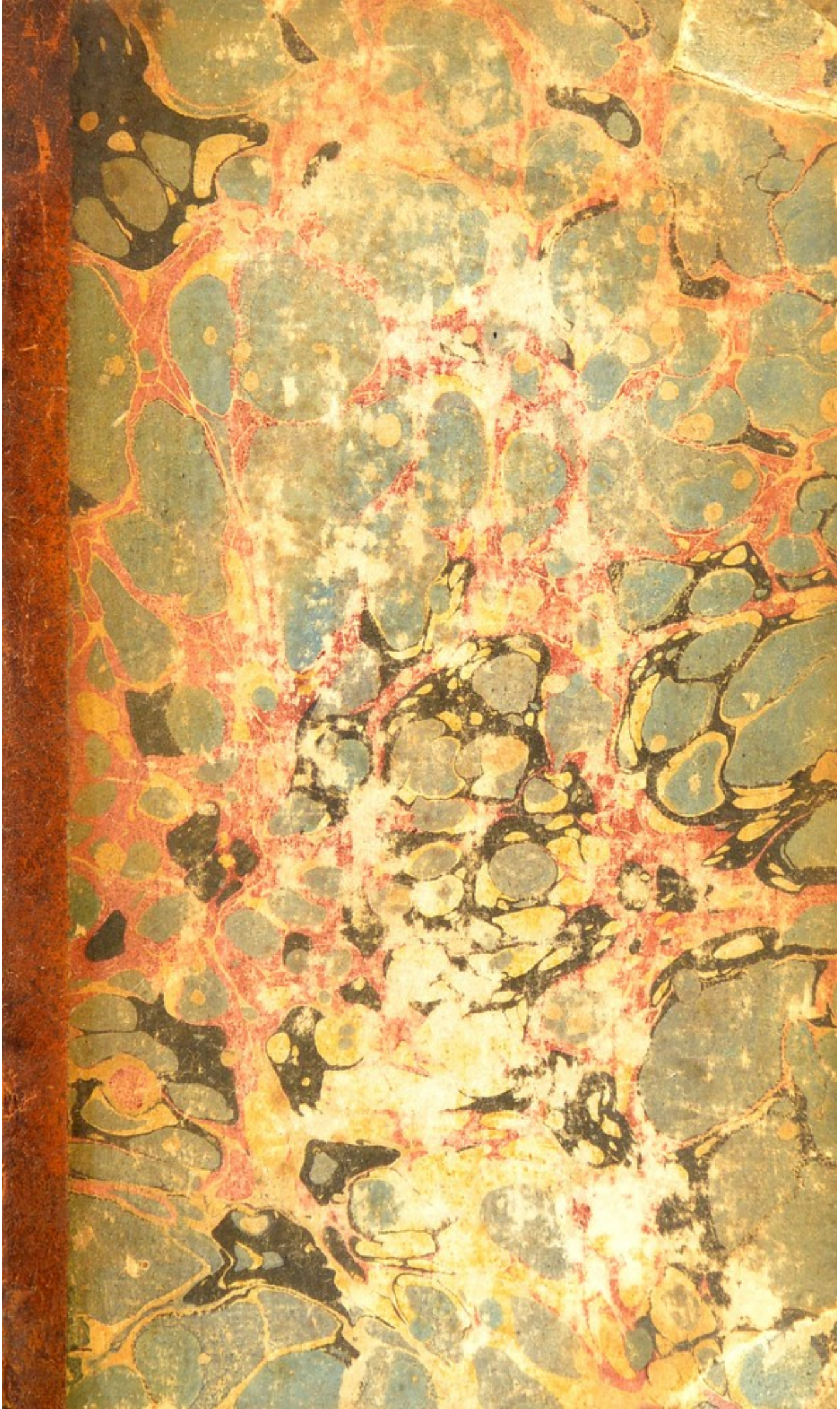
The inoculator : or, Suttonian system of inoculation ... / by Daniel Sutton.



THE

INOCULATOR;

OR,

SUTTONIAN

SYSTEM OF INOCULATION,

FULLY SET FORTH IN A

PLAIN AND FAMILIAR MANNER.

BY

DANIEL SUTTON,

SURGEON,

Who introduced the New Method of Inoculation into this Kingdom in the Year 1763.

TUTO, CELERITER, ET JUCUNDE.

London:

PRINTED FOR THE AUTHOR,

BY T. GILLET, BARTHOLOMEW CLOSE,

AND SOLD BY C. DILLY, IN THE POULTRY,

AND J. OWEN, PICCADILLY.

1796.

[*Entered at Stationers-Hall.*]

PREFACE.

THE practical part of the following Work is the reſult of a very extenſive practice, and an unremitting attention to the ſmall-pox for near forty years*, founded neither on ancient nor modern authorities, but deduced from obſervations of my own: not that I had neglected to conſult, or held in contempt, ſuch valuable relics; for in moſt inſtances we find thoſe venerable monuments of human wiſdom

* The Author was inoculated in the year 1757. The three following years he was in the daily habit of attending to the ſmall-pox: from that time to abour the beginning of the year 1763, he acted as an Aſſiſtant to an eminent Surgeon and Apothecary on the confines of Eſſex, where he had alſo frequent opportunities of attending the ſick who had caught the diſeaſe in the natural way. It was under this practitioner that he firſt meditated the idea of attempting an innovation on the ſyſtem of Inoculation, which he afterwards put in practice at Ingateſtone, in Eſſex.

of too much importance to be paſſed over unnoticed. The fact was, I could not reconcile their diagnoſis of the ſmall-pox with what (to my mind at leaſt) daily experience and obſervation ſeemed to contradict. Indeed, they had been entirely ſilent as to what reſpected the knowledge of the indications preceding the eruptive ſymptoms: here they conceived the diſeaſe began, and they looked no farther back. Aſſuming the liberty to take a more comprehenſive view of the ſubject, I did not, in this ſtate of doubt, perceive myſelf compelled to abide by opinions and doctrines irreconcileable and incomprehenſible, much leſs have I ever been the ſlave to prejudice.

It has been well remarked, that prejudice has ſuch an effect upon the human mind, if indulged and cheriſhed in our early years, and eſpecially if drawn from objects of great veneration, that it is the moſt formidable enemy whatſoever to innovation and improvement in any art or ſcience; and this prejudice, when attached

to

to phyſic, becomes, perhaps, more unfortunate. In particular inſtances, it takes ſuch complete poſſeſſion of the mind, and ſo clogs the reaſoning faculty, that in the ordinary actions of life, its ſterilizing influence is every where diſcernible. Thus it happens that youth, after being trained up under profound maſters, who have unfortunately adopted erroneous principles, can ſeldom, if ever, diſentangle themſelves from precepts early imbibed, ſo as to ſtrike out new lights or improvements. Although, I grant, much deference ought ever to be paid to the voice of inſtruction, yet ſhould the juvenile reaſon alſo be permitted occaſionally to queſtion the ſolidity of precept, and to ſcan the foundations of doctrine. A practice of this ſort, indeed, would enable them afterwards, when ſuch precepts are brought to the teſt of experience, to view them either with an eye of doubt or of approbation; and thus fortify their minds with courage and diſcernment to make the moſt profitable uſe of leſſons ſo received.

Zealous in the cauſe of human preſervation in general, and willing particularly to extricate the practice of inoculation from that ſeries of proceſs which I conceived to be redundant, and foreign to the true purpoſe, it would have been idle in me to have attempted the diſcovery of a more certain, or a more ſucceſsful ſyſtem of practice, on foundations which I ſtrongly ſuſpected to be fallacious: it would have been to purſue a phantom in expectation of finding a ſubſtance.

Impreſſed with theſe opinions, I was naturally led to revolve the ſubject in my mind, and to conſider the diſeaſe in a new point of view. In order to this, many circumſtances, from time to time, had preſented themſelves, and contributed to pave my way for the clearer groundwork whereon to build a new ſuperſtructure of practice. The difficulty which prevailed amongſt the old practitioners, of aſcertaining who were favorable or unfavorable ſubjects for inoculation from external appearances; from the ſtate and

condition

condition of the blood; from the manner of living; and from the equivocal effects produced by a very long preparation, medicinal and dietetic, ſo fondly conſidered as alteratives; all theſe circumſtances being duly weighed, I began to ſuſpect that the various ſhades and degrees of the diſeaſe ſo frequently experienced in practice, muſt ariſe and be the conſequence of ſome proportionate peculiarity, ſome very diſtinguiſhable aptitude for infection or fecundity (if we may ſo term it) of the ſkin, independent of, and totally unconnected with, the ſtate and condition of the blood. Here then commenced the firſt datum, or corner ſtone, on which to ground my principle of innovation.

Having proceeded thus far in my train of hypotheſis, I next conſidered what method muſt be purſued, in order to reduce or abate a ſuppoſed variolous fecundity inherent in the ſkin; and this material point I digeſted and arranged, ſo far as the effects of a concurrent uſe of food,

phyſic, exerciſe and air, might ſafely go. I then cheerfully adventured to put my new ſyſtem in practice; and to my great felicity, a degree of ſucceſs ſoon followed, far exceeding any thing that had gone before. As I advanced, various little imperfections and errors were diſcovered, which I hoped time and obſervation might remove, and herein alſo I was not diſappointed.

I had an intention long ſince to have ſubmitted my routine of practice, as it then ſtood, to the public eye; but almoſt every year producing ſome new information of real uſe to mankind, I determined to wait (and have done ſo from year to year) until I could conſcientiouſly give to the world, A PLAN OF INOCULATION, perfectly ſafe and eaſy, even under the moſt untoward prognoſtications that have occurred in the hiſtory of near one hundred thouſand inſtances of inoculation, in which I have been either immediately employed, or have had ſome concern, in conſultation with others.

The

The point of excellency, at which every practitioner in this peculiar ſcience muſt anxiouſly wiſh to arrive, is the ability to produce a benign ſmall-pox, and that too uniformly on each and every patient, how diſſimilar ſoever they may be in age, conſtitution, and natural tendency to the diſeaſe: this power obtained, the object is completed; and all anxiety for the event in the parties intereſted will be done away.

Perſuaded of the utility and competency of the enſuing Work to produce this effect, I here preſent it to the more immediate conſideration of YOUNG STUDENTS IN PHYSIC AND SURGERY; nor have I the leaſt doubt, that, on entering into practice, thus fortified, they will, under divine Providence, be enabled to conduct their inoculated patients through the ſmall-pox, not only with perfect eaſe to themſelves, but in every inſtance to the ſatisfaction of their employers.

To

To thoſe alſo who may preſent themſelves or others for inoculation, one hint before I finiſh is offered, of the moſt eſſential importance. I particularly recommend confidence in the operator; together with a ſtrict attention and conſtant ſubmiſſion to ſuch advice as may be given by him from time to time; and they will have no reaſon either to repent of their own confidence, or to cenſure the proceedings of a judicious practitioner.

I have thought it moſt proper to divide the Work into two parts: The firſt contains a variety of remarks upon ſome prevailing popular opinions concerning the ſmall-pox, with incidental theoretic obſervations on the nature and peculiarities of the diſeaſe, as ſuggeſted by a great many facts. The ſecond part principally relates to practical experiments and the treatment of patients. In the courſe of this arrangement, I have been in ſome meaſure compelled to deviate from the general modes of medical authors, who very properly ſet out with aſſigning

cauſes,

cauſes, diagnoſtics, prognoſtics, and then ſtating the regimen and remedy. Let it however be obſerved, that my ſyſtem of practice is deſigned rather to prevent the conſequences of a ſerious diſeaſe than to combat with it; and for this reaſon it is, that I am obliged to go farther back, and begin with the ſubject matter as it naturally ariſes.

Hence I have deemed it my duty to conſider: Firſt, The ſubjects for inoculation. Secondly, The method of infecting patients. Thirdly, The anti-variolous diet and medicines. Laſtly, The indications as they ariſe during the progreſs of infection, with directions for the uſe of the medicines, on each day of examining the inoculated patient, according to the various tendency of ſuch indications; concluding the whole with obſervations on, and the treatment of, accidental caſes, and of ſuch peculiar ſymptoms as ſometimes take place in the progreſs, but not neceſſarily connected with the diſeaſe.

ADVERTISEMENT.

WHETHER from any intereſted or other ſiniſter motive, I neither know, nor wiſh to enquire; but I find it has been circulated, That I am not the perſon who introduced the New Syſtem of Inoculation:—That I am not the perſon, who ſome years ſince reſided and practiſed Inoculation at Kenſington-Gore, in the pariſh of St. Margaret, Weſtminſter:—That I am not the perſon, who, in conſequence of a very extenſive and ſucceſsful practice, had the honor of Royal Approbation, evinced by my being preſented with an eſpecial Patent of Arms: In ſhort, That ſome other perſon, having aſſumed my name, has proceeded to the exorbitant length of declaring, that for many years I had quitted my profeſſion, and was long ſince dead.

Finding myſelf, however, ſtill capable of meeting ſuch reports; and being particularly deſirous neither to diveſt myſelf of that profeſſional character, which I have never diſgraced; nor to be ſent out of the World before I am really extinct; it is hoped that the inſertion of the following Patent may find its apology with my Readers, the only one I can offer them,

them, for thus obtruding a copy, though it be not a FAC-SIMILE *of the real Patent of Arms before-mentioned. It may thus possibly contribute to do away the silly reports, either of ignorance or of some less honorable principle; and establish me on that due line and rank, which I have ever wished to hold, as an useful member of society.*

Daniel Sutton.

Great Newport-Street,
May 7, 1796.

PATENT

PATENT OF ARMS.

TO all and ſingular to whom theſe preſents ſhall come, *Stephen Martin Leake*, Eſquire, Garter Principal King of Arms, and Sir *Charles Townley*, Knight, Clarenceux King of Arms of the ſouth, eaſt and weſt Parts of England, from the River *Trent* ſouthwards, ſend greeting. Whereas thoſe ancient badges or enſigns of gentility, commonly called or known by the name of Arms, have heretofore been, and ſtill are continued to be conferred upon deſerving perſons, to diſtinguiſh them from the common ſort of people, who neither can or may pretend to uſe them without lawful authority: And whereas *Daniel Sutton*, of *Sutton Houſe*, *Kenſington Gore*, in the pariſh of *Saint Margaret*, *Weſtminſter*, Surgeon, ſecond ſon of *Robert Sutton*, of *Framlingham Earl*, in the county of *Norfolk*, Surgeon, by *Sarah* his wife, daughter of *John Barker*, of *Debenham*, in the county of *Suffolk*, and grandſon of *Robert Sutton*, of *Kenton*, in the ſaid county of *Suffolk*, Gentleman, hath repreſented unto the Right Honorable *Richard* Earl of *Scarborough*, Deputy (with the royal approbation) to the Moſt Noble *Edward* Duke of *Norfolk*, Earl Marſhal and Hereditary Marſhal of *England*, that he is deſirous of having a Coat of Arms and Creſt granted, ſo as to diſtinguiſh his family from all others of the name, and did therefore requeſt the favor of his Lordſhip's warrant for our deviſing, granting and aſſigning to him and his deſcendants ſuch Arms and Creſt accordingly; the ſame to be borne by *Robert Sutton* his father aforeſaid, and his deſcendants: And foraſmuch as his Lordſhip duly conſidering the premiſes, and alſo the qualification of the ſaid *Daniel Sutton*, did, by his warrant under his hand and ſeal, bearing date the thirtieth day of *July* laſt paſt, order and direct us to deviſe, grant, and aſſign, unto the ſaid

Daniel

Daniel Sutton, ſuch Arms and Creſt accordingly, to be borne and uſed by him and his deſcendants, and alſo by his ſaid father *Robert Sutton* and his deſcendants. Know ye, therefore, that we the ſaid Garter and Clarenceux, in purſuance of the conſent of the ſaid Earl of *Scarborough*, and by virtue of the letters patent of our ſeveral offices to each of us reſpectively granted under the ſeal of *Great Britain*, have, in alluſion to and as a memorial of his great ſkill and unparalelled ſucceſs in Inoculation, deviſed, and do by theſe preſents grant and aſſign to the ſaid *Daniel Sutton*, the Arms following, that is to ſay, Argent, a Civic Crown Proper, on a Chief Azure; a Serpent nowed, Or, a Dove of the Field repreſenting each other; and for the Creſt, on a wreath of the colours, a demi figure, the emblem of Love, holding the Hymeneal Torch, all proper, with this motto, "*Tuto, Celeriter, et Jucunde*," as the ſame are in the margin hereof more plainly depicted, to be borne and uſed for ever hereafter by him the ſaid *Daniel Sutton*, and his deſcendants, alſo by his ſaid father *Robert Sutton*, and his deſcendants, with their due and proper differences according to the ancient uſage and cuſtom of arms, without the let or interruption of any perſon or perſons whatſoever. In witneſs whereof, we the ſaid Garter and Clarenceux King of Arms, have to theſe preſents ſubſcribed our names, and affixed the ſeals of our ſeveral offices, this twentieth day of *Auguſt*, in the ſeventh year of the reign of our Sovereign Lord *George* the Third, by the grace of God King of *Great Britain*, *France*, and *Ireland*, Defender of the Faith, &c. and in the year of our Lord, one thouſand ſeven hundred and ſixty-ſeven.

S. Martin Leake, Garter Principal King of Arms. L. S.

Charles Townley, Clarenceux King of Arms. L. S.

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THE

INOCULATOR;

OR,

SUTTONIAN

SYSTEM OF PRACTICE.

PART THE FIRST

Contains Remarks on certain prevalent Opinions concerning the Small-pox; with Theoretical Obſervations on the Nature and Peculiarities of the Diſeaſe; as ſuggeſted to the Author by a variety of Caſes and Experiments, in a very extenſive Practice of Inoculation; illuſtrative of the great Probability of an Organic cuticular Circulation, wherein the variolous increaſe is generated, and that, in conſequence, the Diſeaſe is to be claſſed as cutaneous.

CHAP. I.

Of Sydenham's Opinion on the Small-Pox—Changes which the variolous Contagion may undergo, by diffuſion through the Air—Doubts expreſſed whether the Diſeaſe ever becomes epidemic, and whether ſuch a Thing as Epidemic Air did ever really exiſt.

SYDENHAM, the great illuminator of the medical world, writing on the ſubject of the ſmall-pox, very candidly ſays, "What the eſ-"ſence of this diſeaſe is, I ingenuouſly own I "know not, by reaſon of a natural defect in the "underſtanding, common to me, and all man-"kind." Thus far I certainly agree with this juſtly celebrated author.

