that has brought them to the grave. Nothing is therefore more eſſential than to recommend lying in bed to thoſe who have received, by counter-ſtroke, violent ſhocks in the joint of the hip, and to confine the limb in ſuch a manner, that the head of the bone ſhall not be able to play in its cavity, more eſpecially when motion is extremely painful. This precaution, however, will not prevent us from having recourſe to repeated bleedings, to a diet more or leſs rigid, and to reſolutive topics applied round the joint. Although we can have no great dependence upon theſe topics, on account of the depth of the parts on which they are to act, yet they are not to be neglected. Spirituous, reſolutive applications, for inſtance, may perhaps convey their effects farther than we ſuppoſe. It is by purſuing this kind of treatment, which is that of all well-informed practitioners, that I have ſeen many of theſe ſhocks, though violent, unattended with any ſerious conſequence ; while others, which in the firſt inſtance ſeemed to require no attention, have produced the greateſt miſchiefs, for want of having taken the above-mentioned precautions in time. Reſt, above all, is the firſt of remedies ; and we cannot be too attentive in fulfilling this curative indication.

Suppoſing

Suppoſing however, that theſe means of cure ſhould not have been employed in time, or that they ſhould have been ineffectual, and that, to the primary accidents of contuſion in the hip joint, there ſhould ſucceed an abſceſs in the cavity, with deſtruction of the ligaments, caries of the articular ſurfaces, &c., how are we to proceed in this caſe? Muſt the patient be left to his deplorable fate, and muſt art remain inactive under ſuch circumſtances? We ſhould be almoſt tempted to anſwer in the affirmative, from what we have ſeen of the inefficacy of its efforts in ſeveral of theſe caſes. Art here conſiſts leſs in doing, than in avoiding to do what may be done; for a cure of this kind can only be the work of nature.

The inſtance we have given of the ſoldering of the thigh-bone with the os innominatum, ſerves at leaſt to ſhew us one of the reſources which nature reſerves to herſelf in deſperate caſes. Suppuration having once taken place in the inſide of the joint, the ſoft and flexible parts which border it and maintain the bones in their ſituation, having been deſtroyed, nature hath no means of preſervation left, but to form, by a complete anchyloſis, one continued bone between the trunk and the thigh; and ſhe tends to this end by the very mechaniſm, by which the deſtruction of the injured parts is effected. In conſequence of inflammations and ſuppurations formed in the joints, the ligamentous parts are inſenſibly conſumed, the bony and cartilaginous parts grow carious, and exfoliate in the ſame manner, and the fragments of them are drenched in the pus which is daily forming in the neighbouring parts attacked with ſuppuration. This pus, while it is not ſuſceptible of ſpontaneous alteration, from the acceſs of the air into the cavities where it is collected, is for the moſt part a mild and beneficial fluid, which, far from re-acting upon the bony and cartilaginous parts, takes charge, on the contrary, of their fragments, and ſerves as a vehicle to carry them out, after having, undoubtedly, contributed to detach them from the maſs that ſupplied them.

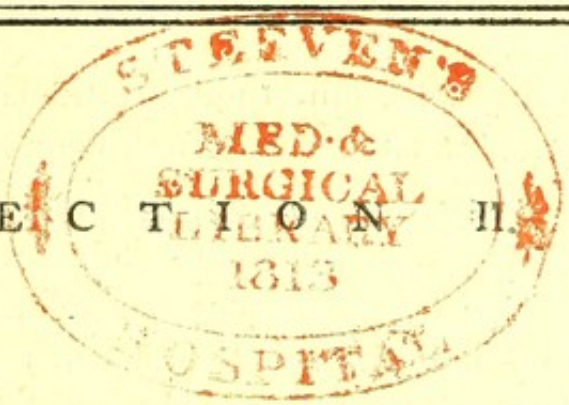
Now

Now we know, that when the organic action of the veſſels of the ſound bone hath accompliſhed, either in one piece, or in detached portions, the exfoliation of the bony parts that were diſeaſed, and that this exfoliation has been removed by art, or carried away by the powers of nature alone; we know, I ſay, that the ſound bony texture remaining, endeavours to unite itſelf, either to the neighbouring fleſh, the nature of which it hath almoſt adopted, or to other bony portions which may have undergone the ſame changes. It is therefore no way ſurprizing, according to the preceding obſervation, that the whole ſurface of the head of the thigh bone, and of the cavity which received it, having exfoliated by degrees, and the fragments of this exfoliation having been continually carried away by the diſcharge, theſe ſurfaces ſhould have been ſoldered together, ſo as to make but one common bone. Would it have been more ſurprizing if this great effect had been accompliſhed without the deſtruction of the patient? Can we be certain that the patient, from his conſtitution, was in circumſtances the moſt favourable for the ſucceſs of the event? Can we be certain, in a word, that the operations of nature, as well as thoſe of art, had not been counteracted by imprudent motions, as much during the three years that this man, who was very poor, languiſhed at home, as during the ten months he lived in the Hoſpital?

Diſeaſes of this nature do not therefore ſeem to me entirely beyond the reach of art. The long ſpace of time the patient lived after the evacuation of the pus by the fiſtulous openings, compared to the time thoſe patients lived, in whom large inciſions were made to procure this evacuation, ſeems, in ſome meaſure, to indicate the proper mode of proceeding in ſuch caſes. From this inſtance, and others, which I cannot quote upon this occaſion, becauſe they have no connection with the queſtion of counter-ſtrokes, I ſhould imagine, that when the original accidents have unfortunately failed of effectual relief, and that an abſceſs has been formed in the joint, which ſhall have manifeſted itſelf externally by evident ſigns; I ſhould imagine, I ſay, that we ſhould not be in haſte to give vent to it; and if it ſhould be thought indiſpenſably neceſſary to let out the pus, this ſhould only be done by puncture with a trocar. The pus,

in theſe caſes, ſeems to be a kind of bath for the bone, to which it owes all the advantages we have been deſcribing. So little ſhould we conſider the pus as a noxious fluid, that, in theſe inſtances, I have never found it tainted with the leaſt ſmell, even when I have let it out after the collection had been formed ſeveral months, and in quantities ſo conſiderable as to amount to two or three pints, among which ſeveral fragments of bone have been found floating. But it is neceſſary to repeat, becauſe it is an inſtructive obſervation, that in leſs than three days, when theſe abſceſſes have been largely opened, the matter, which at the time of opening was always of a proper conſiſtence and perfectly devoid of ſmell, has become thin and very fœtid. Perhaps by adopting the method I have propoſed, with reſpect to the time and manner of opening theſe immenſe abſceſſes which are formed in conſequence of violent contuſions in the joint of the hip [1], and by making the patient abſtain from all motion which might impede the operations of nature and thoſe of art, the complete anchyloſis of the articulating ſurfaces might be obtained, which, in the deſperate caſes we are ſpeaking of, is the only reſource we have to look up to. To what has been ſaid upon this ſubject, I ſhall add, that it would be proper to endeavour to put the lower extremity and the trunk in ſuch a poſition with reſpect to each other, that after the formation of the anchyloſis, the latter ſhould preſerve, as much as poſſible, a vertical direction with the limb.

SECTION




## SECTION II.

### THE EFFECTS OF COUNTER-STROKES ON THE SEVERAL PIECES THAT COMPOSE THE TRUNK, AND THE TREATMENT PROPER FOR THEM.

WHAT has just been said of the mischiefs not unfrequently produced on the lower extremities by counter-strokes, leads us the more naturally to examine what may be the effect of counter-strokes on some parts of the trunk, inasmuch as these extremities themselves are the medium through which the shock is transmitted to those parts. It may, indeed, happen, that in falling upon the feet, the thigh bone may resist, and yet that some of the lower pieces of the trunk may receive a counter-stroke capable of being injurious to them. The os innominatum, the os sacrum, and the last of the lumbar vertebræ, are the parts that are most liable to this accident. If it be impossible that the os innominatum should be fractured over the head of the thigh bone, as it may be presumed, yet that bone may, at least, sometimes experience contusions in its cavity; but

this accident is included in what I have ſaid of the miſchiefs that are done to the hip joint, when there is a violent counter-ſtroke felt in the cotyloidé cavity of the os innominatum.

With reſpect to the os ſacrum, though articulated by large lateral ſurfaces with the oſſa innominata; and though firmly attached to theſe bones by intermediate cartilages, and by very ſtrong ligaments, it is nevertheleſs liable to at leaſt partial disjunctions, from the violent counter-ſtrokes it ſometimes ſuffers. We have too many inſtances of this to call the matter in queſtion; beſides that, it is ſufficient to examine what happens in ſome falls on the feet, to be convinced of the poſſibility of a kind of disjunction of the os ſacrum from the os innominatum. Let us ſuppoſe that in one of theſe falls the direction of the motion ſhall be ſuch, as that none of the lower parts can have ſuffered either inflexion or fracture; in that caſe, all the momentum of the upper parts, multiplied by their weight, is ſpent upon the ſuperior part of the os ſacrum, which receives a moſt violent ſhock from above downwards, while the oſſa innominata remain unmoved. The os ſacrum is then driven like a wedge between theſe two bones; but the manner in which their articulating ſurfaces are conſtructed, the cartilage which lines them, the connections which unite theſe bones to the os ſacrum, and the lateral preſſure they then exert upon it, by means of the obliquity of the neck of the thigh-bone, are the reaſon that none but the moſt violent ſhocks can produce the kind of disjunction we are ſpeaking of; which might however be effected by another mechaniſm, if nature had not provided againſt it. In the caſe we have been ſuppoſing, the ſacrum, at the ſame time that it is driven as a wedge between the two oſſa innominata, endeavours to make a ſwing forwards, while it is effectually oppoſed, not only by all the ligaments which connect it at its upper part to the neighbouring bones, but alſo by the ſciatic, and iſchio-ſacro-ſciatic ligaments, which acting upon the ſacrum with a lever much longer than that of the power, on account of their attachment to almoſt all the lower extremity of this bone, are capable of oppoſing with greater force the ſwing forwards, which the ſhock, received at its upper part, tends to make it produce [m]; whence

whence we perceive how difficult it is, in the circumſtance of very rapid motion of the trunk upon the lower extremities, that any miſchiefs ſhould be produced in the parts which concur in the union of the offa innominata with the os ſacrum, eſpecially when both the extremities bear together.

But it may happen, that the ſhock ſhall be ſo violent, as to elude all the precautions taken by nature, and to produce, even in the caſe here ſuppoſed, if not a disjunction of the bones, at leaſt a divulſion of the ligaments that connect them, a contuſion of the cartilages, and of the bones themſelves; injuries which almoſt always produce very ſerious complaints; or it may happen, that the motion of the trunk, being ſtopped by one of the extremities only, the force ſhall be ſpent entirely upon the articulating ſurface of the ſacrum on one ſide, and that in the very diſadvantageous circumſtance of that bone being neither preſſed upon laterally, nor ſupported by the oppoſite ſide. Even admitting in this caſe that the velocity of the upper parts, multiplied by their weight, ſhould be reduced to a ſmall matter when it came to be applied to the os ſacrum, yet it would not be ſurprizing, that the parts which ſtrengthen the articulation of this bone, on which the whole effort is ſpent, ſhould ſuffer, at the inſtant of the ſhock, a very dangerous divulſion. All that has been ſaid here, is nothing more than an anticipated explanation of the mechaniſm by which ſhocks, conveyed by a counter-ſtroke to theſe parts, have given riſe to the miſchiefs that have fallen under my notice.

A man of forty years of age, having climbed a tree, fell upon his lower extremities from the height of about fifteen feet, and at the inſtant of his fall, had no other ſenſation than that of a general commotion, accompanied with a ſharp pain at the bottom of the ſpine. Being brought home, he would not ſubmit to be blooded, and only took a few bottles of vulnerary infuſions. The very next day, he went out; the little pain he felt, did not ſeem to him to merit any attention; he walked tolerably well for ſeveral days, and followed his buſineſs as uſual. But about the thirtieth day from his fall, he began to grow lame; ſtill however he felt

nothing more than a dull pain about the region of the os ſacrum, towards the right ſide; the pain increaſed, and on the fifty fifth day the difficulty of walking was ſo conſiderable, that he could not do it without a ſtick; urged by his complaint, which now began to make him uneaſy, he applied for aſſiſtance. Having a ſlight degree of fever, he was blooded; reſt, and the uſe of reſolutive fomentations, were preſcribed to him; and laſtly, embrocations made with the martiatum and oil of nutmegs, animated with ſalt ammoniac; but this was without any ſucceſs, the period of the efficacy of theſe means being paſſed. The complaint continued increaſing for five months, at the expiration of which, the patient could not bear in the leaſt upon the right limb; the motion of bending the thigh upon the trunk was both extremely painful and difficult; and a tumour began to manifeſt itſelf, which came from under Poupart's ligament. Such was the ſtate of the patient when he came to the hoſpital for relief.

The hiſtory of his diſeaſe left us no room to doubt of the nature of it, and unfortunately it afforded but a very melancholy prognoſtic. Suppurating cataplaſms were applied to the incipient tumour, which, during the ſpace of three weeks, increaſed but little. He was then ſeized with vomitings and hiccoughs, as if he had had a ſtrangulated rupture. The tumour being ſomewhat lengthened towards the inſide of the thigh, and there being no doubt of its containing matter, it was opened a few days after; a large quantity of white inodorous pus was evacuated; the patient was then free from fever; he was dreſſed with dry lint, and afterwards with digeſtive. The pus, which had been at firſt white, and devoid of ſmell, having become thin and very offenſive, vulnerary, deterſive and ſpirituous lotions, were injected into the abſceſs; and the dreſſings and injections were more frequently repeated; but all theſe precautions were fruitleſs, the fever increaſed with the putrefaction, and the patient died on the ninth day after the opening.

Upon examining the body, all the upper and lateral portion of the ſacrum on the right ſide was found carious, as well as the correſponding part

part of the os innominatum. There was an evident ſeparation between theſe two bones, and the whole of the ſacro-iliac ſymphyſis was attacked with caries. The laſt of the lumbar vertebræ was alſo carious at its lower part, and the ſuppuration had in great meaſure deſtroyed the pſoas and iliacus internus muſcles. Theſe miſchiefs were probably the reſult of the divulſion, which the parts, deſtined to ſtrengthen the union of the os ſacrum with the os innominatum on the right ſide, had experienced, at the inſtant of the fall [n]; and this divulſion muſt undoubtedly have been produced according to the mechaniſm above mentioned. With reſpect to the ſymptoms that ſucceeded, they are the neceſſary conſequences of the dull inflammation of theſe parts, and of the ſubſequent ſuppuration, and they might poſſibly have been prevented, if ſuitable means of relief had been timely adminiſtered.

A woman accidently jumped down a few ſteps, a ſhort time after having been delivered. At the time, ſhe felt nothing more than a trifling pain in the region of the loins, which ſome days after grew worſe, and was accompanied with a difficulty of walking, which increaſed gradually till ſhe could no longer ſupport herſelf upon the left leg. The pain ſhe ſuffered, though not very violent, was continual; and all theſe accidents were attributed to an overflow of the milk, the more readily, as the upper part of the thigh and the hip on that ſide began to increaſe in ſize. This woman, who had not been carefully attended to in the beginning, was brought to the hoſpital, after having kept her bed upwards of three months at home; and at that time, a very large abſceſs appeared to be forming at the back part of the buttock, the matter of which had made numberleſs ſinuſſes, which proceeded from the pelvis by the iſchiatic notch. This abſceſs having been properly opened, furniſhed a large quantity of pus of tolerably good quality, and devoid of ſmell; it ſoon however became thin, of a brown colour, and very fœtid; the fever, which had been more or leſs conſiderable during the diſeaſe, increaſed; a delirium came on, and the patient lived only eight days after the opening had been made. The examination of the body preſented the ſacrum, and the os innominatum on the left ſide, carious throughout the whole

of

of their correſpondent articulating ſurfaces; and in proſecuting our reſearches, we found the upper part of the ſacrum likewiſe attacked with caries, as well as the laſt of the lumbar vertebræ.

The nature of the cauſe, and the circumſtance in which the woman was at the time ſhe received the ſhock, together with the accidents ſhe experienced in the ſequel, every thing announces, that there was a kind of disjunction or divulſion of the ſacro-iliac ſymphyſis [o]. The two preceding obſervations would properly come in ſupport of the poſſibility of this disjunction from an external cauſe, if even it had not been evidently demonſtrated by a fact, in the caſe of a man named Binai, of which M. Louis hath given an account, in his hiſtory of the Royal Academy of Surgery [p].

From what has been ſaid, it is apparent, that in the caſe of a fall upon the lower extremities, when the motion is ſuddenly ſtopped, there muſt be many circumſtances united to occaſion ſuch a counter-ſtroke as ſhall be capable of accompliſhing the disjunction of the ſacrum from the oſſa innominata, or only a certain divulſion of the medium that connects them. But without a ſhock ſo violent as is neceſſary to produce ſuch miſchiefs, counter-ſtrokes may occaſion, in the neighbouring parts, injuries entirely as dangerous as thoſe, the unfortunate iſſue of which I have been mentioning. In a fall upon the two feet, which may have happened without fracture of any of the pieces that compoſe the lower extremities, without contuſion of the joints that are found in them, and even without any apparent divulſion of the ſacro-iliac ſymphyſis; it occurs but too frequently, that the whole effort of the counter-ſtroke bears upon the baſis of the os ſacrum, and upon the laſt of the lumbar vertebræ. In the fall upon the feet or upon the buttocks, for inſtance, it is very poſſible, that the motion of the upper parts upon the baſis of the ſacrum, ſhould be ſo rapid, that this baſis, the laſt vertebræ of the loins, and even the ſtrong and almoſt bony cartilage which unites theſe two bones, ſhall experience a degree of preſſure, ſufficient to diſturb their organization, and their internal texture; and conſequently to give riſe to ſubſequent

quent mischiefs of a very serious nature [q]. This assertion is not made without foundation; for I have found, that many of those disorders which are called abscesses of the psoas muscles, might with propriety be ascribed to the violent pressure of the last of the lumbar vertebræ upon the sacrum, &c. There is the greater reason to imagine this, because, in these kinds of abscesses, the fourth and fifth of the lumbar vertebræ are sometimes carious to a considerable depth, as well as the anterior and upper part of the sacrum; this is at least what I have observed in the bodies of several persons who have died in consequence of such abscesses. The following fact, which I have selected from among many others of the same nature that I have noticed, seems at least to confirm my conjectures upon this point.

A strong and vigorous man, forty two years of age, having leapt, in August 1765, from about eight feet high, felt at first, nothing more than a pain of a very doubtful nature, in the region of the loins. This pain was even dissipated a little while after; but it soon returned, and continued, though in a very moderate degree, upwards of a month. At the end of September, the pain increased by very perceptible degrees; and was much more considerable, particularly when the patient was coming down stairs. The primary cause of his complaint having escaped his memory, he conceived it to be the rheumatism; but time, and the proper means of alleviating his pains, having proved ineffectual, he began to be uneasy. His disorder now grew worse every day; a difficulty, and afterwards an impossibility of walking, came on; and in February, 1766, a collection of matter began to shew itself at the anterior, internal, and upper part of the thigh. This abscess was opened in March, and in a short time the patient experienced the same fate as the other two persons, whose cases I have given an account of. The examination of the body, presented a caries of the upper and fore part of the sacrum, and of the bodies of the two last lumbar vertebræ. Does not the slow progress of the disease seem to announce, that the suppuration and partial destruction of the psoas, were, in this instance, only secondary effects of the suppuration and caries of the neighbouring bony parts? These diseases may be alternately cause and

effect; and the caries of the ſacrum, and of the lumbar vertebræ, may give riſe to the pſoas abſceſs, as collections of matter in the pſoas muſcle may occaſion a caries of the ſpongy bones that are near it.

I ſhall alſo obſerve, that a palſy of the lower extremities may ſometimes be one of the effects reſulting from counter-ſtrokes upon the laſt of the lumbar vertebræ; and that the debility which theſe extremities experience, is the reſult of a gradual compreſſion which is then made upon the ſpinal marrow, and which is the conſequence of the miſchiefs going on, either in the cartilages, or in the bony ſubſtance of the vertebræ. Nothing can be more ſimple than this proceſs; the violent ſhock which the parts have ſuffered, cauſing them to ſwell, they muſt neceſſarily diminiſh the diameter of the channel of the vertebræ, and conſequently compreſs, in a greater or leſs degree, the ſpinal marrow. I have ſeen this happen to a young man of two-and-twenty, who, having fallen upon his buttocks, from the top of a ſhed, ſeemed at firſt to experience no remarkable accident, ſince he continued his work for at leaſt three weeks after, at the end of which, he complained of the increaſe of a dull kind of pain that he had always felt at the bottom of the loins, from the inſtant of his fall: he ſtill walked with tolerable eaſe; but this motion became more and more difficult: the lower extremities grew weaker by degrees, and at length totally loſt their power of motion, without the patient having been ſenſible of any great pain. Being brought into the hoſpital, and queſtioned with reſpect to the cauſe of his palſy, it was concluded, that it would ſoon be followed by an abſceſs of the nature of thoſe I have been ſpeaking of. Accordingly, about ſix weeks after, a tumour appeared projecting from under Poupart's ligament; this being opened ſome time after, when it became prominent outwards, the patient ſoon paid the tribute to nature. Upon examining the body, the two laſt of the lumbar vertebræ were found affected with caries; which in one ſpot penetrated even into the channel of the ſpinal marrow, while the pſoas and iliacus muſcles ſeemed likewiſe, in this caſe, to have ſuffered only ſecondarily. Abſceſſes originally formed in theſe muſcles, are not, however, unfrequent; and although they be only indirectly the reſult of a counter-

ſtroke,

ſtroke, it may not, perhaps appear improper to explain, in this place, in what manner a fall or an effort may give riſe to them.

In a falſe ſtep, or a fall upon the feet, if the upper parts do not bear perpendicularly upon the ſacrum, but if, on the contrary, they bear a little behind, the perſon then will fall backwards. To prevent this accident, the pſoas and iliacus internus muſcles, the fixed point of which is then at their attachment to the little trochanter, act, at the inſtant, with power and celerity upon the trunk, to concur in bringing back the line of gravity of the upper parts on the baſis of the ſacrum, upon the bones of the thigh; but the ſudden effort of theſe muſcles is ſometimes ſo great, that many of its fibres may ſuffer a rupture, which may give riſe to an inflammation, and an abſceſs in the ſubſtance of them, and afterwards to a caries of the neighbouring bones; a diſeaſe of ſo terrible a nature, that art hath as yet diſcovered no reſource againſt it. I have had ſo little reaſon to be ſatisfied with the methods I have tried, or ſeen tried, in a number of theſe caſes, that I can venture to affirm, that it is the beſt way to leave thoſe who are afflicted with this diſeaſe to nature, particularly when they are arrived to a certain period. The abſceſſes which come forward, then burſt of themſelves; they leave ſmall fiſtulous openings, and the patients may live, at leaſt for a certain time; whereas they all periſh in a few days, whenever theſe immenſe collections of matter are opened largely. It is for this reaſon I propoſe hereafter to open, only with a trocar, any abſceſſes of this kind that may come under my notice; for notwithſtanding what MAUQUEST DE LA MOTTE hath ſaid upon the ſubject, I have never ſeen one of them, the opening of which could have been reaſonably attempted, by plunging a ſcalpel into the abdomen.

It is not when counter-ſtrokes have given riſe to theſe extreme miſchiefs, of which I have been mentioning inſtances, that we can pretend to oppoſe their effects; the original accidents, are thoſe which we muſt particularly attend to relieve. But in order to do this ſucceſsfully, we muſt make ourſelves well acquainted with the mechaniſm of the counter-

ſtroke, we muſt be able nearly to eſtimate its power, we muſt know the nature and relative ſituation of the parts that have ſuffered; and from theſe preliminaries, we may form a proper judgement of the nature of the injury that has been produced at the inſtant of the ſhock. The method of cure then becomes rational, and leaves us no reaſon to apprehend thoſe errors which are the conſequence of empiriciſm and ignorance. With ſuch principles, the proceedings we are to adopt in counter-ſtrokes, the action of which bears upon the os ſacrum, upon the ſacro-iliac ſymphyſis, and upon the lumbar vertebræ, are already traced out for us. The kind of miſchief which ſuch a cauſe may produce upon theſe parts, requires bleeding, more or leſs repeated, according to the violence of the ſymptoms; reſolutive and ſpirituous embrocations, a proper diet, and laſtly, the moſt abſolute reſt. This cannot be too ſtrongly recommended in disjunctions or divulſions of the ſacro-iliac ſymphyſis; and in this caſe, compreſſes dipt in reſolutive and ſpirituous topics, and ſupported by a circular bandage applied moderately light, and paſſing over the hip bones, are precautions by no means to be neglected. It is alſo neceſſary to have recourſe to them in caſes where the counter-ſtroke hath produced miſchiefs among the lumbar vertebræ; but in this inſtance, the circular turns of the roller muſt be carried above the region of the loins; that part of the ſpine will be kept more ſteady by this precaution, and the bones which compoſe it will be leſs liable to be affected by motion, which is always hurtful in ſuch circumſtances. To theſe precautions we muſt add, that the horizontal poſition is the only proper one in theſe caſes; but we muſt take little account of the number of days the patient is confined to his bed; it is better to carry our precautions too far, than to be deficient in them. So many unfortunate perſons have been the victims of their own neglect in this particular, that the attention of practitioners cannot be too much fixed upon this point.

It is by the very ſimple means I propoſe, that after falls with counter-ſtrokes on the os ſacrum and the lumbar vertebræ, I have ſucceeded in relieving the firſt ſymptoms, which threatened ſubſequent miſchiefs as alarming as thoſe I have been mentioning: among ſeveral

others, I have ſelected the following remarkable inſtance of this. A young man, having fallen from the height of about thirty feet upon his buttocks, felt a very great pain in the region of the os ſacrum and of the loins. The ſecond, third, and fourth lumbar vertebræ, made even an evident projection outwards, and beſides the impoſſibility which the patient experienced of ſupporting himſelf upon his legs, they were attacked with a conſiderable numbneſs, and were deprived of their quickneſs of ſenſation. Repeated bleedings, a ſtrict diet, graduated and very thick compreſſes applied upon the projecting vertebræ, and ſupported by the circular turns of a bandage rolled very tight round the body; the attention of keeping the patient upon his back, with his head low, and a pillow under his loins; were the means by which this accident was perfectly cured, in leſs than ſix weeks. But the patient was more ſtrongly induced to maintain the poſition in which I had placed him, by the diminution of his pain upon being put into it. I obſerved alſo, in the firſt days after the accident, that the tighter the bandage was, the more he was relieved; for which reaſon, I ordered it to be frequently wetted with brandy, to prevent it from getting looſe; and when the effect was not anſwered by this contrivance, I made the whole bandage tighter by applying a freſh roller. The patient, who found himſelf daily growing better, attempted to riſe on the twenty-ſixth day; but his pains in the lumbar region returning, I confined him to his bed for ten or twelve days longer; and when he got up again, I adviſed him not to walk at firſt without the help of a ſtick, and to wear a tight bandage round his body, in order, for ſome time, to give greater firmneſs to the ſpine. A fall of this kind might have occaſioned a divulſion of the ſacro-iliac ſymphyſis, eſpecially if this young man, in falling, had pitched only upon one buttock, and upon the tuberoſity of the iſchium on the ſame ſide.