But with much deference to his exalted abilities, I conceive that he labours under an error, as to the way in which the diſeaſe is generated: On this ſubject he goes on to obſerve, "But upon a thorough conſideration of the "ſymptoms, it ſhould ſeem to be an inflamma-"tion of the blood and juices; in removing "which, nature, during the firſt two or three "days, endeavours to convert and digeſt the

"inflamed

" inflamed particles; which being afterwards " thrown out on the ſurface of the body, ſhe " further ripens, and at length totally expels, " in the form of ſmall abſceſſes." Again he ſays, " The virulent matter occaſioning this diſ- " eaſe, ſeems to be of an acrimonious and in- " flammatory nature;—whence the pain, heat, " redneſs, ſwelling, eroſion and ulceration;— " and alſo to partake of a cauſtic and putrefac- " tive nature; whence, by its ſubtle inteſtine " motion, it deſtroys the texture and union of " the parts, and corrupts them. *Its eſſence*," he adds, " *conſiſts in a peculiar inflammation of the* " *blood*; in which nature is employed for ſome " days, at the beginning, in preparing and " moulding the inflamed particles, for their rea- " dier expulſion to the external parts; but when " the eruption is over, *the fleſhy parts become the* " *ſeat of the diſeaſe*."

From the foregoing citations, it is pretty clear Sydenham muſt have been of opinion, that the variolous principle was abſorbed immediately into the circulation of the blood, without waiting for, or receiving any qualification or modification on the ſurface of the body, towards effecting a freſh variolous increaſe thereafter, prepa-

ratory to ſuch abſorption; that the variolous principle thus diffuſed and incorporated with the blood, cauſed it to be corrupted and inflamed in ſuch a manner, that a fever was the inevitable conſequence, ſo as to produce a depuration or clarification; and that after a due ſeparation of the "inflamed particles," they were expelled to the ſurface, there to collect and form puſtules. In this way clearly he meant the diſeaſe ſhould be characterized.

This doctrine coming from a man of ſuch eminence, was univerſally adopted, and the diſeaſe was treated accordingly, until by "*down-right blundering and by accident, as a late Au-thor has expreſſed himſelf, I ſtumbled**" upon motives and reaſons which induced me to doubt the truth of it, and to differ in opinion with the practitioners of the day: true it was, that long before, and even after that time, I ſuſpected both their practice and principle were founded in error.

Bad health being totally out of the queſtion, it was maintained that one age was preferable to

* See introduction to Dr. Dimſdale's pamphlet, publiſhed in 1766.

another;

another; that one complexion had the advantage of another; that certain habits and practices of the ſubject imported ſucceſs or danger; that the ſeaſon of the year had its influence; and laſtly, that a benign diſeaſe muſt reſult from habitually pure blood, and on the other hand, a malignant diſeaſe was as ſure to follow groſs impure juices; to all theſe and many more ſuch like ill-founded opinions, the diſeaſe daily gave the lie direct.

Scarcely two inoculators, I obſerved, held preciſely the ſame practical tenets, every one had a method of practice, in ſome material inſtance different from others, and peculiar to himſelf; hence, I ſuſpected neither of them were in the right, and which moſt certainly ſtimulated me to adopt other ideas, and to take the moſt rational means I could deviſe of obtaining more ſatisfactory information to improve the practice of inoculation. Many circumſtances at this time concurred to aſſiſt me in my views, which it is not now neceſſary to enumerate, (a few of them however will occaſionally occur hereafter, as explanatory of ſome ſtriking facts) ſuffice it at preſent to ſay, that having digeſted a new plan upon equally new grounds of

reaſoning, I waited a favourable opportunity to put it in practice, and to my great joy and ſurpriſe, was ſoon convinced of its ſuperiority beyond any thing which had preceded it; yet ſtill I perceived it was by no means near perfection. I doubted not, however, but that a few more experiments purſued with prudence, would bring the trials to ſtill greater certainty, the truth and ſucceſs of which eſſays, time has ſince fully evinced.

With reſpect to the peculiar miaſma, or contagious eſſence, whatever it may be, ſhould ſuch a thing ſpecifically and abſtractedly exiſt, (which as yet appears rather queſtionable) it is certainly of a nature too ſubtle, minute, and volatile, to be aſcertained by any analyſis yet known, nor have its contents been hitherto diſcovered by the help of our moſt perfect and compound microſcopes. The greater probability, therefore, is, that two different bodies, neither of them variolous while inſulated and alone, may, by coming in contact with each other, produce a third body, and ſo conſtitute what we all underſtand by a contagious variolous eſſence. Be this however as it may, it remains for us to judge of the cauſe ſimply by its effects—and to do this upon true grounds,

grounds, we muſt conſider the matter in queſtion, as it affects the human conſtitution; as it attacks the human frame only; and that but once throughout the courſe of human exiſtence.

The lot of ſingularity has fallen on me here alſo, as on a former occaſion upon this ſubject, to reaſon and therefore to act differently from my predeceſſors in the ſcience of healing. Should I be equally fortunate in explaining my ideas on this head, as I was in the practice before alluded to, I ſhall think myſelf happy in having done a ſervice to humanity.

In order to this, I ſhall begin the ſubject with conſidering the ſtate and the alteration which this contagious principle may be ſuppoſed to undergo while it exiſts in the air, and whether ſuch a thing as epidemic air did ever really exiſt.

The volatile principle, (admitting it to be contagious and variolous,) after evaporating from the puſtules, is certainly diffuſed in the air; but how long, and to what extent it may float and remain in it, before its contagious influence is deſtroyed, will be difficult to aſcertain, as the motion and congeniality of the air

are not always the ſame. It may be preſumed, however, to exiſt in this floating ſtate only for a few ſeconds of time; otherwiſe the diſeaſe would ſoon be diſſeminated to any diſtance, juſt as the winds might caſually waft it. Now this does not appear to be the fact.

The air which is ſuppoſed by Philoſophers to poſſeſs a ſolvent power, may by a certain degree of action, ſo triturate or grind to pieces the variolous effluvia, as to render them incapable of exerciſing their contagious influence, when in that ſtate they come in contact with the human body. No longer, therefore, I preſume, than the particles of the variolous eſſence retain their humid ſtate and perfect ſhape in the air, are they capable of acting with a contagious energy. It has been ſaid indeed, with what truth I know not, that the power of variolous infection has remained twenty years, or more, in clothes ſecluded from the open air, in cheſts, &c. and that its contagious activity has afterwards been experienced: But of this I have my doubts; and perhaps it were better for us to ſuſpend our belief till we have more certain evidence of the fact than has yet been given.

I have

I have met with no inſtances, in near forty years of conſtant practice and unremitting attention, that could induce me to credit the exiſtence of a variolous epidemia, let the ſeaſon or air be ever ſo favorable for nouriſhing or diſperſing a variolous effluvia; for until ſuch air is impregnated or charged with ſuch effluvia, no attack of this kind is to be feared. A morbid ſtate of air, unimpregnated with variolous effluvia, can neither give nor engender the diſeaſe; the viſitations of it therefore muſt be fortuitous, and ariſe from another cauſe. We ſeldom, if ever, hear of variolous epidemics prevailing, in cold, inclement, unſocial ſeaſons, even in large populous places; much leſs in retired country ſituations; and that for this obvious reaſon, in ſuch ſeaſons people are leſs inclined to go from home; whereas in temperate pleaſant weather, although in itſelf poſſeſſed of no peculiar qualities to propagate variolous contagion, people are generally apt to aſſociate more together. This I apprehend is the cauſe why the diſeaſe is then more rapidly and extenſively diſſeminated than at any other time; and of courſe ſuch ſeaſons may have been eſteemed epidemic, however ill founded the idea.

Admitting

Admitting the ſmall-pox to be ſometimes epidemic, and the contagious air in moderate motion, ſurely in ſuch caſes, all the inhabitants within reach of its current, who had not previouſly experienced the diſeaſe, would be affected with it, until the air had received a purgation: but in theſe imaginary epidemics, neither all, nor perhaps one half of the human ſpecies, within the ſphere of the contagious current ever do experience it; neither is it propagated at the ſame inſtant of time, as it muſt nearly be were it epidemic: and although the ſame kind of air may be very frequently in motion, yet are its ſuppoſed epidemic conſequences never experienced, I preſume, until a freſh, thick crop of inhabitants is found ready in waiting, perhaps ſeven or ten years together, to receive its viſitation.

But ſuppoſe for a moment, and for the mere ſake of argument, we ſhould conſider epidemic air to be of a ſtagnant nature, and to ariſe, with all its fecundate foulneſs, like a fog, in a perfect calm. In this caſe too, we gain not a ſtep in advance; ſince every human being within its circumference would at the ſame time fall ill of the diſeaſe, or nearly ſo: but this is not the

character

character of modern variolous epidemics; they muſt be indulged (when they have got a ſuppoſed footing) with plenty of time, one, two, or three months, in order to effect and complete their deleterious purpoſes; and even then, one half of the inhabitants, without flying from the peſtilential ſtagnant air, ſhould they be tolerably cautious, will eſcape the contagion. In ſhort, without calling in the aid of variolous epidemic vapour, engendered only in the eſtabliſhed ſyſtems of error, we ſhall find on full inveſtigation, that the ſmall-pox is invariably communicated by infectious perſons or things, coming in, or nearly in contact with thoſe who have not had it, either by accident or by deſign, though oftener for ſome intereſted or other purpoſes.

CHAP.

CHAP. II.

Of the common Opinion reſpecting the Manner in which the Animal Syſtem is affected.—— Reaſons for diſſenting from ſuch Opinions, founded on Experiments and Obſervations.— An Experiment demonſtrating that inhaling infected Air does not communicate the Small-pox. —Other Experiments, to prove that every Part of the human Body within the Skin is not affected by, or ſuſceptible of the variolous Contagion, ſo as to generate the Diſeaſe.—Effects produced by the Application of Epiſpaſtics.—The variolous Increaſe before the Formation of Puſtules, ſuppoſed to be removeable.—Effects produced by local Applications of Heat or Irritations, illuſtrative of a ſuppoſed cuticular organic Circulation.—Of a Revulſion of the variolous Matter. —Inferences reſulting from theſe Experiments, and Effects.—Remarks on the organic Powers; and on the Mode in which a variolous Increaſe takes Place on the Surface, and that in Caſes, at two ſeparate and diſtinct Times.—An internal

Abſorption

Abſorption admitted.—The variolous Fever fallacious.—The Blood exonerated from ſundry Imputations—Probable Effects produced by natural Infection, on the Acceſſion of variolous Effluvia.

IT has been a received opinion of the Faculty, from Sydenham down to the preſent time, that the ſmall-pox was generally propagated by the inhaling of infectious air into the lungs, the lacteals whereof conveyed it to the blood, and other circulating fluids; or elſe in conſequence of an unqualified abſorption by the pores. Through theſe channels of conveyance it was ſuppoſed that the fluids became inflamed and corrupted; and as theſe were more or leſs affected, that the diſeaſe afterwards was produced on the ſurface in a greater or leſs degree: at all events, however, it was concluded that the blood muſt be contaminated, or that the diſeaſe could not be produced.

While I was even in a ſtate of pupilage, I had frequently obſerved, that the practitioners of the day could ſeldom or never judge with certainty, in what degree their patients were likely to be affected: thoſe whom they eſteemed to have the pureſt blood would have the moſt malignant

malignant ſort of ſmall-pox, by inoculation, and thoſe, on the other hand, whoſe blood was ſuppoſed to be the moſt corrupted or corruptible, had it often times in the mildeſt way: from hence, therefore, I very naturally perceived that no uſeful or certain concluſions could be drawn from ſuch opinions. They were, I ſuſpected, equally wide from the truth in their attempts to aſcertain the mode of effectual acceſs and the cauſe of variolous increaſe. To clear up theſe points to my own ſatisfaction, on entering into practice for myſelf, ſeemed an indiſpenſable duty. I accordingly made and repeated an experiment, which proved firſt, that the diſeaſe was not to be caught by inhaling infected air.

Having contrived a machine through which a perſon might inſpire contagious air without danger of being abſorbed by the lymphatics of the mouth, in its paſſage to and down the windpipe to the lungs; I placed it in a proper poſition, and prevailed upon a perſon to uſe it; I inſtructed him in what manner he was to draw in one ſingle breath of the infected air, and then to forbear from reſpiring, until he ſhould be thought out of danger of imbibing it in any other way. This done, and having alſo procured

cured a patient in a moſt infectious ſtate, and taking advantage of a proper current of air, we then proceeded to trial.

The experiment being made to my ſatisfacfaction, we waited the event for fourteen days, when another opportunity offered to repeat it. No ſymptoms appearing of the perſon having been infected from the firſt and ſecond attempt, at the end of about three weeks more, another opportunity preſented itſelf, and we proceeded to the third and laſt trial. Each proving ineffectual, at the cloſe of eight weeks from the firſt experiment, the perſon who inhaled the infected air having occaſionally, to prevent finiſter accidents, undergone a ſtrict preparation, was ſucceſsfully inoculated in the uſual way, and met with only the uſual ſymptoms attending that proceſs.

I have alſo repeatedly tried to communicate the diſeaſe, by conveying conſiderable quantities of active virus into the ſtomach, in the form of pills, but never with effect; both cool and tepid clyſters of water, ſtrongly impregnated with the contents of many ripe and unripe puſtules, have likewiſe been adminiſtered; but, in this

this way too, I have always failed of communicating the diſeaſe.

I had obſerved, that it was not unuſual, by the old way of making deep inciſions, to experience frequent diſappointments in communicating the diſeaſe. It was therefore determined, if I could, to trace out by experiments the ſource of theſe accidental failures; as thinking they might, at the ſame time, lead to the ſtill more important object I had in view; namely, to diſcover in what manner, and to what congenial parts of the human body, the variolous particles did actually attach, ſo as to generate their increaſe. To this end, in the courſe of my early practice, I ſometimes made, by way of experiment, two inciſions; one in the preſent ſuperficial way, which I could depend upon; the other on the other arm, longer, and very deep, completely through the ſkin, and into the fleſh. Into this wound I dropped a ſhort piece of thread, freſh charged with active matter, which not having touched the cuticle and true ſkin, in its way to the bottom of the wound, it was inſtantly cloſed, and a piece of plaiſter applied, both to ſecure the lips together, and to prevent the matter, at the ſame time from

riſing

riſing to the ſkin. Five or ſix days after, the plaiſter was removed, but no ſigns of infection then or afterwards were diſcernible on the part ſo inoculated; and this, on repeated trials, was invariably the reſult, although the ſuperficial inciſion on the other arm as conſtantly proved ſucceſsful.

It having been confidently inſiſted upon, as a principle founded, I ſuppoſe, on Sydenham's opinion, that the blood of a perſon under the preſſure of ſmall-pox would impart the diſeaſe to others: not being myſelf inclined to credit this aſſumption in its full extent, I was determined to ſatisfy myſelf as to the truth of it. To this end, I began by inoculating with blood drawn in a febrile ſtage of the diſeaſe, which indicated confluency, and proceeded in this way daily, till the latter ſtage of the diſeaſe, where an abſorption had evidently taken place. Numerous experiments of this ſort were tried, but all without effect. In making my experiments from a ſubject in the puſtulous ſtage, I uſed the precaution to waſh and wipe away all infectious matter which might adhere to that part of the ſkin whence the blood was taken, and not even then content with ſuch experiments, I ordered

the blood to be ſmelt to, and to be well rubbed in upon the ſkin, on different parts of the body of the ſubject to be infected, yet herein alſo I failed in every inſtance.

The tumified axillary glands of inoculated ſubjects will ſometimes ſuppurate at a time when the diſeaſe, in conſequence of inoculation, is advancing to its criſis, though oftener on its decline; but in neither caſe will the matter diſcharged from ſuch abſceſſes communicate the diſeaſe: having, for my own ſatisfaction, occaſionally tried it without any variolous effect: nor will abſceſſes formed during any ſtage of the diſeaſe on any part of the body, from a ſmall-pox ſubject in the natural way, be at all more effectual.

In my attendance both on the natural and inoculated ſmall-pox, I had obſerved that variolous puſtules were ſeldom to be found in cicatrices; and never on ſuch as ſucceeded deep wounds, or where the fleſh had to a very large extent been deprived of the true ſkin. Theſe obſervations led me to conceive that I might not be able to ingraft the diſeaſe on the centre of ſuch cicatrices. But two or three opportunities

nities have preſented themſelves for me to make experiments, in which I have always failed of ſucceſs. I am aware, indeed, that the diſeaſe may have been effectually engrafted on ſmall ſuperficial cicatrices, ſuch as follow ſcalds, or burns, or on parts where old iſſues have been healed up, and that ſpontaneous puſtules may have proceeded from them, and arrived at full energy and maturity. In theſe rare inſtances, however, notwithſtanding the parts ſo marked may have the appearance of perfect cicatrices, yet the cutis might not have been wholly deſtroyed, ſo as to prevent the poſſibility of its ſhooting a-new, although the parts ſuſtained the outward character of a complete cicatrix: we muſt conſider large cicatrices, therefore, as being no more than a kind of hardened fleſh, and although abſorbent and nervous veſſels may obſcurely exiſt, I believe them to be too ſmall and imperfect for the voriolous miaſma to be abſorbed, or a variolous increaſe to take place on ſuch cicatrices.

It has been a generally received opinion, credited even by ſome of the Faculty, and propagated as a truth, that puſtules do ſometimes pervade the internal parts of the body; and this circumſtance has been aſſigned as one of the

reaſons for ſuch caſes ſometimes turning out fatally. To ſatisfy myſelf as to the truth of theſe opinions and reports, and to deſtroy prejudices founded, perhaps, on certain alvine appearances, I was reſolved to take the firſt opportunity of diſſecting a proper ſubject, who ſhould be ſuppoſed to have died from this cauſe, conjointly with others. A negro having on the ninth day died of a confluent ſmall-pox, I had permiſſion from his maſter to open the body ; but on examining every part of the viſcera and their inveſtiture, (the peritoneum) not a puſtule was to be ſeen, or any thing which had the reſemblance of ſuch an eruption.

I was called in to a man in the eruptive fever, which indicated an approaching confluent ſmall-pox. From the nature of the ſymptoms, I was of opinion that a veſicatory applied to his back would have its uſe, and as I conceived, no time was to be loſt, I waited the arrival of the plaiſter. Upon clearing away the linen to make the application, we obſerved the general ſurface of the back and loins to be covered with a vaſt number of little red ſpots, which in the event proved to be real ſmall-pox. The following morning the diſeaſe was fully manifeſted over the

the whole body, and having now obtained my object, the plaiſter was removed, but the ſcarf-ſkin adhering generally to the plaiſter, I ordered an emollient one as a covering to the part. Two days after, on examining the man's back, I obſerved the puſtules on all other parts to have made a conſiderable progreſs, but on the place where the veſicatory had been applied, no puſtules were to be ſeen, and the new cuticle being formed, only a redneſs of the ſkin remained without a veſtige of puſtules, although on every other part of the body the eruption was formed in the moſt violent degree. This caſe not only proves the variolous increaſe to begin and end immediately under the epidermis, but it ſhews alſo to a demonſtration, that the accumulated contents of a puſtule, even before its criſis, may not be entirely variolous, for if it had been poſſible, with ſafety to the ſubject's life at that time, and by the ſame means to have ſeparated the whole external covering of the man's body from the true ſkin, he would have been cured of the ſmall-pox in twelve or twenty-four hours, and relieved from the maſs of matter which otherwiſe would have ordinarily accumulated in the ſhape of puſtules.

I am much inclined to believe that the ſpontaneous increaſe, before the formation of puſtules, are removeable and determinable to any part of the body, and I ſhall here give an inſtance in ſupport of this hypotheſis, by what I call *invitation*. Suppoſe, for example, that a perſon to be inoculated wiſhes to have the initials of his name put upon his face, and formed with all thoſe puſtules which would otherwiſe have been produced ſpontaneouſly over the body; and we muſt further ſuppoſe, by the progreſs which the inciſion makes, that we may judge pretty accurately, allowing for difference in the ſize of puſtules, as to the number to be thus ſpontaneouſly produced, which, for inſtance, may be fifty or a hundred. Now fifty or a hundred invitations, or dots with the point of a charged needle, being very lightly made in the form required, about forty-eight hours antecedent to the eruptive fever, the whole ſpontaneous produce would by ſuch means aſſemble, or be invited to the face in that ſhape. Should the whole produce, however, not have been ſufficiently numerous, ſome of the invitations will fail, ſo as to leave chaſms in the letters intended to be marked, and in caſe of an exceſs, the overplus will appear ſpontaneouſly. This was no unfrequent

unfrequent practice with me many years ago, and a practice attended with no future inconvenience or blemiſh to the patient.

By whatever cauſe a preternatural heat is produced on the ſkin, whether from fire, or friction, or from any ſtimulating matter applied, (for it is indifferent which) the heat ſo produced, has been found powerfully to ſolicit a variolous increaſe to ſuch parts: The generative organs, as I apprehend, being by any of the foregoing accidents immediately brought into an invigorated fecund ſtate, in ſuch a way as to produce an accumulation of eruptions on the part or parts ſo heated; I cannot conceive that this would have been the caſe, without the aid of ſuch preternatural heat, but that ſuch eruptions would otherwiſe have been indiſcriminately ſcattered over the body, nearly in the ratio of the increaſe ſo produced on the heated parts. For inſtance, where a conſiderable fecundity on the ſkin is foretold by the indications of the inciſion, or otherwiſe, and accidents of this ſort happen, ſuch parts will, in conſequence of ſuch heat, &c. &c. experience an accumulation of puſtules, even to a degree of confluency; but where the indications foretel the mildneſs of the

approaching diſeaſe, the like conſequences do not follow, at leaſt not to any conſiderable extent. From hence, therefore, it may be preſumed, that the ſtimulus acts as an invitation of the eruptions to ſuch parts; and indeed I have oftentimes been led to believe, that the eruption over the general ſurface of the body has been leſſened by this local revulſive accident.

Formerly it was an opinion, that a revulſion of the variolous matter, ſuppoſed to be contained in the habit, might be made from the face, by inoculating on the lower extremities, but it was founded in fallacy; for the ſtimulus occaſioned by ſuch inoculation was too confined and local to produce the effect in any ſuitable extent. Indeed all inoculations muſt be conſidered in the firſt inſtance as only productive of the local increaſe on the arm, and do not affect the extent or ſituation of the ſecond or general crop. The effects of the ſtimulus before alluded to, are only to be produced when the firſt increaſe has taken place, when its contents are diffuſed over the true ſkin, and the proceſs is near to the approach of the eruptive ſymptoms preceding the ſecond increaſe. The reaſoning, therefore, of that time, muſt be, as

I obſerved,

I obſerved, built on falſe grounds, for this kind of revulſion was imputed to the office of the blood; whereas, I apprehend it to proceed from ſome organic circulation, exiſting between the cuticle and the true ſkin.

From the information which the foregoing inſtances afford, together with what is obvious to our ſight, on the place, and at the inſtant of inſerting crude matter by inoculation; from the knowledge to be gained in ſtrictly attending to the texture of the ſkin of the ſubject on whom the operation is to be performed; and laſtly, from the progreſs of infection on the arm, (all which will be explained under their proper heads) I am decidedly of opinion, that ſome fecund, influencing principle, whatever it may be, but having a peculiar power over the variolous eſſence, does exiſt entirely upon, and pervade the ſuperficies of the true ſkin, I mean between that and the ſcarf-ſkin; perhaps in certain ramifying capillary veſſels, or glandular points thereof, which in a natural ſtate unite the ſkins together. It is probable that in theſe ſuperficial glands an organization may ſubſiſt, connected with the ſenſe of feeling, as being ſituated on the extremities of the nerves; and

and that this organization may be vaſcular, containing a circulating, volatilized, ſaline, ſebaceous fluid, peculiar to itſelf, and ſerving to a variety of natural purpoſes, before its excrementitious parts are thrown off from the habit, by the pores of the ſkin. But, whether an organized body exiſts here or not, my opinion is the ſame; viz. that the contagious effluvia, or in a humid ſtate, are attracted through ſome one or more of the pores of the cuticle, and coming into contact with the influencing principle, by ſome kind of electric colliſion, or otherwiſe, a variolous increaſe immediately begins to be produced or engendered therein, on the acceſſion of the variolous infection.

The new variolous increaſe being produced either from a caſual or determined point of attraction, in the manner I have deſcribed, is then received into the lymphatic ſyſtem, the ſuperficial parts whereof, which lie on the ſurface of the true ſkin, depoſit their variolous contents, and by ſome attractive influencing power in the organs of generation, a farther increaſe takes place, of a general productive nature, according to the degree of fecundity exiſting in thoſe organs.

By

By the lymphatics of the biceps muſcle the variolous particles are conducted to the conglobate glands of the axilla, which cannot otherwiſe be affected, and it then proceeds to the thoracic duct: From this duct, as the central point, it may be diffuſed through every part of the human body; and in its circulation, ſhould any of the variolous eſſence take its courſe through the Fallopian tube, by a certain attractive power, which I apprehend to be inherent in every uncontaminated human ſkin, a fœtus may thus experience its contagious effects, but not otherwiſe; and in that caſe, there the variolous eſſence loſes its force and becomes exhauſted. Such parts of the variolous eſſence as did not take that courſe, are ſent forth from the thoracic duct, and thence introduced into the blood; but from the great heat and rapid motion of which, the variolous energy is thereby immediately deſtroyed, and the diſqualified matter is thence conveyed to the ſuperficies of the body, and diſcharged by the ordinary emunctories as excrementitious humour.

I have mentioned the particular muſcle and lymphatics of the arm, when the operation is there performed, as the only courſe from thence

to

to the thoracic duct; for this reaſon, that neither the axillary glands of the other arm, the inguinal glands, nor indeed any of the other lymphatic ſtrainers, are ever ſenſibly affected by inoculation when the operation has been performed on any other muſcle of the arm; or on any other part of the body that I have experienced, and the axillary glands of that arm only in which the inciſion was made.

It alſo clearly appears, from this progreſs of infection, that there are two diſtinct increaſes of the variolous principle, produced immediately under the cuticle of the ſame ſubject, the one I term local, the other ſpontaneous; the firſt inſtantly begins with the inſertion of the infectious miaſma, and ends at the commencement of the veſication of the inciſion. The ſecond increaſe, which I call ſpontaneous, commences with the firſt ſymptoms of an approaching variolous fever, and terminates with the firſt appearance of the general eruption, while they are ſeen as only ſo many little unſubſtantial red or inflamed ſpots, before they have, to the touch, acquired body, or are arrived to a ſtate of veſication; for when this ſtage of infection takes place, either on the inciſion, or in the ſecond or

ſpontaneous

ſpontaneous eruption, every ſuch little ſpot begins to fill with a ſpecies of nutritive lymph, deſigned for ſome healing purpoſe or other.

I am not willing to give too much credit to the effects produced by the application of the veſicatory to the man's back, as before ſtated, but I am nevertheleſs much inclined to believe that the caſe demonſtrates two facts of much importance to my general hypotheſis of the ſmall-pox being cutaneous. The firſt is, that the ſpontaneous increaſe of the variolous principle, (no leſs than the local) is fully completed by the time above ſtated: and ſecondly, that the albuminous lymph, which afterwards enlarges the puſtules, is not, of courſe, wholly variolous, although too intimately united to be ſeparated from each other; for it has frequently been found, by inoculating with matter in the latter part of the concocted ſtate of the puſtules, when the more volatilized variolous particles of it have been evaporated, that the matter will not communicate the diſeaſe.

Notwithſtanding the human conſtitution may be more diſaſtrouſly and differently affected

affected by the ſmall-pox, than by any other cutaneous diſeaſe; it ought nevertheleſs to be conſidered as ſtrictly cutaneous; its principal actions and effects being, as I conceive, produced on the ſurface of the body.

I do not mean to contend, that when a new increaſe of the variolous eſſence has taken place, when the old or parent ſtock has performed its office, and its energy is exhauſted, no abſorption of the new increaſe into the internal parts in any inſtance occurs. We have manifeſt evidence to the contrary; for, about the fourth or fifth day after the acceſſion of variolous eſſence by inoculation, the conſequent new increaſe, as I apprehend, is abſorbed by certain lymphatics in the biceps muſcle, (as before ſtated) and its effects from thence are firſt diſcovered, by the glands of the axilla, or arm-pit, in ſome inſtances, becoming tumefied, ſtiff and painful. By natural infection alſo, as well as by inoculation, the evidence of an internal abſorption is manifeſted from the effects produced on a fœtus in the womb; inſtances having happened, wherein ſuch have come into the world with evident marks of the diſeaſe upon their ſkin.

As

As to the febrile ſymptoms, ſimply, I have ſeen nothing ſo ſpecific in them, that we can abſolutely determine them to be variolous. Such may precede, and be the conſequence too of other obſtructions in the ſkin. It is true, the diſeaſe may be gueſſed at; and on enquiry, if the patient has not had the ſmall-pox, or if he has been in danger of catching it, the prognoſtication may be this; that the diſtemper is breeding; but theſe are only leading enquiries, and betray a doubt as to the point of judging with certainty from the febrile ſymptoms. I mean not to queſtion the ſkill of any individual in the profeſſion; but I have had frequent inſtances, in the courſe of my practice, of eruptive caſes not being determined by them until the eruption had begun to veſicate, and ſometimes not even then; for where the febrile ſymptoms have been very light, and the puſtules few, which ſometimes happens in the natural way; even at that ſtage, caſes have been concluded to be the chicken-pock, when they really were the ſmall-pox, and *vice verſa*. Whence then ariſes this defect in judgment, but from the fallaciouſneſs of the febrile ſymptoms?

From

From the ineffectual experiments made with the blood, and taking at the ſame time into conſideration, the very great and important functions; the rapidity of its natural motion; the ſource from whence it receives its ſupplies; and in what innumerable and perpetual modes it conveys and imparts them to every the minuteſt parts of our bodies; in ſhort, when it is conſidered as the ſoul and ſource of man's corporeal animation; I confeſs I am little inclined to credit the poſſibility of its being poſſeſſed of an attribute or power to impart any qualification to the abſorbed eſſence, whereby a variolous fermentation may be excited, or to occaſion an increaſe therein.

In order to ſupport this mode of reaſoning, ſome definite quantity of the variolous principle muſt be ſuppoſed to be abſorbed, and incorporated with the blood, in the firſt inſtance: ſecondly, that a fermentation, inflammation, corruption and efferveſcence would naturally follow: and laſtly, that the ſcene muſt cloſe with eruptions on the ſurface of the body. In this point of view it ought to be concluded, that theſe febrile ſymptoms and eruptions would, with little variation,

be

be proportioned either to the quantum of the original influx of the variolous principle, or to ſome proportionate inherent prediſpoſing quality of the blood; and yet they by no means appear to be the conſequence of either: for, ſuppoſing the event to be determined by the quantity of the variolous principle abſorbed, and that quantity to be very ſmall, a few particles only, yet ſufficient to produce and aſcertain the diſeaſe to be variolous and effectual; in ſhort, ſuppoſing the eruption to be in proportion to the influx, which I conceive to be inadmiſſible, then all thoſe inoculated with the ſmalleſt quantity of infection would have the diſeaſe the moſt favourably; and thoſe whoſe inoculation was accompanied with an exceſſive quantity of infection would experience the diſeaſe in the moſt formidable way. But the truth is, that this hypotheſis is refuted by daily experience, even among thoſe who have the leaſt pretenſions to form an opinion; and it is now given up generally by the moſt intelligent.

To argue from the exiſtence of an inherent prediſpoſing power in the blood of a ſubject in perfect health, a perſon muſt profeſs ſome uncommon ſupernatural talents, to prognoſticate

with certainty, what degree of fermentation, and conſequent eruption, will enſue on ſuch a ſubject. For let me aſk what clue have we? what analyſis have we of the blood, to aſcertain with preciſion this inherent prediſpoſing power? I confeſs myſelf to know of none; and hence I conclude, that all deductions from an enquiry into this imaginary inherent influencing power of the blood muſt be fallacious. Does the blood, drawn at any ſtage of infection, exhibit any general known or determinate appearance, to aſcertain the fact, which may not alſo with equal propriety be attributed to ſome other febrile cauſe, not even eruptive? Let me own that I have not this diſcriminating gift; nor have I ever heard of any one that had it.

Suppoſe we ſhould admit the ſmall-pox puſtules to proceed from, and to be the reſult of ſome fermentation of the blood, without conſidering whether this fermentation ariſes from the abſorption either of one, or of one million of variolous atoms; I preſume it will be granted, that this fermentation does not take place, until it is diſcovered by an increaſed velocity of the blood: or at leaſt, until the patient exhibits ſome derangement in his health. For it can hardly

be

be inſiſted on, that a fermentation exiſts in the blood, when no ſigns of it are apparent, and while the ſubject continues to be in perfect health; and yet we are not without caſes of this ſort in the natural way of breeding the ſmall-pox, ſince in ſome inſtances the firſt knowledge or ſuſpicion we have of the diſeaſe, is the appearance of a few ſcattered puſtules over the breaſt and other parts of the body; and theſe will appear ſome hours before the commencement of the fermentation or fever, particularly in froward caſes, where two diſtinct crops of puſtules are indicated and expected to follow each other, a few days intervening.

But if this fermentation be ſtill inſiſted upon as the neceſſary harbinger to the eruption, why ſhould not all human beings be ſubject to it more than once? Are all the abſorbing, fermenting, inflaming, corrupting, effervеſcing and depurating powers of the animal fluids, finally and for ever to be deſtroyed by one and the firſt acceſſion of the variolous principle? Shall we, by any analyſis of the blood, find the cauſe of this morbid defunction there? Do not all thoſe who, like myſelf, are in the daily practice of viſiting the ſick, abſorb this ſame princi-

ple into their own perſonal habits? And why not then experience the ſame variolous diſaſters in our blood? Do not gravid women who have paſſed the diſeaſe previous to their pregnancy, and conſtantly living in infected air during that ſtate, abſorb the variolous effluvia? If they do, why does not their reſpective fœtus experience the variolous influence? The truth is, they are perfectly ſafe, ſo long as they continue in their native incloſures.

But it may be ſaid the variolous principle when poſſeſſed by the blood, may lag in its circuitous courſe, and groping in the dark regions of the body, may not find its way through the Fallopian tube; and the fœtus by this fortunate obſcurity may eſcape the contagious ferment, can this be the fact? when it is no very rare caſe to ſee an infant in the 7th, 8th, or 9th month, enter this troubleſome world with the ſmall-pox full upon it, provided the mother alſo is at that time labouring under the like viſitation.

This circumſtance, it is to be remarked, may extend to ſomething more than is generally ſuſpected: a powerfully attractive or electrical influence may exiſt, and by this influence, through the

the medium of the nervous ſyſtem, the effects of the outward ſkin of the mother may be conveyed to that within, to the ſkin of the fœtus. I think it does not conſequently follow, that becauſe an embrio may ſuffer an untimely birth, the accident therefore is intirely to be imputed to an abſorption of the variolous eſſence into its circulation; it might perhaps with as much propriety be attributed to the exceſſive ſhock which the maternal frame may experience from the diſeaſe. Be this however, as it may, I inſiſt not upon it; nor do I take in aid of this hypotheſis, the various and frequent accidents reſulting apparently from nervous ſudden ſhocks of pregnant women in health; the effects of which are ſaid to be ſeen on the infants when they are brought forth.

It may alſo be contended that the general ſtated time of eight or ten days from the firſt acceſſion to the febrile ſymptoms, indicates the probability of this inherent quality of the blood. In this caſe I apprehend the ferment would be more regular in each claſs of ſubjects, than it is really found to be; and which cannot well be attributed even to any particular motion of the blood, or diſcovered by the pulſe: ſubjects of

any age may experience the febrile ſymptoms in ſeven or eight days, others not in twenty, or more; nay, by natural infection, I have had reaſon to believe, the variolous fever has not commenced even till the thirtieth day from the acceſſion, and this without any apparent ſluggiſhneſs of the blood, or any other known or reputed cauſe ariſing from the ſeaſon of the year.

On the ſame ground alſo I would aſk, how it happens that freſh ſubjects ſhall have been in infected air, nay, have ſlept with perſons under the confluent ſmall-pox for five, ſix, or ſeven nights ſucceſſively; that they ſhall then be inoculated and experience the diſeaſe in that way, with all and only the ordinary indications of the arm, and without any premature febrile approaches? Inſtances of this ſort, it is well known do frequently occur in practice; in ſuch, I always recommend perſons to be inoculated, and have generally found myſelf in time to bring the diſeaſe on, in this way and in the mildeſt manner. Now in all ſuch caſes, I would aſk what becomes of the original, natural ſtores for fomentation, &c.?

On

On the ground of a variolous depuration, I cannot conceive why the known, the peculiar and characteriſtically dinted form, and diſtribution of theſe excrementitious eruptions, ſhould ſo invariably follow; for by moſt of thoſe ſenſible depurations of the blood we know of, where it is not thrown out by the ordinary emunctories, the matter, generally ſpeaking, is indiſcriminately collected in the weakeſt, the moſt oppreſſed or obſtructed part; and the magnitude of the repoſitories is generally proportioned in ſize to the quantity of depurated matter, and to the predispoſing cauſe.

Could the time and place be diſcovered, when a variolous particle floating in the air, chances to be abſorbed by an unwounded pore, I have little doubt but that the ſame conteſt * takes place, though perhaps in a ſmaller degree, as when imbibed by inoculation. There is, I humbly preſume, under natural infection, ſome one point or pore of the ſkin, into which a variolous particle firſt enters: this then (if effectual) will be the point of locality, or natural inſertion, if we may be allowed the expreſſion, from whence

* See Chap. V.

the new variolous increaſe firſt and principally proceeds. But, as the preciſe point of abſorption and increaſe is not on the inſtant of abſorption diſcoverable, and as we are never certain that the variolous effluvium is imbibed until its effects begin to be demonſtrated by the febrile ſymptoms, the infected local point is ſeldom if ever diſcovered previous to the experience of thoſe effects; whereas, if a ſtrict ſearch were made as ſoon as the diſeaſe is expected, the preciſe point of abſorption and increaſe might always be diſcovered, and by old nurſes, in this caſe, is called the Maſter Pock. A few other leading puſtules may indeed appear of the ſame kind, and from the ſame cauſe, but the largeſt, or the firſt, is that from which, as I apprehend, the ſpontaneous increaſe proceeds.