Although frequent inſtances occur, of the lumbar vertebræ being much expoſed to the effects of counter-ſtrokes, yet they are not the only vertebræ that experience the pernicious effects of a ſimilar cauſe; for it may act alſo upon the dorſal vertebræ, ſo as to produce very great ſubſequent

mischiefs. Lateral distortions of the spine, and its excessive projection outwards, have been often occasioned by a counter-stroke, the shock of which hath fallen upon these vertebræ: at least I have seen many deformed persons who had become so, only in consequence of falls they had been exposed to in their younger days. With respect to the method of cure to be pursued, it is almost entirely prophylactic; it is scarce of any utility, except in the first instance, and should be little different from that which is adapted to the complaints of which I have been giving the history. Bleeding, rest, and a circular bandage round the body, may be sufficient: it will be proper, however, in children, to add to these methods, the remedies calculated for the rickets, whenever there appears a tendency to this disease, which is itself often the only cause of these deformities. Absorbents, tonics, bitters, preparations of steel, and especially an abstinence from all acescent food, are then the most effectual remedies.

After having successively examined the effects of counter-strokes on the different bones which compose the pelvis, and the greatest part of the spine, it remains only, to complete this section, that I should trace these effects upon the other bones which concur in the formation of the trunk. Among these, the cervical vertebræ do not appear to me susceptible of the bad effects of counter-strokes; but this cannot be said either of the ribs or the sternum. That the ribs especially, may be fractured in a part distant from that which receives the shock, is a fact which stands in no need of being proved; fractures of the ribs, with projection outwards, are always the effect of a counter-stroke, to which their form renders them liable. The rib being stopped short, as it were, backwards, at the same time that it receives a considerable shock towards its anterior extremity, is fractured in the middle: this may also happen when the shock bears upon the cartilaginous part of the rib, or upon the sternum, provided the body that causes it, have some extent of surface, and shall strike with a certain velocity; but the mechanism of this fracture, and the treatment of it, are too well known for us to dwell upon. If the shock should bear upon the angular or middle part of the rib, even in the instance where the opposite side of the chest should lean against some resisting body,

body, no injury can be done to the ſternum, nor to the anterior part of the ribs; and then the fracture, which may happen at the part that receives the blow, is no longer the effect of a counter-ſtroke. It could only be claſſed among the effects of ſuch a cauſe, in thoſe inſtances, where it ſhould happen on the ſide oppoſite to that which received the ſhock; which is not impoſſible in the ſuppoſition of the trunk leaning againſt ſome reſiſting body; and in this caſe likewiſe, the beſt way of directing the cure is ſufficiently known. With reſpect to the ſternum, although from its ſituation and figure it ſhould not be very liable to the effects of counter-ſtrokes, yet it hath ſometimes happened, that a fracture of this bone has been produced by ſuch a cauſe, of which the following fact is an inſtance.

A maſon, eight and twenty years of age, having been brought to the hoſpital, after falling from the height of about fifty feet, it was found, upon examining him, that he had a fracture of the left thigh, and that the ſpinal proceſſes, of the laſt of the dorſal, and firſt of the lumbar vertebræ, were likewiſe broken. The fracture of the thigh being reduced, and the ſurgeon perceiving that the man could not bring his head forwards, examined in order to find out the reaſon of this, and diſcovered it to be a tranſverſe fracture of the ſternum, with a conſiderable interval between the firſt and ſecond piece of that bone. The patient when on the ground, was found lying upon his back, with his left leg under him; and upon the fore-part of the breaſt there was neither ecchymoſis nor excoriation, nor any mark which could induce a ſuſpicion that the fracture of the ſternum had been produced by a blow upon the part. The mechaniſm of this accident, appeared therefore ſo problematical to the ſurgeon, that he found it difficult to account for it; but a workman who was preſent, ſoon enabled him to ſolve this difficulty, by acquainting him, that the patient, at little more than one third of the courſe of his fall, had met with a projecting piece of ſcaffolding, which had given him a blow in the middle of his back. The ſurgeon, as well verſed in the practice as in the theory of his art, immediately concluded, that the fracture of the ſpinal proceſſes of the vertebræ above mentioned, and that

that of the ſternum, were the conſequence of this firſt ſhock, becauſe, in the inſtant that the body had been ſtopped in its fall by the middle of the back, the lower extremities on one hand, and the upper part of the trunk on the other, had preſerved a ſufficient quantity of motion to force the ſpine to ſuch a degree of extenſion, that the muſcles which go from the ſternum to the head, &c., being violently ſtretched, had effected the ſeparation of the firſt bone of the ſternum from the ſecond. This mechaniſm is too ſimple, not to be readily underſtood. With reſpect to the curative indications that preſented themſelves for this double accident, they were fulfilled by a method as eaſy as it was effectual; ſo true it is, that a man of genius always enriches the art, while he ſeems to ſimplify it. The enlightened practitioner of whom we are ſpeaking, ordered a hollow to be made in the bed, at the part correſponding to the fracture of the vertebræ; he placed thick cuſhions under the nates, with a pillow under the ſhoulders, and employed every precaution neceſſary to keep the ſpine conſtantly bent forwards, and to bring the head in the ſame direction: this he accompliſhed by attending only to the poſition of the patient. The elongation of the ſpine, which is never more conſiderable than in the ſtate of flexion, brought back, into their natural ſituation, the ſpinal proceſſes, which were a little turned to one ſide, and maintained them there by means of the conſtant tenſion of the ligaments and muſcles that are fixed into it. The upper portion of the ſternum was kept, by the ſame contrivance, in exact oppoſition with the inferior extremity; ſo that at the uſual period of the cure of fractures, the patient went out perfectly well, and without having ſuffered any ſymptoms, except ſuch as are uſual, and to remedy which, the proper methods had been employed immediately after the accident. I make no doubt but that many fractures of the ſternum have been produced by the ſame kind of mechaniſm, and which, for want of being known at the time, have given riſe to abſceſſes, and to troubleſome caries of the bones.

SECTION

## SECTION III.

### TO EXPLAIN THE EFFECTS OF COUNTER-STROKES ON THE UPPER EXTREMITIES, AND THE MEANS OF RELIEVING THEM.

ALTHOUGH the upper extremities, in caſes of leaps or falls on the feet, do not receive the firſt ſhock, yet they partake of it, at leaſt very often, in ſuch a manner as to ſuffer material injuries. If a perſon ſhould fall from any height upon the lower extremities, when theſe come to the ground, they have ſeldom the whole weight of the upper parts to ſupport, becauſe the line of gravity of the latter paſſing, for inſtance, along the fore part of the cotyloide cavity, the trunk and the head continue to fall forwards, and the hands preſent themſelves naturally to the ground, to ward off the violent ſhock which the head might receive, without this precaution of mere inſtinct. It is not neceſſary even, to confirm this obſervation, that the fall ſhould be from any height. If a man, in walking, doth but loſe his balance, he falls; if backwards, he throws his elbows and ſhoulders as far back as poſſible, in order to multiply

tiply his points of contact with the ground; if forwards, he presents his hands and knees for the same purpose; and if sideways, the elbow. Thus it is that we instinctively avoid the commotion of the brain or the fracture of the cranium; but nature very frequently can only ward off these accidents, at the expence of the parts of less consequence, which seem so voluntarily to offer themselves for the preservation of this important viscus. Accordingly, we have already seen what the lower extremities are exposed to suffer, in many cases, in taking their share of this preservative intention (P); and it is in endeavouring to accomplish the same end, that we shall find the upper extremities also exposed to injuries which are almost always the effect of a counter-stroke.

If the palms of the hands strike upon the ground in any fall whatever, these parts being suddenly stopped, the body is stopped at the same time; and the bones which compose them receive the shock of the upper extremity, which is itself acted upon by part of the trunk in motion. This kind of shock, which is a real counter-stroke, may, and sometimes does, produce mischiefs in the joint, a divulsion of the ligaments which connect the neighbouring bones, or a dislocation of the wrist; which last accident belongs to the effects of counter-strokes taken in the most extensive sense. It may however be observed, that some of these injuries are less frequent than they might be supposed to be, and that for reasons which are derived from the mechanism of the fall. The direction of the motion being then in a midway between the vertical and the horizontal line, the bones of the carpus are always pushed directly against the bones of the fore arm, and this same direction farther eludes the violence of the shock, inasmuch as the hands being able to slide on a little forwards, the motion is not so suddenly stopped as it would have been without this circumstance. But notwithstanding this, and the loose attachment of the scapula, which renders the application of the weight of the trunk gradual, a fall upon the hands will not unfrequently occasion, in the joint of the wrist, the injuries I have been mentioning.

The

The principal ſymptoms that characteriſe theſe injuries, are an acute pain, and a ſwelling, more or leſs conſiderable, with a difficulty of moving the part. If theſe original accidents be not relieved, an abſceſs, a caries, a complete or partial anchyloſis, may ſucceed; at leaſt I have ſeen inſtances of ſome of theſe terminations. The ſymptoms that firſt make their appearance, ſufficiently indicate the kind of remedies to which we muſt have recourſe; repeated bleedings, reſolutive topics, more or leſs ſpirituous; in certain caſes, emollients, and anodines in others; retentive bandages calculated to prevent every motion of the part; are the only means to be employed in the firſt inſtance. But when the primary ſymptoms are relieved, balſamic embrocations may be tried, ſuch as thoſe made with the *balſamum tranquillum*, the *martiatum*, and the oil of nutmegs animated with a little volatile ſpirit of ſalt ammoniac; or we may uſe the ſoap of lead, quickened alſo with the ſpirit above mentioned. I have employed this laſt with ſucceſs, in ſtiffneſſes of the joints, with enlargement. I have ſeen ſome complete and true anchyloſes, and two incomplete or ſpurious ones, in conſequence of counter-ſtrokes received in the joint we are ſpeaking of [1], which have all happened to perſons who had neglected to apply in time for proper relief.

But the effects of theſe counter-ſtrokes are not confined to the wriſt, they moſt commonly produce a fracture of the fore arm; and whether this fracture be ſimple or compound, it requires no other method of treatment than ſuch as is well known. It muſt only be obſerved, that as the bones are at ſome little diſtance from each other, it is neceſſary, before the circular roller be applied, to place two ſlips of linen of tolerable thickneſs, ſo as to anſwer to the inter-oſſeous ſpace, one on the out, the other on the inſide. This precaution is more particularly neceſſary when the fracture is in the middle of the fore arm, and if it be near the elbow joint, care muſt be taken not to put the arm in a ſling; it muſt, on the contrary, be kept extended, for reaſons which are very evident.

If inſtead of falling upon the hand, the perſon falls upon his elbow, and that the olecranon be not fractured, the inſide of the joint may experience a counter-ſtroke accompanied with ſymptoms more or leſs violent, and which may be attended with all thoſe fatal conſequences which I have mentioned in deſcribing the effects of counter-ſtrokes in the joints of the lower extremities.

In November 1768, I opened, in a young man of eighteen years of age, an abſceſs, the origin of which was in the elbow joint, and which had proceeded from a ſimilar cauſe. The patient had felt great pain at the inſtant of his fall; a conſiderable ſwelling had come on; and when I ſaw him, on the 17th day after the accident, he had a conſiderable degree of fever; it was in vain that I bled him twice, and applied anodine and emollient reſolutive topics to the tumour; it terminated in ſuppuration, and the fluctuation becoming evident a few days after, I delayed not the opening of it. The pus being mixed with a glairy fluid, and the introduction of my finger into the opening, aſcertained the ſeat of the diſeaſe. The patient ſeemed relieved for ſome days after the operation; but the bad ſymptoms ſoon returned, the fever increaſed, the diſcharge became fœtid; the edges of the wound were livid and much ſwelled; the patient was delirious; and during the ſpace nearly of three weeks, he ſeemed to be in too deſperate a ſituation for us even to be able to attempt amputation with any proſpect of ſucceſs. After this period, however, he grew better by degrees; the ſymptoms were relieved, and the wound being dreſſed with dry lint, was perfectly healed, without there having been any apparent exfoliation; there were even hopes, when the patient went out of the hoſpital, that the joint would ſtill retain a certain freedom of motion.

It ſeldom happens that miſchiefs are produced in the joints, unleſs in thoſe caſes where the ſhock is not conſiderable enough to occaſion a fracture; but let us ſuppoſe, that in a fall upon the elbow, the ſhock ſhould be ſufficient to produce a ſolution of continuity in the bone; it will either be the olecranon, or the upper part of the fore arm, which will yield to the

the immediate application of the force upon them; or elſe theſe parts will reſiſt, and the os brachii will be fractured by a counter-ſtroke, as it frequently happens. The os brachii will either be broken in its body, and then the curative intentions are too well known to be mentioned here, or elſe this bone may be fractured at its upper extremity, or its neck, and in that caſe we muſt take ſuch precautions as the ſeat of the fracture requires. Though the curative indications be the ſame as in all other fractures, yet the mode of fulfilling them is different. As it is impoſſible to ſurround the fractured part with a circular roller, after having put the bones into a proper ſituation, we muſt apply under the upper part of the arm, two thin compreſſes which muſt croſs each other on the fore part of the ſhoulder, while the axilla and the inſide of the arm muſt be defended with tow or lint, previouſly ſteeped, as well as the above-mentioned compreſſes, in a mixture of oil of roſes, the yolks of eggs, and brandy [u]. The arm muſt afterwards be brought cloſe to the trunk, while any hollows there may be between the arm and the trunk, either at the fore or the back part, muſt be filled up with lint or tow, which is alſo to be put round the upper part of the arm and the ſhoulder, and the arm is then to be kept in the ſituation in which it has been placed, by the circular turns of a roller paſſed round the body and including the arm, and by a bandage ſomewhat ſimilar to the capeline for the clavicle, taking care only that the roller ſhould be long enough to make a ſufficient number of turns round the body. The arm being thus immoveably fixt to the trunk, and the fore arm put in a ſling, nothing can prevent the re-union of the fractured pieces. It is by this very ſimple method, which is ſimilar to that of M. MOSCATE, that I have cured ſeveral fractures of the neck of the os brachii without the leaſt accident. The padding recommended by that able practitioner, is very well calculated to anſwer the ſurgeon's intentions in this caſe: and we may have recourſe to it, if we think proper, in preference to any other mode [w].

But the ſhock tranſmitted from the elbow to the os brachii, may leave that bone entire, and make uſe of it merely as a medium, by which the miſchief is conveyed to a greater diſtance. Thus it is that a fracture of

the proceſſus acromion of the ſcapula, is ſometimes produced: the following is an inſtance of it. In 1769, a man carrying a conſiderable load upon his left ſhoulder, having fallen upon the right elbow, or rather upon the upper part of the fore arm, while bent at right angles with the upper arm; the head of the os brachii was driven with ſo much force againſt the acromion, that the proceſs was fractured, while I perceived only a ſlight contuſion at the part which had received the ſhock. It does not appear to me, that the mechaniſm of ſuch a fracture ought to make any alteration in the method of cure which it requires of itſelf. In whatever manner the cauſe producing the fracture may have acted, the buſineſs is to bring the fractured extremities into exact appoſition, and to maintain them in a ſtate of reſt, which may allow of the inſpiſſation of the intermediate juice that is to unite them.

This double intention may be fulfilled, by keeping the arm exactly fixed to the trunk, and ſupporting it in ſuch a manner, that the head of the os brachii ſhall be conſtantly kept cloſe to the acromion, the motion of which is afterwards to be reſtrained, as well as that of the ſcapula and clavicle, by ſuitable compreſſes, and by the capeline of the ſcapula, which is to be applied, as I have juſt before mentioned, ſo as to include the arm in the circular turns which this bandage makes round the body; the cure will be the more complete in proportion as the motion of all theſe parts ſhall have been more confined. For this reaſon, in order more effectually to anſwer this eſſential indication, we muſt fill up, with lint or cotton dipt in the mixture above mentioned, all the hollows on the fore part of the arm, above and below the clavicle, &c. and this before we apply the roller. Theſe were nearly the modes of proceeding I adopted in the caſe juſt mentioned, and which ſucceeded ſo well, that the patient enjoyed, a few months after, a greater freedom of motion than I expected, conſidering what authors have ſaid of this fracture.

But ſuppoſing that the direction of a violent ſhock ſhould be ſuch, that the os brachii ſhall not ſuffer any fracture either in its body, or at its neck, and that it ſhall not be driven againſt the acromion, the ſhock is

then conveyed almoſt entirely to the inſide of the joint, where it may produce accidents proportioned to its violence. An acute pain, a ſwelling more or leſs conſiderable, with inflammation, ſubſequent abſceſſes, and a caries of the bones, are ſometimes the effect of ſuch a ſhock. In July 1765, a man fell from a horſe, and pitched upon his right ſhoulder; the pain, which was at firſt rather acute, was relieved by two bleedings, and by reſolutive applications; but it was not completely removed; ſome particular motions were always painful, and the pain increaſed upon change of weather; this the patient attributed to the rheumatiſm, to which he had been ſubject for many years, and which he imagined to be fixed upon this part. Eight months having elapſed in this ſituation, he was ſeized in March 1766, with a high fever, for which he was blooded four times. A week afterwards, the fever having ſtill continued with violence, he felt in the right ſhoulder, a pain more conſiderable than uſual, with a difficulty of motion which he had not yet experienced, and a tumour appeared, which was conſidered as the criſis of the diſeaſe. The ſwelling grew larger, and the pain, which increaſed notwithſtanding the application of anodines, did not ſeem to give way, till it might be preſumed that a ſuppuration was formed. The collection of matter not being, however, evident to the touch, anodine and ſuppurating topics were ſtill continued for more than three weeks. The fluctuation being then apparent, an abſceſs was opened on the lateral, outward, and upper part of the arm, which furniſhed a very great quantity of well-conditioned pus. It was thought that the patient was ſaved by this evacuation, becauſe this was ſuppoſed to be only a critical abſceſs; but we were ſoon undeceived; the fever did not give way, the abſceſs ſtill furniſhed a great quantity of matter, and ſome ſmall particles of bone were found at intervals in the diſcharge. This unfortunate diſcovery rendered the nature of the malady no longer doubtful, any more than the imminent danger in which the patient was; notwithſtanding all the care that could be taken of him, he fell into a hectic, which increaſed by degrees, and deſtroyed him in three months after the opening of the abſceſs. Upon examining the ſhoulder joint, I found the head of the os brachii, and that of the ſcapula, affected with a deep caries.

Might

Might I be allowed to hazard ſome conjectures upon this diſeaſe, I ſhould ſay, it is to be preſumed, that the fever which came on, was independent of the effects of the ſhock on the joint, ſeeing that it preceded, ſeveral days, the pain and the ſwelling of the part [x]; but it may alſo be imagined, that without the previous miſchiefs in the joint, the fever would not have occaſioned thoſe appearances which I obſerved after the death of the patient. Still it is certain, that in the firſt inſtance, we cannot carry too far the precautions which ought to be taken after violent ſhocks in the joints: it is right to recal to our memory, and to that of others, that in theſe caſes, we are not to ſuffer patients to remain in that ſtate of confident ſecurity, which they derive from being aſſured, that they have neither a diſlocation nor a fracture.

In continuing to trace the effects of counter-ſtrokes upon the bones that compoſe the upper extremities, we find, that the laſt of the pieces that concur in this ſtructure, in aſcending from below upwards, is as much, and even more, expoſed to them than any other; this is ſo certain, that there are very few fractures of the clavicle that are the conſequence of an immediate ſtroke upon this bone; ſometimes it is occaſioned by a fall on the elbow; ſometimes by a fall or a blow on the ſhoulder, or on the ſcapula. I have ſeen ſeveral inſtances of fractures of the clavicle, that have happened in all theſe different ways. The mechaniſm of them is ſo ſimple, that it is unneceſſary to explain it. Neither ſhall I give an account of any of the caſes, becauſe they would contain nothing but trivial obſervations, little calculated to appear before the reſpectable body who are my judges; nor ſhall I mention any thing of the mode of cure, which is ſufficiently known, and requires, beſides, no alteration reſpecting the cauſe producing the fracture: I ſhall only recommend Mr. Brasdor's bandage, as preferable to every other method of keeping the ſhoulders conſtantly back.

We ſhall conclude this ſection by obſerving, that if it be ſufficient, in order to claſs any injury among the effects of counter-ſtrokes, that it ſhould have taken place in a part diſtant from that which received the ſtroke,

ſtroke, the effects of counter-ſtrokes on the external parts will be conſiderably increaſed; for in this general acceptation, diſlocations are always produced by this cauſe. We cannot doubt of this, when we ſee that a diſlocation of the thigh is almoſt always the reſult of a ſhock, of a reſiſtance, or of a power applied towards the lower extremity of that bone; the ſame may be ſaid of a luxation of the wriſt, of the elbow, of the ſhoulder, of the clavicle, of the lower jaw, of the leg, &c. The bone always receives the ſtroke either at the extremity oppoſite to that which is diſlocated, or in its body: there are even few inſtances where the ſhock applied immediately to the joint, could poſſibly produce the kinds of accidents we have been ſpeaking of[y]. In making this obſervation, I do not mean to explain the mechaniſm by which diſlocations are produced; this is a point which it was impoſſible ever to miſtake; we only give the name of counter-ſtroke to this mechaniſm, without making any addition to the well-known theory of theſe accidents; nor does this bring any improvement in the mode of treatment required for luxations. It is well known what proceedings are to be adopted in all caſes of this kind, either to accompliſh the reduction of the diſlocation, to maintain the parts reduced in their ſituation, or to relieve the preſent and counteract future miſchiefs. All theſe points of doctrine have been diſcuſſed by the moſt able practitioners; and I cannot ſuppoſe it to be the wiſh of the Academy that we ſhould take a review of all kinds of luxations, becauſe they are effects of counter-ſtrokes, if even we had any intereſting obſervations to offer upon ſome of theſe injuries. What is here ſaid of diſlocations, I alſo ſay of a wrench, and of a diaſtaſis, which are likewiſe the effect of counter-ſtrokes, ſince the miſchief is not done to the part that receives the ſtroke. With reſpect to the treatment of theſe complaints, we have nothing to propoſe which is not already known. Repeated bleedings, reſolutive, emollient, and ſometimes ſpirituous applications, retentive bandages, and above all things, abſolute reſt, are the means to be preferred in all ſuch caſes; and I only mention them here, that I may not be ſuppoſed to have overlooked this part of the effects of counter-ſtrokes.

PART

# PART II.

## TO EXPLAIN THE EFFECTS OF COUNTER STROKES UPON THE SEVERAL VISCERA CONTAINED IN THE CAVITIES OF THE HUMAN BODY, EXCLUSIVE OF THE CRANIUM; AND TO POINT OUT THE TREATMENT THAT MIGHT BE EMPLOYED MOST SUCCESSFULLY AGAINST THE MISCHIEFS THAT ARE PRODUCED BY THEM.

DAILY experience too evidently proves, that very ſerious accidents are often the effect of a commotion, or violent concuſſion, which the principal viſcera of the human body experience, after a ſhock given to a part which is often at a great diſtance from the cavity containing theſe viſcera. This kind of injury is not confined to that viſcus only which is placed within the cranium. The viſcera that are incloſed within the thorax and the abdomen, are alſo expoſed to it, although moſt of the precautions taken by nature to avoid the too great commotion which the brain might experience in caſes of leaps, or falls, are common to the other viſcera. We ſhall, however, obſerve, and indeed it cannot be

otherwiſe, that in the moſt ordinary inſtances of falls, the viſcera of the thorax are leſs expoſed to the effects of counter-ſtrokes, than thoſe which are contained in the pelvis. This is the conſequence, both of the multiplicity of parts, calculated to abſorb motion, which are found between the feet and the cheſt, and of the power which the cheſt has of being extended ſtill farther downwards, when the motion of the pelvis is already ſtopped. In this, as in the firſt part, we find the diviſion ready marked out, and we adopt it the more willingly, as it is very natural, and well calculated completely to illuſtrate the laſt part of the queſtion we have to treat of. We ſhall therefore begin by explaining the effects of counter-ſtrokes upon the viſcera contained in the abdomen, and ſhall conclude this eſſay by examining theſe effects upon the organs incloſed in the cavity of the cheſt.

SECTION

## SECTION I.

### TO EXPLAIN THE EFFECTS OF COUNTER-STROKES UPON THE SEVERAL VISCERA CONTAINED IN THE CAVITY OF THE ABDOMEN, AND TO POINT OUT THE MODES OF CURE BEST ADAPTED TO RESIST THEIR CONSEQUENCES.

IT is ſufficiently evident, that the ſudden ſtoppage of motion of the pelvis, in inſtances of falls or leaps, muſt give riſe to a ſhock, or commotion in the viſcera of the abdomen, ſo much the more violent, as the ſhock ſhall have been greater, and as the ſeveral bony pieces, by means of which the ſhock is tranſmitted, ſhall have eſcaped being fractured; it is the ſame as in a concuſſion of the brain, which is never more conſiderable after a violent ſhock, than where there is no fracture in the bones of the cranium.

It muſt, however, be acknowledged, that the ſhocks which the viſcera of the abdomen may experience, in caſe of leaps, falls &c. ſcarcely produce any miſchief in them, except when theſe viſcera are in an un-

natural, or at leaſt, not an ordinary ſtate. At any rate, the injuries they may be expoſed to in theſe inſtances themſelves, are always the effect of counter-ſtrokes, taken in the moſt extenſive ſenſe. Thus it is, that abortion and its conſequences may be conſidered as the effect of ſuch a cauſe. The moſt trifling fall, or a falſe ſtep, are ſometimes ſufficient to produce it, becauſe, in theſe circumſtances, the motion of the pelvis being already ſtopped, while the placenta, fixed to the uterus, ſtill tends to move downwards with the velocity acquired by the fall, an effort is made upon that part of the womb to which it is fixed, which would ſeparate it much more frequently than we obſerve this to happen, if it experienced any reſiſtance from the womb, or if the uterus had not nearly the ſame tendency downwards as that ſpongy body has. But this circumſtance, ſo favourable in preventing its ſeparation in ordinary and habitual motions, becomes inſufficient when the pelvis ſuffers ſhocks of any violence: the divulſion of the placenta becomes then almoſt a neceſſary conſequence, notwithſtanding the power which the fundus of the uterus has to follow its motion downwards, and notwithſtanding the preſence of the waters, which take off ſo conſiderably from the weight of the placenta itſelf. We know in what manner the ſeparation of this organ, when begun in one ſpot, extends itſelf by means of the fluid, which iſſuing from the ſmall ruptured fibres, is extravaſated between the placenta and the ſides of the uterus; we know how the flux of the blood is brought on, and laſtly, how the pains which come on, give riſe to premature labour. With reſpect to the proper means of preventing this alarming accident, every ſurgeon is acquainted with them. Bleeding, reſt, and diet, are the remedies beſt adapted to the complaint, and they ſometimes ſucceed; the moſt complete reſt eſpecially, is abſolutely neceſſary. This is at leaſt all that can be done by art, under ſuch circumſtances. It is by the ſame mechaniſm, that a fall, upon the feet, or upon the knees, a leap, &c. may produce a recent hernia, or force down an old one, and thus become the diſtant cauſe of all the miſchiefs that may enſue. It is by the ſame mechaniſm that a ſchirrous teſticle, which is not ſupported by a ſuſpenſory, in the ſhocks which are the conſequence of the fall, may occaſion a dragging down of the cord, and excite a pain in it which may be communicated to the teſ-

ticle itſelf, and occaſion the ſchirrus to degenerate into a cancer. Thus it is too, that a counter-ſtroke, taken in the moſt extenſive ſenſe, may occaſion pain in a womb that is ſwelled and inclined to become ſcirrhous, which may change the nature of this termination into a worſe. Even in inſtances where this viſcus is not in a diſeaſed ſtate, it may give riſe to hæmorrhages very difficult of cure. Are we not alſo to conſider as the reſult of the kind of cauſe, the effects of which we are inveſtigating, to thoſe pains, which, after a fall, were felt in the abdomen of a woman, who, for ſome years paſt, had had a ſchirrhus of one of the ovaries; and muſt we not attribute to the ſame cauſe, the fatal alteration which happened, after a ſimilar event, in a tumour of the ſame ſort in the liver? I have ſeen all theſe fatal accidents be the reſult of imprudent leaps, or of falls upon the lower extremities, or the bones of the pelvis.