CHAP. III.

Obſervations to ſhew the Probability that neither the Motion of the Blood, nor any peculiar Conſtitution of the Air, has any effectual Influence to aggravate the Diſeaſe.—The Number of Puſtules not increaſed by any particular Habit of Body or Manner of Living, beyond the natural Standard of Fecundity in the Skin.

THE different degrees of virulence and irregularity, obſerved in the progreſs of infection on different ſubjects, have been attributed to various cauſes. Some practitioners have aſcribed this difference to the temperament or conſtitution of the air, or to the ſeaſon of the year; others to the circulation of the blood; but I never could draw any ſatisfactory concluſions from either. For in the latter inſtance, in infants, whoſe blood is univerſally admitted to circulate faſter than that of adults, we do not in general diſcover that the progreſs of infection proceeds faſter than that in the oldeſt ſubjects ever inoculated. It is equally certain alſo, that the conſtitution of the air and ſeaſon of the year

year have no particular known influence which can be depended upon to quicken or retard the variolous progreſs during either the firſt or ſecond increaſe. The progreſs of infection on ſome ſubjects of the ſame family, houſe or neighbourhood, inoculated at the ſame time, and from the ſame ſubject, will be very diſſimilar and unlike, owing principally, I believe, to the different treatment of the ſubjects during the preparatory courſe, or from ſome natural variations in the organs of variolous generation, unconnected with the motion of the blood, or any particular ſtate of the air, even though the ſubjects may have been twin children.

It is a very generally received opinion, and I believe an erroneous one, that the ſmall-pox is rendered more exceſſive, and far beyond what nature originally deſigned it to be, by habitual or caſual diſeaſes, by intemperance, or by febrile diſpoſitions in the habit at the time of catching the ſmall-pox, or by a convaleſcent ſtate from pleuriſies, peripneumonies, hooping-cough, conſumption; by frights, fears, foul blood, and even from extreme old age. For although moſt of theſe may be very untoward circumſtances to combat with, when the ſmall-pox is making its

attack

attack in the natural way particularly ; yet I am fully perſuaded, from the obſervations I have made, that the diſeaſe is not by all or any one of theſe occurrences capable of being aggravated, not a ſingle puſtule ſuperadded beyond what the conſtitution would otherwiſe have ſuffered, had it been in perfect health : and from hence I draw this concluſion, that in the whole hiſtory of the diſeaſe, there have been found perſons of all ages, but particularly very young children, of the moſt healthy, regular, and temperate habit, with blood and juices unqueſtionably the moſt pure, who nevertheleſs have been as ſubject to an exceſs of puſtules, ſimply conſidered, as the moſt unhealthy and intemperate. On the other hand, inſtances have frequently happened of perſons whoſe habits having been obviouſly deranged, and charged with impurities, have therefore been deemed bad ſubjects, yet have they, nevertheleſs, experienced the diſeaſe as favorably as thoſe who enjoyed the beſt ſtate of health, with only the ordinary preparatives, and without any expreſs attempt to alter or cleanſe the habit.

CHAP. IV.

The Eruptive Fever, its Source, and Tendency conſidered.

ADMITTING, for the ſake of argument, that a mere abſorption of the variolous eſſence into the blood, unqualified in the ſkin, is the cauſe of the fever, as a neceſſary preliminary operation to the producing any new increaſe on the ſkin; admitting alſo, that the fever is invariably proportioned to the influx of the variolous eſſence, how comes it to paſs that thoſe who have had the diſeaſe, and are in a daily habit of abſorbing the contagious eſſence, ſhould not be attacked with a proportionate variolous fever, according to the influx, as the neceſſary conſequence of ſuch abſorption, although no eruption follows; for, as I have already obſerved, the organic powers of abſorption remain abſolutely as perfect for health, after we have paſſed through the diſeaſe, as they ever did before. Upon a due conſideration, I apprehend, it will be found that the variolous eſſence on being abſorbed, is more offenſive to the nerves

than

than the blood, and that this ſenſitive organ, on the ſuperficies of the body, is inſtantly affected by an intruſion of the variolous principle, as alſo in its ſtate of progreſſive increaſe. By this medium of ſenſation, intelligence may be conveyed to every neceſſary part in the animal economy, of the intruſion of whatever heterogeneous matter may enter the pores of the ſkin, tending, or likely to offend or obſtruct the ordinary functions of nature. I do not mean to inſinuate that expreſſes are diſpatched from the extremities, as out-poſts to the ſpinal nerves, to the head, and to the heart, in order that all the powers within the animal economy may be put upon their guard; but I conceive that thoſe animal ſpirits which circulate in this cuticular organization, may firſt experience the ſhock electrically, and act as the proximate agent to accelerate the motion of the blood, and that the blood being by this agency quickened in its motion, and propelled beyond its ordinary bounds, a fever is thus conſtituted. The object, therefore, to be obtained by the eruptive fever is firſt to expel that which is found to be foreign and offenſive to nature on the ſurface of the body; and, ſecondly, by its component nutritious particles, to heal ſuch parts thereon as had received injury. Upon

duly

duly conſidering alſo the nature of certain pains which ſometimes attack ſmall-pox patients, whether in the head, in the loins, or other parts, I conclude they may with great propriety be attributed to the nerves being particularly affected, in conſequence of an abſorption of the variolous principle into that, or the lymphatic ſyſtem.

Hence it will be perceived, that the fever when excited, is not intended to cleanſe the blood from variolous infection; but by an afflux of neceſſary lymph, to reſtore the injured parts under the puſtules to their uſual ſtate and tone of ſoundneſs. This fever therefore, which has hitherto been eſteemed eruptive, may perhaps more properly be called *conciliatory*, or *healing*, rather than eruptive and concoctive. However it may be termed, when it is at its criſis, the power of further impregnation and increaſe becomes deflagrate or extinguiſhed, probably from ſome imperceptible diſorganization of the attractive fecundific powers inherent on the ſurface of the true ſkin, and fortunately for human nature, never to be re-kindled.

CHAP.

CHAP. V.

Of the Diagnoſis, or diſtinguiſhing Character of the Diſeaſe, illuſtrated in the dinting of the Puſtules and their Similarity.—Of the Corroſion or pitting of the Skin after the Small-pox.—Concluſion of the firſt Part.

THE influencing principle, before conſidered, having co-operatively induced the variolous eſſence upon its diffuſion on the ſurface of the ſkin, to attach to certain prolific points or minute glands under the cuticle, towards making an increaſe, ſuch glands alſo, or points, being ſuppoſed to be nearly of the ſame extent: thoſe points receiving an injury in exact proportion only to the quantum of increaſe, and the neceſſary influx of the albuminous fluid being conſequently proportionate to the injury ſuſtained; and as Nature never acts ſuperfluouſly or in vain, it follows, in courſe, that the ſize of the puſtules will always nearly correſpond to the increaſe made of each prolific point, and to the influx of the albuminous healing lymph.

Every

Every variolous puſtule, as well as inciſion, has its central dint in ſome degree or other; and as the diſeaſe becomes hereby principally characterized, it will be found neceſſary, and may be found of ſome conſequence to the general argument, to aſſign a reaſon for this common dinted depreſſion of the puſtules.

Wherever a particle of the variolous eſſence is detained in the glandular points, for forming an increaſe on the ſurface of the true ſkin, I apprehend that at every ſuch point of detenſion a certain degree of irritation and inflammation takes place, and that the fecund part being thereby contracted, ſome injury, however ſmall, is ſuſtained in the central region of the puſtule: hence in its ſtate of yielding increaſe, and in an early ſtate of veſication, the centre, as I apprehend, is prevented from riſing; whilſt by the influx of lymph round the point of increaſe, the margin, or the more outward part of the puſtule riſes, and fills with ſuch neceſſary lymph, ſo as to leave a dint on the centre of the puſtule. This phenomenon, as I obſerved before, characterizes the diſeaſe, and ſhews in a peculiar manner, its ſingular difference from every other eruption on the ſkin to which human nature is ſubject.

Should

Should the increaſe at ſuch glandular points as before deſcribed, be more formidable than ordinary, and the conſequent irritation, inflammation, and ſuppuration penetrate quite through the true ſkin; a pitting, after the puſtules are ſhed off, will be the certain conſequence. It is, perhaps, for this reaſon alſo, that in the act of inoculation, the punctured ſpot receiving a great number of the variolous particles, and the increaſe being proportionably large, when an inciſion is made into, or quite through the true ſkin, ſuch part thus ſuſtaining a proportionate degree of inflammation and ſuppuration, will ever after have a pitted depreſſion, or ſcar. The pitting may alſo be aſſiſted in a certain meaſure, by ſome peculiar texture or diſpoſition of this integumental covering of the body.

Concluſion the Firſt Book.

Upon a general review of the whole of the queſtion before us, the following deductions will naturally ariſe: Firſt, That our prognoſtications depending on the ſtate and quality of the blood, for aſcertaining who are good or bad ſubjects for inoculation, are not to be depended

upon. Secondly, That the ſmall-pox being conſidered as cutaneous, our preſcriptions ought not to be directed with a view to a depuration of the blood, but rather to prevent exceſſive obſtructions in the glandular capillaries of the ſkin. And laſtly, That the ſafety of the ſubject to be inoculated muſt depend on our ability to judge with accuracy of what is diſcoverable on the ſurface of the body. To this end I am naturally led, in the ſecond part of this Work, to deſcribe, ſo far as can well be aſcertained, who are the ſubjects favorable or unfavorable for the practice of inoculation, in order that the preparatory preventive courſe may be adjuſted accordingly.

THE

THE

INOCULATOR;

OR,

SUTTONIAN

SYSTEM OF PRACTICE.

PART THE SECOND

Contains Practical Obſervations, pointing out the perſonal Signs previous to Inoculation, and the local Prognoſtics which will afterwards take Place in the ſeveral Stages of Variolous Infection; with ſuch Directions for the Treatment, as will, in every Caſe, give Certainty and Eaſe to the Practitioner, and greatly contribute to the Security of the Patient.

CHAP. I.

Of Subjects favorable, unfavorable, and improper for Inoculation.

FIRST, of favorable ſubjects, under two or three years old; thoſe who, being in a perfect ſtate of health, are of a placid, yet undaunted, diſpoſition; thoſe who have had the thruſh and red-gum, particularly the latter; thoſe who are ſubject to ſlight eruptions on the head, face, and other parts of the body, from teething, &c. thoſe who are fat and fleſhy, and whoſe ſkin is of a motley appearance; ſucklings who live on milk of their own age, derived from temperate healthy nurſes; thoſe who are naturally bleſt with a due ſolubility of body; who in the night ſeaſon perſpire moderately, and by day have clammy moiſt hands; thoſe whoſe ſkins are of a coarſe ſpungy texture; thoſe who are not reſtrained from partaking of whatever a moderate table affords; and laſtly, thoſe who have not been enjoined or reſtricted to a long preparatory regimen antecedent to the operation.

It muſt be obſerved, that it very rarely, if ever, happens, that all the foregoing indications, or indeed one quarter of them, are to be traced in one and the ſame ſubject. As we advance further from the age of infancy, ſome of theſe indications or perſonal ſigns naturally loſe their conſequence, and ſome few others will as naturally manifeſt themſelves.

Secondly, favorable ſubjects above the foregoing age: Thoſe of an indolent, ſlothful diſpoſition, groſs, fleſhy, and who on ſlight exertions ſoon perſpire; corpulent adults in health; thoſe of a calm intrepid diſpoſition of mind, who can look forward to the event without irritation and reſtleſſneſs; thoſe of coarſe, rough, ſcaly ſkins; thoſe who are frequently ſubject to eruptions and ſcabs, not of a malignant nature; thoſe liable to glandular tumors, and ſuch like cuticular obſtructions; thoſe who are naturally of a ſoluble habit; thoſe whoſe digeſtive powers are ſtrong; thoſe whoſe labor is not exceſſive, and who are not frequently expoſed to ſudden heats and colds; thoſe who being natives of a warm climate, but are lately removed from thence to a temperate one; and laſtly, old ſubjects of good ſtamina. I do not rank in this claſs what are

called very regular temperate people of any age, on that account ſimply; becauſe by experience I find ſuch are as liable to be burthened with an abundant ſmall-pox as the moſt irregular and intemperate: whether it be that they conſider themſelves as indubitably choice ſubjects, and therefore are more inclined to be remiſs in the preparatory proceedings than others, who may have an indifferent opinion of themſelves, I do not preſume to ſay. The foregoing claſs of patients, compared with thoſe which follow, are as about four to one.

By pointing out the claſs of ſubjects unfavorable for inoculation, I do not mean to alarm any perſon whatever, nor to throw needleſs difficulties in the way to that inoculation which it has ever been my zeal and happineſs to promote and bring to perfection. But with many of ſuch perſons, I think it my duty candidly to obſerve, that eſpecial care and ſkill are required, through every ſtage of the progreſs of infection, in order to enſure to them a mild and benign ſmall-pox.

Under this unfavorable claſs, I conſider the following individuals, whether they be in health

or

or otherwiſe. And to begin with them in an infant ſtate, I ſhall particularly mention thoſe who have not had the thruſh or red-gum; thoſe naturally timid, who are apt to cry on trivial occaſions. As to children who expreſs a ſtrong reluctance to inoculation, whether it ariſe from their being frightened by thoſe about them or no, I know not, but I have generally obſerved that ſuch children, nine out of ten, are diſpoſed to a diſeaſe as froward as their tempers. I alſo conſider as unfavorable, thoſe who are naturally of a lean habit of body, or a dry parched ſkin; thoſe of a coſtive habit, or whoſe ſtools are diſcoloured, from ſucking very ſtale or impure milk, ſuch as the milk of dram-drinkers, &c. &c. thoſe, the ſuture of whoſe heads not being properly cloſed in ordinary time, become enlarged, and perhaps hydrocephalous; thoſe who are narrow cheſted, ricketty, or kept in a general ſtate of ſloth and uncleanlineſs, or in a confined and corrupted air, or with too ſcrupulous an exactitude and ſameneſs in food and exerciſe; thoſe whoſe heads abound with a dark adheſive ſcurf, particularly about the temples; thoſe, the ſkin of whoſe poſteriors has, by uncleanlineſs, become heated, hardened, or inflamed, and in ſome inſtances excoriated; for the

excrementitious evacutions of infants ſo neglected are exceedingly acrimonious; thoſe who exhibit palpable ſigns of having worms; and laſtly, children who are ſuſpected to have caught the meaſles; becauſe, ſhould the eruptive fever from that malady intervene, betwixt the eruption and the criſis of the ſmall-pox, ſome danger is to be feared, from a combination of the two diſeaſes.*

Subjects unfavorable, farther advanced in life, are thoſe of thin delicate habits, in their nature active, induſtrious, and vigilant to exceſs; thoſe of a peeviſh, irritable, froward temper, or of acute ſuſceptible feelings, from ſome peculiarity in the œconomy of the nervous ſyſtem; thoſe of a coſtive habit of body, with preternatural heat and dryneſs of the ſkin and hands, and whoſe ſenſible perſpiration is with difficulty excited; thoſe of weak digeſtion, ſubject to windy complaints, greaſy or rancid ſourneſs of the ſtomach, heart-burn, &c. thoſe whoſe ſtomachs or other viſcera are infeſted by worms, or labouring under intermittent, gouty and rheumatic complaints; thoſe whoſe laborious occupation calls them daily before large fur-

* See Chap. IX. on the Morbillous Fever.

naces,

naces, &c. and thus frequently expoſes them to heats and colds; ſailors alſo, and others who have been long confined to ſalted unwholeſome proviſions; and laſtly, thoſe natives of a country, who being removed from extreme cold to a more temperate climate, are immediately inoculated, before a due ſeaſoning has taken place.

Some ſubjects are obviouſly unſafe and improper to be inoculated, for various reaſons. The following come under this deſcription: infants whoſe heads are preternaturally large, or hydrocephalous; thoſe perſons who are afflicted with any acute diſeaſes, or whoſe habits, injured by long and ſevere intemperance and irregularities, abound with acrimonious corroſive humours of the animal juices; thoſe diſpoſed to frequent returns of intermittent complaints, or to a manifeſt debility and languor of the whole ſyſtem; thoſe who have any painful internal obſtructions, or are dropſical; women in their latter months of pregnancy; hypochondriacal and hyſterical perſons, and thoſe who are afflicted with the jaundice. Prudence directs a previous cure for ſuch ſubjects, and to wait a favorable opportunity for introducing the ſmall-pox, ſhould it then be required and eligible.

CHAP.

CHAP. II.

Of Subjects moſt proper to ſupply the Matter for Inoculation—Time of Day, Seaſon of the Year, and the beſt Age for the Operation.

HITHERTO people in general, and even the majority of inoculators, have confined their hopes of ſucceſs, ſo far as concerns the choice of proper matter for inoculation, to the good natural ſtate of health of the ſubject from whom the matter is to be collected; preferring a mild, benign ſort to a copious, malignant, ill-conditioned ſpecies: certainly no objection can be made to a healthy ſubject; ſuch, for general ſatisfaction, is unqueſtionably to be preferred; and yet experience does not abſolutely warrant this preference, for neither inveterate ſtrumas, ſcrophulous complaints, nor venereal taints, (the moſt of all others to be dreaded) have ever, to my knowledge, been communicated by the ordinary methods of inoculation; even in thoſe caſes, where experiments have avowedly been made in this way, for the

the expreſs purpoſe of aſcertaining the extent of the effects of ſuch matter.

But I have my objections to inoculate thoſe, whom, upon examination, I rank under the claſs of unfavorable ſubjects, from ſuch as have a very benign ſmall-pox, or from thoſe whoſe arm indicates ſuch benignity; and the reaſon is, becauſe my experience has informed me (and it is neceſſary to have had very great experience to aſcertain the fact) that by ſuch a choice, the ſubjects to be inoculated are liable to have more of the diſeaſe than they would have experienced had they been inoculated from a malignant ſort, or from thoſe whoſe arms indicated ſuch malignity. It is for the ſame reaſon that I uſually employ matter from an untoward ſtock, when it can conveniently be procured; but more eſpecially when the ſubject to be inoculated appears to fall under the claſs of unfavorable ſubjects.

The time of day for performing the operation, though apparently trivial, is a matter well worthy our attention, if we are ſolicitous to lay hold of every little advantage as we paſs along.

Somebody

Somebody has well ſaid, to our preſent purpoſe,

" Deſpiſe not trifles, tho' they ſmall appear :
" Sands riſe to mountains, moments make the year ;
" And trifles, life. Your time to trifles give,
" Or you may die, before you learn to live."

Should we refer to our reaſon for aſcertaining the advantage, I believe it will be found in this, as in many other inſtances, not to be relied on, and very defective: but let us ſee what experience holds out as to the fact.

About ten or fifteen years after I had introduced and eſtabliſhed the new method of inoculation, I was employed to inoculate a large party, of the ſame town, conſiſting of above 700 perſons. About one half of them were inoculated before twelve o'clock, and the other half were begun upon, at half paſt three in the afternoon : They were all inoculated by my own hand, from the ſame individual ſubject, without any ſelection of perſons for either part of the day. The conſtitution and temperament of the air on that day was uniform and ſerene throughout; the medicines were procured from the ſame druggiſt, and compounded by the ſame hand;

hand; and yet thoſe perſons who were inoculated in the latter part of the day, experienced, on an average of the whole number, five times the number of puſtules that the others had, who were inoculated in the morning. Perceiving this ſingular difference in the number of puſtules, together with the aggravated ſymptoms accompanying ſuch increaſe, I was induced to ſearch my records; from whence I could well recollect large parties having been inoculated in the latter part of the day, and other parties about the ſame ſeaſon of the year in the morning. The reſult was, that I found, on calculation, the average number of puſtules to be in about the ſame ratio as mentioned in the foregoing inſtance.

Should we be inclined to favour any particular ſeaſon of the year, as being moſt propitious for the practice, or otherwiſe, I think we ſhall gain no advantage; I believe no one will be found preferable to an other; this at leaſt is my fixed opinion, confirmed by unremitting obſervation and practice.

" What is the beſt age for inoculating?" has been a queſtion put to me ſometimes; to which I deemed

I deemed myſelf obliged to give a negative anſwer, by mentioning that which I think the worſt; and this I believe to be, in general, from about eighteen to twenty-eight years, becauſe I have obſerved patients of that age to ſuffer more from the eruptive ſymptoms, and generally ſpeaking, to have the diſeaſe worſe than at any earlier or later period of life.

CHAP. III.

Obſervations on the Uſe of freſh variolous Matter, and of that which is become dry or ſtale—Probable Occurrences—Unripe Matter, in ſome Inſtances, too active.

IT is not to be expected, though preferable, that crude freſh matter can always be obtained juſt when it is wanted: to ſupply the deficiency, therefore, recourſe muſt be had to that which has been collected and dried upon a lancet or glaſs; and this will continue good many days: but when reſorted to, it muſt be liquified with a drop of cold water, and then proceeded

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to inoculation, in the manner hereafter deſcribed. The ſmalleſt drop thus impregnated will be ſufficient for the purpoſe. Some do not heſitate to uſe ſtale concocted matter; but it muſt be remembered, that neither this nor the dried, is to be depended upon for conveying the infection ſo certainly as the freſh; the progreſs of infection alſo, will not be ſo quick in general, nor will the indications on the arm be ſo favorable: the conglobate glands of the axilla will be more liable to ſuppurate; the eruptive ſymptoms more irregular and ungovernable; the diſeaſe, in ſhort, more froward; and laſtly, which is a circumſtance the moſt extraordinary and unaccountable, neither the preparatory diet, nor the medicines, will be found afterwards to be ſo effectual, or to agree ſo well with the patient, as when freſh active matter has been employed.

To moſt patients, where it becomes neceſſary, a ſtrict preparation, continued for only eight or ten days, during the progreſs of infection, is not very pleaſing, and becomes really tedious and diſguſting, when lengthened, by a ſluggiſh infection to fifteen or twenty days; yet ſuch inſtances do now and then happen from ſtale dried matter. But this would not be an object of very

very great conſideration, did the evil reſt here; for, by the uſe of ſuch matter, the patient may, in all likelihood, have to encounter with a very copious ſmall-pox, which he would not have to do from the uſe of freſh matter. Laſtly, when once inoculation is determined on, and put in execution, failures in communicating the infection from bad matter are productive of great diſappointments; they always derange and lengthen the preparatory proceedings; and while ſuſpenſe hangs on the mind of the patient, if an adult, he may be kept in ſuch a ſtate of reſtleſſneſs and irritation, from that cauſe alone, as may lead to very untoward accidents. Some patients there are, even at this day, who cannot be prevailed upon to perſevere in a ſecond or a farther trial in caſe of failure; and this from a ſuperſtitious perſuaſion, that the firſt abortive attempt was contrary to the will of Providence. This is very embarraſſing, ſometimes irremediable, and may in the event be dangerous.

I have hereafter ſtated the progreſs of infection as reſulting, in ſome degree, from a certain accurate and uniform mode of performing the operation, together with the uſe of proper matter for communicating the diſeaſe. But if we

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are not attentive to this practice, and make large and deep punctures, ſo as to penetrate quite through the ſkin, the centre of the inciſion may in conſequence appear afterwards more depreſſed than it otherwiſe would have been; and it will, in the courſe of infection, be more ſubject to ſlough and become foul; and the glands of the arm-pit more liable to be affected: ſo alſo a large and unneceſſary quantity of matter employed for infecting, particularly at a time when the ſkin is in a humid ſtate, may ſolicit puſtules about the inciſion, even to a degree of confluency, which might not have happened had a ſmall quantity been uſed and the ſkin dry: however, this confluency much oftener proceeds from a natural diſpoſition to frowardneſs. The inflammation on the arm alſo will not be ſo extenſive; and the halo or ring ſurrounding the puncture, during the eruptive ſymptoms, will be leſs frequent. And, if I can rely on my obſervations, the eruptive ſymptoms will be more refractory, and the ſmall-pox more abundant from the uſe of ſtale dried matter, than from that which is freſh and active.

There is a poſſibility, I confeſs, that variolous matter, taken at the early ſtage I have recommended,

mended, may prove too active, by producing the febrile ſymptoms ſo ſoon, that we may not have a ſufficient number of days at our command to prevent a diſagreeable crop of puſtules; for it is not always the caſe that a very favorable ſmall-pox will follow an early progreſs of infection, though in ninety-nine caſes out of one hundred it does, according to my practice.

Theſe very active inſtances, which are chiefly confined to infants, ariſe from an uncommonly active diſpoſition of body and mind. This coinciding with the uſe of crude matter taken from a ſubject whoſe caſe is, or is likely to turn out froward, the diſeaſe will be produced in two-thirds of the uſual time, without imputing the caſualty to a previous natural infection, or to any coincidental ſtate of the air; which, from what I have ſaid on that ſubject, cannot, I conceive, be the caſe.

CHAP. IV.

Ineffectual Inſertions of Variolous Matter—Some Inſtances of them which led the Author to diſcover, by ſimply puncturing the Arm with a charged or clean Lancet, whether the Perſon applying had already paſſed through the Diſeaſe or not—The Effects produced on the Arm and Habit of ſuch Perſons as apply to be inoculated, but do not experience the Diſeaſe—Obſervations on ſuch ineffectual Caſes—The Method of performing the Operation, ſo as to decide upon them with moral Certainty.

IT ſometimes happens that perſons, unconſcious of having had the ſmall-pox, preſent themſelves for inoculation; and they, no leſs than the operator, under ſuch unforeſeen and embarraſſing circumſtances, muſt be mutually diſappointed in their expectations. Hence a ſecond, a third, or even a fourth operation, has, from time to time, been inſiſted upon by one or the other, but with no better effect; and each, in this diſſatisfied ſtate, takes leave of the other.

An incident of this ſort occurred to me ſoon after I had begun *the new method of inoculation in Eſſex*, in the perſon of a Mr. ——. I had inoculated him five or ſix times ſucceſſively in the courſe of three weeks, during his ſtay at my houſe; he was alſo daily amongſt the infected, but without experiencing any variolous effects frome one or the other, ſuch only excepted, as I have ſince found invariably to follow ineffectual inſertions.

After his return home, being ſtill diſſatisfied, he took frequent occaſions to viſit my infected houſes, ſtill continuing to live by rule and to be inoculated, until at laſt he was fully convinced of his being proof againſt any variolous attack. Having ſo often punctured this patient's arm, at laſt I began, as I conceived, to diſcover an unuſual denſity, or compactneſs, in the texture of his ſkin. In making the puncture rather deliberately, the ſkin ſeemed to cut firm, not receding from the lancet like that which is of a ſoft, looſe, porous texture, and liable to imbibe the ſmall-pox.

Whether this denſity or compact texture of my patient's ſkin was merely a caſual formation,

reſulting

reſulting from no particular accidental cauſe; or whether any uſeful information or certain indications might have been afterwards derived from it, I could not conjecture. The effects, however, produced from theſe repeated inſertions were as follow.

In a few hours after the inſertion of the ſmall-pox matter, the part became conſiderably inflamed and hardened to the extent of a ſhilling, or wider, reſembling the effects produced by the ſtings or bites of ſmall venomous inſects, and attended with an itching ſenſation. Theſe effects increaſing, continued for two, three, four, or more days, and then diſappeared. In ſome inſtances of this ſort which have ſince happened to me, the part thus irritated has ſuppurated, and a ſmall ſloughing enſued; but this matter will not give the ſmall-pox. In others the inflammation has extended from the elbow nearly to the ſhoulder. In ſubjects of a plethoric, groſs habit, the head and ſtomach, about the ſixth or ſeventh day, have been a little diſordered for a few hours, and in one or two of theſe ineffectual caſes, a pain and ſtiffneſs of the axilla alſo have been experienced. All theſe ſymptoms and circumſtances have, however, ended happily, and

required little or no chirurgical or medical aſſiſtance.

Shortly after I had met with the firſt mentioned caſe, another of the ſame kind occurred; the firſt inſertion proved ineffectual, and as the inflammation and itching of the inciſed part were in all reſpects nearly the ſame as in the inſtance of Mr. ——, I began to have ſome doubts whether the event alſo would not be ſimilar. To be as certain therefore as poſſible, I inoculated him a ſecond and a third time, and this with a view alſo to aſcertain whether the ſkin poſſeſſed the ſame denſe kind of texture, and firmneſs in puncturing, as in the firſt caſe. To this end, I was particularly attentive to the cutting of the ſkin, and was pleaſed, both at the ſecond and third operations, to find that it cut exactly in the ſame manner as in the caſe of Mr. ——. Much the ſame appearances afterwards followed, and the event proved equally ineffectual.

I enquired of this perſon, as to the poſſibility of his having had the ſmall-pox previous to his application to me; he recollected to have heard, when a child, his mother and grandmother debating

bating upon this ſubject; but as he had no marks of it on any part of his body, he entertained no idea as to the point of fact, until I told him my reaſons for preſuming that he muſt have had the ſmall-pox before, or at leaſt that he was not liable to take it in future. Strongly, however, inclining to think that this was an object of conſequence, as ſome uſeful information might ariſe out of theſe caſualties, I requeſted permiſſion to puncture his arm a few times more in the manner I had already done, only with a lancet perfectly clean; for I now wiſhed particularly to pay all poſſible attention to the puncturing of the ſkin, in hopes that my ſenſe of feeling from the point of the lancet might be ſo well confirmed under ſimilar circumſtances, as with a moral certainty to determine in the firſt inſtance, and by ſimply puncturing the ſkin with a charged or clean lancet, whether a patient really had, or had not already paſſed through the diſeaſe.

My practice of inoculation, from year to year increaſing, large parties, to the number of from one to ſix or ſeven hundred, were now and then inoculated in a day, and amongſt theſe,

one, two, or three ineffectual cases, like the foregoing, would commonly occur. But, where such numbers were to undergo the operation in so short a space of time, it was not to be supposed, however generally nice in my observations, that I could pay sufficient attention to remark with precision, and to determine positively on every case, or indeed on any one in particular, at the instant. Yet, nevertheless, amidst all this dispatch, not one in five would escape immediate notice.

Further experience, in calmer practice, has at length matured the knowledge which I so much wished to obtain, and has brought it to that state of certainty which (I shall presently explain) will enable any person in private practice to judge of the effects on the instant, with the utmost accuracy, by simply puncturing the arm with a lancet perfectly clean. Should such practitioners, however, have any doubts at first as to their ability, by only performing the operation with a lancet charged with crude fluid matter, the effects produced from it will soon remove all uncertainty. Another circumstance also will considerably help to confirm their prognostications. The instant appearances of real

infection,

infection, which are fully deſcribed in the enſuing chapter, will never occur.

Againſt what I have thus advanced it may be ſuggeſted, that ſome perſons are not liable to the diſeaſe at ſome one time, or indeed at any time by inoculation. But I am by no means of this opinion; for upon a ſtrict enquiry into three-fourths of theſe ineffectual caſes, which have occurred to me through one medium of information or another, I have been enabled, with a ſatisfactory degree of evidence, to aſcertain, that the perſons ſo inoculated without effect, had taken the diſeaſe before. And for this reaſon, therefore, I conclude, that in all probability, the other part had alſo paſſed through the diſeaſe. Of late, indeed, I have never had occaſion to perform the operation but once, being well convinced that if I failed in the firſt eſſay, all future attempts will be equally fruitleſs and in vain.

I have underſtood that many ſuch ineffectual inoculations as before deſcribed, if they happened to be accompanied with inflammation, itching and pains in the head, cold ſhiverings, &c. have been determined upon otherwiſe, and

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the patients at the end of ſix or ſeven days have been returned to their relatives, or finally diſcharged, as having been conducted through the ſmall-pox in that time. Such a conduct, I apprehend, muſt only have proceeded from ignorance. I admit that theſe ineffectual caſes, ſometimes are attended with the foregoing febrile ſymptoms, and ſlight remitting pains in the head and other parts; ſuch ſymptoms alſo have been experienced by common nurſe-tenders on the ſmall-pox, and ſometimes ſucceeded alſo by a ſort of blind eruptions on their arms and faces, particularly when they attend on infants loaded with the ſmall-pox. But we are not to contend, therefore, that ſuch ſymptoms and eruptions are of the true variolous kind, although cauſed by it; nor that the matter of ſuch blind puſtules will ever convey the diſeaſe to another; nor yet, that ſome people are therefore ſuſceptible of the ſmall-pox repeatedly.

To aſcertain by ſimple puncture, with a charged or clean lancet, whether or not a patient has already paſſed through the diſeaſe, let the practitioner carefully attend to the following method. Make the puncture rather deliberately, not deeper than the ſixteenth part of an inch, and ſlant-wiſe, as uſual. Should the

the ſkin thus punctured cut firm, ſomewhat reſembling, for inſtance, the cutting of liver, lift up the ſkin a little with the lancet before it is returned, and obſerve whether that part of the ſkin juſt above the lancet looks paler than it uſually does with thoſe who are clearly ſuſceptible of the ſmall-pox. We may then ſafely pronounce that the ſubject has already paſſed through the diſeaſe. But as it may reaſonably be preſumed that none will apply for inoculation, who are conſcious of having had the ſmall-pox before, ſo the operation is generally performed with a charged lancet, and this being done, the appearances reſulting from inefficacy will in courſe follow.

If by thus poſitively determining in all caſes, whether people would have the ſmall-pox or not, the experiment had no further extent or object, it might poſſibly be conſidered by many as rather a matter of curioſity than uſe: but this exertion of ſkill extends much further. Should the patient be informed on the inſtant of being inoculated, that he has already experienced the diſeaſe, it will give him the clue and a motive for enquiring among his relatives or others, as to the fact thus unexpectedly declared. It muſt either have, or at leaſt ought to have ſuch

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an effect on his mind as if he were inſtantly, by a kind of charm, carried through a loathſome and troubleſome diſeaſe, without ſuffering fear, doubt, or pain, from the event of his inoculation. It precludes the neceſſity of uſing preparatory diet and medicines, and ſuperſedes all their diſagreeable conſequences and effects. The work of ſafety and conſolation is performed in an inſtant; the patient, if he ſo chuſes, has the pleaſing ſatisfaction of immediately returning home to his avocations and to his friends, and I ſhould hope alſo without being at the expence for that which he has not received, becauſe he did not want it.

I am aware however, that to acquire a competent knowledge of this art requires the occurrence of many ineffectual caſes; the habit alſo of unremiting ſuſpicion with regard to them; nice attention to them as they offer, and a good retentive critical degree of feeling, ſo as to determine every caſe with promptitude and accuracy. As to the effects that reſult from puncturing the ſkin, together with the concomitant phenomena, I have explained, I hope with ſufficient preciſion, to leave not a doubt on the mind; at leaſt where the caſe was before doubtful.

CHAP.

CHAP. V.

The Author's Manner of inoculating the Small-Pox.—Obſervations on the inſtantaneous viſible Effects produced by the inſertion of the variolous Matter when it proves effectual.

ON this ſubject little need be ſaid, as the manner of performing the operation is now familiar to almoſt every one: however, a few obſervations upon it appear neceſſary, and may, in many inſtances, be found very uſeful.

The lancet being charged with the ſmalleſt perceivable quantity, (and the ſmaller the better) of unripe, crude, or watery matter, immediately introduce it by puncture, obliquely, between the ſcarf and true ſkin, barely ſufficient to draw blood, and not deeper than the ſixteenth part of an inch. Neither patting, nor daubing of the matter, in or over the punctured part, is at all neceſſary to its efficacy. This practice indeed is rather prejudicial than otherwiſe, as it may affect the form of the inciſion, and thus be apt to confound our judgment

judgment upon it. Make the puncture not more than two or three inches above the joint of the elbow, on the upper part of the arm of an adult; if on infants, not more than an inch above it. Should it be made higher up, inconveniencies may ariſe when in an inflamed ſtate, the part is to be examined. In paſſing up a tight ſleeve very high at ſuch times, to come at the inciſion, the head may be rubbed off, and a conſiderable inflammation and ſloughing may take place in conſequence, creating unneceſſary pain and trouble.

On the very inſtant that freſh variolous matter is introduced from the point of a lancet, a fluſhing or light inflammatory, tremulous appearance, of ſhort duration, round the punctured part to the extent of an inch or farther, is diſcoverable; and on its diſappearing, it leaves the ſkin for a while paler than in its natural ſtate. This phenomenon appears only on thoſe who are ſuſceptible of infection, not on ſuch as have paſſed the diſeaſe, nor in the ſame degree on all who are liable to be infected; on ſome few it is not diſcoverable without the help of a magnifier, from ſome ſuppoſed opacity, coarſeneſs, or thickneſs of the cuticle, or from

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an unuſual ſmallneſs of thoſe fibrous capillaries on the ſurface of the true ſkin.

On the inſertion of the matter, the adjacent fluids, which appear to be almoſt pellucid, ſeem to be put in immediate commotion, rapidly daſhing to and from the point of inſertion, in all directions; and during this phenomenon, inſtantaneous pains are ſometimes perceived in remote parts of the body. How far the nerves, the ſource of all ſenſibility on the ſkin, may operate with this ſecreted fluid, as an unſucceſsful repellent of the variolous contagion, I know not; but it is certain, that the convulſive motion alluded to is not the reſult of the mere puncture, becauſe when ſuch is made with a perfect clean inſtrument, theſe effects are not produced either on a perſon who is ſuſceptible of the diſeaſe, or on one who has paſſed it. It is ſubmitted to the conſideration of thoſe better informed than myſelf, whether this rapid and claſhing motion, ſeen at the inſtant of inoculation, does not alſo, in ſome meaſure, prove an organic circulation on the ſuperficies of the body.