It is not, however, always neceſſary, that the effects of counter-ſtrokes ſhould fall on diſeaſed viſcera, in order to give riſe to diſorders which were not previouſly exiſting there. I have ſeen a man who before enjoyed a good ſtate of health, void almoſt pure blood through the urethra for ſeveral days together, and this on account of having fallen aſtride, from almoſt the height of two feet, upon a bar of iron. From that time he has always been ſubject to nephritic colics, and to a frequency of voiding his urine, attended with an habitual diſcharge of ſmall gravel; diſorders to which he was entire ſtranger before his fall. From whence did this blood proceed; from the bladder, or from the kidneys? In what manner has this counter-ſtroke been able to produce a hæmorrhage in the urinary channels, and give riſe to thoſe habitual nephritic colics which torment the patient? Theſe are queſtions, the ſolution of which would be as uſeful as ſatisfactory; but I am far from pretending to ſolve them. It appears to me, however, from the pain which the patient told me he plainly felt at the inſtant of his fall, about the region of the loins, and from the dull pain which he complains of ever ſince in that part, that the kidneys may be conſidered as thoſe of the urinary organs which ſuffered moſt by the commotion. The branches of the renal plexus of nerves being vio-

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lently affected at the inſtant of the ſhock, may have injured the vaſcular ſyſtem ſo much, as to occaſion a hæmorrhage in the internal ſtructure of the organ; or elſe theſe nerves might, perhaps, leave the ſecretory canals in ſuch a ſtate of atony, that in the firſt inſtant of the accident the blood might paſs into them indiſcriminately with the aqueous fluid that was to be ſecreted in the kidney; and indeed, ſuch a diſturbance in the internal organization of this viſcus was very likely to encourage the formation of thoſe gravelly concretions which the patient voids with his urine ever ſince that period. This is now eight months ago, during which time the patient hath been in the habit of taking a quantity of the decoction of marſh-mallows and linſeed; a drink which may poſſibly have contributed to keep up his tendency to a nephritic colic. The good effects he finds from ſaponaceous and balſamic aſtringent remedies, the uſe of which he has continued for ſome days paſt, would ſeem to confirm my conjectures.

The following caſe affords alſo a very ſtriking inſtance of the effect of counter-ſtrokes, which, though trifling, yet from being often repeated, have given riſe to fatal diſorders. A tradeſman, little accuſtomed to go on horſe-back, having rid ſix and thirty miles at full trot, upon a bad hackney horſe, found himſelf overcome with fatigue. On his return, he vomited, and was ſeized with a pain in the epigaſtric region, which he thought reſt would remove. It continued, however, with a degree of violence for ſome days, during which time, he would not ſubmit to loſe blood, although he had ſome fever, and vomited whenever he took any ſolid food; nor did he even obſerve the abſolute reſt that had been enjoined to him. The pain being ſomewhat abated, and the vomitings returning at intervals only, he took little notice of his complaint for ſome time; but the pain ſtill ſubſiſting, and the vomitings having never left him entirely, he began to grow uneaſy, and had recourſe to remedies which were not well adapted to his caſe; an emetic was adminiſtered to him twice; and he was ordered to take wormwood wine. The complaint, far from diminiſhing, increaſed; the vomitings became more frequent; and after having lived two years, trying a variety of medicines, the patient

was

was reduced to ſuch a ſtate, that his ſtomach would retain nothing but liquids; and theſe he at length became unable to paſs, for they were thrown up again in large quantities, after having remained ſometimes two or three days in the ſtomach. The patient fell at length into a maraſmus, and died in an aſtoniſhing ſtate of emaciation. Upon opening the body, I found the liver very hard, without being much increaſed in ſize; the pancreas was ſchirrhous at that part of it which is next to the duodenum; and this inteſtine, partaking of the diſeaſe of the pancreas, was almoſt entirely obliterated; the ſtomach was exceedingly large, and the inteſtines were ſcarce bigger than thoſe of a chicken.

Beſides all the pernicious effects of counter-ſtrokes upon the principal viſcera of the abdomen, how frequently has not this kind of cauſe given riſe to a mortal commotion in the ſpinal marrow? There are few practitioners who cannot produce ſome inſtance of a palſy in the lower extremities, coming on in conſequence of a fall, without either diſlocation or fracture of the lumbar vertebræ. A girl of ſeven years of age, walking in a waxed room, having fallen backwards, was unable to riſe again. Being lifted up and put to bed, ſhe was examined; and although none of the bones that compoſe the ſpine were found injured or diſplaced, yet the lower extremities had loſt all power of motion. The father having refuſed to ſuffer his child to be blooded in the firſt inſtance, the parts were only rubbed with warm cloths, and fumigated with various aromatics, while vulnerary remedies were internally adminiſtered. Notwithſtanding theſe aſſiſtances, and bleeding, which was afterwards performed, the parts never recovered their power of motion; and the girl lived only between two and three months after the fall. We could not obtain leave to open the body; but it is very certain, that there was no appearance externally, which indicated any kind of injury done to the bones.

With reſpect to the proper mode of treatment in the ſeveral caſes which we have been ſpeaking of, it may be obſerved, that the ſymptoms which are or may be the reſult of counter-ſtrokes, the effects of which

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are felt either in the principal viſcera of the abdomen, or in the lower part of the ſpinal marrow, ſeem to indicate, that the curative intentions to be purſued, muſt be nearly the ſame, whatever may be the nature of the parts ſuffering the miſchief. Accordingly, in the ſeveral inſtances we have been mentioning, bleeding, reſt, and ſtrict diet, are the chief remedies to be employed.

SECTION

## SECTION II.

### TO EXPLAIN THE EFFECTS OF COUNTER-STROKES ON THE VISCERA CONTAINED IN THE CAVITY OF THE CHEST, AND THE MODE OF TREATING THEM.

ALTHOUGH, in cases of leaps, and falls upon the feet, or on the nates, the effects of counter-strokes, for the reasons before mentioned, can seldom be conveyed to the viscera contained in the cavity of the thorax, so as to disturb the functions of these viscera; it is not however an uncommon thing to find, that the kind of motion communicated to the chest in this way, produces evident mischief in the lungs; but it must be acknowledged, that this happens more particularly, when there is some disease in this organ. Accordingly, it may readily be conceived, that if the lungs be affected with tubercles, if they be partly schirrous, or have recently contracted adhesions in consequence of inflammation, the commotion they would experience, in case of any fall, might give occasion to dangerous divulsions, to rupture of vessels, and to an hœmoptoe. Thus it is that I have seen the mere shaking of a horse, hasten the death of per-



sons

ſons whoſe lungs were much affected with tubercles. It muſt not, however, be imagined, that the lungs, though free from the diſeaſed ſtate above-mentioned, ſhould ſtill be entirely ſheltered from the effects of counter-ſtrokes in caſes of leaps or falls upon the lower extremities. I have ſeen perſons, without any tendency to diſorder in the lungs, ſeized with a ſpitting of blood, after ſuch falls, and incur all the dangers of an hœmoptoe. I have known others complain of a painful dragging ſenſation between the two ſhoulders, at the place where the lungs are more particularly attached to the ſpinal column; which was certainly owing to a divulſion of the connections that fix this rather weighty viſcus to that part. I have alſo ſeen inſtances of perſons, who having fallen upon their heels, from the height of about two or three feet only, have been ſeized with fainting fits to an extreme degree. This ſymptom may poſſibly be conſidered as the effect of a violent commotion, which the heart may have experienced at the time of the ſhock. I am, however, more inclined to think, that theſe faintings, among which I have ſeen an inſtance of their returning for three weeks together, every time that the trunk was thrown into a vertical poſition, are the effect of a concuſſion of the brain, a diſeaſe which is not the object of our preſent enquiry; but the viſcera of the thorax may experience injurious concuſſions, by other means beſide that of a fall on the feet, or a leap from a certain height. Every blow received externally upon the parts which form the cavity, may occaſion conſiderable injuries in theſe viſcera, even when the bony compages that ſurrounds them, ſhall remain unhurt. In this caſe, the heart cannot always avoid the effects of ſuch counter-ſtrokes. We know the kinds of miſchief which may happen, by this way, to theſe important viſcera, and the curative means to be employed againſt them; the ſame may be ſaid of the contuſion which the liver may receive from a violent blow on the falſe ribs. Repeated bleedings, a ſtrict diet, diluting liquors, and reſolutive ſpirituous applications, are almoſt the only remedies to be uſed in theſe caſes. I have undoubtedly ſaid enough to prove the danger of very violent ſhocks, even when they fall upon parts of a more compact texture than the brain, and to explain the wiſdom and foreſight which nature has diſplayed, in arranging the contri-

vances

vances deſtined to avoid or to diminiſh the effects of theſe concuſſions. It remains only, to finiſh this eſſay, that I ſhould give a ſummary recapitulation of the effects of counter-ſtrokes, conſidered either in their limited, or their moſt extenſive ſenſe; and to explain the principal curative intentions beſt adapted to the ſeveral kinds of miſchiefs that may reſult from them.

From what has been hitherto ſaid, we ſee how many different diſeaſes may be referred to one ſingle cauſe; and how various and numerous are the effects of counter-ſtrokes. It is not therefore, without foundation, that, at the beginning of this eſſay, I declared, that the moſt ſerious diſorders of ſurgery, and I might have added, of medicine, aroſe from a ſimilar cauſe. All diſlocations, wrenches, every diaſtaſis, all contuſions in the joints of the extremities, disjunctions of the ſacrum, divulſion of the ligaments that connect it, and ſeveral of the injuries that happen to the pieces that conſtitute the ſpine, are they not the effects of counter-ſtrokes? Are not moſt fractures accompliſhed by the ſame mechaniſm, as well as moſt abortions, deſcents of the uterus, and herniæ? Doth not this cauſe frequently make ſchirrous tumours degenerate into cancers, or produce the ſame effect on other ſwellings of a ſimilar tendency? Have not counter-ſtrokes often given riſe to evident miſchiefs in the important organs of the abdomen and thorax, when they were in a diſtempered ſtate, and ſometimes when they were ſound? The moſt ſerious diſorders of the brain, which we have not noticed, on account of the limits preſcribed by the Academy, are they not the reſult of counter-ſtrokes? How many ſubordinate accidents afterwards ſucceed all theſe original diſorders which we have enumerated? From all theſe circumſtances, it cannot be doubted, but that counter-ſtrokes are among the moſt general cauſes of the diſorders to which our frail machine is ſubject.

But notwithſtanding the multiplicity and variety of the original accidents which are derived from this ſingle cauſe, we obſerve, with ſatisfaction, that the intentions of cure to be followed in order to counteract theſe effects, whatever they may be, are always nearly the ſame, when

the injury hath happened in the viſcera contained in the ſeveral cavities, the brain itſelf not excepted. Accordingly, we find, that in all theſe caſes, repeated bleedings, perfect reſt, and ſtrict diet, are the remedies to be preferred [z]. External applications in caſes where they can be employed, are only acceſſory remedies, which however are not to be neglected; they muſt only be varied according to circumſtances. Sometimes they are only to be ſuch as to defend the parts, at other times, reſolutive ſpirituous topics are to be applied; ſometimes emollient, relaxing and anodine remedies; ſometimes ſaponaceous, balſamic, aſtringent aromatics, tonics, and artificial pumping upon the part, with natural or artificial medicinal waters, &c. Theſe are all ſubordinate methods, to which we are ſometimes the more obliged to have recourſe, the more we have neglected, in the firſt inſtance, the principal modes of cure which we have treated of.

A ſubject ſo difficult, and ſo extenſive, required more genius to be well underſtood, more talents and knowledge to be treated to the ſatisfaction of the Academy. I have at leaſt exerted my beſt endeavours to fulfill the conditions of the theſis; and can only judge of my efforts, without being anſwerable for the ſucceſs of them; nor ſhall I think my labours uſeleſs, if they can only intitle me to ſome attention from thoſe who are to decide upon them.

NOTES

# AUTHOR's NOTES

ON

# COUNTER-STROKES.

*(a)* I DO not mean to ſay, that writers have been entirely ignorant of this kind of cauſe, although they have not mentioned it under the ſpecific term of counter-ſtroke; much leſs do I aſſert, that their practice has never been directed according to the mechaniſm, by which the complaints they obſerved, had been produced. This would be to allow neither reflection nor genius to our predeceſſors. I imagine only, that in many caſes, their attention has been rather engaged in diſcovering the nature of the accident, than in reflecting upon the ſeveral ways in which it might have been produced.

*(b)* We muſt here make an allowance, for the loſs of the power of motion, by communication.

*(c)* This is the caſe of the cable that is veered away, for a certain time, in order to ſtop the boat gradually. If the head bore upon an inflexible column, its motion, in falling upon the feet, would be ſtopped, at the very inſtant that the feet came to the ground; while the ſoft viſcus

 contained

contained in the cavity of the cranium, would continue to ſtrike againſt the baſis of this cavity, with all the force that would have been imparted to it, by the velocity it would have acquired in the fall. This would produce, in the organization of this important viſcus, a diſturbance of the ſame kind as that which was obſerved in the brain of a criminal, who, running from a few paces back, daſhed his head againſt the wall of his priſon. But the cartilages which line all the joints, thoſe which unite the vertebræ with each other, and eſpecially the various inflexions of the body in falls upon the feet, are the cauſe that the head, coming near the ground when theſe parts are already at reſt, can only loſe its motion in a gradual and imperceptible manner.

*(d)* I have ſeen patients, cured of a fracture of the fibula, remaining a long time unable to walk without crutches.

*(e)* This was the third death I had ſeen happen at the ſame period, and with the ſame ſymptoms, after compound fractures of the legs which had been well reduced; this circumſtance led me to reflect. I inquired for the limb, and examined the ſtate of the tibia; the marrow contained in the cylinder of this bone, was ſomewhat in a ſtate of diſſolution towards the fractured extremities, and the ſmell of it was putrid in the higheſt degree. This circumſtance made me imagine, that a portion of the putrid miaſmata produced by the diſſolution of the marrow, having been abſorbed, had occaſioned a true nervous diſeaſe; and in conſequence of this idea, I determined to adopt ſome other mode of proceeding in the firſt caſe of the kind which my practice might furniſh me with. The opportunity ſoon preſented itſelf; when, inſtead of putting the two ends of the tibia in exact appoſition, I placed them in ſuch a manner, that by means of their ſituation, and of a detached piece of bone which I took away, I could conveniently throw into the cavity of the bone any injection I might think proper; ſo that I treated this caſe as every compound fracture is treated, with the additional precaution only, of injecting upwards and downwards into the cavity of the bone, at every dreſſing. By this contrivance, my patient was exempt from any of thoſe ſymptoms which had

ſucceſſively

ſucceſſively deſtroyed three others whom I had attended; and recovered with only a very trifling deformity of the leg. I wait for other opportunities of verifying theſe conjectures, in order to ſend to the Academy an eſſay upon a point of doctrine which ſeems to be new.

*(f)* Miſchiefs nearly of the kind, may very poſſibly be the reſult of a violent commotion which the marrow of the bone may have ſuffered in a fall, or a ſtroke upon the part; and in that caſe, they would ſtill be the effects of a counter-ſtroke upon a ſoft part.

*(g)* I have had ſeveral inſtances of ſimilar internal exfoliations; and not long ago, I extracted one of three inches from the inſide of the tibia, but the diſeaſe had not been the reſult of any violence.

*(h)* Probably the fall on the knees, in this inſtance, had cauſed a fracture of the thigh ſo near the joint, only on account of the woman having an old ſub-luxation of the leg, ſo that there was a deformity in the part, which gave an oblique direction to the ſhock.

*(i)* The cotyloide cavity preſenting an oval cup, the great diameter of which, is from above downwards, admits, by this contrivance, of this gliding, which contributes to deſtroy the motion by degrees.

*(k)* See Mr. PETIT's treatiſe on the diſeaſes of the bones.

*(l)* No man can have a greater veneration for the memory of the celebrated Mr. PETIT than I have; nor can entertain a more profound reſpect for the opinions of this great man: but I have never had reaſon to be ſatisfied with the large inciſions recommended by him, in certain caſes, to empty collections of matter in the joints; perhaps my practice may not yet have been ſufficiently extenſive, or perhaps I may not have employed theſe inciſions in the proper caſes.

*(m)* If

*(m)* If we recollect the manner in which the ſpine bears upon the ſacrum, and that this bone is inclined backwards, we ſhall ſee, that as the center of gravity of the upper parts, paſſes only through the baſis of the os ſacrum, the weight of theſe parts muſt neceſſarily tend to puſh this baſis downwards and forwards, and conſequently to raiſe the point of the os coccygis backwards.

*(n)* Perhaps too theſe accidents were only the conſequence of the contuſion of the cartilages.

*(o)* It muſt be acknowledged, however, that the unfavourable ſtate of the woman, and the diffuſion of the milky ſecretion were auxiliary cauſes, without which, the external cauſe might poſſibly have produced no miſchief.

*(p)* Hiſtoire de l' Académie, tom. iv. page 19.

*(q)* The divulſion and extenſion of the ligaments connecting theſe bones, ſometimes concurs powerfully in producing theſe miſchiefs; but it muſt be acknowledged, that they may be the reſult, of the mere contuſion or ſinking in of the bony ſubſtance of the laſt vertebræ of the loins, or of the os ſacrum, without extenſion or divulſion of the ligaments which ſtrengthen their connection with each other.

*(r)* It is taken for granted, that in caſes of apparent diſplacing of the bones, all the means, proper to bring about the reduction or natural conformation of the parts, have been tried.

*(ſ)* A fracture is often the only effectual mode of preſervation, that nature could have adopted under certain circumſtances.

*(t)* Nothing can be added to what the celebrated Mr. PETIT ſays, in his work upon the diſeaſes of the bones, concerning the treatment proper for theſe complaints.

*(u)* I never

*(u)* I never ſaw any eryſipelas after the application of this mixture.

*(w)* See his eſſay upon this ſubject, in the fourth volume 4to, of the Memoirs of the Royal Academy of Surgery at Paris, page 614.

*(x)* It might, however, be poſſible, that a carious ſpot in the bone, aſſiſted with a depravation of the fluids, might have given riſe to the fever and other ſymptoms, which appeared to be the conſequence of it.

*(y)* I deſire it may be remembered, that in the firſt inſtance, I have claſſed among the effects of counter-ſtrokes taken in the moſt confined ſenſe, ſuch injuries only as might be produced by the immediate application of a ſhock upon the part, where the diſorder is ſeated; from whence it follows, that diſlocations not being included in this claſs, it appears to me, that they ſhould only be conſidered as the effects of counter-ſtrokes, taken in the moſt extenſive ſenſe.

*(z)* It is taken for granted, that in caſes of diſlocation or fracture, the parts have been previouſly reduced.

# V.

ON THE

# TREATMENT

OF

# CANCEROUS DISEASES.

ON THE

# METHODS

PURSUED IN THE TREATMENT OF

# CANCEROUS AND SCHIRROUS DISORDERS, &c.

IN giving this account, the following order will be obſerved. I ſhall firſt ſpeak of ulcerated cancers, and the various applications I have uſed to them; under which head will be included the treatment of cancers of the womb.

The ſecond part will be taken up in the conſideration of ſchirrous tumours, in which will be inſerted thoſe caſes that were merely ſchirrous tumours, or occult cancers, when they firſt came under my notice, and which afterwards became ulcerated.

The third part will contain obſervations on what is commonly called the milk breaſt, or the coagulation of milk, and the conſequent formation

tion of matter in the breaſts of women after lying-in, with the account of a peculiar method of treating theſe complaints.

It would be tireſome and unneceſſary to give a deſcription of every caſe that has been under my care; my deſign being only to make a full communication of every external application I have uſed, and of every internal medicine I have given, with the general reſult of the effects; and to note the peculiar obſervations which experience has led me to make, in the number of theſe caſes that have fallen under my notice. Thoſe caſes therefore ſhall be ſelected in which the methods have been varied; or the detail of which may appear to afford ſome lights that may poſſibly be of advantage to others.

But as I am convinced, that more uſeful information is frequently to be derived from a candid avowal of our errors, than from the diſplay of our beſt ſucceſſes, I ſhall be particularly careful not to omit any inſtance, in which I could have the leaſt ſuſpicion of any fatal or dangerous ſymptom having ariſen, from the properties of any application or medicine employed. This may at leaſt ſave other practitioners the time and trouble of purſuing the ſame track; and if it cannot tell us what to do, will at leaſt teach us what we are to avoid: a knowledge, in many caſes, and particularly in deſperate ones, next in utility to the former. I ſhall only obſerve, that the inſtances in which ſuch accidents have happened, are extremely few in compariſon of the great number of patients with whom the ſame methods have been followed.

In the year 1770, a lady applied to me with a cancerous complaint of a very malignant nature. She had been afflicted with it upwards of thirteen years. It had originally conſiſted of two ſchirrous tumours, which had been removed about three years before ſhe applied to me, by Mr. Guy's method. That gentleman was never able to cloſe the wound entirely; and though the lady remained tolerably well for ſome time after the removal of the tumours, yet there was a little crack ſubſiſting which furniſhed occaſionally a greater or leſs quantity of diſcharge. Mr. Guy

dying

dying ſome time after this, and the patient growing worſe, ſhe applied to his ſon from whom ſhe received no benefit. She afterwards ſhewed the part to ſeveral eminent ſurgeons, who all adviſed her to do nothing to it, except to keep the wound clean. When I firſt ſaw her, the appearances were as follow. One large, oblong, pale, ill-conditioned, ſloughy wound in the middle, extending nearly throughout the whole of the ſcar formed by the previous application of Mr. Guy's cauſtic. This wound ſurrounded by ſeveral ſmaller, ſome near, ſome at a diſtance from the larger one, and all diſcharging an ichorous acrimonious fluid, which frequently inflamed and excoriated the parts on which it fell, and thus produced other wounds. The edges of the wounds were tucked in, and thoſe of the large one in particular, were extremely indurated. From the moſt external border of the large wound there aroſe a kind of cord of conſiderable hardneſs and bulk, which extended quite into the armpit, occaſioned pain, and ſometimes a degree of ſwelling in the arm on that ſide, and rendered the operation impracticable. Mr. Falwaſſer, ſurgeon and apothecary at Maidenhead, and Mr. Yatman, apothecary in Percy-ſtreet, Rathbone-place, were both witneſſes of the caſe and the reſult of it.

This I conſidered as a fair caſe to make trial of the hemlock bath, which I was induced to do from an account of its ſucceſs that I had met with ſome years before written in the German language, and which I tranſlated and publiſhed in London a ſhort time after my return from that country. I had already recommended this bath to ſome poor perſons who applied to me in the courſe of a few years with cancerous complaints; but though I offered to defray the expences of the apparatus and of the plant for them, yet I could induce very few to try it; and thoſe who did uſe it two or three times, could not be prevailed upon to continue it long enough to find any effect from it; alledging, that it was a method too troubleſome for them and their families. On the other hand, the hemlock was fallen into ſuch general diſcredit among the faculty in England, and they were ſo particularly prejudiced againſt any thing that had the name of coming from Germany, that I could not prevail upon any of

of my medical friends to try this new mode of introducing it into the habit.

I resolved however not to propose this bath to my patient at first, in order not to alarm her; but to give a fair trial to the internal use of the extract of hemlock, and the external application of the plant in poultices and fomentations. She persisted for a long time, and the dose of the extract was gradually increased as far as it could be borne, but without any visible effect, except a trifling alteration for the better upon the first trial of it, or upon the first varying of these applications for some other. A year and a half or more passed away in this manner, during which time she tried the extract of hemlock, the bark, the sublimate, the carrot poultice, and many other things without obtaining any relief. On the contrary, she grew visibly worse. Long continuance of excruciating pain had reduced her to an extreme degree of weakness and emaciation. Her countenance was become quite livid. The disease was much advanced in its progress, both with respect to the number and condition of the sores, and the extent and size of the indurations. Such, in a word, was her state in the month of December, 1771, that her family justly apprehended it would not be long before they should be deprived of a valuable relation and friend.

I had frequently taken the opportunity of endeavouring to persuade my patient to try the hemlock bath, but all my expostulations to this purpose were unavailing; so that chagrined at the inefficacy of all the methods pursued, I had lately been revolving in my mind a design of trying the outward application of salt ammoniac, which I had always considered as a substance of powerful resolutive properties, and of course as a very useful topic in all indurations. I could not however readily determine upon the mode of using it in these cases, and in this dilemma communicated my ideas to Doctor Morris, in hopes that his well-known abilities in chemistry might assist me in settling this point. Upon my mentioning the salt ammoniac to him, he informed me that there was an account just published in one of the German Ephemerides, of a chymical preparation, used

uſed with ſucceſs in cancerous caſes, in which that medicine was a principal ingredient. I procured the account, and found that the medicine was a tincture of equal parts of ſalt ammoniac and iron in rectified ſpirit of wine, with the addition of oil of vitriol, and oil of tartar, and directions were given for applying it. The exact mode of preparing it ſhall be mentioned at the end of this ſection. At preſent let it ſuffice to ſay, that I reſolved to try it, and accordingly deſired the favour of Doctor Morris to prepare it for me.

The liquid being ready, I began uſing it, as directed, in the following manner. I dipped a ſmall pencil bruſh into it, and ſmeared all the edges of the ſores, and every part that was indurated with it, taking all poſſible care that the liquid ſhould not run down into the ulcers themſelves. The part beſmeared was then ſuffered to dry; the wounds were covered with dry lint, and the edges with the ſame. It being ſcarce poſſible to prevent ſome of the liquid, which was extremely ſharp, from inſinuating itſelf into the ſores, there was generally a degree of ſmart accompanying the dreſſing, but this ſoon ſubſided. My patient was directed to repeat this application of the liquid to the edges, and to all the indurated parts two or three times a day, or as often as ſhe could bear it. Finding in a little while that there was a viſible alteration for the better, I ventured to uſe the liquid more freely, and after having ſmeared all the indurated parts as before, dipt in it ſome pieces of lint or rag doubled, and layed them wet all over the edges and indurations. By this contrivance the liquid remained active upon the parts for a much more conſiderable ſpace of time, and the patient had nothing more to do, than with the pencil bruſh to ſoak the lint again as often as it became dry, or as ſhe could ſupport the ſmart. When it appeared that the liquid produced an alteration in the edges and indurated parts, I reſolved to waſh the ulcers themſelves with it, lowering it for this purpoſe with water, and trying the mixture upon my tongue, till I judged that it was ſufficiently mild. When it happened that the edges were inflamed or excoriated by the frequent uſe of this ſharp liquid, it was ſuſpended till they were recovered, which they generally were in four and twenty hours. In this manner I

proceeded for about three months, at the expiration of which time the pain of the diſeaſe was leſs, the edges and indurations began to ſoften, and the diſcharge from the ſores was meliorated.