CHAP. VI.

Of Medicines and Diet; Cleanlineſs of Perſon; Exerciſe and Air; conſidered as anti-variolous Preparatives of general Uſe, from the Day of Inoculation to the Termination of the Eruptive Fever: with Obſervations on the Treatment of Patients thenceforward.

WE are here to ſhew in what way the preparatives, conſidered as an anti-variolous meaſure, are calculated to reſiſt the violence of the diſeaſe. My object, therefore, in directing the following preparatives, is, firſt, to clear away all redundancies and indigeſtible impurities, in caſe any ſuch ſhould prevail in the firſt paſſages, thereby ſecuring a regular and good digeſtion. Secondly, The diet being duly reſtricted in quantity and nutritious quality, the blood will naturally become properly attenuated; and being by this means deprived of its influence to induce or ſupport an undue heat and irritation on the ſurface of the body, a mitigated diſeaſe will naturally be the reſult. The ſkin too, from this paucity of nutritious aſſiſtance,

ance, will, of courſe, be rendered cooler and more flexible, leſs liable to be affected by the fever; and the generative fecund power in the ſkin will alſo be proportionably leſs prolific; in conſequence of all which, the eruption will be reduced to that certain and regular, that uniform and benign ſtate ſo anxiouſly to be wiſhed for, by all who are intereſted in the ſucceſs of inoculation.

In aid of this lowering antiphlogiſtic method, the following purging powder, or ſome ſuch like, (for it is in general immaterial in what it conſiſts, ſo that the patient be properly purged) will be found to have its ſhare in the ſucceſs of lowering and cooling the habit,

The quantity of the purging powder for each patient's age will be found in the table of medicines ſubjoined.

Take of—Jalep, freſh powdered, two parts,
Turkey rhubarb, in powder, one part,
—Mix, and ſign it—THE PURGING POWDER.
This compoſition is calculated for children, but for thoſe who can be prevailed upon to take them, glauber ſalts are preferable.

Or, take of—Syrup of buckthorn, an ounce and a half,
Stomachic tincture, a drachm and half. Mix, and ſign this—THE PURGING SYRUP.

The following alterative powder has alſo its correſpondent uſe with the foregoing, and its reſpective quantities will alſo be found in the table.

Take of—Calx of antimony waſhed, ten drachms,
Calomel, eight drachms,
Emetic tartar, two drachms.—Mix, and rub them well in a marble mortar, until they are perfectly united, and the compoſition ſmooth, not gritty. This powder ſhould be kept in a wide-mouthed vial with a gauze covering only; and it will be found to anſwer the end better, ſhould it ſtand for a month or ſix weeks before it be uſed.

Every patient proper for inoculation is enjoined the uſe of this mercurial compoſition: two motives induce me to this practice: firſt, That in conjunction with the other ingredients, it is exceedingly well calculated, in the way I ſhall direct it to be taken, to anſwer the intention of ſubduing any preternatural heat, which might,

might, without the uſe of it, continue to ſubſiſt in the habit, and to remove from the firſt paſſages whatever might be prejudicial to the proceſs. It alſo prepares and induces the habit to perſpire during the eruptive ſymptoms, a circumſtance very deſirable.

Secondly, in caſe any obſtructions, though imperceptible, ſhould happen to exiſt in the ſkin, the mercurial part of the powder, by its gravity and power of entering the minuteſt veſſels, will be found to have a moſt powerful, I had almoſt ſaid a ſpecific effect in deſtroying worms, ſhould ſuch have an habitation within the ſtomach, or other viſcera. Laſtly, when conſidered in what ſmall quantities it is to be adminiſtered, and how ſhort a time is neceſſary for its uſe, it cannot in any wiſe be deemed an unſafe or improper medicine.

The further object which I have in view, by directing a temporary uſe of medicines, is to ſecure a gentle, gradual, and proportionate reduction of each patient from day to day, previouſly to, and during the eruptive fever, according to the claſſification of the ſubject. In pointing out the good effects of gently reducing

the inoculated ſubject, I muſt not be underſtood to mean, that the reduction of infants ſhould extend further, than merely to prevent, for eight or ten days, their increaſing in weight; nor indeed, in many inſtances, are they to be kept even down to that ſtandard; becauſe, during the firſt three or four months of infancy, the increaſe of bodily weight is more rapid than at any future period; nor can it be conceived that I mean to be ſo exact as to require their being put into a pair of ſcales, in order ſtatically to aſcertain the point of reduction propoſed.

In directing the quantity of the alterative powder to each age, and particularly to infants, my deſign is to proportion it rather to the extent of the ſkin, than to the comparative weight of the patient: my calculation being, that the ſuperficies of an infant from three to four months old, is about the ſixth part of that of an adult, although the weight may not be more than a ſixteenth part; and for this reaſon it is, that I order for ſuch infants the ſixth part, in general, of what is uſually given to adults.

The following table exhibits at one view the quantity of thoſe alterative and purging medicines,

cines, which is generally found neceſſary for each reſpective age, from one month to the extreme of life.

TABLE OF MEDICINES.

Years of Age, from		Alterative Powder. Number of Grains for a Doſe.	Purging Powder. Number of Grains for a Doſe.	Glauber Salts. The Quantity for a Doſe.
17 to 70	take	12	30 or	one ounce.
16 — 17	—	11	25 or	ſeven drachms.
14 — 16	—	10	22 or	ſeven drachms.
12 — 14	—	9	22 or	ſix drachms.
10 — 12	—	8	20 or	ſix drachms.
8 — 10	—	7	18 or	five drachms.
6 — 8	—	6	18 or	half an ounce.
4 — 6	—	6	16 or	half an ounce.
3 — 4	—	5	14	N. B. Where the purging powder does not agree, or is not ſufficiently productive of ſtools, 2, 3 or 4 tea-ſpoonfuls of the purging ſyrup, according to the age of the child, may be given in lieu thereof, or ſenna-tea may be uſed to quicken the powder, when neceſſary.
2 — 3	—	4	12	
1 — 2	—	3½	10	
MONTHS.				
8 to 12	—	3	9	
4 — 8	—	2½	9	
1 — 4	—	2	8	

My method, when I have inoculated a patient, is to leave with him ten of the above alterative powders, and five of the purging powders, incloſed in the printed inſtructions; the former to be taken, one every night at bed-time, till otherwiſe ordered, beginning on the evening of inoculation; and the latter, the purging powder, to be taken every morning, beginning the morning next after the operation; by which courſe they will be expended much about the ſame time, that is, on the tenth day from the inſertion of the ſmall-pox. I direct the alterative powder to be given in currant jelly, a vegetable acid, becauſe it is neceſſary that a fermention ſhould be produced, to prevent any diſagreeable effects, which the emetic tartar in the compoſition of the powder would otherwiſe be more liable to create.

The method of mixing and giving the alterative powder is as follows:—Half a tea-ſpoonful of currant jelly being ſpread in the front of a table-ſpoon, carefully ſlip one of the powders upon the jelly, and mixt them uniformly together; as they are mixing, a light fermentation or enlargement will be diſcernible; in this ſtate the patient ſhould ſwallow the doſe; and particular

cular care having been taken not to waſte any of it, nor to leave any in the ſpoon untaken, it ſhould be waſhed down with a ſpoonful or two of any warm ſimple liquid. The patient having taken the medicine, ſhould immediately retire to bed, otherwiſe it may not reſt quietly on the ſtomach. Should any part of the medicine have been waſted in mixing or giving it, take ſo much as may be ſuppoſed to have been loſt, and proceed as at firſt. This alterative powder muſt not be mixed in any liquor, but with the jelly only, for the reaſons before given.

It is not unuſal for the firſt, and ſometimes the ſecond alterative powder, to cauſe a ſlight ſickneſs and vomiting, eſpecially if the ſtomach abounds with flatulencies, or indigeſtible crudities; and under ſuch circumſtances, it is rather fortunate, that the medicine ſhould have diſburdened the ſtomach of its unwelcome contents. After the uſe, however, of the firſt or ſecond powder, it ſeldom has this effect; neither ought it to have any ſenſible effect, unleſs to cauſe a laxative motion towards morning, until the onſet of the eruptive fever; when, during this effort of nature, it may be expected, in the night ſeaſon, to produce a ſenſible perſpiration.

This is indeed an object peculiarly desirable, as from henceforward the alterative powders become useless.

The purging powders are to be given in a spoonful or two of coffee, in preference to any other vehicle, and sweetened to the palate. Their operation should extend to four, five or six loose stools, as the case may require; that is to say, should the subject be of the favorable class for inoculation, and the progress of infection on the incision, prognosticate a favorable event, four loose motions may be sufficient to be obtained from each dose. On the other hand, should the indications both before and after the insertion of the infection, turn out untoward, as will be known by the description I have given of the progress of infection on the arm, five or six motions will be necessary to be procured at each time of administering a purging powder, particularly that powder which it may be expedient to give at the commencement of the eruptive fever, or during its progress.

The purging powders should be worked off either with water-gruel, rennet-whey, or weak senna-tea, as may be most agreeable and convenient,

nient, for the purpoſe of obtaining the requiſite number of motions. Where the digeſtive powers are naturally weak, or rendered ſo by caſualty, or where the ſtomach and bowels abound with acidities, flatulencies, or worms, the purging powders will ſometimes take their courſe upwards, and defeat the purgative intention. In all ſuch caſes, when the ſickneſs is gone off, the whole, or a due part of another powder muſt be given; or recourſe may be had to ſome other laxative, ſo as to procure the neceſſary number of ſtools in the courſe of the day.

To thoſe *above five years old*, glauber ſalts may be given, diſſolved in a little warm water, and worked off in the foregoing manner. I think ſalts preferable, in general, to any other purging medicine, from their poſſeſſing a more cooling quality; but infants can very ſeldom, if ever, be prevailed upon to take them.

In directing the preparatory diet for the patient, my deſign is, that it ſhould correſpond to the ſame ends and intentions as are aimed at by the alterative and purging medicines, namely, to reduce the habit, and to prevent any improper heat or irritation, after the local variolous

increaſe

increaſe has taken place. Having already conſidered the ſubjects for inoculation, under the two heads of favorable and unfavorable, I now conſequently adviſe and recommend it for the firſt claſs, that they ſhould be daily reſtricted, in the following manner, to a *vegetable diet*, that is, three parts only in four of their former quantity of eating at each meal: and for the latter, the unfavorable claſs, I would have it leſſened to two thirds. This difference in the quantity is but very trifling, yet ſuch as I deem ſufficient to anſwer a general reducing purpoſe. The patients thus dieted, ſhould refrain from eating any thing between meals, unleſs it be fruits, prepared or in their natural ſtate.

What has hitherto been advanced for the reduction of the patient by a reſtricted diet, muſt be conſidered as perfectly ſafe and proper, under each claſs of indications, without having much regard to the conſtitution of this or that ſubject; for amongſt tender, delicate and weakly patients, we may often experience as great a proportion of unfavorable indications and froward caſes, as amongſt the ſtrong and robuſt. There is indeed no clue, in theſe reſpects, to form

form our prognoſtications with any tolerable accuracy.

By purſuing our meaſures, according to the indications as they offer, we ſhall invariably find that ſuch ſubjects as require the ſtricteſt treatment ſuſtain it the beſt; and by adhering cloſely to the method propoſed, we ſhall ſecure a favorable ſmall-pox, uniformly, on each and every ſubject, how different ſoever they may be in age, ſex, and conſtitution. Nor is there any danger to be apprehended, as ſome have ſuppoſed, of their being reduced too low to throw out the ſmall-pox, or that their health and ſtrength will not return together with that change of diet, which an emancipation from the diſeaſe will juſtify.

I underſtand it has been a practice of late, to give up preparation, medicinal and dietetic, entirely, and to rely on the power of medicines, and the ſkill of the operator, during the eruptive fever, to keep it in due ſubjection. But with ſubmiſſion to thoſe who chooſe to practiſe in this way, I conceive, that one, at leaſt, in eight or ten caſes, may give them more trouble than is either deſirable or prudent: and we

have

have moreover reaſon to lament, that out of that number, in the natural way, one uſually dies, from confluent ſmall-pox, in defiance of our utmoſt efforts to ſubdue the eruptive fever. With equal ſubmiſſion alſo, I apprehend, that under ſuch a mode of treatment, very little difference will be found between thoſe who are inoculated, and thoſe who receive the infection in the natural way. I never yet could diſcover any advantage from the mere act of inoculation, beyond that of aſcertaining the time when the patient would fall ill. In ſhort, I had much rather prevent than contend with unruly febrile ſymptoms to conduct my patients to a ſtate of ſafety.

THE PREPARATORY DIET *is to conſiſt of any of the following articles, beſt ſuited to the reſpective age of the patient.*

For Breakfaſt—Tea, with dry toaſt; milk-porridge; ſkimmed milk; rice-milk; panada; water-gruel; water-pap; honey and bread; or bread made with the addition of ſugar and currants.

For

For Dinner—Bread-pudding; rice or millet-pudding; plum or plain pudding; apple-pudding; panada; milk-porridge; rice-milk, and the productions of the kitchen-garden. Sugar, ſalt, and vinegar, are allowed with the foregoing articles, as they may be deſired.

For Supper—Any of the above ſpoon-meats; roaſted apples or potatoes. For children, a little weak tea, or milk and water, with dry toaſt, at an early hour (tea-time) is all that is requiſite.

As very little alteration can be made in the quality of the food for very young children, it will, on this account, be the more neceſſary to render that which they are allowed, rather thinner than before the operation, and to give it in a reſtricted quantity. Children at the breaſt may be ſtinted alſo in their allowances; their nurſes, however, need only abſtain from high-ſeaſoned, inflammatory food, and ſpirituous liquors; and to keep their minds eaſy as to the event; for ſhould they, from any imaginary cauſe, be kept in continual anxiety or agitation of ſpirits, their milk will of conſequence become vitiated and unwholeſome.

It is a very pernicious practice to put new-born infants to breaſts, the milk of which is much older than themſelves, and it ought to be avoided, if poſſible; ſuch food being generally productive of coſtiveneſs, flatulency, and green griping ſtools, preternatural heat, and irritation of the ſkin; all which certainly tend more to increaſe, than to mitigate the eruptive ſymptoms. It is likewiſe neceſſary for all patients to perſevere in their preparatory diet, until the eruptive ſymptoms are terminated, and the inciſion paſt the criſis; becauſe any premature indulgence in nutritious animal food, or in ſtrong drinks, juſt before, or during the eruptive fever, may raiſe it to an ungovernable height, and produce a dangerous crop of puſtules, ſhould there be a natural tendency to it.

The preparatory diet may ſafely be diſcontinued, when the ſtiffneſs and pain in the armpit have ſubſided; when the inflammation round the inciſion is gone off; when the matter contained under the veſication of the inciſion appears in plenty, and looks of a concocted, yellowiſh hue; the eruptive fever being ſubſided, the puſtules having made their appearance, and the appetite revived, calls for a more nouriſhing

ſupply.

ſupply. The change of diet ought, however, to be gradual and moderate, and eſpecially where the puſtules are numerous, or unuſually large.

The ſame cooling *regimen* ſhould be adhered to alſo throughout the progreſs of infection, in the article of the patient's drink, whether conſidered as a beverage, or as a diluent: therefore, during this ſtage, I adviſe the following, for common drink:

Toaſt and water; thin milk and water; barley-water; lemonade; boiling water, acidulated with cream of tartar in powder, and ſweetened to the taſte. The firſt and laſt articles are an excellent draught in the eruptive fever; and a very liberal uſe of either is highly neceſſary and refreſhing when the fever is exceſſive. The ſmall-pox having made its appearance a few days, the reſtriction of drink may be taken off, and the patient may be indulged with a moderate quantity of his uſual beverage.

The following articles of diet are not allowable during preparation.

Of

Of Eatables—Fiſh, fleſh, butter, cheeſe, eggs, and ſpiced food. Of Drinks—All ſpirituous and vinous liquors, cyder, and beer of any ſort. In ſhort, whatever of either kind poſſeſſes a manifeſt heating quality, muſt be avoided as very improper, during the progreſs of infection and the prevalence of the eruptive fever; particularly ſhould the fever be accompanied with ſickneſs of the ſtomach, or a loathing of food. In ſuch caſes, an obtruſion on the ſtomach of very nutritious or heating things may be attended with dangerous conſequences; nor ſhould they ever be given for that ſilly idea of throwing out the ſmall pox. Too great a load indeed may be expected, in theſe inſtances, without ſuch wretched aids.

On the head of cleanlineſs of perſon as a preparative, one would reaſonably ſuppoſe that little need be urged; as not a creature can hardly fail to own the utility, from the drawing-room to the nurſery; and yet ſo it happens, that poor nature too often ſeriouſly ſuffers from the want of it in the latter regiòn, where moſt eſpecially it claims the ſtricteſt attention. From an unaccountable and injurious habit of unneceſſary cloathing, ſwaddling, and pinning up of infants,

ſants, how frequently do we obſerve their delicate ſkins tortured with a fixed heat and inflammation on certain parts, extending even to excoriation! This, and the conſequent uncleanlineſs that naturally follows ſuch treatment, are the frequent cauſe of an inſufferable load of ſmall-pox on ſuch places, at the ſame time that other parts of the body ſhall be found almoſt exempt from the diſeaſe. Whether it ariſes from a deprivation of cool refreſhing air, or whatever elſe be the cauſe, it is certain that the excrements of infants thus ill-managed are exceedingly fœtid, acrimonious, and irritating, ſuch ought, therefore, to be removed as ſoon as diſcovered, and the parts waſhed clean with cold or warm water; and this with ſafety may be done at any ſtage of the diſeaſe. A continued ſeries of uncleanly management in the nurſery, may convert a naturally good ſubject for inoculation into a very unfavorable one; and we may be neceſſitated to perſevere in a preparatory treatment with ſome ſeverity, which otherwiſe would have been unneceſſary, in order to counteract ſuch injurious proceedings. The heads of young children ſhould alſo be kept perfectly clean, and free from ſcurf; this adheſive ſoil not being natural to infants in health, may proceed

from ſome general defect in the organs of perſpiration; for whenever an obſtruction of this ſort is prevalent, the heads of infants will generally be found incruſted with this black adhefive ſoil, particularly on the temples; their habit of body will be found thin, their ſkin flaccid, and of an unhealthy colour: and hence it is, that I have aſſigned them a place in my claſſification of unfavorable ſubjects.

Moderate and frequent exerciſe, in temperate air, ſuch as is cuſtomary, but not to exceſs, during the preparatory ſtage of inoculation, is conducive to a variety of uſeful purpoſes. It gives keenneſs to the appetite, invigorates the digeſtive powers, promotes a due degree of inſenſible perſpiration, and enables the whole organic ſyſtem to throw off all ſuch impurities as might otherwiſe adhere to the ſkin. Infants in hand, by way of exerciſe, ſhould have their bodies and limbs frequently well rubbed with the hand; and if they have been in the habit of cold-bathing, that practice may ſafely be continued till the ſmall-pox has made its appearance; indeed I ſee no reaſon why it may not be continued throughout the diſeaſe, where the ſubject inoculated has been in the habit of bathing, and

is in a relaxed, debilitated ſtate, or afflicted with the rickets. All indulgence, or confinement rather to the cradle, beyond what is neceſſary for ſleep only, retards the progreſs of infection, and inclines the diſtemper to a greater degree of frowardneſs.