Notwithſtanding theſe favourable appearances, I obſerved with much chagrin, that although my patient being freer from pain, was rather better in health, than when this proceſs was firſt entered upon, yet the amendment in this particular was not nearly ſo evident as in the others. This was a material circumſtance to attend to. But in what manner was this amendment to be brought about? All the ordinary remedies given as alteratives, or with an intent to reſtore the exhauſted ſtrength of the body, had been already adminiſtered in vain. Reflecting then upon the good effects produced by the liquid applied externally, it ſeemed probable to me, that a medicine of a ſimilar nature might be given internally with ſome proſpect of ſucceſs. The flores martiales occurred as the preparation the neareſt to it, and I was the more induced to try it in this inſtance from conſidering the invigorating power of the iron contained in it. Accordingly, it was made up into pills with a ſolution of gum arabic, each pill containing three grains of the medicine, of which the patient took at firſt two in the day. Five grains of the flores martiales were ſoon after put into each pill, and the doſe gradually increaſed, till twelve of theſe laſt pills were taken in the courſe of the day. When this method had been continued ſix weeks, my patient's health was viſibly mended, her complexion cleared, and her ſtrength much recovered. Encouraged by theſe promiſing appearances, and finding that the medicine did not diſagree, the doſe of the martial flowers was increaſed to ten grains in each pill, of which pills from twelve to twenty were taken in the day. The only inconvenience ever experienced from this, was a little ſickneſs at ſtomach now and then, which was eaſily removed by a tea ſpoonful of brandy, or ſome warm wine, and which might perhaps be as much owing to the ſwallowing of a number of pills in the day, as to any effect of the medicine. It is to be obſerved, that upon an average my patient may be ſaid to have taken between two and three drachms of the martial flowers every day, for a long continuance, without inconvenience. A

few

few of my cancerous patients have ſince taken from three drachms to half an ounce of the ſame medicine in the ſame ſpace of time, and likewiſe without inconvenience; though it muſt be acknowledged, that this medicine, as well as others, can be borne in much larger quantities by ſome ſtomachs than others: ſo that, upon the whole, whether the pills are made with five or ten grains of the medicine, it may be as well to reſtrain the doſe to about two drachms in the day, which from experience I am inclined to think, will not diſagree with any patient. And even this is an almoſt incredible doſe, when we conſider how ſeldom this medicine has been preſcribed, and when it has, how ſparingly.

In the courſe of this work, we ſhall have occaſion to obſerve the utility of this enlarged doſe of the martial flowers, in a diſeaſe very common among women, which frequently baffles all the ſkill of the phyſician, and which has been generally conſidered as one of the principal cauſes of ſterility.

In three or four months after the giving of this medicine, that is, about ſeven months after the firſt application of the liquid, my patient was ſo much mended in every reſpect, that I began to entertain hopes of effecting a complete cure. The internal uſe of this invigorating medicine had ſo far reſtored her health, that ſhe appeared like a new creature. The pain of the diſeaſe was almoſt entirely ſubdued, the indurations were all of them conſiderably ſoftened, and in ſome places totally reſolved. The cord under the arm-pit was much leſſened. The large wound was contracted, and ſome of the ſmall ones cloſed: the diſcharge from them was generally good.

But the appearance of the ſores was ſtill not ſo ſatisfactory to me, as the changes produced in other circumſtances; and I ſoon grew ſenſible that there wanted ſome other application to them. Though ſome of the ſmall wounds were healed, yet they broke out again, and this freſh ulceration was always attended with pain, and brought on at firſt an ichorous and acrimonious diſcharge. The ſores in general were now tolerably

clear and free from ſloughs, but the ſurface of them was rather reticulated than granulating; and when touched ever ſo ſlightly, their ſenſibility was ſo exquiſite, that it was evident they were ſtill in a fungous or cancerous ſtate, and not yet diſpoſed to heal properly*. The common cauſtics had ſcarce any effect upon them; neither did there appear any permanent advantage from touching them occaſionally with the liquid unmixed with water. Encouraged however by the progreſs already made, and unwilling to have ſuch fair proſpects blaſted, I reſolved to try the effect of arſenic applied to the ſores. I was aware that the fatal ſymptoms brought on by an indiſcreet uſe of this medicine, had induced many eminent and learned men to reprobate it entirely; while others, it muſt be acknowledged, of equal repute, affirmed that it was of infinite ſervice in cancerous affections. Senſible at the ſame time that this application would neceſſarily occaſion pain, it was my deſire to find out the leaſt painful method of uſing it. In this view, it occurred to me that if it were poſſible to make a preparation of it, that ſhould act immediately upon touching the ſore as the lunar cauſtic does, that the pain, however ſharp at firſt, would not be of long duration†. This idea was communicated to Doctor Morris, who was deſired, if poſſible, to make ſuch a preparation. The Doctor told me he had a preparation of arſenic by him, the effect of which he could not take upon him to aſcertain, but believed that it would be milder than the crude mineral. It conſiſted of equal

* I have frequently obſerved, that this appearance of net-work upon the ſurface of any ſore, argued an uncommon degree of ſenſibility. Perhaps this may be owing to the denudation of ſome ſmall nervous filaments, and their being affected by the acrimony of the diſcharge. The balſamic quality of good pus from a fair wound, may poſſibly ſheath theſe filaments, and contribute to remove this extreme ſoreneſs, which is known always to be an indication of the fungous or morbid ſtate of a wound.

† I was miſtaken in this, for I have ſince had ſuch a preparation made, and am convinced by experience that it cannot be uſed. The action of the arſenical ſalts is naturally very painful, though ſlow; but when they are exalted to their higheſt degree of activity, the pain they give only by a momentary touch is totally inſupportable. They are worſe than actual cautery, inaſmuch as they ſeem to be equally acute at the inſtant, and that the pain continues in all its firſt violence long after their action has ceaſed.

parts of arſenic, copper, tin and mercury, diſtilled in ſpirit of wine, and afterwards in oil of vitriol. As it was agreed between us, that the action of the arſenical ſalt would rather be lowered than exalted by this combination and proceſs, I determined to try this preparation. Though I had gathered from reading, as well as general report, that the arſenic muſt have been uſed externally in pretty conſiderable quantities for the cure of cancerous complaints, and that with ſucceſs, yet I was reſolved to proceed with all poſſible caution in my trial of a medicine, of the effects of which I had not yet been an eye-witneſs. I therefore reduced the maſs Doctor Morris gave me into impalpable powder, took as ſmall a particle of it as I could poſſibly ſeparate, and laid it on the middle of one of the ſmalleſt ſores, the ſize of which did not exceed that of a ſixpence. I ſtaid with my patient a conſiderable time to watch the effect of this firſt trial, and returned in the evening to inquire what degree of pain ſhe had felt, intending, if it had been violent, or ſtill continued, to preſcribe her ſome opiate to appeaſe it. But although ſhe had felt the action of the medicine, yet the portion of it was ſo ſmall, that the pain had been very tolerable. When the part was dreſſed next day, it appeared, that an eſchar was produced, which had extended itſelf beyond the point where the powder had been applied. In order to aſcertain the effect of this topic, it was neceſſary, that the eſchar ſhould be made to ſpread quite over the ſurface of the ſore, and therefore I contrived to bring this about gradually, by a repeated application of the powder in ſmall quantities, ſometimes with more, ſometimes with leſs pain. It was my wiſh to obſerve what alteration would be made upon this little ſore, after the ſeparation of the eſchar, before the powder was applied to the other ulcers, that my patient might be preſerved from any further unneceſſary pain, if it ſhould be found not to ſucceed in this firſt trial. The experiment was carried on ſo ſlowly, and with ſo much caution, that a few days elapſed, before the eſchar had pervaded the whole ſurface of the ſore. It was ſoon thrown off, not being deep, and in a few days after this, I had the ſatisfaction to find the little ulcer perfectly cicatrized. In the mean while it was obſerved with pleaſure, that the caſe continued mending in every other particular. This courſe was therefore ſtedfaſtly perſevered in; the

liquid

liquid was uſed outwardly to all the indurated parts, the martial flowers were taken inwardly in as large a doſe as they could be borne, and the arſenical powder was applied at different intervals to all the ſores, in greater or leſs quantity, as it was judged neceſſary to make the eſchar more or leſs deep. Some of the ulcers were very obſtinate, and it became neceſſary to renew the application of the powder to them, after the ſeparation of the firſt, ſometimes of the ſecond, and even of the third eſchar. It may be preſumed that the patient underwent a great deal of pain in the courſe of this treatment. It muſt be owned ſhe did; and my attention was chiefly engaged in deviſing methods to give the leaſt pain it was poſſible to give, and to alleviate it whenever it roſe to any degree of violence. This did not happen often, and when it did, it was found, that the external application of an anodine fomentation compoſed of twelve poppy heads bruiſed, and boiled in little more than a quart of water, till reduced to a quart, was much more effectual than the internal uſe of opium, which at the ſame time however was not neglected. The warm bath proved alſo of great ſervice in this particular. By thus ſtedfaſtly perſevering, ſucceſs was at length obtained, and in the month of March, 1773, about fifteen months after the firſt application of the liquid, the wound was compleatly cicatrized. The ſchirrous parcel under the arm-pit was diſſolved, and that in the literal ſenſe of the word, for no wound had been made upon it, no cauſtic applied to it, and there remained only a ſlender cord like a thin piece of packthread, which ſeemed but to indicate where the great hardneſs had been. The indurated edges were alſo entirely ſoftened, except the anterior edge of the ſore next the ſternum, where there was ſtill a knob about the bigneſs of a large pea. My patient felt not the leaſt pain, and had not felt any for ſome time paſt; and her health was ſo perfectly reſtored, that ſhe now appeared ſeveral years younger than ſhe had done in the year 1771. I would fain have perſuaded her to ſuffer me to make a little wound upon the knob ſtill conſpicuous at the anterior edge of the ſore, in order to deſtroy it by the arſenical powder, but the ſatisfaction of finding herſelf in a perfect ſtate of health, after having languiſhed ſo long under ſuch a painful diſtemper, and the dread of renewing her former pain, prevented her from conſent-

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ing to this propoſal. She was then adviſed to continue the application of the liquid to the line under the arm-pit, and to the little knob afore mentioned; upon a preſumption that in time theſe remains of the diſeaſe, if they could be called ſo, would be removed by this precaution; but ſhe was ſo perfectly ſatisfied with her preſent ſtate, that even in this particular ſhe neglected to follow my advice. About ſix months after the healing of the wound, ſhe ſent for me, having ſcratched the cicatrix with a pin. The ſcratch bled a little, and was about two inches in length. She was exceedingly alarmed leſt this unfortunate accident might deſtroy the happy effect that had been produced with ſo much difficulty. Upon examining the part with attention, it appeared however that the ſmall line remaining under the arm-pit at the period of the healing of the wound, though nothing had been done to it, was now entirely diſſolved, ſo that there was not the leaſt trace of the large induration that has been deſcribed in this part, and it was even impoſſible to diſtinguiſh where it had formerly been. My patient was deſired to take notice of this favourable circumſtance, which contributed to quiet her fears, and to convince her that the diſeaſe was now ſo effectually ſubdued, that the little accident would not be attended with any conſequences. No other application was made to the ſcratch, than ſome white cerate ſpread as thinly as poſſible upon lint; with which we had the ſatisfaction to find that it healed in a few days.

Such was the caſe and the event of it, upon which my hopes of having diſcovered a method of curing cancerous affections, were firſt founded.

Many of my brethren in the profeſſion ſaw this caſe, and although their unanimous opinion was, that it was a very extraordinary one; yet the knob remaining at the anterior edge of the ſore, made them conclude in general that the virus was not totally eradicated. Doctor Wathen's expreſſion after having ſeen it in the year 1776, above three years after the healing of the wound, occurs particularly to me. He ſaid, *it was all but cured*; but ſo well ſatisfied was he of the benefit received, that he

deſired

desired a lady who had come from the country to consult him in a similar complaint, to put herself under my care. I shall not enter into a discussion of this opinion that the cure was not completed, though contrary to mine, but shall state the facts as they happened, and leave my readers to form their own conclusions. It must only be observed, that from the time of the wound being healed, till the middle of the year 1777, that is, near four years and a half, my patient remained free from any kind of complaint in the breast, except a scab which now and then formed on this knob, and fell off of itself. In other respects she was perfectly well, had not any excoriation or discharge from the part, and felt not the least pain: her health too, continued firmly established.

About Whitsuntide, 1777, as she was going into a ship's boat, the board being wet, her foot slipped, and her son, who held her under the arm, raising her up and extending it suddenly, to save her, she immediately felt great pain on the scar of the breast. A few days after this the scar broke out, and there appeared a wound about an inch in length. She complained of a good deal of pain at times, but her health was good, great part of the cicatrix remained entire, and there was not yet the least appearance of that hard thick cord that formerly extended itself towards the arm pit. This was the state of the case about autumn, 1777; I had not an opportunity of attending it after.

The same method was afterwards pursued in some of the other cancerous cases, and though the first changes produced were satisfactory, yet the event did not turn out so favourably. This led me to recur to my former resolution of trying the hemlock bath. It appeared at first this bath kept the disease under, if it did nothing more; and finding that it was attended with no ill consequence, the quantity of the plant used in each bath was gradually increased from twelve to twenty and thirty pounds weight, and upwards. This quantity was always regulated by the season of the year in which the plant was gathered. If it was in its full vigour it was not necessary to use more than twenty or thirty pounds. But it may not be improper to observe that, when I was obliged to employ the dried

dried plant, a much ſmaller quantity of this was found equivalent, as it may naturally be ſuppoſed, to a much greater quantity of the recent herb.

Some of the firſt caſes of ulcerated cancers, in which I had an opportunity of trying the hemlock bath, were in the Weſtminſter hoſpital. It will be needleſs to tire the reader with deſcriptions of ſimilar caſes; but I ſhall principally refer to two of theſe patients, becauſe they lived the longeſt, and thereby enabled me more particularly to note the effects of the method. Theſe two caſes were of long ſtanding, the patients advanced in years, and the appearances of ſuch a nature, as not to afford any proſpect of ſucceſs from the uſe of the knife. In both theſe inſtances, the firſt effects of the hemlock bath uſed with a large quantity of the plant were the ſame. A high ſymptomatic fever enſued, attended with rigors, great increaſe of pain, and every ſymptom of an advancing ſuppuration. I was not alarmed by theſe ſymptoms, and endeavoured, not only to quiet the apprehenſions of my patients, but alſo to mitigate their ſufferings as much as poſſible. In a ſhort time the ſuppuration was far advanced, and affected not only the ulcerations, but extended alſo to every part that ſeemed tainted with the diſeaſe, which ſoon came away in large ſloughs, accompanied with great abundance of matter. The pain my patients already ſuffered, and the extreme ſenſibility of the parts, hindered me from uſing any dreſſing but dry lint or ſoft Goulard cerate to the edges; for, to ſave the fatigue of long dreſſing, even the application of my liquid was omitted. To ſay the truth, I flattered myſelf, from all the appearances, that nothing more was wanting than a little attention to complete the cure. The firſt of theſe patients, Elizabeth Williams, admitted into the hoſpital on the 23d of September, 1773, ſoon recovered eaſe and ſtrength, and in about three months from her admiſſion, the ulcer was apparently reduced to the ſtate of a ſimple wound, which every one imagined, as well as I, would heal in a ſhort time. She uſed to riſe and walk about the ward in perfect eaſe, and to all appearance, in perfect health. She was, however, ſuddenly ſeized with a putrid fever, which carried her off in a few days, at the end of about four months from her firſt admiſſion into

the hoſpital. All I ſhall obſerve on this circumſtance is, that the illneſs was ſudden, and the iſſue of it ſpeedy; and that during the little time it laſted, there was no pain complained of in the breaſt, nor was there any alteration in the favourable appearance of the ſore and the parts ſurrounding it, though the cicatrix was never completely formed.

In the other caſe, which was that of Mary Randall, a woman about 60 years of age, who was admitted into the hoſpital on the 15th of December, 1773, the event was different. After the large ſloughs, cauſed by the ſuppuration of the diſeaſed parts, were ſeparated by the uſe of the hemlock bath, which happened in about three months, every thing went on well, though ſlowly, for a conſiderable time. My patient enjoyed eaſe and health for about ſix months: but the wound never healed kindly, and ſome diſagreeable appearances began to ſhew themſelves both in the ſore and on the edges. I was convinced by other experience, that the efficacy of the powder in the firſt caſe, had been owing to the arſenic it contained. and as the other ingredients might poſſibly increaſe the pain without adding to the effect of the application, I determined to ſuppreſs them. Here I ſhall take the opportunity of returning my thanks to Dr. Cheſton, of Glouceſter, for the many uſeful hints and communications he ſupplied me with in the courſe of our correſpondence and converſations, reſpecting the external uſe of arſenic in this and other complaints where he had tried it with advantage. He adviſed me to flux arſenic and antimony together, either in equal parts, or with two of antimony to one of arſenic, in the view, by this combination, to moderate the effect of the arſenic by the ſulphur contained in the antimony *. This laſt was the powder uſed in this caſe with great caution, and only a little at

* In conſequence of theſe hints, the Author conſulted his chemical friends, in hopes of meeting with ſome preparation of arſenic, which might anſwer his wiſhes, to deſtroy the morbid part without raiſing that degree of inflammation, which too often brought on freſh indurations; but after repeated trials, he was led to conclude, that none of the various preparations he had made uſe of, anſwered his intentions ſo well as the combination of arſenic and antimony here recommended. After the author's deceaſe, a paper was publiſhed by Dr.

at a time, taking care to uſe my liquid to all the edges and neighbouring parts, wherever freſh indurations were perceived to ariſe. An equal, and even a larger proportion of opium was afterwards added to this powder, by which I found its painful effect much diminiſhed. All my endeavours, however, proved fruitleſs, the patient's pain increaſed, and ſhe fell a victim to the diſeaſe, a year after her admiſſion into the hoſpital.

Thus I continued treating many caſes of ulcerated cancers in many parts of the body, varying theſe methods according to the different ſtates of the diſorders, and what appeared to me to be the conſtitution of the ſeveral patients, and with various ſucceſs. Some were relieved at firſt, others I did little or no ſervice to, and others again were nearly cured; the progreſs of their diſeaſes evidently ſtopped, their lives were preſerved for a conſiderable time longer than, in all human probability, they would have been, and that, too, with tolerable comfort to themſelves, of which there are ſome inſtances ſtill living. But I never ſucceeded in healing any ulcerated cancer beſides the firſt here deſcribed, by theſe methods nor others which ſhall be hereafter mentioned; except in the inſtance of one other cancer, which, as it proceeded from another diſeaſe, and was treated in a different manner, ſhall be introduced at the end of this account of the other methods I tried for the cure of ulcerated cancers, which are the only object of this part.

Though my firſt hopes were now cruelly fruſtrated in many inſtances, yet I could not but be convinced from the reſult of all my caſes, that ſomething more had been effected by theſe methods, than had been done by others, and as arſenic ſeemed to be the beſt application externally, I reſolved, in the firſt obſtinate caſe, to try it internally. I was the more induced to this from knowing that it had been adminiſtered by others,

Dr. RUSH, in the American Tranſactions, and ſince inſerted in the Medical Commentaries by Dr. DUNCAN, Vol. I. Decad. 2d. on the uſe of arſenic in cancerous affections. Dr. MOSELEY has likewiſe given an account of the ſucceſsful effects of Sublimate in the ſame complaint, in his treatiſe on tropical diſeaſes, which the reader will do well to conſult. H.

and from an account recently publiſhed, in which it was ſaid that this medicine had been given with effect in cancerous complaints. I determined, however, to give it in my own way, and therefore weighed out a grain of arſenic, and mixing it thoroughly in a glaſs mortar with a ſcruple of teſtaceous powder, made it up into a maſs of pills, with a ſmall quantity of ſyrup. This was divided into ſixteen pills, made exactly equal, by carefully weighing them ſeparately one againſt the other. Theſe pills were always prepared by myſelf.

On the 5th of October, 1774, Ann Bond applied to me with a cancerous ulcer on the right ſide of the tongue about the ſize of a crown piece, ſurrounded with indurations, and very painful. She came into the hoſpital on the 18th of January, 1775. She was at firſt put into the hemlock bath, the flores martiales were adminiſtered internally, and the ulcer was ſmeared with a mixture containing one drachm of ſpirit of ſalt, five grains of arſenic, and twenty of opium, with a ſufficient quantity of teſtaceous powder to make the whole into a conſiſtence ſomewhat like that of mel ægyptiacum, a portion of which was alſo ſometimes added to this mixture; and whenever any ſeparation was likely to take place from the action of the arſenic and the ſpirit of ſalt, the uſe of the mixture was ſuſpended, and the mel ægyptiacum uſed alone. Sometimes the ſore was merely waſhed with my liquid. When the mixture was uſed, the patient was directed to take particular care not to ſwallow any of her ſaliva for ſeveral hours after, and to waſh the mouth with ſome of my liquid, lowered with water, before ſhe ſwallowed her ſaliva, or took any food. The corroſive ſublimate was ſoon after ſubſtituted to the martial flowers, as being judged from Doctor Akenſide's obſervations, to be a medicine better adapted to this caſe. With this medicine internally, and the fore-mentioned applications externally, ſome advantages were gained; but the diſorder ſtill proving obſtinate, I reſolved at length to give the arſenic internally, beginning with the ſixteenth part of a grain every day, and gradually and carefully increaſing the doſe till my patient took a grain in the day. This patient could not bear much more than this quantity, for when ſhe had taken a grain and a half for a few days, ſhe

was ſeized with tremors of the limbs. But another patient I had at the ſame time with a cancer in his face, who was a remarkably ſtrong man, took two grains of it daily, without finding the leaſt inconvenience from it. From the time of my uſing this medicine, the appearances grew ſo favourable, that I was in great hopes of completing the cure, and many other ſurgeons who ſaw the caſe with me, and had ſeen it in its worſt ſtate, were of that opinion. But the obſtinacy of the diſeaſe made me judge it neceſſary to increaſe the doſe of arſenic, if my patient could bear it, and therefore I fuſed it with four times its weight of ſulphur, with the view of tempering the violence of its action. I began with the ſame quantity mixed with ſulphur that my patient had been uſed to take by itſelf, that is, a grain of arſenic in the day; and ſoon found that I could uſe it much more liberally in this way than before. For ſhe ſoon took four and five grains of the mineral every day in this combination with ſulphur, with leſs inconvenience, than ſhe took one grain and a quarter of the arſenic alone. But if the violence of this medicine was diminiſhed by this combination, it ſoon became evident that its efficacy was likewiſe decreaſed by it; for the diſorder ſeizing the tonſils and other glands about the neck and throat, the patient died in about ten months from her admiſſion into the hoſpital.

This, and the other caſe of a cancer in the face, were the only two caſes in which a fair trial was given to the internal uſe of the arſenic. Encouraged by the fair proſpects theſe trials afforded me at firſt, I had begun to give it to two other patients. But as the hopes I had entertained of its efficacy in the two firſt inſtances, were afterwards diſappointed, and that, however promiſing the internal uſe of the arſenic might appear to me in theſe complaints, it ſtill ſeemed impracticable to give it in ſuch doſes as to inſure ſucceſs, I thought myſelf not juſtified in continuing or repeating the trial. I therefore would not ſuffer my other patients who had begun, to continue taking it; and from that time never preſcribed any arſenic internally, judging that the advantages ariſing from it were not ſufficient to compenſate the riſque. The aſcertaining of this point appears to me to be a very eſſential, and, indeed, a very neceſſary circumſtance,

cumſtance, for if, from the boldneſs of ſome publications on the ſubject, others ſhould be tempted, as I was, to make the experiment, in hopes of contributing to the relief of mankind in theſe terrible caſes, they will probably be deterred from it by this fair expoſition of the matter. At the ſame time I am inclined ſtill to think, from all the obſervations I have been able to make, that arſenic is really the true antidote againſt this diſeaſe; but as its internal uſe is attended with great danger, and that every attempt to correct its noxious qualities, ſeems to leſſen its efficacy, it is not probable that it can ever be given ſo as to produce a complete cure.

The other caſe of a cancer in the face, alluded to above, in which a fair trial was given to the internal uſe of arſenic, was that of Mr. Champneſs, a man of the moſt vigorous conſtitution I ever knew. He was 67 years of age when he applied to me, in Auguſt, 1773, and his complaint had then been of eight years ſtanding. He had been for two years under the care of an eminent and ſkilful ſurgeon of this town, who, as he informed me himſelf, had very humanely taken a great deal of pains to do him ſervice, though his attempts had not been attended with ſucceſs; for the patient aſſured me, that the diſeaſe had been conſtantly increaſing ſince that time, and that its progreſs had been very rapid for the laſt fortnight before he addreſſed himſelf to me. When I ſaw him firſt, all that part of the face between the edge of the os malæ and the ala of the noſe on the left ſide was eaten way. The lower part of the ala of the left noſtril was quite corroded, the lip ſeparated from its adheſion to the gum, and almoſt deſtroyed on the left ſide. The ſmall remaining part of the lip on this ſide was very hard, and the induration extended to the right ſide and up the right noſtril. This patient, as I before obſerved, being of a remarkably ſtrong habit of body, I had an opportunity of giving the arſenic its full trial with him, both externally and internally, and with ſuch appearance of ſucceſs, that in the beginning of the year 1775, all the ſores had healed except one, and that was in ſo favourable a ſtate, and my patient ſo free from pain, that I had ſcarce a doubt of completing the matter, and, indeed, told the gentleman who had before attended

him

him of this expectation. But my hopes were again disappointed. The wound was never completely healed, and though the disorder remained very tolerable, and was kept from spreading for a twelvemonth after this, yet about the end of that time it began to break out again, till at length it reached the glands of his throat. Notwithstanding this, he lived till the latter part of the year 1778, and for the last year of his life, as I have been informed, in a very miserable state, having lost so much of his lip, jaw, and teeth, that it was with the greatest difficulty he could swallow any food. Though this patient persevered in the use of the arsenic for six months, in the dose before mentioned, yet he never experienced the least inconvenience from it. He was in good health, and continued even his daily labour all the time he was taking it, and for a long while after he had left it off.

As I have hitherto only mentioned two methods in which I applied the arsenic externally in cancerous ulcers, to wit, the arsenical and metallic preparation used in the first case, and the arsenic fused with antimony in other cases, I shall now communicate another method of using it, which I first tried on Mr. Champness; I mean, mixed with an equal quantity of sublimate. This hastened the action of the arsenical caustic considerably, and made a much larger eschar, nor did it appear to cause greater pain than was complained of when the arsenic was used alone. It must, however, be observed, that a large share of opium was mixed with every caustic I applied, from which considerable advantages resulted, the pain being generally less in proportion to the quantity of opium employed.

While my thoughts were engaged on this subject, I made frequent researches among the manuscripts of the Museum, in hopes of finding in them something relating to it. I communicated this circumstance to Doctor Morton, who being thoroughly acquainted with the manuscripts, might possibly give me some leading information to assist me in my enquiries. He told me, that in the Harleian library he had seen a recipe called the Earl of Arundel's receipt for curing a cancer, which he imagined to be the same as that used by Mr. Guy. He was so obliging

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as to inſtruct me where to find it, and I ſhall here give it the reader juſt as I extracted it from the manuſcript at the Muſeum.

The EARL of ARUNDEL's Receipt to cure a Cancer.

*The cauſticke powder.*

Take one ounce of yellow arſenicke, and half an ounce of bole armoniack, mix them well together, and make them into fine powder.

*The gliſtering cauſticke powder.*

Take an ounce of yellow arſenicke, of red precipitate, and bole armoniacke of each ℥ſſ.

*The tarte water.*

Take an ounce of white ſublimate, halfe an ounce of red precipitate, beat theſe together very ſmall, and put it into three pints of white wine vinegar, and boyle it neere to a quart, and when it is cold keepe in a glaſs.

*The red water.*

Take a lime ſtone or two about two pounds, boyle two gallons and a halfe of ſpring water out of a rock riſing againſt the ſunn, put the lime ſtones into an earthen pot, and then power the boyling water upon them. Cover all cloſe and ſo let it ſtand a day and a night, then power of the cleareſt and throw away the bottome: then take of bolus verus, roch allum, white copperas, aloes ſicotrina, and campher of each two ounces, beate and ſearſe them fine and mix them well with the ſaid cleare water, and let theſe all boyle together for an hower, then put it in a pot cloſe ſtopped till it be cold, and then turn it into a glaſs botle cloſe ſtoped and uſe the cleareſt.

*The green oyntment.*

Take lbiſs of freſh hog's greaſe, ℥iii of venice turpentine, lbiſs of roſin, half an ounce of verdigreaſe, beate the roſin and verdigreaſe together, put all together into a ſkillet, and boyle them till it comes to a ſalve, and ſtrayne it into a gallypot.

*The*

*The use of the things.*

Take ſome of the cauſticke powder and mix it with green oyntment, ſpread it thin upon a cloath the juſt bigneſs of the noli me tangere, and apply it thereunto, it muſt ly on eight or ten days till it falls off, and then apply one other till all the dead fleſh be ſpent.

The white tarte water is to be applyed to the noli me tangere, with a cloath diped in it, if occaſion require. Alſo it is good for a cancer in the noſe, ringworme, or for any dead fleſh.

The red water is to waſh the eyes if bloud ſhot, or pir, and webb, alſo to preſerve the ſight; uſed either for any ſore, to be uſed warme, and to be caſt in with a ſyringe, if occaſion.

The green oyntment is to be applied to the noli me tangere after the cauſticke hath done his working, to heall and draw. It is uſed alſo to draw any ſore.

Be it knowne that I, Eliſabeth Fellow, wife to Henry Fellow, blackſmith, dwelling neere St. Laurence ſtreet, in Oiciter, do proteſt and vow, before God, that I have trewly and faithfully ſett down and diſcovered in this note delivered by me to the Right Honorable the Earle of Arundell and Surrey, Earle Marſhall of England, the whole full and perfect receipt and manner of cure of the noli me tangere, which my father uſed, and often cauſed me to make, by which he ordinarily did cure that malady. And I do hereby faithfully promiſe and ſwear not to teach, give, or ſell the ſaid receipt at any time hereafter to any perſon or perſons whatſoever, other than my owne children, in witneſs whereof I have ſet my marke, this 16th of October, 1638.—

Eliſabeth Fellow,
her ꝗ mark.—

Witneſs'd
Fred. Bently,
Adrian Medcalfe,
Philip Howard.

Extracted from Colepeper's adversaria. Vol. XV. Q. R. Oxford library, British Museum.

I have thought proper to give the whole of this extract, rude as it is, and though the *red water*, mentioned in it, be foreign to the subject. As soon as I had read this receipt, it appeared to me that it was not Mr. Guy's, because this application would not act through the cuticle, as I knew Mr. Guy's did. It could not therefore be used in schirrous tumours that were not yet ulcerated, and was peculiarly adapted, as the receipt expresses, to the *noli me tangere*, the name given to an ulcerated cancer on any part of the face, a disease of which it is well known that Lord Bolingbroke died after the application of Mr. Guy's caustic. I therefore prepared only the caustic powder, the tart water, and the green ointment, omitting the red water for the reason above mentioned, and the glittering caustic powder, because in the detail of the use of the things, it was not mentioned what purpose that powder was designed for. With respect to the green ointment, I had it prepared merely for the sake of complying with the receipt, not from any opinion of its utility, for I have already declared my aversion for every kind of greasy application in these cases; and the powder may as well be formed into a consistence with the yolk of an egg.

In January, 1775, a wealthy farmer of Sussex, aged 73, applied to me at the desire of Doctor Pepys. He had a *noli me tangere* on the right cheek: it came on about twenty years before with a small pimple, which was frequently shaved off by the razor. It increased gradually to the size of a pea, and grew very troublesome, being attended with a sharp pricking pain. In this situation he applied, about a twelvemonth before he came to me, to an apothecary in the country, who put some butter of antimony upon the part. Far from being helped by this, he grew gradually worse; and when I saw him, there was an ill-conditioned cancerous ulcer on his cheek, about the size of a crown piece, and surrounded with edges, turned in and extremely hard. The induration at the upper

part

part extended over great part of the os malæ, and nearly to the orbit. He felt a good deal of pricking darting pain in it at times.

As I had obſerved that the preparation of arſenic and antimony uſed by me in former caſes, had been much too ſlow in its action, I determined in this inſtance, to give a fair trial to this receipt of the Earl of Arundel's, upon a preſumption that it would act more ſpeedily and powerfully than the preparation I had uſed. Some of the cauſtic powder was therefore mixed with the green ointment, and applied, according to the directions, upon the whole extent of the *noli me tangere*. This acted ſtrongly, and in about a month after, the whole of the diſeaſed part to which it had been applied, came away. But ſome of the hardneſſes beyond the ulcer where the ſkin was not broken, and on which the cauſtic could not act, ſtill remained. The bottom of the ſore looked extremely well for a time, but I afterwards found that the ſurrounding indurations fed the diſorder. I endeavoured to get rid of theſe by applying my liquid to them, and by touching the diſeaſed granulations, wherever they were obſerved to riſe with the *tart water*, as directed in the receipt. The application of the cauſtic was likewiſe renewed ſeveral times to the ulcerated edges of the indurations, in hopes of deſtroying them gradually. By theſe means carefully and attentively purſued, I ſucceeded ſo far in about five months as to ſubdue moſt of the diſeaſe, and very nearly to conſolidate the wound. There remained, however, ſtill ſomething to be done, which I had the greateſt reaſon to hope would have been accompliſhed, becauſe all the parts before treated had gradually yielded to the method. I uſed every argument in my power to perſuade my patient to ſtay longer under my care; but the attendance had already been tedious, and he was of an unquiet reſtleſs diſpoſition, and withal very uneaſy at being ſo long abſent from his family and his affairs, ſo that it was impoſſible to prevail upon him. His ſon, however, who was a ſurgeon in the country near him, came to town; and I ſupplied him with all the medicines, giving him as clear directions as I poſſibly could, for the occaſional application of them. Whether theſe were cloſely followed I cannot take upon me to ſay, but am inclined to think they were not, for the old gentleman was

wearied, and I ſhould ſuppoſe not diſpoſed to follow the method any longer. Whether this were the caſe, or whether the diſorder would have been equally incurable whatever method had been purſued, I cannot take upon me to contend. So far is certain, that ſome months after, the patient returned to town, and put himſelf under the care of a quack, who reduced him ſo much in a ſhort time, without doing any ſervice to the complaint, that he was very near dying from mere faintneſs and debility. He then had once more recourſe to me, and I ſcarce knew him again on account of his being ſo much altered from the hearty ſtrong man I had before ſeen him. Though the diſorder was worſe than when he had quitted me, yet it was by no means arrived to any dangerous height, nor was it near ſo much advanced, nor in ſo bad a ſtate as when he firſt put himſelf under my care. But he was now too much harraſſed both in body and mind with what he had gone through, to think of ſubmitting again to painful dreſſings; ſo that I now reſolved to try the effect of fixed air upon the part, which I was informed had been tried with ſucceſs in theſe caſes by an ingenious gentleman in the profeſſion. This application was continued for ſome time, and it appeared to keep the wound clean, and the part tolerably free from pain. But as he was again anxious to return into the country, I furniſhed him with the apparatus for continuing to apply it himſelf. I was informed, to the beſt of my remembrance, that he perſevered in it till the time of his death, but without its producing any particular effect on the diſeaſe.

Since I have had occaſion to mention the application of fixed air in theſe complaints, and that great expectations have been raiſed amongſt philoſophers of the preſent age from the introduction of this newly-diſcovered remedy into practice, I ſhall take this opportunity of communicating what has paſſed under my obſervation reſpecting the uſe of it in theſe diſorders.

I have tried it in ſeveral caſes of ulcerated cancers for a conſiderable time; and purſued the following method in applying it. I firſt adapted an open bladder to the end of a flexible tube of a convenient length, and

placing this bladder upon the ſound parts round the cancerous complaint, ſo as carefully to include the whole of the diſeaſe, I confined the margin of the bladder by applying to it a piece of ſheet lead, which was held cloſe to the ſurrounding parts by one or more aſſiſtants. The end of the tube was then fixed into the mouth of a pretty large bottle, into which ſmall pieces of marble had been put to a fourth part of its height, and the bottle itſelf about half filled with water. A quantity of oil of vitriol being then poured into the bottle, an effervescence was raiſed, which driving the vapour rapidly through the tube, inflated the bladder. The fixed air being thus conveyed to the wound was kept there for half an hour, or an hour at a time, as long as the patient could bear the proceſs. If the bladder grew ſlack, the effervescence was raiſed afreſh by ſhaking the bottle, or adding more oil of vitriol to the marble*. This application was renewed twice or three times in the day, and if I could have prevailed upon my patients to do it oftener, I would; being of opinion, that if any ſucceſs were to be expected from it, it muſt be owing to its being reiterated frequently. I imagined, indeed, that if it had been poſſible to keep the part conſtantly immerſed in fixed air, without any communication with the external air, this would be the moſt likely method of inſuring ſucceſs. However this may be, in all the caſes wherein I tried it, it did not by any means confirm thoſe expectations that report had raiſed in me of its utility. It never in any one inſtance diſpoſed the cancerous wound or any part of it to heal; and all the benefit I experienced from the uſe of it, was keeping the wound ſweet and clean. This indeed is no inconſiderable advantage, where theſe effects cannot be brought about by other means, leſs inconvenient than this. Neither can I aſcertain whether it contributed in any remarkable degree to abate the pain of the diſeaſe, for all the caſes I tried it in were very far advanced, and the patients having been uſed to obtain relief from opium, did not chuſe to relinquiſh a medicine, the good effects of which they had felt.

* Perhaps this detail may be deemed unneceſſary, conſidering how well the method of producing fixed air is known. But I thought it proper to particularize the mode in which I uſed it, that it might be determined whether my want of ſucceſs were owing to this.

Let

Let us now consider in what view the application of fixed air has been tried in cancerous affections. Except in some late instances where, from Doctor Hales's hints, it has been ingeniously suggested to be a dissolvent of the human calculus, the only principle upon which it hath been used in the disorders of the animal œconomy, is that of its resisting putrefaction. From Sir John Pringle's curious experiments on putrid animal substances, which, together with those of Doctor Black on the nature of calcareous earths, were the basis of all the experiments since made by Doctor Macbride, Doctor Priestley, and others, and the doctrines established in consequence of them, it appears, indeed, that fixed air, both as an internal medicine, and as a topic, is likely to become very beneficial in all putrid diseases. But what effect are we to expect from it when applied upon this principle to cancerous complaints? A cancer cannot surely be called a putrid disease, for the symptoms and appearances that attend it, are directly contrary to those in which we find the putrid diathesis prevailing in the machine, such as scurvy, putrid fevers, &c. In all putrid dieases the solids of the body are softened and relaxed; in cancers, those parts that are affected with them are bound by the most rigid hardnesses. In putrid diseases the solids become flabby and much increased in bulk, unable to resist the impulse of the fluids; in the true cancer, the parts are all contracted into a narrow compass, puckered up and drawn in, so that if a woman have one breast thoroughly affected with this disease, it will be much less in size and appearance than the other, even before any of its substance shall have been destroyed by the ulceration of the part. It will be urged perhaps that ulcerated cancers are generally accompanied with an extremely offensive smell, which indicates putrescency. Not to insist upon the circumstance that an offensive smell is not always an indication of this quality, I shall only observe, that the stench in these cases appears to be an adventitious symptom of the disease; it is the consequence of its ulcerated state, and is generally proportioned to the size and extent of the ulcer. If the cancer were of itself and *ab origine* a putrid disease, it is most probable that it would be cured as soon as the *foetor* were corrected; as is the case with other putrid distempers, which are cured whenever the tendency to putrefaction

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can be overcome. But it has already been obſerved, that fixed air in all the trials I have made of it, though it generally corrected the offenſive ſmell, has not cured the complaint, which agrees nearly with what Doctor Percival has ſaid of its effect in theſe caſes. There are, indeed, other means of correcting the ſmell of cancerous ulcers, and much more ſimple than the application of an apparatus for the generation of fixed air, and which, from all the obſervations experience has furniſhed me with on this point, ſeem to anſwer the purpoſe as effectually. The ſeveral topics I have uſed for this purpoſe are the flowers of zinc, the calamus aromaticus in powder, either alone or mixed with ſuch a proportion of powdered ſalt ammoniac as my patients could bear; ſulphur, either alone or combined with a ſmall portion of arſenic, which laſt preparation ſhall be ſpoken of more fully in the ſequel of this work. Theſe are the dreſſings I have chiefly uſed in the intervals of ſuch as were more active, and by means of which, I have generally preſerved my cancers from any very offenſive ſmell; and even in the laſt ſtage of the diſtemper, have ſucceeded in diminiſhing greatly this nauſeous ſymptom. Doctor Wathen ſaw a remarkable inſtance of this in an extremely offenſive cancer, which he ſaw with me in the moſt deplorable ſtate of the diſeaſe. He expreſſed his ſurprize on finding this ſtench much corrected in a few days by means of ſome of the fore-mentioned alcaline and abſorbent powders, aſſiſted with an outward covering of rags dipt in ſpirituous applications. The ſpirituous covering I generally uſed in theſe caſes, was the martial and ammoniac tincture above mentioned, either alone or diluted with water, without the addition of the oil of vitriol, which anſwers nearly to the common tincture of ſteel with ſalt ammoniac, to be found in ſome diſpenſatories. I ſhall here obſerve, that in all offenſive cancers we ought religiouſly to abſtain from every kind of greaſy application, however mild and innocent it may be, and even were it only uſed with a view to keep on the dreſſings. No ointment muſt come near the ſore, or even touch the neighbouring ſound parts. When the cancerous wound is ſmall and free from any offenſive ſmell, it is better ſtill not to uſe any greaſe if it can be avoided; and if we be forced to it, from the dry lint ſticking to the edges, it will be beſt to powder the ſore firſt with flowers of zinc,

and

and lay nothing over but the Goulard cerate, or ſome ſuch mild ointment. Baſilicon or the green digeſtive always add to the offenſive ſmell. Let me be permitted to obſerve by the way, that it might poſſibly be better if theſe digeſtive ointments were baniſhed from the practice of ſurgery, and more particularly from the treatment of ſimple wounds. The ſmell of them is of itſelf very diſagreeable to the patient as well as the ſurgeon, and I am fully perſuaded they are of no uſe. The purpoſe of keeping a ſimple wound moiſt and protected from the air, is as well effected by a little white wax and oil melted together, which to render it pleaſing to the eye, may be coloured with alkanet root. This kind of ointment, the Goulard cerate, and the epulotic cerate, are the only topics I have uſed to ſimple wounds for theſe laſt fourteen years, either in public or private practice. The advantages ariſing from this, are, that the wounds thus dreſſed do not yield ſo great a ſhare of matter, that the granulations are not therefore ſo likely to riſe above the edges of the ſore, that theſe edges themſelves are more eaſily kept clean, and that the dreſſings are not in the leaſt offenſive to the patient.

But to return to the ſubject of fixed air. If I did not apply it to cancers merely with a deſign of correcting their fœtid ſmell, as others have done, it may be aſked what was my view in trying it. I acknowledge that my expectations of ſucceſs from it in cancerous affections, were founded on its mephitic quality, rather than on its ſalutary properties. I have long ſuſpected that the cancer was produced from inſects or the germina of them taken up from the air by the lymphatic veſſels; and that in the inſtances of ſchirrous tumours, which ſometimes continue for a long time in a ſtate of eaſe and tranquillity, theſe germina thus abſorbed, remain in an inanimate ſtate till ſome accidental circumſtance brings them to life. This has appeared to me to conſtitute the ulcerated ſtate of the diſeaſe. I am not ſingular in this idea; for in one of the volumes of tracts upon cancers, collected by the late Mr. Bell, which was lent me by Dr. William Fordyce, I found it introduced as a received opi-

opinion *. And in another tract in the ſame volume, written in the Italian language, the author ſpeaks of having ſeen the inſect †. But whatever may have been the ideas of others upon this matter, for my own part, I have been led into this conjecture, from the nature and ſituation of the parts in which the diſeaſe is uſually ſeated; from the kind of pain peculiar to it, and the progreſs of the ulceration; from analogy, and the effects of poiſonous medicines upon it.

The parts chiefly affected with the cancer are the breaſts of women, the womb, the tongue, the lips, the noſe, and the face. All theſe parts are abundantly ſupplied with abſorbent veſſels, and are moſt of them expoſed to the external air, ſo that if there be any germina of inſects floating in this fluid, they will be ready to abſorb it. The breaſts of women in particular, which are by far the moſt ordinary ſeat of the complaint, are remarkably full of pores, and from the various ſtate of diſtention they undergo, theſe pores muſt certainly become at different times very large, and conſequently more fitted to receive and tranſmit any thing from without. The mammary glands alſo, to which the lymphatic or abſorbent veſſels immediately tend, are uſually the parts firſt affected ‡. The

* Tota intentio arſenicum adhibendi videtur ſuperſtructa eſſe opinioni illi, quod cancer vivat. Aut juxta forte pathologiam animatam, quod ex innumeris vermibus vivis confletur. Diſſertatio de cancro a Martino Schumacher.

† Ma non andò guari, che crudelmente riſorſero (gli ſpaſimi vùol dire) e nuovamente del pari ſi ſcemarono, allora quando per gli ſteſſi canali d'onde era piovuto il marciume, un picciolo vermicello ſi aperſe il paſſo, groſſo come un filo ordinario da cucire, longo alla miſura del primo nodo del dito mignolo, di colore roſſiccio, ſiccome ſarebbe una fibra di carne ſalata.

*Nuovo metodo per curare ſicuramente ogni canchero coperto, e ſpecialmente le ghiande ſcirroſe delle mammelle, e di altre parti del corpo: opera di Giuſeppe Maria Quadria.*

‡ I am aware that there are frequently indurations or ſchirrous tumours of the internal glands, ſuch as the liver, meſenteric glands, kidneys, &c.—But it may be conſidered, that if theſe germina be abſorbed from without, they may either be ſtopped in the firſt gland through which

The ſecond circumſtance which ſuggeſted the idea to me of the cancer being generated by inſects, is, the kind of pain peculiar to the diſeaſe, and

which the veſſels that abſorb them paſs, or may be accidentally hurried on with the circulation, and depoſited in the courſe of it upon ſome of the internal glands. Excluſive of this circumſtance, it is pretty apparent, that theſe indurations are different from the true cancer; ſo that whether we ſuppoſe them produced from the ſame cauſe or not, we find at leaſt that the effect is different. Indurations of the meſenteric glands are marks of the ſcrophula; and the ſymptoms and appearances attending ſcrophulous hardneſſes are extremely diſtinct from thoſe which accompany the cancerous induration; and might be accounted for upon a very oppoſite principle, were it not foreign to my preſent purpoſe. With reſpect to ſchirrous tumours of the liver, though they alſo appear to be indurations of a different kind from the cancer, yet as I ſuſpect this diſorder to be more frequent than it is generally imagined, it will not, I hope, be thought intruſive, if I take the opportunity of this note to communicate what has occurred to me in the treatment of theſe caſes.

A negro ſervant belonging to Doctor Mac Namara was admitted into the Weſtminſter hoſpital under my care. He had a large prominent tumour on the right ſide of the linea alba, and immediately under the margin of the cheſt. From the ſeat of the complaint, the ſymptoms attending, and from an obſcure fluctuation diſcerned in the tumor, I ſuſpected this to be an encyſted abſceſs of the liver, a diſeaſe often met with among negroes, and therefore reſolved upon opening it. I made an inciſion through the whole extent of the tumour, and after having divided the muſcles of the belly and the peritonæum, gave vent to a quantity of matter, which evidently appeared to be contained in a large cyſt, totally diſtinct from the cavity of the belly as uſual in theſe caſes. The ſac ran ſo far back towards the ſpine, that it was not poſſible to empty it at once, and, indeed, the contents were ſo viſcid and tenacious, that it was only by repeated injections with barley water, continued for about three weeks, that the cyſt could be entirely evacuated. When this was done, and that the ſides of it were conſequently brought nearer together, one might plainly feel an enlargement and induration of the liver, extending through the whole of its region. In little more than two months the wound was healed, except that there remained a fiſtulous opening which it was impoſſible for me to cloſe. Conſidering that this orifice might be kept open by the diſeaſe of the organ, I directed my patient to rub half a drachm of ſtrong mercurial ointment every day on the region of the liver, ſuſpending the uſe of it occaſionally, that the mouth might not be affected. By perſevering in this courſe about ſix weeks, the whole of this immenſe induration ſubſided, and the fiſtulous opening, cloſed of itſelf. The ſucceſs of this caſe induced me to try the effect of mercurial frictions in two other inſtances, of an enlargement and induration of the liver, evident to the ſight and touch. Both theſe caſes were cured by this method; even the induration, which was fartheſt advanced, and in which a prominence

and the progreſs of the ulceration. Nothing ſeems more properly to favour the notion of inſects corroding the parts, than that ſhooting darting pain complained of in this diſeaſe, which the patients deſcribe as the pricking of ſo many needles. The ſame may be obſerved of that gradual, creeping, and almoſt imperceptible corroſion of the parts, by which not only the whole ſubſtance of the breaſt is frequently deſtroyed, but the ulceration is alſo extended to the neighbouring ſkin, and a wound is produced of a moſt horrid appearance, full of cavities and inequalities, not unlike a piece of mouldering ruins. To which we may add, that the diſeaſe extends itſelf in the direction of thoſe lymphatic veſſels which firſt conveyed it to the mammary glands, forming hard chords which terminate and are loſt in the indurated glands of the arm-pit.

The third circumſtance which has given riſe to my conjecture, is analogy, and the effects of certain poiſonous medicines upon the cancerous affection.

a prominence on the ſame ſpot where the negro's large ſwelling had appeared, ſeemed to indicate a tendency to ſuppuration, was diſſolved without the formation of matter.

Thoſe who are converſant in diſſections, have frequent opportunities of ſeeing, that large and indurated livers are commonly found in the abdomen of perſons who die of a dropſy in that cavity. Theſe indurations have, indeed, been reckoned by ſome as the chief and perhaps the only cauſe of theſe collections of water; which, if it be the caſe, muſt be owing to the preſſure of a hard maſs upon ſo large a vein as the vena cava; thus obſtructing the courſe of the blood returning to the heart; in the ſame manner as the preſſure of the gravid uterus occaſions an anaſarca in the legs of pregnant women. Is it not probable, then, that this terrible diſeaſe might be cured if this apparent cauſe were removed? Accordingly, I remember to have found (though I cannot recollect where, having unfortunately loſt many of my papers) that it was a practice uſed with ſucceſs in India, to rub the belly with mercurial ointment in the dropſy of that cavity.

Some years ago I tranſlated a manuſcript paper for Dr. Fothergill, which had been ſent to him in the German language from a gentleman at Moſcow. The author mentioned that he had obſerved many internal complaints to proceed from indurations of the liver, which could not otherwiſe be accounted for. He accordingly recommended a more frequent examination of the ſtate of that organ than is generally attended to.

Every insect seems to have its particular bane. Thus in that cutaneous disorder the itch, which from Lewenhoeck's microscopical observations has been shewn to consist in numerous insects swarming on the surface of the skin, sulphur has been found to be the most effectual poison. There are, indeed, other poisons that will destroy these insects, such as hellebore and mercury, but none of these are near so powerful against them as brimstone* Thus there seems also to be a particular poison against the cancer, which is arsenic; which, in many instances of Mr. Guy's practice, and others upon record, has destroyed several cancerous affections, and which, from the experience I have had of it, though so often unsuccessfully used, appears still to be the proper antidote to this distemper. The fact seems to be, that it is a poison of so dangerous a nature, that it can seldom be used in sufficient quantity to bring about the desired effect, without exposing the patient to too great risque. But if the arsenic be not used in sufficient quantity to eradicate the disease, it does hurt rather than good, because after having lost its quality of an antidote, the ill effects of its having acted as a caustic still subsist, and the irritation it has occasioned exasperates the disease. For we well know that cancers, when irritated by caustic applications of any kind, are considerably hastened in their progress, which seems to form another presumptive argument in favour of the conjecture I have ventured to mention: for when the insects find themselves disturbed by an external application, they will make what haste they can to get out of the reach of it. Besides, no other caustic ever acts upon the cancerous affection in the manner that arsenic does; for, were we to attempt to extract schirrous glands by any other caustic, we should constantly fail in our attempts;

* Perhaps it may hereafter be found, that most cutaneous disorders arise from the same cause. At least they seem for the most part to have a particular poison appropriated to them. Thus we find, besides the instance of the itch, that in venereal blotches on the skin, sublimate is acknowledged to be the most powerful preparation of mercury. Hellebore has been recommended by the antients, and is still prescribed in many cutaneous eruptions, which we know not how to cure otherwise; and in the tinea or scald head, I have found no poison so effectual as a strong decoction of tobacco, by which I have cured some obstinate cases of this kind in a very short time, after all the usual methods, not omitting even the pitch plaster, had been tried for a long continuance without effect.

which

which I am convinced of, as well from the teſtimony of others, as from my own experience. On the contrary, though Mr. Guy's cauſtic hath not ſucceeded in every caſe, yet it is no leſs certain, that many have been cured by it, and that he has frequently extracted ſchirrous glands entire with it. A moſt ſingular effect, which I have alſo accompliſhed in one inſtance, which ſhall be related hereafter.

Theſe are the ſeveral reaſons that have encouraged me in the conjecture of the cancerous affection being produced by inſects; and which induced me to try the application of fixed air to theſe complaints, in hopes that its noxious quality would deſtroy theſe inſects and cure the diſeaſe. But it is an extremely difficult thing to apply mephitic air to cancerous ulcers, in ſuch a manner as to exclude all communication with the external air, upon which circumſtance alone, according to my ideas, its efficacy muſt depend.

The inequality of the parts on which the apparatus is to be fixed, and ſometimes the extent of the diſeaſe, are obſtacles to the cloſe adapting of it, which in ſome caſes are inſurmountable. Add to this, that a bladder is the only thing that can be made uſe of to contain this mephitic air; for if a hollow glaſs were applied, it is evident that it would act like a cupping glaſs, and become inſupportable upon parts already extremely ſenſible. Doctor Prieſtley obſerves too, that *a bladder, he has found by experience, will not long make a ſufficient ſeparation between ſeveral kinds of air and common air* *. Theſe may, perhaps, be the reaſons why the application of fixed air has not ſucceeded with me. Whether the nitrous air diſcovered by Dr. Prieſtley, and which he obſerves to be more noxious than the former, will ſucceed better, muſt be determined by future experiments.