It has been inſiſted upon by ſome perſons, that much of my ſucceſs in inoculation was obtained by forcing my patients into uncuſtomary and very cold air, during the eruptive fever. I have never yet aimed at the gigantic power of reſtraining the tongue of unthinking ignorance: but for my own credit, at leaſt, it is but juſt to ſay, that the aſſertion ſo hazarded againſt me, is not founded in fact. Having had other, and more effectual reſources for moderating the fever, I have never wiſhed to expoſe my patients to a greater degree of cold air than was perfectly agreeable to them, and conſiſtent with their former practice, however the indications and the fever might preſent themſelves to my own judgment.

CHAP. VII.

Of the various Appearances of the inciſed Part in its daily Progreſs of Infection; and the favorable and unfavorable Indications pointed out, on certain ſpecific Days of examining the Patient, from the immediate Inſertion of the variolous Matter to the Criſis or Maturity of the Inciſion.

IN deſcribing the following indications and appearances of the inciſion, it muſt be underſtood that the inſertion has been invariably performed in the manner already detailed; for as theſe appearances and indications will be found, by experience, to depend much on the mode of performing the operation, ſo it will be neceſſary that it ſhould be well attended to, as by this invariable mode of practice the ſucceſſion of appearances and indications may be expected more regularly and uniformly to precede each particular degree and ſpecies of the ſmall-pox, ſo far at leaſt as ſuch appearances and indications are either attached to the mode of practice, or depend upon natural and conſtitutional cauſes;

cauſes; nor will our judgment be ſo apt to be confounded as otherwiſe it might be.

Indications of the Inciſion, &c.

In the incipient ſtate of variolous increaſe in the inciſion, a ſmall florid ſpot appears on the part of acceſs, reſembling a flea-bite in ſize; and on paſſing the finger lightly over it, a hardneſs is felt, not larger than a ſmall pin's head. This florid appearance and hardneſs denote that the variolous principle is effectually imbibed, and their indications point no farther, unleſs the progreſs to veſication be very ſlow, in which caſe an uncomfortable number of puſtules may be ſuſpected to follow. The florid ſpot, in moſt inſtances of inoculation, is ſomewhat larger, or more extended, on the ſecond than on the third day after the inſertion.

Itching of the Inciſion, &c.

About the fourth day from inoculation, ſhould the inciſion begin to veſicate, an itching ſenſation will be complained of, on the place of inſertion; the occurrence of which ſymptom is the firſt indication of a favorable event, yet not of ſufficient importance to juſtify any preſent relaxation in the preparatory proceedings. The operator ſhould be very careful not to confound

the itching ſenſation here noticed, with that which occurs much earlier, and before the veſication is ſeen to take place, and where it is an indication of inefficacy.

In this early progreſs of variolous increaſe, nothing further is diſcoverable to our preſent purpoſe; I ſhall therefore proceed to the next ſtage of infection, but ſhall firſt premiſe, for the ſake of perſpicuity, that in deſcribing the future indications and appearances of the inciſion, and other prognoſtics, I ſhall refer them to two claſſes, namely, favorable and unfavorable. To draw a middle line, with regard to ſuch indications as generally precede what may be thought a troubleſome crop of puſtules, though by no means dangerous, would be an unneceſſary and uſeleſs diſtinction, rather tending to puzzle and perplex, than to direct and benefit the operator.

Favorable Indications on the 5th Day.

The veſication of the inciſion, in moſt inſtances, will begin to be viſible on the fourth or fifth day after the inſertion of the matter; the ſooner it becomes ſo, the more favorable may be expected to be the event. The extent, or diameter of the veſication, at this ſtage, does not

not uſually exceed that of a large pin's head, and it has invariably a dint or ſmall depreſſion, in a greater or leſs degree in its centre, (a true variolous character) and the cuticle being a little raiſed above the ſurface of the ſurrounding ſkin, it will, on puncturing, be found to contain a very ſmall portion of clear fluid, which poſſeſſes a variolous energy, fully ſufficient for the purpoſes of inoculation. When the veſication takes place early, it will ſometimes be accompanied with an itching ſenſation, and if, in conſequence thereof, the head or table of the inciſion, a day or two after, ſhall be found to be rubbed off, a brown ſcab will be formed: this circumſtance does not impede the progreſs of infection, on the contrary, it implies a ſucceſsful infection. In conſequence of this accident, and the part being rubbed and chafed, from time to time; an irritation, or inflammation and ſloughing may follow: all which, however, being of little importance, will terminate to our wiſhes at the ordinary time, provided an unſeaſonable officiouſneſs, by poulticing, &c. does not intervene. This trifling caſualty may, however, ſometimes occaſion many puſtules to be produced within the limits of the inflammation, although few or none may be found afterwards

on other parts of the body. A redneſs alſo may about this time begin to proceed from the baſe of the inciſion.

Unfavorable Indications on the 5th Day.

There are but two of this tendency diſcoverable on the place of inſertion at this time; the redneſs and hardneſs of the inciſion not being increaſed ſince the firſt examination, and the inciſion not yet beginning to veſicate.

Favorable Indications on the 7th Day.

About this ſtage of infection, the veſicle will be found, on examination, to be extended to about the ſize of the flat part of a ſmall ſplit pea; its elevation will be proportionably increaſed, and the dint on its centre will conſequently appear deeper; the raiſed covering of the more outward part of the veſicle, which is beginning to appear turgid, or bloated with variolous lymph, will have a ſmooth ſurface; devoid of aſperities; and compared with other coverings, which contain a leſs quantity of lymph at this ſtage, it will incline to a bright tranſparency; and on puncturing the veſicle or bleb, its contents will flow out freely, without a preſſure of the lancet. A redneſs, or crimſon-coloured

loured inflammation, begins about the fifth or ſixth day to be ſenſibly enlarging, and ſpreading forth from the baſe, or outward margin of the veſicle. Its progreſs from thence at firſt is rather ſluggiſh, but as it advances to this ſtage of infection it will become quicker. To judge with accuracy of the various ſhades of the inflammation on different patients, a comparative regard muſt always be had to the natural complexion of the ſkin of the ſubjects inoculated.

The inflammation on the arms of ſome, may be ſimple, and unaccompanied with puſtules; on thoſe of others, it may be ſprinkled with a few, and on others with a vaſt number, even to a degree of confluency. Whenever puſtules ſo occur, in any number, their appearances ought to be late in the progreſs of veſication.

In conſequence of an abſorption of the variolous principle into the habit, the glands of the axilla, about the fifth, ſixth, or ſeventh day, ſeldom later, will, in ſome inſtances, begin to be affected by ſtiffneſs and pain, eſpecially on lifting the arm in an angular poſition towards the head; and on examination, the gland will be found to be enlarged to the ſize of a pea, in a fluctuating,

fluctuating, unfixed ſtate. In the caſe of infants, who cannot expreſs their ſenſation of theſe ſymptoms, the operator, to be fully informed of the ſtate of the glands, ſhould lift up the arm in a horizontal bended poſition, and examine with his two fingers, whether he can diſcover the glands to be enlarged. Their preſent magnitude is generally about the ſize of a pea, and they are not very painful when touched by the finger.

A ſupervening raſh, ſomewhat reſembling a confluent ſmall-pox, except not being raiſed above the ſurface of the ſkin, is caſually ſeen about this ſtage on different parts of the body, in patches of various forms and ſizes; indeed, in ſome rare inſtances, it almoſt covers the whole body. Laſtly, the habit of body, at this time is found inclining to a ſolubility, or is eaſily induced to perſpire; all theſe are favorable prognoſtics, but they ſeldom all appear on one and the ſame ſubject.

Unfavorable Indications on the 7th Day.

On or about the ſeventh day from the inſertion, the head or table of the inciſion may not have begun to veſicate, or it may have made but

but little progreſs. If a dinting has taken place, it will be ſmall and very confined, and the general ſurface tending rather to flatneſs or depreſſion, and ſcarcely riſing above the ſurface of the ſurrounding ſkin, which will appear rather paler than in its natural ſtate. The complexion of the table of the inciſion will be inclining to a duſky crimſon, or purpliſh colour; and the cuticle, on puncturing it with a lancet, will be found thicker than when the inciſion is replete with lymph, which, from its paucity, is, with difficulty to be obtained by ſcraping, or preſſure. The redneſs about the inciſion, (for it cannot yet be called an inflammation) makes but very ſlow progreſs, ſcarcely perceptible; and what is to be ſeen of it inclines to a duſky crimſon colour. Puſtules too are diſcovered within the limits of the inflammation at this early ſtage of it, and whilſt the inciſion itſelf continues in a backward ſtate.

Although convulſion fits are not now to be expected, yet as the following appearances on the table of the inciſion indicating them may begin to take place about this time, it will be moſt proper to conſider them here.

Indications

Indications of Convulſions.

About the ſeventh day from the inſertion to the attack, the veſicated part being, as before related, depreſſed, containing but a ſmall portion of lymph, with its outward edge ſharpiſh and irregular, and a conſiderable number of ſmall points being ſeen, toward the extremity of the veſicle, reſembling very ſmall pin-holes, and of the colour of thin milk and water, little doubt remains but that the patient will be attacked with convulſions in the evening preceding the commencement of the eruption, unleſs ſeaſonably prevented.

From the ſeventh to the ninth day inclufive is a period in the progreſs of infection the moſt important. No ignorance or inattention to what is paſſing on the arm, &c. muſt now be ſuffered: on the contrary, a juſt and accurate diſcrimination between the favorable and unfavourable indications, in what way ſoever they now preſent themſelves, is abſolutely indiſpenſible, in order to inſure an uniform and favorable ſmall-pox. And here it muſt be recollected, as I have obſerved elſewhere, that many of the indications depending on the mode of practice, are ſubject

to

to variation; and will either recede or advance accordingly. Thus an unfavorable indication, which depends on natural habit, may be converted, by practice, into a favorable indication; and by the neglect of a due preparatory courſe, it may continue equally unfavorable to the end.

Favorable Indications on the 9th Day.

On or about the ninth day from the inſertion the inciſion will be either apparently more turgid and dinted; or it may in very early caſes, even before this ſtage, have loſt its dint entirely, and the head in this caſe will be of a globular form, in the ſhape of a large plump pock; whilſt in others, the dint continuing, it may be conſiderably increaſed in its elevation and extent, of courſe a greater and proportionate quantity of lymph will be contained within it. On puncturing the inciſion, the flowing lymph (in very early inſtances, and where the fever, although hardly perceptible, has made ſome progreſs) will appear very lightly turbid: In this ſtate of the lymph, the inflammation being conſiderably extended from the inciſion, the outermoſt part of the inflammation will be of a deeper caſt than that which is nearer to the puncture, and in ſome caſes, though not in all, the inflammation will form

a ring,

a ring, or halo, the intermediate ſpace inclining to a pale orange colour. The outer part of the ſurface of the veſicle at this period continues ſmooth, and will have acquired a ſomewhat more ſhining appearance than heretofore.

The inflammation about the inciſion, which is ſtill inclining to a deep crimſon hue, will be ſpreading faſt; the puſtules, few or many, within its limits, will have arrived at a ſtate of veſication; and in very early caſes of progreſſive infection, they may already have loſt their dint.

The ſtiffneſs and pain in the axilla, or arm-pit, before noticed, will, under the ſtate of theſe appearances, be on the decline, and the glands leſſening. The febrile ſymptoms, ſcarcely diſcoverable hitherto, will in moſt caſes be found to have made ſome progreſs. Early on the eighth, ninth, or tenth morning, the patient on enquiry will have experienced a degree of perſpiration; and if of a ſufficient age, he will complain of ſlight remitting pains on the fore part of the head, eſpecially in turning the eyes upwards, which he may be directed to do.

A caſual

A caſual efflorescence or raſh, generally the effect of a medicinal preparatory proceſs, and othewiſe but little connected with the ſmall-pox, may, perhaps, now be expected to make its appearance, as before related: the later it appears before the eruptive ſymptoms take place, the better. A ſlight fever uſually precedes it.

Another kind of efflorescence alſo, unqueſtionably a-kin to the raſh, and in conſequence of medical preparation, is about this time ſeen to make its ſudden and unexpected appearance round the inciſion to a conſiderable extent. Its progreſs is very rapid; it uſually comes on in the night, and by the morning it will be extended to the breadth of a half-crown piece, or much further: it generally continues increaſing in colour and ſize, till the criſis of the eruptive fever; ſometimes nearly till that of the inciſion; and is always attended with a halo, or ring, in its decline.

My reaſon for believing that this efflorescence, like that of the raſh, occurs chiefly in conſequence of a medicinal proceſs, is this, that where ſuch proceſs has not been inſiſted upon, or perſevered in with ſteadineſs, and where the diſpo-

ſition

ſition of habit does not coincide, theſe appearances are ſeldom or never obſerved; nor are they ever the forerunners of a copious or ill-conditioned ſmall pox.

A pain acroſs the temples, eſpecially on turning the eyes upwards, is alſo complained of by ſome patients in this ſtage of the diſeaſe. It may continue twenty-four hours or more, and then ceaſes.

Laſtly, during a perceptible eruptive fever, the appetite continues unabated, with a reliſh for diluting liquors.

Unfavorable Indications on the 9th Day.

On or about the ninth day from the inſertion, the veſication will probably have taken place; but it will riſe and fill with lymph very ſlowly; and, inſtead of a viſible dint, a general flatneſs or depreſſion may ſenſibly prevail over the whole ſurface of the inciſion; the external form of which, approaching its extremities, will be uneven; its edges ſharp, and irregularly jagged; and in paſſing the finger over it, will appear, in ſome inſtances, to be rather below than above the ſurface of the

ſurrounding

ſurrounding ſkin. In this caſe, the cuticle, on puncturing, will ſtill appear thicker than ordinary; and the clear lymph underneath, from the ſmallneſs of the quantity collected, will, with difficulty, even now be obtained.

The inciſion, in ſome rare inſtances about this period, or rather later, will be very broad, exceeding the circumference of a ſixpenny piece, in ſome inſtances as broad as a ſhilling; and yet, although thus extended, if it does not contain a correſponding quantity of lymph, and the parts about it be but little inflamed, and a paleneſs, rather of an orange-coloured caſt, prevail at the extremities of the inflammation, the appearances, eſpecially the laſt, portend great and uncommon danger.

The general complexion of the inciſion may be found ſtill inclining to a duſky crimſon colour, but moſtly ſo in the centre. In ſome inſtances alſo the centre will appear of a livid bluiſh caſt, and in others of a brown, although the head of the inciſion has not been rubbed off.

The inflammation ſurrounding the inciſion, even at this period, makes but very ſlow progreſs; and although it may be extended on ſome arms more than on others, yet it ſeldom is found to ſpread beyond the circumference of a ſhilling.

The puſtules within the ſurrounding inflammation, whether few or many, appearing early in the veſicated ſtate of the inciſion, and like that too, veſicating but ſlowly. The fever continuing beyond the ſecond night, before the puſtules within the inflammation, be much raiſed or dinted. The ſpontaneous crop of puſtules appearing either before, or in an early ſtage of the fever.

The variolous fever having made its attack, while the inciſion is in a watery, crude, or early ſtate of veſication; or before the puſtules about the inciſion (ſhould there be any) ſhall have began to veſicate; or, before the inflammation at the baſe of the inciſion is perceived to have made a ſudden rapid progreſs from thence: or, when a pain of the head is not particularly felt over the temples more than any other part of the head; or, when the fever is

accompanied

accompanied with reſtleſſneſs, languor, loſs of appetite, and the patient has a diſinclination to take food; or, if the fever be attended with ſickneſs and retching, accompanied by a hot dry ſkin, and the feet and ancles remarkably cold: Laſtly, a preternatural fixed redneſs on one, or both cheeks, when the fever is not otherwiſe very ſenſibly experienced.

After this ſtage of unfavourable indications, I confeſs myſelf ſomewhat at a loſs to deſcribe thoſe which may follow. For on ſearching my records of caſes, I find but three or four in more than two thouſand of my laſt inoculated patients to whom I have referred, who claimed any ſerious attention: my late and preſent method of practice preventing the further progreſs of unfavorable indications after this ſtage of the diſeaſe; moſt of them being, by the eleventh or twelfth day, changed into a ſet of favorable indications, when a correſpondent eruption takes place in courſe. What I know by my own experience, and what I have obtained from that of other practitioners, will be found under the following head of unfavourable indications, on the eleventh day from the inſertion.

Favorable Indications on the 11th Day.

On or about the eleventh day, in rather ſluggiſh inſtances (which, however, are not always unfavorable) the contents of the inciſion will be clear and tranſparent, and the ſurrounding inflammation may not yet be arrived at its utmoſt extent, which laſt circumſtance is aſcertained by the extreme parts of the inflammation being of a ſtronger colour than that nearer to the inciſion; nor will the puſtules within the inflammation appear much raiſed, and veſicated to correſpond with the inflammation. In ſhort, the general criſis of the arm may not yet take place for a day or two; but whenever it does happen, it may be known by the receding of the inflammation, by the lymph in the veſicle appearing diſcoloured, and by the total abſence of the fever, together with a return of appetite, ſhould that have failed. Theſe are certain indications that a cook is more wiſhed for, and wanted, than a Doctor.

In moſt inſtances the fever is ſcarcely perceptible, nor is the ſleep and appetite very little, or at all interrupted or deranged; but in caſes of rather

rather more ſenſible attacks, the fever may be experienced for three ſucceſſive nights, though ſcarcely ever on the fourth, with intermiſſion during the intermediate days; the ſecond or third evening it uſually makes its greateſt effort; and retiring towards the morning, leaves the patient in a gentle perſpiration.

Where the patient is liable to two or three hundred puſtules, which will not be the caſe in ſo many inſtances; ſome ſmall number of them uſually begin to appear in the morning after the ſecond night of the fever; the main crop in the morning after the third night; and ſome remaining few eruptions may not appear until the fever has entirely gone off a day or two: And thus the whole buſineſs reſpecting medical aſſiſtance terminate when the indications have been regularly favorable.

Unfavorable Indications on the 11th Day.

On or about the eleventh day from the inſertion, and during the eruptive fever; the inciſion will ſtill continue depreſſed and flat, and of a livid or brown hue; its edges jagged and ſharp; the whole appearances remaining, to come to a

criſis even after the fever is declining or remitting. Infants, during the fever, expreſſing a diſlike to be moved; frequently turning their eyes upwards; an inceſſant crying for hours together during the febrile ſymptoms; their lower extremities pale and cold to exceſs; the fever ſtill intenſe, and unremitting, accompanied with ſickneſs and frequent vomiting; pains acroſs the loins; an intenſe pain of the back part of the head, felt particularly at the lower extremity of the ſagittal ſuture, or upper part of the nape of the neck. This pain, when plainly manifeſted, ſeldom extends to the breadth of a ſhilling, and is a prognoſtication the moſt unpromiſing at this ſtage of any that I know, whether by inoculation or in the natural way.