Such were in general the methods I uſed, in the treatment of ulcerated cancers; beſides which, upon ſuperficial cancerous wounds, where it was

* Experiments on air, vol. I. p. 37.

my design to make a slight eschar with little pain, or where I was endeavouring to heal the obstinate remains of a cancer previously brought into a small compass, I used to mix some of the magnes arsenicalis, or even some crude arsenic, with a proportion of opium, and make it into an ointment by the addition of some Goulard cerate, or any other mild unguent of the same kind. This was made stronger or weaker according to the effect it was meant to produce. The general rule was to take ten grains of the magnes with the same quantity of opium, and mix them with one drachm of soft ointment. This mild application gives little or no pain, and produces evidently good effects. It might, perhaps, prove useful in removing any fresh appearances of the disease, that are apt to arise after extirpation, however carefully or well performed. Indeed, unless the arsenical caustic can be applied so as to eradicate the whole disease in a short time, I should always prefer this mode of using it, not only on account of its being rendered mild by the addition of an unctuous substance, but also because, in this mode of applying it, we can always ascertain the quantity of arsenic used upon any patient in a given time. This is a material circumstance to attend to; for if we are too free even in the external application of arsenic for any continuance, it will be apt to bring on pains in the extremities and other disagreeable symptoms. But in this mode it may be continued for any length of time without danger, for as I always spread the ointment as thin as possible upon the lint, a drachm weight of it will last for several dressings, and that drachm contains no more than ten grains of the magnes, in which there are but five of arsenic. It appears to me, that the disease may always be palliated and the progress of it checked by this kind of mixture; and, perhaps, if it were continued for many months uninterruptedly, to small cancerous sores about the face, it might often effect a cure: but the great length of time sometimes required to pursue the same method with advantage, frequently discourages the patient and the surgeon too, from persevering as they ought. I have had two instances of this, one of a cancer on the nose, the other the noli me tangere above mentioned; both which cases I verily believe, would have been completely cured by a steady perseverance in the use of this mild ointment, had it not been for the restlessness of the

patients

patients and their anxiety to return into the country. Nor do I think it neceſſary to add the opium to the mixture, unleſs the crude arſenic be uſed, and that in a larger quantity, for the application is ſufficiently mild without it. I ſhall take this opportunity to mention, that this arſenical ointment is alſo very uſeful in ſome inveterate ulcers, and likewiſe in ſcrophulous ſores. I was firſt induced to try it in ſcrophulous ulcers, from having found among ſome of Sir Hans Sloane's manuſcripts, that the magnes arſenicalis was mentioned as a ſpecific againſt the ſcrophula. Though I cannot boaſt of having found it entirely ſo, yet I have frequently uſed the magnes alone, or mixed with opium, to theſe ſores, and particularly to the carious parts of bones in them, with very good effect.

I am aware that ſome perſons will cenſure me on this occaſion, for endeavouring to introduce into practice, the old complicated and frequently ſevere method of dreſſing ſores, inſtead of thoſe ſimple and mild dreſſings ſo ſtrongly and ſo juſtly recommended by all modern writers of eſtimation. To this charge I anſwer, that no man can be a greater friend to plain dreſſings in all ſimple wounds than I am; which may be collected from what has been already obſerved in this work of my having entirely baniſhed from my practice even the common turpentine dreſſings of baſilicon, or the green ointment, which are ſtill almoſt in univerſal uſe. Neither do I ever employ the lunar cauſtic, the blue vitriol, or any other eſcharotic remedy, to keep under thoſe luxuriant granulations which in all ſimple wounds, particularly in young and ſound habits, are ſo apt to riſe above the edge of the ſkin, and prevent cicatrization; though ſuch applications are ſtill in common uſe for this purpoſe. To theſe I have ſubſtituted the conſtant and moderate preſſure of a linen roller, wherever the wounds were in a ſituation to admit of its being applied. This I find more effectual than the former practice, and it is certainly much more mild; for I know, from my own experience, that even the ſlighteſt touch of the blue vitriol upon theſe tender granulations, occaſions no inconſiderable ſmart, which ſometimes continues for ſome hours after the dreſſing. But there is a diſcrimination to be made; for however I may be an advocate for plain dreſſings in all ſimple wounds,

yet

yet there are ulcers, tumours, and complicated ſores, the treatment of which may require the exertion of every effort, that a competent knowledge of the materia medica can ſuggeſt to us. We are, indeed, often obliged to feel our way in the dark in ſome of theſe caſes, and to vary our applications till experience directs us to one that can even procure tolerable eaſe to our patient. Nor are we to ſuppoſe, that the immenſe ſtore-houſe of nature and the proceſſes of the chemical art, have in vain ſupplied us with ſo great a variety of ſubſtances, the properties of which are ſo diſtinct. The ſtudy of topical applications and their effects is perhaps too much neglected in this age. It is a ſtudy not to be purſued without much labour; and when the knowledge is attained, only partially (for it never can be completely) is not calculated to give the ſurgeon that degree of eminence which he will acquire from dexterity in operation. I would therefore earneſtly recommend to the young ſurgeon the ſtudy of natural hiſtory, not merely as a ſcience of nomenclature, but with a view, as Boerhaave adviſes in his Methodus Studendi Medicinam, to acquire an early inſight into the properties of bodies; that by combining this knowledge with the nature of the complaint he is to treat, and with experience, he may be led to a rational application of it. This will effectually ſecure him from having recourſe to thoſe unmeaning combinations with which diſpenſatories abound; and the abſurdity of which has been the cauſe of the diſgrace and neglect of topical applications, though much benefit might accrue from a prudent and ſcientific management of them.

In page 343 of this work, it has been obſerved, that I had found a preparation of arſenic and ſulphur uſeful in removing the offenſive ſmell of cancers. The method of making this preparation and the proportions are as follow: take of ſulphur in impalpable powder, four pounds; of white arſenic in impalpable powder, one pound; mix them, and put them into a ſmall glaſs retort, place them in a ſand heat, and lute on a long neck and a receiver. Raiſe the fire gradually until the mixture be fuſed. The fixed maſs is the part to be levigated for uſe, the ſublimed part is to be rejected.

This was the preparation which I had given internally in the proportion of five grains of arſenic in the day, without producing any pernicious effects. From this circumſtance, and conſequently from the little riſque there appeared to be in uſing it externally, I was inclined to entertain hopes that it might not only correct the offenſive ſmell, but alſo be attended with more complete ſucceſs in theſe caſes. I had very good reaſon indeed to be ſatisfied with its effects in the few caſes I have hitherto had an opportunity of trying it, and which were of the worſt kind. It gave ſcarce any pain, it corrected the ſmell and the diſcharge, it alleviated the painful ſtate of the diſeaſe, and checked its rapid progreſs, if it did nothing more. But even this mild application I found could not be uſed in all cancers, without danger, of which I ſhall candidly relate the inſtance.

A lady who had been attacked with a ſevere paralytic complaint, of which ſhe ſtill had the remains in the difficulty of her ſpeech, put herſelf under my care, with an exceeding bad ulcerated cancer from which ſhe ſuffered much pain. Apprehending the conſequences of even the ſmalleſt quantity of arſenic uſed in a habit addicted to palſy, I thought it neceſſary to apprize the family, that my applications being of an arſenical nature, I could not anſwer for the effect they might produce in ſuch a habit. But ſo eager was the patient to try for relief, and ſo deſperate was her preſent ſituation, that it was agreed we ſhould run the riſque of the application, and if it ſhould cauſe any alarming ſymptom it might then be left off. I proceeded with all poſſible caution, and as the ſore was very large and deep, and would conſequently require ſome quantity of the powder to cover its whole ſurface, I made it weaker than uſual, by mixing it with equal parts of the flowers of zinc. The ſore was ſo much mended by this in a ſhort time, and the patient ſo evidently relieved, that the ſatisfaction experienced from this change, made us overlook, or not pay ſufficient attention to, ſome apparent trifling weakneſs in the leg, attended with ſlight ſpaſms. But theſe ſymptoms continuing and increaſing, I could no longer doubt that they were owing to the abſorption of the arſenic from ſo large a ſurface as the ſore exhibited. I there-

fore desisted from the use of this application, and dressed with nothing more than flowers of zinc and sulphur combined. But notwithstanding this precaution, my patient did not long survive this fresh attack.

From this fact we must conclude, that it is necessary to abstain entirely from any arsenical application in paralytic habits; and that, where the surface of the sore is very large, as it was in this case, and consequently the absorbent power considerable, we should use it with extreme caution.

I am now to give the account which I promised before of the successful treatment of a cancer of another kind, by a method somewhat different from any of the preceding. This disorder was produced from a venereal infection. The patient who applied to me in this case, had had, four months before, some chancres on the prepuce. He had rubbed in a quantity of mercurial ointment, and taken mercury freely internally. He had also taken the decoctions usually prescribed in these cases, but all to no purpose. When he applied to me, in the month of May, 1776, the chancres were converted into an eroding cancerous ulcer, which had then eaten away most of the glans penis, had seized upon the corpora cavernosa, and had destroyed the greatest part of the prepuce*. The

* I am aware here of the distinction so properly established by an ingenious French writer, Mr. Perilhe, in his essay on cancers, between what is called the true cancer and the cancerous ulcer, the latter of which he says sometimes admits of a cure. The case here described may perhaps be thought more properly to come under the last appellation: yet as this distinction seems not to have been so precisely drawn, but that in many cases it may be difficult to ascertain to which class the distemper belongs; it has been thought proper to insert this case here, more especially as, notwithstanding the acknowledgement that cancerous ulcers sometimes admit of cure, there have been no certain rules laid down for the general management of them. There is the greater reason for this, as the usual treatment of this terrible and rapid cancerous ulcer succeeding the venereal taint, is, to the best of my knowledge, mostly unsuccessful. In one of the instances that fell under my notice the testicles were laid quite bare, and hung loose as if the integuments had been dissected from them; in another, the ulcer had eaten away the integuments and muscles of the abdomen, and the intestines came out at the aperture. It will not be improper to add, that in these instances the mercury had been continued to the last; a circumstance which determined me to lay aside the use of it in the present case.

wound

wound was full of ill-conditioned ſloughs, was extremely offenſive and very painful. The ſkin at a conſiderable diſtance from the edge of the ulcer, was quite black and ſeemed in a ſtate of mortification. This livid appearance of the ſkin extended itſelf even to the root of the upper part of the penis, and was creeping on by a red duſky line to the integuments of the belly. I did not judge that there was any ſucceſs to be expected from the amputation of the part while the mortification ſeemed to be in its full career. Neither was I inclined to uſe the arſenical cauſtic here, leſt the eſchar produced by it ſhould deſtroy too much of the penis, the remains of which I was anxious to preſerve. On the other hand there appeared to be an abſolute neceſſity of taking ſome effectual method to ſtop the progreſs of the diſorder, which muſt otherwiſe ſoon prove fatal to the patient. It then occurred to me that I had met with an account of a medicine conſiſting of equal parts of crude ſalt ammoniac, arum root, and crab's claws in fine powder, having been uſed with good ſucceſs in cancers *. From the pungency of the arum root, the quickening power of the ſalt ammoniac, and the utility of abſorbent powders in all cancerous, fœtid, and malignant ulcers, I judged this combination to be peculiarly adapted to the preſent caſe, and therefore determined to try it in lieu of the arſenical cauſtic, for the reaſons above-mentioned; with a full reſolution to alter my plan if ſome remarkable change were not ſoon produced by this joined to other efforts. Accordingly, I dipped pieces of lint into my liquid, and placed them upon all the black and livid parts of the ſkin, even to the edges of the ſore, directing my patient to wet theſe pledgits twice or thrice in the day with the liquid. I ſtrewed the whole ſurface of the ulcer with the powder above mentioned, which, notwithſtanding the apparently dead ſloughs upon it, was ſtill ſo active as to be ſenſibly, though not ſeverely, felt. The pills with martial flowers were at the ſame time taken freely, and that nothing might be omitted from which the leaſt advantage was to be expected, I adviſed my patient

* At the time of my reading this, which, to the beſt of my recollection, was in a book of voyages, I had taken a memorandum of the matter with an account of the book I had extracted it from, and the place where the remedy was ſaid to have been tried. But the loſs of my papers prevents me from gratifying the curioſity of my readers in theſe particulars.

to go into the hemlock bath every other day, and to ſtay in it from half an hour to an hour. All my directions were punctually followed; and there was ſo favourable an alteration in a ſhort time, that I was encouraged to perſevere in the ſame methods. In leſs than a month the ſkin near the root of the penis had entirely recovered its life, and moſt of the livid appearances were vaniſhed. The ſloughs were in a great meaſure ſeparated, and the wound itſelf had a quick and lively aſpect. But it was impoſſible to prevent ſome of the blackeſt part of the ſkin, at the edges of the ſore on the upper part of the penis, from coming away in ſloughs, and thus enlarging the ſore. The powder now occaſioned a very conſiderable ſmart, from the wound being in a more ſenſible ſtate. This ſmart was very ſharp on the firſt application, but the violence of it ſoon abated, though it ſometimes continued troubleſome for an hour or two after the dreſſing. I obſerved alſo with chagrin, that as ſome parts of the ſore healed others grew worſe; the ulcers ſtill continuing to corrode the under part of the glans and the corpora cavernoſa, ſo that my patient was obliged to compound with the loſs of a greater part of the penis than I at firſt hoped. However, by perſevering ſteadily in this courſe, the progreſs of the diſorder was gradually ſtopped, and the wounds were all healed in about two months from his firſt application to me. No ſooner was this effected, than my patient, to my great ſurprize, was ſeized with ſwellings and pains in the extremities, and venereal ulcers on the tonſils, which plainly indicated the communication of the original virus over the whole habit. He had, indeed, complained of a ſoreneſs in his throat for about a fortnight before the cancerous ulcers were cloſed, but as there appeared nothing more upon inſpection at that time, than an enlargement of the tonſils without any ulceration, I concluded that this appearance was owing to his having caught cold. But now the diſeaſe was manifeſt, and though the former copious adminiſtration of mercury had failed in this caſe, yet I now judged it neceſſary again to have recourſe to mercurial frictions, aided by the internal uſe of the ſublimate. As I imagined alſo that the failure of this remedy in the firſt inſtance, had been owing to its not being brought ſufficiently into action, (a circumſtance which I am apt to think occurs more frequently than is commonly

monly ſuppoſed) I ordered my patient to live very freely during his courſe of mercury, and gave him at the ſame time warm volatile medicines, to ſtimulate the vaſcular and muſcular ſyſtem of the body, and thus increaſe the power of the mercury. I alſo took particular care by the uſe of the hot bath*, and diuretic decoctions, and by ſuſpending occaſionally the uſe of the mercury for a day or two, to divert it from what ſeems its favourite channel, the ſalival glands. By theſe methods he was entirely cured of all his complaints in about two months more, and is at this time in the moſt perfect health.

This caſe ſeems to point out the following ſingular circumſtance; that the cancerous ulcer ſucceeding to a venereal infection, is both independent of the original diſeaſe, and connected with it. Independent with reſpect to the mode of treatment, and yet connected with it ſo far as to imply that the original virus is not yet deſtroyed but ſtill exiſts in the habit. It appears to me, indeed, that this venereal cancer differs very little from a complete ſphacelus of the part: and this idea may furniſh us with the reaſon why a continued uſe of mercury, by breaking down the texture of the blood, and relaxing all the ſolids, ſeems rather to aggravate than relieve this ſymptom of the venereal diſeaſe, if it may be ſo called. It is evident, indeed, that wherever there is a tendency to ſphacelation, it muſt unavoidably be encouraged by any medicine that produces ſuch effects as theſe in the animal œconomy.

I now proceed to ſpeak of cancers of the womb, which I ſhall conſider in the claſs of ulcerated cancers, as I believe they generally are ſuch when they come under our notice.

I have been conſulted only in four caſes of cancer of the uterus, but all of them were in the moſt advanced ſtate. In two of theſe I did no

* Not the tepid bath, which is uſually preſcribed in theſe caſes, in what is called the Montpellier method, with intentions very different from mine. But my ſentiments on this head will be fully explained in ſome obſervations on the venereal diſeaſe, which I propoſe to offer to the public when they are collected and thrown into ſome kind of order.

good,

good, or very little; in the other two I gave much relief, and in one of them prolonged life with tolerable comfort, for a conſiderable time. This was the firſt caſe of the kind I was conſulted in, and as I have got Doctor Hunter's deſcription of the caſe by me, written by himſelf after his examination of the patient at my requeſt, before ſhe put herſelf under my care, I cannot do better than to give it in his own words.

Nov. 14, 1773.

"This day, upon examining Mrs. ——, I find little or no diſcharge, "or offenſive ſmell; ſo far ſhe is better than when I examined her laſt, "about three or four months ago, during which time ſhe has done nothing "but drink the decoct. ſarſaparillæ. Her principal complaint at preſent "is an almoſt perpetual call to make water, with an uneaſy urging preſ-"ſure downwards. She has paſſed ſome ſmall gravel; and her urine depo-"ſits large quantities of very tough ſlime. No hardneſs or tumour is to be "felt outwardly in the hypogaſtric region; but on introducing the finger "into the vagina, I ſtill find what I ſhould ſuppoſe to be an incurable in-"duration of all the parts at the upper end of the vagina, and which I "ſhould ſuppoſe to be in a ſchirrous ſtate that is introductory to ulceration "and cancer. The hardneſs with inequality of ſurface begins about "half an inch within the extremity of the urethra, and about half an "inch more inwards ſtill, the vagina is contracted into a hard round "ring, little larger than juſt to allow the laſt joint of my finger (which "is ſmall) to paſs. The point of the finger meets there with a ſofter "round piece of fleſh, probably a fungus; and the ring, with all the "parts ſurrounding it, are ſo firmly fixed, that a pretty firm preſſure "gives them no motion, nor does it give her pain. This hard ring "would naturally paſs for the os uteri, but I think it is too near the ex-"ternal parts to be any thing but vagina."

Such was the ſtate of the caſe as given me by Doctor Hunter, to which I ſhall only add, that this perpetual call to make water was the miſery of her life; ſo that ſhe ſcarce ever dared to go abroad, could not ſuffer the jolting of a coach, and was frequently ſcarce able to remain for one

quarter of an hour in the ſame poſture. When ſhe addreſſed herſelf to me to know whether I thought my medicines would be of any ſervice to her, I freely declared that it was a queſtion I could give no ſatisfactory anſwer to, not having experienced them in any caſe of the kind. Beſides, they were caſes that, not admitting of any ſurgical operation, nor indeed of any immediate topical application, except from injections, did not ſo commonly fall under the cognizance of the ſurgeon, and I could not, therefore, take upon me to promiſe her any relief: nevertheleſs, if the knowledge ſhe had of what I had done in other cancerous complaints made her wiſh to try the effect of my remedies, I could take upon me to aſſure her that they would at leaſt do her no hurt, if they did her no good. She reſolved then to put herſelf under my care, and the method I purſued was to preſcribe my pills made with flores martiales, to order the hemlock bath, and to have an injection thrown up, compoſed of a ſtrong decoction of hemlock and my liquid in equal parts; adding to or diminiſhing the quantity of the liquid as I found ſhe could bear it. She ſoon took twelve, fourteen, and ſometimes twenty pills in the courſe of the day, each containing ten grains. She went into the hemlock bath, and ſtaid in it from half an hour to an hour, and ſhe uſed the injection three or four times in the day. She ſoon grew better in health and freer from anxiety and uneaſineſs, and when ſhe had perſevered in this method for three months ſhe found herſelf ſo much recovered, that ſhe could ſit quietly in company and play at cards as other people, undiſturbed by thoſe frequent calls to make water, which had before been ſo troubleſome to her. She could alſo bear to go out in her coach, and in a word, was ſo materially relieved, that ſhe conſidered herſelf as almoſt cured. Though I was far from entertaining ſuch ſanguine hopes, yet it is certain that the progreſs of the diſeaſe was ſo far checked, and the uneaſineſs of her ſituation ſo thoroughly removed, that ſhe lived upwards of a year and a half after her firſt applying to me, ſeveral months of which period ſhe paſſed in great comfort and eaſe. She continued the bathing and pills during all the ſummer of the year 1773, and remained tolerably well till the beginning of the year 1775. Her complaints began then to return, and continued in a greater or leſs degree till the time of her death; but they never roſe

to

to ſuch a pitch as they were arrived at when ſhe firſt applied to me; for in the few weeks before her death ſhe ſuffered more from a continual hectic fever than from her local complaints, though it muſt be owned theſe were likewiſe much exaſperated, particularly the pain ſhe uſed to complain of in her back.

It is neceſſary alſo to mention, that upon the firſt return of her complaints, I deſired that Dr. Hunter might examine her again, to aſcertain the ſtate of the parts. This he was ſo kind as to do, and to give me again the account in writing. But this laſt paper is among the many I have loſt, ſo that I cannot even aſcertain the time when this examination was made. To the beſt of my remembrance, it was in the ſpring of the year 1776; and it is but juſt and candid to declare that the tenor of this laſt paper, as I have it from my memory, ſignified that the Doctor found little or no alteration either for the better or the worſe in the ſtate of the parts ſince his laſt examination: ſo that, however the ſymptoms might have been relieved, the diſeaſe ſeems to have exiſted invariably the ſame.

Another caſe of a cancer in the womb, to which I was called, was that of a mantuamaker in Piccadilly. She appeared to me ſo near death when I firſt ſaw her, which was in the month of February, 1774, that I attempted to diſſuade her from doing any thing. But ſhe had been ſo ſtrongly perſuaded of the relief I had afforded in the caſe above mentioned, and withal ſo totally overcome with pain, that ſhe conjured me to try what could be done. Her pain was conſtant, ſo that ſhe ſcarce got any reſt, even with large doſes of opium; the diſcharge from the uterus was prodigious, conſtantly wetting through numbers of thick cloaths that were laid under, and frequently changed, to receive it, and was ſo intolerably offenſive that one could ſcarce bear the room. Add to this, that the patient's ſtrength was totally exhauſted, and her complexion changed into a yellow cadaverous hue. I directed her to go into the hemlock bath every other day, and to take the pills with flores martiales conſtantly and freely. Deplorable as this caſe ſeemed to be, I was aſtoniſhed at the ſudden change produced in it. In three weeks time, the patient's pains were

were ſo far leſſened, that ſhe ſlept comfortably with much leſs opium than ſhe had uſed before in vain; and her ſtrength was ſo far recovered, that ſhe could ſit up beſt part of the day. The diſcharge was ſo amazingly reduced in quantity, that it was not in the leaſt troubleſome to her, and the ſmell of it was inoffenſive. Notwithſtanding theſe favourable appearances, ſhe died, after remaining for about four months in a languiſhing but quiet and calm ſtate, free from the violence of thoſe ſymptoms that had excruciated her for ſo long a time before ſhe had applied to me, and which nothing ſhe had hitherto tried could give the leaſt relief to. Although this caſe was ſo deſperate, that it could not certainly have been conſidered as any impeachment of the method if no effect had been produced by it, yet I cannot but be perſuaded, that beſides the ſpeedy and unexpected alleviation of all the ſymptoms, it contributed to allay the miſeries of this patient during the laſt months of her exiſtence.

The third patient who put herſelf under my care with this dreadful complaint, was a lady of quality. The lady flattered herſelf that ſhe felt ſome degree of relief at firſt; but for my own part, I freely acknowledge that I do not think ſhe received the leaſt benefit. It is neceſſary, however, to obſerve, that her ſtomach being very weak, ſhe never took the martial flowers ſo freely as the other two patients.

The wife of a ſurgeon in the country, was the ſubject of the fourth caſe of cancer of the uterus that fell under my notice. Though the patient was a young woman, yet her caſe was as far advanced as that in the ſecond inſtance, but in a different way. Being leſs corpulent, the diſcharge was leſs, and leſs offenſive; but the frequent and conſiderable loſſes of blood ſhe ſuſtained, had reduced her to extreme emaciation and weakneſs. The relief procured in this inſtance was more marked than in the laſt, but not in the leaſt to be compared to what I had ſeen in the two firſt inſtances. My patient returned into the country, and died a little more than two months after ſhe had applied to me.

It has often been obſerved, that our frequent failures in the cure of a cancer in the breaſt, ariſe principally from the long concealment of this complaint, proceeding from the ill-judged and fatal modeſty of ſome women. The diſeaſe in ſome, thus becomes unfit for the operation, or too much fixed in the habit to be relieved by it. This baſhfulneſs muſt operate much more ſtrongly with women who are afflicted with a cancer of the womb; and how much more effectually muſt it prevent the ſucceſs of any means that may be attempted to cure this too common and too fatal diſorder of the fair ſex. Neither indeed could women prevail upon themſelves to diſcloſe theſe complaints in their earlieſt ſtages, which I am inclined to think they often do under the appearance of other diſorders, is there any determined criterion to aſſure the phyſician or ſurgeon of the nature of the diſeaſe. The moſt terrible cancers of the breaſt ſometimes proceed from almoſt imperceptible beginnings, or from ſmall ſchirrous tumours, which ſhall have exiſted for many years in the body, without pain or trouble to the patient. And it is reaſonable to preſume, that theſe uterine complaints may ariſe from the ſame imperceptible beginnings, and may alſo continue in the part for a long time before they exert their violence. I have heard many women complain of a pain in the back, which though not violent at firſt, and coming on only at intervals, has been conſidered by themſelves, and by the medical people they conſulted, as rheumatiſm or gravel, and has been treated accordingly, or neglected as a thing not very violent, and that would of itſelf wear off. This is ſometimes attended with a fluor albus, or what is commonly called the whites, in which caſe the pain in the back is often attributed to debility ariſing from the diſcharge. I ſhrewdly ſuſpect theſe ſymptoms, even when ſeparate, to indicate frequently the beginning of the cancer in utero, and when combined, more particularly ſo. It is neceſſary therefore when a female patient complains of pain in the back, to examine carefully the nature and ſeat of the pain. If it be rheumatic, it will generally be ſeated about the faſcia of the loins, it will be exaſperated by lying in bed, and more ſeverely felt upon firſt riſing from a recumbent poſture, and it will be alleviated by the neceſſary motion and exerciſe of the day. If the pain proceed from urinary complaints, it will probably be

be ſeated higher up in the loins, and will moſt properly be diſtinguiſhed by the other concomitant ſymptoms of theſe affections, and by their yielding to the uſual remedies preſcribed in ſuch caſes. But if the pain be of that pricking darting kind ſo peculiar to the cancerous affection, if it be much aggravated by motion, and if it be ſeated lower down than the fore mentioned complaints, upon the os ſacrum, and particularly if it be attended with a diſcharge from the uterus, though ever ſo inoffenſive, we may have reaſon to ſuſpect an incipient, or, perhaps, a more advanced ſtate of a ſchirrous of the womb If patients were examined in this early ſtate, by a ſkilful anatomiſt and an experienced man-midwife, well verſed in the natural feel of the parts, the true nature of the diſeaſe might perhaps be aſcertained.

I have been more particular in endeavouring to trace the beginnings of theſe uterine affections from an expectation that if they could be diſcovered in their early ſtate, they would be much more likely to yield to the uſe of the hemlock bath, and the free adminiſtration of the flores martiales, joined with aſtringent injections, than other cancerous diſeaſes. Theſe expectations have been raiſed in me, not only by the experience of their effect in the preceding caſes, but alſo by the accidental diſcovery of the great effect of the flores martiales in the liberal doſes I have uſed them, in curing the fluor albus; a circumſtance which I hinted at in the former part of this work. I am not ignorant that this medicine has been preſcribed by many perſons in this common but troubleſome diſtemper; but it has been uſed in ſuch ſparing doſes, that its great and peculiar efficacy has not been aſcertained. A phyſician of great learning and eminence, to whom I had frequently communicated my thoughts on this ſubject, aſſured me that he had not met with any diſeaſe more rebellious than this. He alſo informed me that he had found the flores martiales the moſt effectual remedy againſt it; but having never given it in ſuch liberal doſes as are mentioned in this performance, this may have been the reaſon of his not having ſucceeded ſo fully as he might probably have done. My experience of it, indeed, is only accidental, and therefore not extenſive, becauſe theſe caſes fall uſually under the notice of the phyſician,

and belong properly to his province. Some few of my cancerous patients have informed me of their being completely cured of the whites while they were taking the martial flowers for their other complaints. One of them, I afterwards was informed, had had this discharge to a most violent degree, and had previously taken a number of medicines for it without the least effect. This circumstance induced me to try it in some cases of obstinate gleets in men, in which I have most frequently found it effectual, though not universally so. This may perhaps be accounted for, from the difficulty of prevailing upon men who are always running about, to confine themselves to a steady perseverance in swallowing a great number of pills every day.

Before I close this part of the work respecting ulcerated cancers, it will not be improper to give the prescription for making the liquid so frequently mentioned, as it is to be found in the writer from whom I took it *, with a short account of the performance that contains it. The pamphlet was published in Latin, at Vienna, in 1767, and is written by Francis Xaverius de Mare, who stiles himself Doctor of philosophy and physic. The title of the book is, *Tractatus Medico-chirurgico-chemicus, de cancro et spina ventosa curabilibus per medicamentum hactenus secretum, nunc communicatum.*

From this title we see that the writer applies his liquid to the cure of the spina ventosa, as well as of the cancer. The account he gives of the nature and progress of these disorders, does not, however, contain any thing new or worthy of remark. There are only four cases adduced in support of the utility of its application, and three of these appear to be scrophulous, though he calls one a spina ventosa. His directions for applying the liquid, are to smear the edges of the sores and all the indura-

* When I first used this liquid, I had not the original book in which the prescription is; but copied it from a periodical work in which it was transcribed, and which Doctor Garthshore (the person from whom Doctor Morris had received his information concerning it) was so obliging to lend me for that purpose. A considerable time after this I had the original work imported from Vienna, being very desirous to see the whole of a performance from part of which I had reaped such advantage.

ted parts with it, by means of a pencil brush three or four times in the day, and to suffer the part to remain exposed to the air till the liquid dries upon it; so that he has not used it near so liberally as I have done since. His mode of preparing it I shall give in his own words Ri. Ramentor. ferri lotor. et supra ignem in vase aperto siccatorum & minutissimé contusorum; salis armoniaci in pulverem redacti āā unc. iv. Mixta dentur in retortam terream optime in fundo et circumferentia lege artis munitam, imponatur hæc capellæ, admoveatur vas vitreum recipiens, quod bene lutetur: detur ignis in gradu digestionis, & dum retorta calefieri incipit; augeatur successivè ad sublimationis, finitaque sublimatione ad calcinationis gradum. Hoc facto successivæ refrigerationi committatur retorta, et ex refrigerata fractaque accipiatur calcinatum in fundo hærens, caput mortuum teratur, et subigatur minutissimé in mortario lapideo, dein subactum imponatur in vas vitreum et affundantur spiritus vini rectificatissimi Empyreumaticum odorem non redolentis lbij. Agitentur sæpius primis octo horis: post viginti quatuor horas agitatis denuo instilletur tribus quatuorve interstitiis observatis, acerrimi, ut vulgo vocatur, olei vitrioli nigri unc. i—ad quamvis instillationem semper mixta agitando; deinde in quiete permittantur per viginti quatuor horas, his elapsis decantetur tinctura, residuo vero in fundo affundantur prioris spiritus vini lbij. Agitentur iterum pluries, dein extractio de novo relinquatur per viginti quatuor horas; his transactis instilletur iterum, ut prius, olei vitrioli supradicti unc. i. Effervescentia finita vero infundantur spiritus tartari simplicis unc. iv. Agitentur et finita agitatione aliquoties repetita relinquantur in vase per viginti quatuor horas; his elapsis secunda hæc solutio misceatur priori decantatæ, et optime simul agitentur, tunc parata est ad usum PANACEA NOSTRA ANTI-CANCROSA.

This is a very elaborate process, and it is evident that a tincture of the same properties might be made with much less trouble. But I chose not to depart from the prescription, and used it just as it is here set down. I varied it afterwards by omitting the oil of vitriol and the oil of tartar, where I did not think them necessary. My first motive, indeed, for employing it was the salt ammoniac used in it, but I am since convinced that

that the addition of the ſteel has a very conſiderable ſhare in its virtues. Perhaps ſome may think that its effects depend entirely upon this laſt ſubſtance, that there is little of the ſalt ammoniac in the tincture, and that the only uſe of this ſalt in the proceſs is to diſſolve a greater proportion of the iron. However this may be, it is certain that this liquid, or one of a ſimilar kind, is likely to prove a very ſerviceable topic, the uſe of which may hereafter be extended. For beſides the evident advantages obtained from it in the firſt caſe deſcribed in this work, I have found it very uſeful in diſſipating recent ſchirrous tumours, as will be ſhewn hereafter; in reſolving cancerous indurations or checking their progreſs; and in alleviating the darting pain of the ſchirrus. It is alſo uſeful in ſoftening the callous edges of ulcers, and in ſtopping the advances of putrefaction, as in the inſtance before adduced of the cancerous ulcer of the penis; and in another of a very large and moſt alarming anthrax or carbuncle between the ſhoulders, where it was uſed with remarkable ſucceſs. But there is another diſeaſe which is frequently very troubleſome, and againſt which this liquid ſeems to act with peculiar efficacy, this is, venereal warts. I never knew it fail in this complaint; but as it is a very common one, and often relieved by other means, I ſhall only adduce one inſtance of this kind, becauſe it is of ſuch a nature that it ſeems to put the ſuperiority of this application in this caſe beyond a doubt.

In the year 1774, a young man applied to me who had been in St. Thomas's hoſpital with a confirmed lues. When he came to me, all his glans penis was totally ſurrounded and covered with warts, ſo that it exhibited the appearance of a cauliflower. Theſe warts were extremely painful, and ſo large that he could not bring the prepuce over them. Having been under very ſkilful hands, every known method had been tried to cure him of this diſagreeable complaint. He had been ſalivated, the warts had been fumigated with cinnabar, cauſtics both mercurial and others had been applied, but with no ſucceſs. They had alſo been cut off cloſe to their baſe, and notwithſtanding every precaution taken to keep them down afterwards, they ſtill ſprouted afreſh, and grew to their former ſize, ſo that they were deemed incurable. I was very careful in inquiring

inquiring what had been done for him, and he being an intelligent lad, gave me full information; for not having tried the liquid in theſe caſes, I knew nothing of its effect, and intended therefore to try the Savin powder with him, till he aſſured me that had alſo been uſed to no purpoſe. I then reſolved to try the liquid, which was applied by dipping a pencil bruſh into it, and touching all the warts, leaving them expoſed to the air till they became dry. But the warts were at firſt ſo exquiſitely ſenſible, that he could not bear the pungency of the liquid. In order, therefore, to remove this tenderneſs of the parts, I gave him ſome expreſſed juice of hemlock, with which I directed him to waſh the warts frequently in the courſe of the day. This ſucceeded to my wiſhes, ſo that in a few days he was able to bear the liquid, which in about ſix weeks entirely removed all his warts, and that with very little pain. When I have uſed this liquid ſince, in caſes of this kind where the warts were not painful, I have directed it to be applied with the end of a tooth-pick or pen dipped in it, and preſſed on the ſurface of the warts, ſo as to make ſome impreſſion upon them.

PART

## PART II.

## OF THE TREATMENT OF SCHIRROUS TUMOURS OR OCCULT CANCERS.

I NOW proceed to communicate the methods I have uſed in the treatment of ſchirrous tumours, and give an account of the good or bad ſucceſs that has attended them. In doing this it may not be improper to obſerve, that I ſhall have occaſion to mention three caſes of recent indurations immediately conſequent upon the milk abſceſs of the breaſt, but as I treated them in a different manner from that in which I uſually treat theſe laſt complaints, and indeed was obliged to treat them differently, I think myſelf authorized to conſider them as incipient ſchirrous tumours.

The firſt caſe of the ſchirrus that preſented itſelf was that of M. Perrin, an old woman between fifty and ſixty, who, in the year 1772, was made an out patient in the hoſpital, under my care. The late Doctor Brickenden had for a conſiderable time tried ſeveral things to relieve her with no effect. She had been troubled for ſome years with two ſchirrous tumours in the left breaſt, which, when ſhe applied to me, were

both very large and hard, one of them as big as my fiſt, and which had latterly become very painful. Both the tumours were looſe, but the largeſt of them formed an angular projection, which was near the ſurface of the ſkin, and appeared likely to adhere to it at that ſpot. This woman never did any thing more than take the flores matiales very freely, and apply to the tumours a large piece of doubled linen dipped in the liquid, which ſhe renewed ſeveral times in the day. She certainly uſed this liquid more freely than any other patient who ever tried it, for her ſkin not being tender ſhe was able to bear it much better. Add to this, that in a few months ſhe found herſelf ſo much relieved from the pain of the diſeaſe, that ſhe paid little attention to the ſmart of an application from which ſhe experienced ſo much benefit. She perſevered with great reſolution, and with very little intermiſſion, in the uſe of theſe remedies for upwards of a twelvemonth; at which time ſhe was entirely free from any kind of pain; and the tumours were ſo conſiderably decreaſed in every reſpect, that they were reduced to much leſs than a fourth part of their former ſize. The leaſt tumour was, indeed, ſcarce perceptible, and the largeſt was almoſt flat, and was divided by ſeveral chops or fiſſures under the ſkin, which made it feel as if it were cracking to pieces. The angular projection was removed from the ſkin, to which there was now no danger of an adheſion being formed; and the tumour was ſo remarkably ſoftened that it felt rather like a piece of wet and rumpled rag in the breaſt than like an indurated gland. It was pleaſant to ſee how evidently this woman recovered her health, which was in a very languid ſtate when ſhe firſt applied to me, and how lively and full of ſpirits ſhe became; an effect which I have always obſerved to follow whenever the martial flowers were taken freely for any length of time. But this was all the advantage I was able to gain in the caſe; it was never poſſible for me to diſſolve the tumours entirely; they remained in the ſame indolent and quiet ſtate till the time of her death, which happened about two years after this, from an illneſs totally independent of the complaint. She had, indeed, done nothing for a conſiderable time before ſhe died, except that ſhe uſed the liquid now and then, which ſeemed to contribute

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to keep the part in the ſame ſtate it was in, a little more than a year after ſhe began the proceſs.

Mrs. H. aged 30, applied to me on the 19th of October, 1773. She had been ſeized with a fever nine days after her lying-in. This brought on an abſceſs in the left breaſt, which got well in about a fortnight, and when the diſcharge was nearly ſtopped, ſhe found a ſwelling come on in the right breaſt. It was then very painful and much ſwelled even under the arm-pit. Linſeed and bread and milk poultices had been aſſiduouſly applied for more than two months, which though they alleviated the pain, yet ſtill the ſwelling remained invariably the ſame. When I examined her, there was an oblong indurated tumour, very hard to the touch, about four inches in length, and extending acroſs the nipple. Imagining this to be a milk breaſt, I tried at firſt the application I commonly uſed in thoſe caſes, and of which an account ſhall be given in the third part of this work. It was continued more than a fortnight without producing any ſenſible effect. But as it was not uſual with me to ſee that application perſiſted in ſo long in milk breaſts, without perceiving ſome alteration, I ſupplied my patient with ſome of the liquid before deſcribed, directing her to dip a double rag in it, and lay it all over the tumour, and to wet the rag as often in the day as the ſkin would bear it; taking the precaution of guarding the nipple either with a piece of dry lint or a pledget of ſome ſoft ointment, leſt the liquor ſhould excoriate it. In a few days the tumour began inſenſibly to melt away, and in leſs than three weeks had totally diſappeared.

Ann Highland, aged 29, came into the hoſpital in the year 1773, with a large indurated tumour in the breaſt, eleven months after giving ſuck to two children. In the beginning of the eleventh month the children were ſeized with the ſmall pox. Soon after this ſhe perceived a ſwelling in her breaſt, which in three weeks burſt into five different apertures, and diſcharged a ſmall quantity of matter. She uſed a bread and milk poultice for more than two months without effect, before ſhe applied to me. When I ſaw her, all the original orifices were ſtill open, and there

was a large indurated gland in the midſt of the breaſt: there was alſo a ſwelled gland under the arm-pit. She ſuffered extremely with the pain of this complaint, which ſhe deſcribed as of the pricking, darting kind. The ſores were all ſloughy, and of a purple hue. Though it be frequent to ſee the ſores have an ill-conditioned aſpect, in milk-breaſts that are treated with bread and milk poultices, yet I never ſaw any of them with ſo very bad a look as theſe, ſo that, indeed, I was alarmed at the appearance. Whether this circumſtance were owing to the virus of the ſmall pox I cannot determine. It induced me, however, not to conſider this as a mere milk breaſt, more eſpecially as the complaint had come on ſo long after lying in, and I therefore directed the patient to uſe the liquid as the former had done, not even covering the ſores with any thing elſe. This application was renewed five or ſix times in the day, as often as ſhe could bear it, for it ſmarted much on being firſt applied, and the ſmart laſted about an hour. In a few days ſhe found much relief from the pain: and the firſt and almoſt immediate effect of the application was, that the milk flowed plentifully with the matter from all the ſores, and from the nipple. In a ſhort time the ſores were all healed, and in a month the enlargement of the gland under the arm-pit was diſperſed, and the large ſwelling itſelf conſiderably diminiſhed. This induration, however, ſtill ſubſiſted; but as ſhe was now entirely free from pain, and deſirous of returning to her family, ſhe went out of the hoſpital, and by perſevering in the uſe of the liquid ſix weeks longer, was perfectly cured. The free diſcharge of milk occaſioned by the firſt application of the liquid in this caſe, indicated that there was a coagulation of that fluid attending this complaint. But the ſymptoms above deſcribed, the form of the tumour, the looſeneſs of the cellular ſubſtance of the breaſt, which in this caſe was entirely free from induration, and the continuance of the pain, though a free iſſue was given to the matter by five openings (a circumſtance which uſually procures eaſe in milk breaſts) and the time, near three months, employed in getting rid of the diſorder, induce me to think that it partook more of the nature of a recent ſchirrous tumour.

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Mrs. B. aged 30, applied to me at the defire of Mr. Jarvis the furgeon, on the 11th of November, 1773. She had lain in fix months before. A fortnight after her lying-in, fhe had her right breaft difordered from a coagulation of the milk. This complaint lafted about two months, and as that breaft got well a hardnefs was formed in the other, which fuppurated and difcharged a great quantity of matter. The wounds healed, but left an indurated tumour, which fometimes partly difappeared and came again. It returned about two months before fhe applied to me, burfting again, but the wound had been clofed about a fortnight before. When I faw her, there was a confiderable induration extending almoft over the whole breaft. It was hard to the touch, in fome parts unequal, and attended with much pricking, darting pain at intervals. This was treated as the former cafe. The pain foon went off, and the tumour leffened, but it was near four months before it was completely diffolved.

In the month of May, 1774, I was confulted by an eminent and learned phyfician on account of his lady, who was afflicted with a fchirrous tumour of confiderable ftanding. Upon examining the part, I found the fwelling remarkably hard and ftony, and fo large that it occupied almoft the whole breaft, and extended towards the arm-pit. The pain was very acute, and, indeed, fhe complained of wandering pains over the whole body, which made her life very uncomfortable. About the middle of the tumour, towards the nipple, the fkin adhered to the furface, and was already difcoloured, fo that this fchirrus would certainly have burft very foon, and have become an ulcerated cancer. I acquainted the phyfician with every thing I had already done in thefe complaints, and with the methods I intended to purfue with his lady, merely in the view to give eafe, check the progrefs of the diforder, and prevent the tumour from ulcerating, which was all I expected to do in this cafe. He approved of my plan; and accordingly the patient was put into the hemlock bath, fhe took the flores martiales as freely as fhe could, and applied the liquid externally. Every advantage we had promifed to ourfelves was obtained. The patient was much relieved from pain, the tumour was foftened and diminifhed in fize, and it was kept from burfting, which it

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moſt probably would have done in the courſe of a few weeks. This amendment continued a longer time than we had any reaſon to expect from the ſtate of the diſeaſe, and the age of the patient. In a word, from the time the relief began to be apparent, which was after perſevering about three or four months in the methods preſcribed, ſhe remained upwards of a year in a very tolerable ſtate. It was not till the autumn or beginning of the winter 1775 that her pains ſeemed to return with more violence than ſhe had felt them for ſome time. The tumour, however, was not yet burſt, but there now appeared a veſicle of blood immediately under the cuticle, which ſeemed once more ready to make an opening. Upon conſidering the alteration made in the tumour, which was much diminiſhed from its former ſize, I ventured to accelerate the burſting of the cuticle, and therefore emptied the veſicle of blood by paſſing a lancet into it, in order to try, whether by the uſe of the arſenical cauſtic, applied with ſuch a proportion of opium as not to make it act with violence, I might be ſo happy as gradually to remove the whole of the tumour. But whether the ſtate of the diſeaſe would not admit of this method of treatment, or whether my patient's age was unable to bear the labour of ſuch an operation, I cannot take upon me to determine. It is certain, however, that ſhe fell a victim to the diſorder in the beginning of the year 1776.

While I was attending this lady, one of the ſervants in the family applied to me with a recent ſchirrous tumour in the breaſt, attended with frequent pain. This was removed in a ſhort time, merely by the application of the liquid.

In the number of ſchirrous caſes I have attended, there are ſeveral, the progreſs of which has been checked in as evident a manner as in the preceding caſe. This has been remarkable in one very deplorable inſtance of the kind. There is a ſpecies of ſchirrus, which ſeems not ſufficiently diſtinguiſhed by writers on this ſubject, and may be well ſtiled the true occult cancer; is more malignant in its nature, more terrible in its effects, more rapid in its progreſs, and more certainly fatal than any other. Whether it may differ in its nature from other cancers I cannot

tell, but I rather imagine that its peculiar malignancy arifes from its feizing upon a large portion of the animal machine at once, and not advancing by flow degrees, and from almoft imperceptible beginnings, as the more frequent indolent fchirrus or creeping cancer does. One of the diftinguifhing marks, indeed, of this difeafe, is the whole fubftance of the breaft being fuddenly attacked with a ftony and almoft immoveable hardnefs. The difeafe is fometimes confined to this part at firft, fometimes extends to the arm-pit, the neighbouring ribs, the clavicle itfelf, and the glands of the neck. The pain of the difeafe is exquifite, fcarce to be moderated by the moft powerful opiates, and the patients defcribe it as the conftant gnawing of dogs. I cannot avoid taking notice that in the few women I have feen tortured with this difeafe, I have obferved, that the pores of the fkin were uncommonly large, of which I have certified myfelf more particularly, by looking at the part with a good lens, and comparing the appearances with thofe of the cancerous affection in other fkins, the texture of which feemed more firm and compact. This circumftance, if upon examination it fhould appear to others as it did to me, may poffibly be admitted in collateral fupport of the conjecture ventured in the preceding pages, that the cancer may proceed from the introduction of infects or their germina through the pores of the fkin. However this may be, it is a fact, that I never faw any of thefe dreadful cafes relieved by any method hitherto purfued. Even the operation, though practifed at the moft early period, and before the difeafe appeared to have extended itfelf beyond the part, has never fucceeded in thefe cafes to my knowledge. The fate of the patient, indeed, is in general foon decided. From fix weeks to two or three months, or at moft fix, are generally the limits of it.

I was called to a lady with one of thefe occult cancers, in the year 1774. Befides the whole breaft being indurated in the manner before defcribed, there was a fchirrous gland lying deep in the arm-pit, which occafioned the arm to fwell, though the difeafe was very recent; and there was alfo an indurated fixed tumour above the clavicle. A furgeon of remarkable fagacity and extenfive practice had feen this cafe a few days before

before me. He was too well acquainted with the fatal prognoſtic of this diſeaſe, which he thought would terminate in a few weeks, not to give warning of it to the patient's friends. But even in this terrible caſe the pain was evidently diminiſhed by the hemlock bath, and the rapid progreſs of it ſeemed, for a while, to be checked. But theſe deceitful hopes did not laſt long, for ſhe died about ſeven months after ſhe had been under my care.

Upon examining the body after death, the breaſt was found ſtrongly adhering to the ribs, ſome of which were carious. The cancer had even penetrated the cavity of the thorax, and affected the internal ſurface of the pleura. Moſt of the clavicle was totally rotten, and fell to pieces upon the touch, beſides which, there was a large cancerous gland in the groin on the oppoſite ſide to that where the breaſt was affected. The ſtench, too, was almoſt intolerable, though it had been very trifling while the patient lived, and that no kind of ſmell was perceived till near the period of her exiſtence.

One remarkable effect happened, which I ſhall here take the opportunity of mentioning, and which I attribute to the hemlock bath. It was obſerved only in this and two other caſes, where the diſeaſe was extenſive. I mean the formation of an abſceſs, ſome few months after the bath had been uſed. In the fore-mentioned caſe, the abſceſs was formed in the fore-arm of the diſeaſed ſide; in another, under the arm-pit of the oppoſite ſide; and in the third, in the groin of the oppoſite ſide. From theſe circumſtances, and the large ſuppurations brought on by this bath in two of the caſes of ulcerated cancers before mentioned, we may preſume, that the quantity of hemlock abſorbed by this mode of introducing it in the habit, muſt neceſſarily quicken the circulation, and put all the fluids in agitation, by which means theſe ſuppurations are probably brought on. It may be obſerved, by the way, that theſe effects ſeem very contrary to paralytic affections, which ſome learned men think the hemlock has a tendency to produce. For my own part, in all the numerous inſtances in which I have employed this plant, and in the free uſe I have made

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of it, I never yet obſerved any paralytic ſymptom to ariſe from it, nor indeed any other bad ſymptom, unleſs theſe ſuppurations ſhould be deemed ſo, which however, it muſt be remarked, healed very kindly after having been opened, notwithſtanding the cancerous diſeaſe prevailing in the habit.

Finding many of theſe ſchirrous caſes obſtinately reſiſt every method employed for their cure, though they were moſt of them relieved, I was induced to try the effect of an arſenical plaſter to them, encouraged by the evident advantages I had ſeen to reſult from the external uſe of the arſenic in cancerous ulcers. For this purpoſe, I choſe to employ the mildeſt preparation I had of this mineral, and therefore had ſome of the yellow powder, deſcribed in the former part of this work, mixed with ſuet and other ingredients to the conſiſtence of a pretty ſoft plaiſter. The preparation itſelf was mild, as we ſee it contained no more than one grain of arſenic to four of ſulphur, and that ſo much weakened by this combination, that it has been obſerved I had given internally a quantity of this powder, containing five grains of the arſenic, with greater ſecurity than I could give one grain and a half of the crude mineral. Beſides this, the preparation would be ſtill weakened by the addition of the ingredients neceſſary to form it into a plaſter; ſo that I had not the leaſt reaſon to ſuſpect this application would be attended with any bad conſequence. Neither, indeed, do I think it would, had it not been for an accidental circumſtance, which I confeſs I did not foreſee. This plaiſter was applied to ſix different patients at the ſame time, and in a little while, the ſchirrous tumours afforded ſuch evident marks of diminution, that I had every reaſon to be ſatisfied with my having thought of this application. I afterwards tried it in another caſe, where my patient was at the ſame time uſing the hemlock bath. But here ſome paralytic ſymptoms began to ſhew themſelves ſo imperceptibly at firſt, that I was not aware of the danger till it increaſed beyond the power of relief. I could ſcarce perſuade myſelf that ſuch an effect could be produced by this mild arſenical plaiſter, till another patient who had applied it for ſome months with great hopes without uſing the bath, was at length ſeized with very diſagreeable complaints in the bowels, upon going into the bath, while ſhe uſed the arſenical plaſter.

She was, however, relieved from this attack; but these instances convinced me that the warm water, by opening the pores, had occasioned too great an absorption of the arsenic, and had perhaps contributed to separate it from the sulphur; without which process I presume these symptoms could not have been brought about. However this may be, though my other patients who used the same application, and did not go into the warm bath, had not suffered any disagreeable symptom, and that I had every reason to wish to continue it with them, yet I determined to lay it aside, fearing lest some accidental circumstance, which it was impossible for me to foresee, might separate the arsenic from the sulphur, or encourage a too liberal absorption of it. I therefore immediately collected from my several patients all that remained of this arsenical plaster, and threw it away, determined never to use it more.

In one of the schirrous tumours, in which I had tried the fore-mentioned methods without success, I resolved to attempt the extirpation of it by the arsenical caustic. My patient was extremely timorous, and would by no means be persuaded to submit to the operation by the knife. She had a very hard stubborn schirrus in the right breast just above the nipple, of the size of a small apple, and beyond this a small indurated gland under the axilla. The arsenical preparation I used in this case was composed of one third of antimony, and two thirds of white arsenic fused together. This being reduced into impalpable powder, a few grains of it were mixed with as much powdered opium. But as the skin was entire, and as I knew the arsenic would not act through the cuticle, the day before this powder was applied I rubbed the whole surface of the gland gently with the lunar caustic*. By this contrivance the cuticle was easily

* I did not know whether Plunket's powder acted through the cuticle, or whether he had some method of separating this part, in order to make way for the action of the arsenic. But I am inclined to think that this effect is produced in his powder by the crow's foot, which is said to enter into its composition, and which is a very acrid and pungent plant. My method will, perhaps, be thought preferable, as the touching the entire skin with lunar caustic is not painful, whereas the action of so irritating a vegetable I should imagine must add considerably to the pain of the application. On the other hand, I believe Plunket's powder is quicker in

eaſily ſeparated next day, when mixing a ſmall quantity of the powder with part of the yolk of an egg, ſo as to bring it to the conſiſtence of an ointment, I ſpread this upon a pledget cut to the ſize of the gland, and applied it to the whole ſurface. The pain was very great for the firſt four and twenty hours, but after that ſubſided. I left this firſt dreſſing on for ſeveral days, when ſeeing it ready to drop off I removed it, and found that all that part of the ſkin on which the cauſtic had been applied was cracking all round and the tumour beginning to ſeparate. In expectation of facilitating this ſeparation, I made a few ſcarifications on the deſtroyed ſurface, and filled the crevices with more of the powder, applying over it a pledget of the ſame kind as the former. But this ſecond application did not as I imagine produce any effect, for it cauſed no pain. I then waited a few days to obſerve what would happen. The ſeparation began to take place more evidently at the edges, which now looked florid, though the tumour did not yet ſeem ready to come away. To haſten this event, I judged it proper to put ſome of the powder all round the ſeparating edges, and as low down as it could be inſinuated between the diſeaſed gland and the ſound ſkin. I ſoon found that this contrivance had its effect, for the pain it occaſioned was more violent than that produced by the firſt dreſſing. I was, however, obliged to repeat the application of the powder to different parts of the edges at intervals, but never in ſo large a quantity as before. By this method the ſeparation of the tumour was effected in little more than two months, and the gland came out entire as a nut out of its ſhell, or as if it had been cleanly diſſected with a knife. The ſmall gland under the arm-pit I had put nothing to, thinking it would diſſolve by the ſuppuration of the larger one, but in this I was miſtaken; it ſtill remained; but this circumſtance did not prevent the wound made by the ſeparation of the larger gland, from healing very faſt after it had come out. Seeing the ſmall gland ſtill exiſt after the healing of the wound, contrary to my expectations, I was very ſorry I

in its action than this preparation, becauſe in his, the arſenic and ſulphur, though uſed in equal quantities, are incorporated in their crude ſtate by mixing them in a mortar, without being expoſed to the action of fire, as the arſenic and antimony are in my preparation.

had not treated that in the ſame manner as the large one, and at the ſame time; which might have been done with great eaſe, for it was ſo ſmall that the patient would not probably have received much additi ona pain from it. I endeavoured to perſuade her to let me apply the cauſtic upon this little ſwelling after the wound was healed, but I could not prevail. She was ſo well ſatisfied with having got rid of the moſt material part of the diſeaſe, and being freed from the pain which that gave her, and ſo fearful of going through the ſame violent pain again, that ſhe choſe rather to remain with it as it was. I ſaw her about a year and a half after this, when ſhe was in perfect health; the little gland under the arm-pit remained, but it was neither increaſed nor decreaſed in ſize. She ſuffered no pain from it, and there was then no other appearance of the complaint.

This is the only inſtance in which I ever attempted to *draw out* the ſchirrous gland, as it is vulgarly called. I have heard ſome eminent phyſicians ſay, that it was a deſideratum in ſurgery to know how to do this as Mr. Guy did. Whether Mr. Guy's method be the ſame as Mr. Plunket's was, as it is imagined, I cannot take upon me to determine. I ſhall only obſerve, that here is an inſtance of the ſame thing being done by a method very different from Plunket's, though eſſentially perhaps the ſame, with regard to the chief remedy that ſeems to produce the effect. That effect, by which ever of theſe methods it may be brought about, or however painful may be their operation, is certainly a very ſurprizing one; and may be of advantage, not only with reſpect to many timid perſons who cannot reconcile their minds to the terror of the knife, but may alſo be of utility in ſome caſes where the knife cannot be uſed with ſafety. I ſhall be happy if the advances I have made in this point ſhould induce my brethren to turn their thoughts to this kind of operation, which, if it were once reſcued from the hands of empiriciſm, might not only become more certain under the directions of a man of learning, attention, and experience, but might probably be rendered more mild in its effects. To facilitate the attempts of others in this matter, I ſhall obſerve, that I was not ſatisfied with my method of doing it, though

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it ſucceeded. I thought the operation too ſlow, and that I was obliged to renew the application too often, which not only prolonged the pain, but likewiſe made it neceſſary for me to uſe a greater quantity of arſenic, and to continue it for a longer time than I could have wiſhed. It might perhaps ſucceed better if the powder were made more active. For this purpoſe I ſhould prefer the crude arſenic to that which has been fuſed by heat. Neither is it neceſſary perhaps to blend it with ſulphur, which only ſerves to weaken its operation; for a very ſmall portion of arſenic when mixed with the yolk of an egg may be applied to a pretty large ſurface; and if we wiſh to divide its particles and ſpread a ſmall quantity over a larger ſurface, this may as well be done by adding ſome teſtaceous powder to it, which will have this effect without altering its properties. I would alſo recommend the corroſive ſublimate to be joined to it, for although this combination quickens its operation very conſiderably, yet I am convinced from experience that it adds very little, if at all, to the pain cauſed by the arſenic. One thing further I muſt obſerve, which is, that when a ſchirrous gland becomes ulcerated in one part, and that the induration ſubſiſts with the ſkin entire much beyond the ulceration, the application of arſenic in this caſe upon the ulcerated part of the gland ſeems to act no more than any other cauſtic does, except that its effect may be more extenſive, and deſtroy more of the gland. But it does not, as in the inſtance juſt recited, diſpoſe the gland to ſeparate from the ſound parts. This action ſeems to depend on the application of the arſenic to the ſound ſkin when deprived of its cuticle. The mineral ſeems then to act by bringing on inflammation and ſuppuration in the cellular membrane all around and underneath the diſeaſed gland, which is thus forced out entire and unaffected by the cauſtic. This is a material point to attend to, and which I have learned only from diſagreeable experience. If any one, therefore, be deſirous of applying the arſenic to an indurated gland, which is ulcerated in the middle, in the expectation of ſeparating the whole gland at once, he muſt extend the application all over the indurated part, after having deprived the ſurrounding ſkin of its cuticle, either by a bliſter, or by the method made uſe of by me in the above inſtance, which I think preferable, as being leſs irritating. Perhaps it

may hereafter be found only neceſſary to make a circle round the whole tumour for the application of the arſenical cauſtic. If this ſhould ſucceed, which is not improbable, from conſidering the effects of this cauſtic, the utility of this method may be extended to caſes, where, from the extent of the complaint, it would not be ſafe to uſe it in the preſent mode, and that for obvious reaſons. This is, however, merely a conjecture; and I ſincerely and ardently wiſh that theſe, which are all the obſervations I have been able to make upon the uſe and effects of arſenic, may lay the foundation of other more important diſcoveries, which may hereafter tend to the improvement of ſurgery, and the benefit of mankind.

Before I quit this part of my ſubject, it will not be improper to take notice of a diſorder in the breaſt, to which I know not what name to give. It cannot be called a ſchirrus, for it is not attended with any ſenſible external mark of ſwelling; neither can it be deemed an ulcerated cancer, for there is no ſore accompanying it. But from the nature of the pain complained of in this diſorder, and other circumſtances, it appeared to me to have a cancerous tendency.

On the 24th of April, 1775, Mrs. B——, of the Temple, conſulted me for a complaint in both breaſts. She had for a few years been afflicted with a violent aching pricking pain in them, which had lately increaſed to ſo great a degree, that it was almoſt intolerable. The breaſts were exceedingly ſore to the touch, ſo that ſhe could not even bear the natural weight of them; and for two years before had not been able to lie in bed on one ſide or the other, but was obliged to ſleep in a ſupine poſture with her arms folded ſo as to ſupport them. Notwithſtanding theſe ſymptoms, upon examining the breaſts, I could not find any evident marks of a ſchirrous tumour in either of them. The texture of the glands ſeemed, indeed, to be rather firmer than it ought to be. This patient had been ten months under the care of another ſurgeon, but nothing he had done for her had given her the leaſt relief; on the contrary, her pain was become greater and more conſtant. She perſevered for a twelve-

twelvemonth in the internal uſe of the flores martiales, and the external application of the liquid, without much benefit, except that ſhe found the complaint rather more tolerable. At length I prevailed upon her to try the hemlock bath, which ſhe began to uſe in the month of May, 1776. She went into the bath twice in the courſe of a week, and when ſhe had continued for three months, found more relief from this than ſhe had done from any thing ſhe had tried before. She perſiſted in the uſe of this bath till Chriſtmas, 1776, began to go into it again in April, 1777, and continued till November in the ſame year. At this preſent writing, in 1779, the left breaſt has no remains of the diſorder; and the right is ſo much mended, that all ſhe complains of now, is a tenderneſs upon one of the ribs underneath. She can now ſleep on either ſide, and is perfectly free from any kind of pain.

The other caſe of the ſame kind is that of a young woman who had been afflicted for more than two years with very excruciating pains in her breaſts, which upon examination diſcovered not the leaſt apparent mark of diſeaſe. She had been for a very long time under the care of a ſurgeon of great knowledge and ſagacity, who had in vain endeavoured to relieve her. I was then deſired by a pupil of the hoſpital to permit her to take my pills, as they were uſually called, of the flores martiales. She took ſeveral in the day, and by continuing them between two and three months, was perfectly freed from her complaint. She uſed no external application to the breaſts. Near a twelvemonth after, having ſuffered ſome uneaſineſs of mind, ſhe was ſeized again with the ſame diſorder. She had recourſe to the ſame remedy, and obtained eaſe in a ſhort time; ſince which ſhe has had no return of the complaint.

## PART III.

### ON THE METHOD OF TREATING THE COAGULATION OF MILK IN THE BREASTS OF WOMEN AFTER LYING-IN, COMMONLY CALLED THE MILK BREAST, AND THE ABSCESS IN THE BREAST, WHICH FREQUENTLY SUCCEEDS IT.

THIS is a complaint made very light of by moſt practitioners in ſurgery, from a ſuppoſition that it always gets well in time without any thing being done to it, except keeping the part covered with a large bread and milk poultice, and that it never degenerates into a ſchirrous tumour or cancer.

I cannot help thinking, that this is a miſconceived opinion. Beſides the teſtimony of Aſtruc (which I ſhall ſoon take particular notice of) and many other writers in ſupport of a contrary opinion, experience has ſhewn me ſome inſtances of very malignant cancers which were traced by the patients themſelves from a milk abſceſs in the breaſt, without any interruption of the complaints, till they had arrived at the bad ſtate in

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which I firſt ſaw them *. It is probable too, from all that has been ſaid before, that the recent indurations mentioned in the ſecond part of this work, and which ſucceeded the abſceſs of the breaſt, would have laid the foundation of ſome cancerous affection had they not been removed.

One argument advanced in ſupport of the indurations of the milk breaſt not degenerating into a ſchirrus, is, that they are diſeaſes of different parts; the ſchirrus being a hardneſs of the mammary glands, and the other complaint being merely an induration of the cellular and adipoſe membrane of the breaſts. This I apprehended to be a poſition erroneous both in itſelf and in the conſequence deduced from it. For the diſeaſe being acknowledged on all ſides to conſiſt originally in a coagulation of the milk, it follows that it muſt neceſſarily exiſt in thoſe parts deſtined by nature for the ſecretion, receptacle, and conveyance of that fluid; which are the mammary glands, and the lactiferous tubes proceeding from them. Theſe lactiferous tubes pervade the whole ſubſtance of the breaſt, and I preſume it is by their being diſtended with coagulated milk, that the cells of the cellular ſubſtance become compreſſed on all ſides, ſo as to exhibit the appearance of the induration being ſeated in them. It may be urged, indeed, that this compreſſion of the ſides of the cellular ſubſtance being continued for a long time, the cells will not be able to recover their tone, even though the obſtruction of the lactife-

* I have generally obſerved too that the ſchirrous tumours I have ſeen, which were traced from the milk breaſt, were always of a more irregular angular form, and flatter than other ſchirrous tumours, which could not be apparently traced from the ſame cauſe. It ſhould ſeem, therefore, that the ſchirrus ſucceeding the induration of the milk breaſt, adopts the ſame kind of form that it had before its degeneracy. This diverſity of form, indeed, has been conſidered as one of the diſtinguiſhing marks of this diſeaſe; but I cannot think that the round or regular oblong figure is a characteriſtic of the true ſchirrus, which puts on all ſorts of forms. Perhaps, if the obſervation here laid down ſhould be made by others, we may at laſt come to diſtinguiſh thoſe kinds of ſchirrous tumours that ſucceed the induration of the milk breaſt, from others. Whether ſuch a diſtinction will be of any uſe in practice I cannot tell; but from all I have been able to obſerve upon this matter, I am inclined to think, that theſe irregular ſchirrous tumours are more obſtinate than thoſe which are round and ſmooth.

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rous tubes that run through them ſhould be removed; and that the induration will therefore ſtill ſubſiſt. Whether this be the caſe or not, which it is impoſſible to determine, yet, admitting that the induration exiſted only in the cellular membrane, this would be no ſort of proof that the complaint would not degenerate into a ſchirrus or cancer. For all ulcerated cancers are accompanied with indurations of the cellular and adipoſe membrane, which, indeed, is one of the ſtrongeſt marks of the true cancer. Theſe ſchirrous hardneſſes of the cellular membrane are indeed as difficult to cure as any other part of the diſeaſe; and from the conſideration of that dreadful ſpecies of ſchirrus or occult cancer deſcribed in the ſecond part of this work, which ſeizes the whole ſubſtance of the breaſt, ſeem to be of a more malignant nature, than a ſchirrus of the mammary glands alone. So that in whatever point of view we may conſider the affection of the milk breaſt, whether as a diſeaſe of the mammary glands and of the lactiferous tubes proceeding from them, or merely as a diſorder of the cellular and adipoſe ſubſtance of the breaſt, it is equally poſſible that it may degenerate into a ſchirrus or cancer.

It muſt be acknowledged, however, that the inſtances of this degeneracy are rare, when compared with the number of perſons who are troubled with the milk breaſt. Neither is it neceſſary to ſuppoſe that the diſeaſes, though ſeated in the ſame parts, are originally the ſame. The milk induration ſeems to become a ſchirrus merely from inattention, neglect, or improper treatment. But the poſſibility of ſo dreadful an event calls for every exertion in our power to prevent it. The learned Aſtruc obſerves, that abſceſſes of the breaſt often leave indurations of the glands, when ſome of the obſtructed part remains unſuppurated *. This ſeems to be the exact ſtate of the caſe, and, like moſt of that accurate author's obſervations, very juſt. The matter is brought about, as I apprehend, in the following manner, which, if it be really the caſe, will ſerve not only to account for the variety of opinions on this head, but alſo to reconcile them. I have ſeen theſe complaints laſt four, ſix, eight

* On the Diſeaſes of Women. Book IV. chap. 4. p. 324.

and ten months when treated by the conſtant application of a bread and milk poultice, and when at length the abſceſs has been healed, and there has appeared no further diſpoſition to ſuppuration, the complaint has been conſidered as cured; and though there ſhould remain *ſome of the obſtructed part unſuppurated*, yet there being no more pain, it is concluded, that theſe remains will go away of themſelves, merely by keeping the part warm. This, indeed, does frequently happen; but it alſo happens ſometimes that the patient finding ſuch great difference between her preſent ſtate, and that when ſhe was expoſed to the ſufferings occaſioned by a freſh abſceſs collecting and burſting every three or four weeks, perhaps for months together, thinks herſelf well, and neglects this trifling induration; which may, at the ſame time, be ſo ſmall as ſcarce to be diſtinguiſhed by an unſkilful touch. Should ſhe chance to feel a little pain in it now and then, ſhe attributes this to the change of weather, or poſſibly to the neceſſary conſequence of what ſhe cannot but have conſidered as a grievous complaint. Thus the diſeaſe being neglected, may remain for a long time in a tolerably quiet ſtate, till ſome accidental circumſtance puts its virulence into action. Even then it may continue for a long time almoſt imperceptibly increaſing, till it ſhall arrive to ſuch a height as to be no longer miſtaken. This event may take place at ſo conſiderable a diſtance of time from the formation of the abſceſs in the breaſt, that this complaint ſhall no longer be remembered as the cauſe.

But even ſetting aſide theſe conſiderations, it muſt be owned that the coagulation of the milk, and the ſubſequent formation of matter in the breaſts, is a diſeaſe attended with ſo much pain, and frequently of ſo long duration, that the health is often impaired by it*. It is a very diſagreeable thing to ſee a woman labouring for ſeveral months under a teizing and painful diſorder, which for the moſt part may be prevented, or the duration of which may at leaſt be conſiderably ſhortened. The conſideration of theſe circumſtances, led me to turn my thoughts upon finding

* Abſceſſes of the breaſts are a long and painful diſeaſe, long in forming, and long in curing. Aſtruc on the Diſeaſes of Women. Book IV. chap. iv. p. 323.

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a more expeditious mode of treating theſe complaints. On looking over my manuſcript papers, I found in ſome notes taken from the late Doctor Didier's * lectures on the Materia Medica, that ſalt ammoniac diſſolved in Hungary-water, was ſaid to poſſeſs the property of keeping the milk fluid. I determined to make the experiment the firſt opportunity. In the mean while I tried how much ſalt ammoniac a given quantity of Hungary water would diſſolve, and found that water alone took up a much larger quantity of the ſalt, and kept it ſuſpended better than the ſpirit. Suppoſing that the virtue of the application reſided chiefly in the ſalt, upon the firſt occaſion I uſed it in the following manner. I directed three ounces of ſalt ammoniac to be diſſolved in a pint of common water, to which an equal quantity of Hungary water was added. Rags dipped in this liquor made a little warm, were applied to the whole ſurface of the breaſt. Theſe rags were wetted again as often as they became dry. The firſt caſe I tried this application in, was a coagulation of the milk ſoon after lying-in, before any ſuppuration had been formed. I ſoon found the confirmation of Doctor Didier's aſſertion, that this ſolution had the property of keeping the milk fluid; for, after it had been applied a few hours, the grumous feel was diſperſed, and the breaſt reſtored to its natural ſtate, while the milk flowed freely from the nipple.

I tried the ſame method in a great number of caſes where I was called in before the ſuppuration was formed, and never yet knew it fail. Among others, Mrs, H——, who had ſuffered ſo much from one of theſe complaints, and whoſe caſe ſtands the ſecond in the ſecond part of this treatiſe, was brought to bed about a year after I had firſt attended her. Her huſband having received a violent bruiſe on the ancle, ſent to conſult me. The firſt day I ſaw him happened to be the day after ſhe had been delivered. I found her very much alarmed, and dreading the former ſufferings ſhe had gone through; for her breaſts were now as much ſwelled

* As I have occaſion to mention that gentleman's name, I cannot avoid paying a tribute to the memory of genius, induſtry, and a number of amiable virtues, which he poſſeſſed in an eminent degree. His premature and much-lamented death deprived ſociety of one of its moſt valuable members, and the profeſſion of one of its beſt ornaments.

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and painful as they had been at her preceding lying-in. I directed her to apply the ſolution of ſalt ammoniac in water, and Hungary water, as mentioned above, and when I ſaw her the next day ſhe was perfectly free from pain, and the coagulation diſperſed. She continued the application, however, at my deſire, for a couple of days, and had no return of the complaint. The circumſtance of this ſwelling yielding ſo readily to the ſolution of ſalt ammoniac, which produced no effect on the former ſwelling in the ſame patient *, ſeems to eſtabliſh the difference between theſe two complaints, and to ſhew that the former was beginning to degenerate into a ſchirrous tumour. But there was one caſe of the milk breaſt in which this method was tried, and which was of ſo remarkable a nature, that I hope the reader will not think I treſpaſs upon his patience in giving an account of it.

In the year 1776, Joſeph Smith, ſervant to the Duke of Montague, deſired me to viſit his wife, who, he ſaid, had a bad breaſt. I went immediately, and found, that having been brought to bed the preceding day, ſhe was ſeized with a coagulation of the milk of ſuch a kind as I never ſaw before. The ſize of the breaſt was immenſe, the pain to the higheſt degree excruciating, the glands under the arm-pit ſwelled, and in a word, the whole diſeaſe ſo violent, that ſhe was unable to move the arm on that ſide. Her pulſe was at the ſame time very low, ſhe having ſuffered much at her delivery. I was alarmed at the ſight, for I had never beheld a breaſt of ſuch a prodigious volume. Thinking it neceſſary from the intenſeneſs of the pain in this caſe to join an anodine with the ordinary ſolution, I wrote the following preſcription.

℞ Capit: papaver: contuſor: No: xii
Flor: ſambuc: manip: ij.
Coque in aq: fontanæ lbiſs uſque ad lbi: In colato liquore ſolve
Sal: ammon: cr: ℥iij. deinde adde
Camphor: in ſpirit: vin: ſolut: ℥ſs. m. f.

* See the deſcription of this caſe in page 371 of this work.

When this pint of liquid came, I directed it to be mixed with a pint of brandy, and then to be applied warm by cloths dipt into it over all the breaſt, the arm-pit, and the arm itſelf, which was much diſtended. I directed alſo that the cloths ſhould be attentively wetted again with the warm liquor as often as they became dry. When I called upon her the next day, ſhe told me ſhe had felt much eaſe in ſix hours after the application. The ſwelling was now conſiderably diminiſhed, the pain almoſt gone, and the arm reſtored to its functions. In leſs than three days the breaſt was reduced to its natural ſize, and the complaint entirely diſſipated. I adviſed her to continue the application for a few days, leſt ſhe ſhould have a relapſe, which, however, ſhe never had.

It is impoſſible to ſay what would have been the event of this caſe had the breaſt advanced to ſuppuration; but from the uncommon diſtenſion of the part, the excruciating torture that was the conſequence of it, and the weak ſtate of the patient, it is probable ſhe would have ſunk under a diſeaſe, which is not ſuppoſed to be attended with any kind of danger.

Thus far we have been ſpeaking of the unſuppurated ſtate of the milk breaſt; it now remains to conſider what is to be done when matter is already formed, in which ſtate it moſt frequently comes under our inſpection. For though the diſeaſe be in general ſlow in its progreſs, yet the firſt formation of matter is often made very quickly and ſuddenly. It has already been obſerved, that in the ordinary mode of treating theſe milk breaſts with bread and milk poultices, it frequently happens that the ſuppuration is renewed once a fortnight, once a month, or once in ſix weeks, for ſeveral months together, with great pain and inconvenience to the patient. Now, although the ſolution of ſalt ammoniac will not cauſe the re-abſorption of matter when once it is formed, yet it will prevent its forming a ſecond time, when it is once let out. I have tried this in a very great number of caſes, and never knew it fail but once; ſo that the milk breaſts treated in this matter do not laſt more than three weeks, one month, or ſix weeks at fartheſt, while the others frequently

continue

continue for ſeveral months, and ſometimes in the end, leave remains of induration behind them. In the one caſe where this method failed, the patient was labouring the whole time under a febrile affection, but even in this inſtance the complaint did not laſt more than three months. Two ſiſters, living next door to each other, and lying-in nearly at the ſame time, were both affected with a coagulation of the milk. Theſe caſes both advanced to ſuppuration. One of theſe ladies had previouſly applied to me on account of a ſchirrous tumour, the other had no diſeaſe in her breaſt. The former was under my care, and treated with the ſolution of ſalt ammoniac; the latter was treated with bread and milk poultices. The firſt was well within the month, the laſt remained ill, as I was informed, for four months. Theſe obſervations appear to eſtabliſh the advantage of the ſolution of ſalt ammoniac above that of the bread and milk cataplaſm in theſe caſes. What good, indeed, are we to expect from the latter application in theſe complaints? It is uſed as an emollient, to relax the parts and eaſe the pain. But I fear this relaxation produces more miſchief than it does good. The veſſels are already too much diſtended by the influx of milk; the application which really does relax and keep them open, expoſes them to a greater influx of milk without appearing to have any effect upon the contents that are already clotted. Beſides, is it not probable that as the poultice becomes dry the milk itſelf may be abſorbed from it into the veſſels already diſtended, and thereby add to the coagulation? The ſolution of ſalt ammoniac, on the contrary, even if it ſhould not poſſeſs the property here aſcribed to it of keeping the milk fluid, yet being mixt with ſpirit, which adds to its own aſtringency, it is more likely to be advantageous in this caſe from that very quality. For if the ſides of the diſtended veſſels be contracted by the power of any aſtringent application, they will not only be more diſpoſed to reſiſt the farther accumulation of any fluid, but their diameters being leſſened, and their coats ſqueezed, and compelled to act upon their contents; theſe contents will be driven back into thoſe veſſels where the circulation is ſtill free, and where the conſtant motion will ſoon break down and comminute the grumous clots. This is, perhaps, the reaſon why many inflammations, and particularly of the eryſipelatous kind, which

which have long refiſted all emollient applications, will ſoon yield to that of ſpirit of wine and camphor. This is, perhaps, the reaſon why the ſame application, if applied immediately after a ſcald, will frequently prevent the veſication of the ſkin, by contracting the veſſels and reſiſting the impulſe of the diſtending fluids; and it is probably for the ſame reaſon that ſpirit of wine and camphor, if timely applied to ſuperficial whitloes, inſtead of a bread and milk poultice, as is uſually practiſed, will effectually prevent the formation of matter. I ſhall obſerve, by the way, that a bread and milk poultice in theſe caſes, ſeems likely to protract the diſeaſe. For when the matter is once formed, though in ever ſo ſmall a quantity, if it can find a vent through the cuticle, the diſeaſe is ſoon terminated. But at the end of the fingers, where this whitloe is generally formed, the cuticle is naturally very thick, and therefore oppoſes a ſtrong obſtacle to the iſſue of the matter. The bread and milk poultice, therefore, by keeping the part conſtantly ſodden in moiſture muſt neceſſarily increaſe the thickneſs of the cuticle, and thereby prevent the effect it was intended to forward. This is very evident from the aſpect of the ſkin after having been wrapped up in a bread and milk poultice, for it appears white, compact and corrugated, like the fingers of a waſherwoman, who has had her hands all day in the ſuds. When we come to open it with a lancet we alſo frequently find it enormouſly increaſed in thickneſs, which circumſtance may be partly owing to the inflammation, partly to the conſtant moiſture of the application. This thickening of the cuticle, which prevents the matter from finding its way outwards, makes it ſpread itſelf round in every direction, and renders the diſeaſe much more extenſive and troubleſome than it would otherwiſe be. On the contrary, when it has appeared to me that matter has been already collected in a ſuperficial whitloe, I have often, by puncturing the cuticle, or ſeparating the lamellæ of it with a lancet, given vent to a drop or two of pus; and have thus put a ſpeedy end to a diſeaſe, which if this had not been done, might have proved very painful and tedious.

In confirmation of this doctrine, I ſhall juſt mention, that a lady, to whoſe family I am related, being very frequently troubled with ſuper-

ficial whitloes, which were ſometimes extremely irkſome to her, once aſked me if there was no way of preventing theſe collections of matter. I adviſed her as ſoon as ſhe felt pain or throbbing in any of her fingers, ſo as to make her ſuſpect that the diſeaſe was coming on, to dip a piece of rag in camphorated ſpirit of wine, and apply it with a moderate degree of preſſure round the affected part. She followed this advice, and has never had a whitloe in her finger ſince.

But to return to the milk breaſt, there is one circumſtance more to be conſidered with regard to this complaint, and that is, whether it be beſt to ſuffer the abſceſs, when formed, to break of itſelf, or to open it with a lancet. For my own part, experience has determined me in favour of the latter method, and for the following reaſons: when abſceſſes in any part are near the ſkin, and preparing to burſt through it, the diſtenſion the inflamed ſkin ſuffers at this time is extremely painful, and this natural vent may be obſtructed from many cauſes which we cannot account for. To make a ſmall opening with a lancet, when the ſkin is thin, ſeems to me to ſave the patient four and twenty, if not eight and forty, hours of excruciating pain. Beſides, the opening with the lancet, however ſmall, is ſtill larger than that which is made by the ſpontaneous burſting of the matter. Accordingly, we ſee that nature ſometimes makes way for the matter by five or ſix different openings; and ſeems thus to point out to us what is moſt proper to be done. It appears, therefore, that a ſmall opening with a lancet, beſides that it will ſave the patient ſome hours pain, will alſo be more likely to prevent a freſh ſuppuration by affording a more ample vent to the matter. & it will also cause the patient to have a series of fresh abscesses forming every month or so — for this is very bad practice —

THE END.

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## ERRORS.

Page 24, line 5 *of the note*, *for* callous, *read* callus.
—— 35, l. 24, *for* Guillemean, *read* Guillemeau.
—— 41, l. 4, — Bohnices, *read* Bohnius.
—— —, l. 13, — Lambſwerde, *read* Lamzweerde.
—— —, l. 16, — Filengius, *read* Tilingius.
—— 42, l. 14, — Meckeren, *read* Meekren.
—— 43, l. 21, — Belloſt, *read* Belloſte.
—— 46, l. 2, — Peyrone, *read* Peyronie.
—— 180, l. 18, — Rotron, *read* Rotrou.