Upon the whole, the later, the more irregular and complicated theſe appearances of the inciſion are found to be, ſo much the more obſtinate will be the febrile ſymptoms, and the more froward and dangerous will be the diſeaſe.

Two diſtinct Crops of Puſtules.

The indications of which are, a few ſcattered puſtules unexpectedly appearing on the arms, neck, or other parts of the body, about the ſixth, ſeventh,

ſeventh, or eighth day from the inſertion, while the general appearances of the arm are in a crude ſtate, and before the inciſion has arrived at the uſual ſtage of maturity to induce us to look for puſtules on ſuch parts, and ſome hours alſo previous to the fever. The feet and ancles about the ninth or tenth day, during the prevalence of a ſevere fever, will on ſome ſubjects be found remarkably cold; theſe are the ſtriking indications of two diſtinct crops of puſtules.

It is to be obſerved that theſe puſtules which precede the fever are ſeldom numerous, but they will generally be found much larger than thoſe which ſucceed it; and although there is ordinarily an intervening ſpace of two or three days, between the firſt and ſecond crop, yet, as the laſt is uſually of a very ſmall kind, they generally come to a criſis about the ſame time with the other; the laſt, indeed ſometimes, ſooner than the firſt crop.

Two or three of the foregoing inſtances have occured to me in the courſe of practice; and one of them very lately, where the latter crop of puſtules came to a complete criſis within forty-eight hours from its firſt appearance. Theſe

rare caſes are generally very troubleſome and embarraſſing, but they have nevertheleſs ended ſucceſsfully.

To the inexperienced, this early appearance of puſtules may be very flattering, (as it formerly was to me) as it may give hopes that the febrile complaints, in conſequence of the appearance of theſe ſcattered puſtules, are on the decline, when in fact they have not yet commenced; we ſhall, therefore, act prudently by not relaxing in our preparatory proceedings, when ſuch premature puſtules, or firſt crop, make their appearance, leſt we ſhould be led on to a dangerous precipice.

CHAP. VIII.

Of the Examination of inoculated Patients, and of the medical Advice given on each Day of Examination during the Progreſs of Infection, the eruptive Fever, &c.

THE patient having been inoculated in the manner already deſcribed, and a general printed form of inſtructions for his conduct, incloſing

cloſing the uſual quantity of the alterative and purging medicines, being delivered to him, I ſhall now proceed to the FIRST EXAMINATION; which with me, uſually takes place on the third day from the inſertion of the variolous matter.

At this time, in paſſing the finger lightly over the punctured part, a hardneſs about the ſize of a pin's head will be felt, and a ſmall red ſpot will be ſeen, not larger than a flea-bite.

On enquiry into the effect of the two alterative powders which have already been taken, and whether they have been taken according to their printed form of inſtructions, we ſhall be informed that the firſt may, or may not have had a ſlight effect upwards; if it has, we ſhould learn how long it has reſted on the ſtomach before the ſickneſs came on; the general time being from the firſt to the ſecond hour: but if it was inſtantly thrown up, orders ſhould be given in this and in any future occurrence of the kind, for immediate recourſe to another alterative powder; ſince no great or proper effects can be expected from a medicine inſtantly returned: this circumſtance ſeldom occurs, yet ought to be noticed whenever it takes place. The ſecond

alterative

alterative powder will moſt probably have no ſenſible effect; neither ſhould any of them afterwards, unleſs it be a laxative motion towards morning; a circumſtance not very frequent, although rather deſirable.

Enquiry ſhould alſo be made into the effects of the purgative powder; and the number of laxative motions obtained from it ſhould be remembered, and noted down in the proper column, on the back part of the inſtructions *. The number of motions to be obtained from each purging doſe ſhould correſpond with the claſs in which the patient has been ranked; that is to ſay, if of the favorable claſs, four or five; but if of the unfavorable claſs, five or ſix looſe ſtools ought to be obtained. In caſe the ſecond purging powder, which is to be taken on the fourth morning, or if any future purging doſe ſhould prove too weak, ſpecial inſtructions muſt be given to have it aſſiſted with a tea-ſpoonful or two of the purging ſyrup, or it may be worked off with ſenna-tea, &c. as the caſe ſhall require. The patient being directed to continue the alterative powders and purging powder for

* See the printed form at the end of this Work.

two

two days more, according to his inſtructions, leave may be taken until the ſecond examination. But before I proceed to further enquiries, or to give directions for the conduct of a patient from this to the ſeventh day, or third of examination, it may be neceſſary here to remark, that

Many of the original indications of an unfavorable kind, depending poſſibly on ſome ſlight defect in the digeſtive powers, are removable, by the uſe of the combined preparatives, in three or four days; and then the indications on the arm will begin to ſhew themſelves favorably. In ſuch inſtances, we are not to conclude that our firſt prognoſtications were erroneous, but may rather impute the favorable appearances now exhibited on the inciſion, to the happy effects of the medicines and diet, as acting ſeparately or conjointly to this end. Other original unfavorable indications there are, more radical or ſtubborn, which may not ſo readily yield to treatment; ſome not till the ſeventh, eighth, or ninth, others not before the tenth or eleventh day; and in ſome very obſtinate, untractable inſtances, not until a yet later period. I do not from hence mean to inſinuate, that all

froward

froward appearances will at length turn out benign, though in many caſes more generally ſo, than otherwiſe; but it is good to be guarded againſt the conſequences of a ſluggiſh progreſs of infection, by reminding the parties ſo materially concerned, of the neceſſity of perſevering in a ſtrict preparatory courſe, until the febrile ſymptoms wholly diſappear, and the contents of the inciſion is ſhewing ſigns of approaching maturity. Such perſeverance, I am perſuaded, if conducted with ſpirit and attention, will ſo meliorate and reduce the moſt untoward indications, as finally to bring a patient through the diſeaſe with all deſirable ſucceſs.

Second Examination.

On the fifth day from the inſertion, &c. let the progreſs of infection on the arm be as it may, no alteration ſhould be made either in the patient's diet or medicines, provided the latter have had their due effect: however, note down on the back of the directions, under the proper head, whether the inciſion be in a veſicated ſtate, or otherwiſe, and whether it appears harder to the touch than when it was laſt examined; enquire alſo into the effects of the medicines, whether the purging powder has produced

duced the requiſite number of motions; if it has proved defective, recommend better attention in future; and laſtly, whether the alterative powder has had any ſenſible effect; if it has, and if a ſucking infant be the ſubject of attention, give directions that the powder may not be taken on a full ſtomach, of which nurſes and parents are often guilty; make all theſe neceſſary remarks on the paper. This precaution will have its uſe, when we arrive at the approach of the eruptive fever; for by glancing the eye over the progreſs of the inciſion as noted down, and the operation of the alterative and purging medicines, from time to time, we ſhall be the better enabled to adviſe what then is beſt to be done for the mitigation of the febrile ſymptoms. From this cautious expedient, it may be diſcovered, without further enquiry, wherein we have been defective, or otherwiſe, with regard to the effects of the medicines; we ſhall there ſee the daily progreſs which the inciſion has made, and from thence we may be better prepared againſt accidents. This method may by ſome indeed be eſteemed a matter of no importance, but in my own practice I have frequently experienced its uſe.

Third

Third Examination,

On the ſeventh day from the inſertion. We are now approaching to a very ſerious period in the progreſs of infection; and any inattention to what is paſſing on the inciſed part, or elſewhere, at this ſtage, or any ignorance betrayed either in orders, or in the execution of them, may lay the foundation of much doubt and uncertainty. If the progreſs of infection indicates much benignity, and the patient perſeveres too long in the preparatory proceedings, he may eventually have few or no eruptions; and from hence he may afterwards be diſſatisfied, or in doubt of his having had the ſmall-pox: on the contrary, where the progreſs of infection ſhall be of the irregular and froward kind, he may be ſo ſeverely afflicted by the febrile ſymptoms, and by a conſequent abundance of puſtules, as to be placed in a very precarious ſituation.

Examine well, therefore, the inciſion; remark the progreſs it has made within the laſt forty-eight hours; obſerve whether the indications have a more favorable appearance, or otherwiſe, than before; and eſpecially whether any ſigns

of

of convulſion-fits are to be ſeen on the inciſion, for we may now begin to expect ſuch, where a patient is to be attacked on or about the ninth evening from the inſertion. Examine or enquire whether the glands of the arm-pit are affected or not, and if they are, when it was firſt diſcovered. Enquire alſo into the effects of the medicines; whether any little feveriſh heat prevails towards the evening, before the inciſion has yet indicated a ſpeedy approach of the eruptive fever; for in ſuch inſtances a harmleſs raſh, the harbinger of ſucceſs, may ſoon be expected, and muſt not, when it appears, be miſtaken for a confluent ſmall-pox. The febrile ſymptoms preceding the raſh are duly moderated or ſubdued, with only a plentiful dilution of any cooling drink. If, on a view of the whole, and conſidering every circumſtance, an opinion ſhould be formed, that the indications manifeſt a benign iſſue, in this caſe an eighth part of the alterative powders remaining untaken may be omitted, or at leaſt one of the two next following; and the purging need not be ſo much inſiſted upon. On the other hand, ſhould appearances be unfavorable, an eighth part may be added to thoſe alterative powders which remain to be taken, and the purging rather increaſed,

ſhould

ſhould it be deemed neceſſary. At all events continue the diet; and ſhould the patient be under the guidance of a nurſe, eſpecial enquiry ought to be made at every examination, that ſhe performs her duty punctually and faithfully, as the adminiſtration of the medicines, &c. comes entirely under her immediate cognizance.—Laſtly, as no allowance is to be made for waſte in the quantity of powder, ſhe ſhould ſee that all of it is properly and fully taken, and in due time, according to the inſtructions; whereon note your obſervations, as before.

Fourth Examination, &c.

On the ninth day from the inſertion, ſhould we obſerve that the daily progreſſive appearances on the arm, and the preſent ſtate of infection indicate an approaching mild eruption; and that the ſundry medicines hitherto taken (on due enquiry) have had their deſired effect, and no very ſenſible fever having been experienced or expected, the alterative powder may be diſcontinued. But ſhould a raſh have intervened ſince the laſt examination, and ſtill continue to increaſe; or if, incautiouſly, the patient ſhall have caught cold from being too long on damp floors; or if by having been too much expoſed

to

to wet weather, and the glands of the mouth are thereby become affected; in either of theſe caſes the remaining alterative powder muſt be diſcontinued. The purging powder, however, will be more immediately neceſſary to be taken at the time appointed.

The indications of the arm, &c. thus propitiouſly preſenting themſelves, we may about this time expect the eruption to make its appearance; but it will, notwithſtanding, be adviſable for the remaining purgative doſe to be repeated on the tenth morning. But ſhould the inciſion have arrived at its criſis, the fifth purging doſe may with propriety be omitted. The diet, at all events, ought to be continued until the fever is entirely gone off, and the eruption completely out.

We muſt not omit now to examine into the ſtate of the glands of the axilla; for where they have been enlarged, and ſtiffneſs and pain is experienced, ſuch complaints ought now to be on the decline, and wholly to go off at the termination of the eruptive fever. But ſhould the pain and ſwelling of the glands continue troubleſome after the ninth or tenth day, and not

ſubſide with the eruptive fever, it will be adviſeable to apply to the hollow of the arm, pieces of flannel wrung out of hot vinegar. A few applications of this kind will generally diſpoſe the tumor to diſperſe; but in caſe afterwards it be too far advanced to yield to this ſimple application, emollient poultices ſhould be applied, and we may, without alarm, wait the event of a criſis, which is never of any very ſerious conſequence. Abſceſſes of this ſort occur ſo ſeldom, that I do not recollect to have met with more than four or five in the whole extent of my practice; they generally are the conſequence of inoculating with very ſtale matter, which I ſeldom or never uſe, if it can be avoided.

Should the appearances of the arm at this time be leſs propitious, the alterative powder muſt be continued; and under ſome ſluggiſh and very froward appearances, an eighth or quarter part may be added to the original quantity of the powders ſtill left untaken, and the remaining purging doſe ought to have its full effect.

It muſt not be forgotten, that whenever a few ſcattered puſtules prematurely and unexpectedly obtrude

obtrude themſelves on the face, breaſt, or other parts of the body, while the inciſion continues in a crude ſtate, and the fever made little or no progreſs, the alterative powders which remain to be taken, ſhould be ſtrengthened, by the addition of a quarter or one half of their original quantity; and the remaining purgative doſe likewiſe ſhould be ſo increaſed as that not leſs than ſeven or eight motions may be procured in the courſe of the day. The diet alſo ſhould be much reſtricted; and in all caſes of a ſtrong eruptive fever, plentiful and frequent dilution ought to be enforced, eſpecially during the night. The more cool and ſimple the beverage the better. Cold toaſt and water is generally the beſt diluter, and will be found more palatable, even to infants at the breaſt or otherwiſe, than barley-water, or any other ſmall drinks, in caſe they can be prevailed upon to take any thing of the ſort, which they may do with a little addreſs.

If at any time, on the occurrence of an ardent eruptive fever, and much reſtleſſneſs, it ſhould not yield, in a few hours, to what has already been recommended, we ſhould then have

immediate recourſe to the following cooling laxative clyſters, notwithſtanding the purging doſe may have amply anſwered its intentions only a few hours before, but eſpecially in a ſtate of infancy; and where the head is ſuppoſed to be much affected by pain, or a preternatural fluſhing on the cheeks, no time is to be loſt.

Take of—Glauber ſalts, ſix drachms, rather more or leſs,

Hot water, half or three quarters of a pint.—Mix for a clyſter, which ſhould be adminiſtered without loſs of time. This proportion and quantity is ſufficient for a child of from two to twenty months old: the quantity to be increaſed according to age. Let the clyſter be detained in the bowels as long as poſſible; but in caſe of an immediate return, repeat it directly: if the heat, fever, and pain of the head, are not ſenſibly abated within the courſe of an hour from the firſt application, it ought to be repeated. Should the fever be accompanied with ſickneſs, or loathing of food, it will be adviſable to add, for young children, half a drachm or a drachm of nitre to each clyſter.

Fifth

Fifth Examination, &c.

On the eleventh day from the inſertion, where the patient has experienced little or no inconvenience from the febrile ſymptoms, we ſhall now find that the eruption will be nearly, or altogether, compleated: little therefore remains to be done, except to order the diſcontinuance of the medicines, ſhould any remain, and to direct the preparatory diet to be changed when the general crop of puſtules have made a little progreſs in veſication, which may be about the twelfth or fourteenth day from inoculation. The patient may then return to his ordinary animal diet, and his uſual liquors, with much caution, however, and reſtraint, until the criſis be confirmed, which will be known by the puſtules becoming plump, and leaving no dint on the centre of their heads. A day or two after this, merely as it is the faſhion, the patient may take ſome laxative medicine to procure two or three motions; and it may, for the ſame reaſon, (for I know of no other) be repeated a week or ten days after: and thus inoculation, ninety-nine caſes out of an hundred ends, with the patient's not having had more than that number of puſtules.

Such patients as remain, and now require medical aſſiſtance, call for certain perſevering exertions to carry them through the diſeaſe as favorably as thoſe of whom we have juſt now taken leave. The alterative powders in an increaſed quantity, according to the degree of the frowardneſs and ſluggiſhneſs of the inciſion, muſt be cloſely followed up to the ſecond night of the eruptive fever incluſive, be it late as it may in its attack, provided no raſh intervenes, and the mouth be not affected. The purging ought likewiſe to be purſued every third or fourth morning; as alſo the preparatory diet and drink. Copious and frequent libations of toaſt and water, both day and night, muſt not in theſe untoward caſes be neglected, eſpecially ſo long as the fever prevails; during which, the laxative refrigerating clyſters alſo ſhould be occaſionally adminiſtered: theſe meaſures, by a ſteady perſeverance, will ſoon extinguiſh the fever; and the diſeaſe may, notwithſtanding the frowardneſs of the eruptive ſymptoms, terminate favorably and to our wiſhes. Should the febrile ſymptoms, however, not give way, nor remit much in twelve or eighteen hours, with no diſpoſition of the patient to perſpire, and the feet and ancles remarkably cold; in theſe caſes give

frequently

frequently and plentifully of cyder-whey, or vinegar-whey, to each potion of which may be added twenty, thirty, or more drops of Mindererus's ſpirit; and in caſe of faintneſs, wine-whey may be given to advantage.

Theſe crabbed circumſtances, by the bye, occur not once in a thouſand inſtances, and when they do, we ſhall find the latent cauſe to have lurked perhaps in the nurſery: it is too often the caſe that we have there to combat with more than diſeaſe, perverſeneſs, ſelf-conceit, and ignorance, and what is ſometimes worſe than all, deceit and neglect in the courſe of preparation, from whence danger is the moſt to be dreaded.

I ſhall here ſubjoin ſome GENERAL DIRECTIONS for the management of the patient after the eruptive fever, in caſe of a conſiderable crop of ſmall-pox.

Where patients, by any accident, are uncomfortably burthened with puſtules, neither keep them in a cloſe confined room, nor in a very warm air, nor too near a fire; for this practice will too much relax them. Neither expoſe them to very cold air, or in any currents of it, as that

may be liable to check the neceſſary courſe of inſenſible perſpiration. Suffer not the body to continue long coſtive, eſpecially in the early progreſs of the eruption, leſt the growth of the puſtules be thus obſtructed. To prevent this, cooling clyſters, compoſed of two drachms of glauber ſalts, in a ſuitable quantity of meat broth, are preferable to any thing received by the mouth. Before the concoctive ſtate of the puſtules, diluting liquors, moderately nutritious, ſuch as mountain wine-whey, milk-porridge, thin panada, chicken or mutton broth, with a little of the fleſh occaſionally, or whatever is of ſimple and eaſy digeſtion, may be taken by way of food. Afterwards, more nouriſhing, ſolid diet may be frequently given, but in ſmall quantities, and of ſuch a kind as not to render the bowels too ſoluble.

It ſometimes happens, where the patient has caught a ſlight cold, that a flux is the conſequence. From one to three or four table-ſpoonfuls of the following mixture, taken two or three times a day, will ſoon remove the irritation, and check the progreſs of the ſtools.

Take

Take of—Gum-arabic, in powder or otherwiſe, half an ounce,

Boiling water, ſix ounces,

Compound powder of crabs claws, two ſcruples,

Syrup of ſaffron or ginger, half an ounce.—Mix according to art. In caſes of much reſtleſſneſs and pain, from the filling of the puſtules, a tea-ſpoonful, or more, of the ſyrup of white poppies, or about five or ten drops of laudanum, towards night, may be given in any convenient liquor, (if it cannot be diſpenſed with) to procure a little ſleep, until after the criſis of the puſtules; then gently purge once, twice, or thrice, at intervals of five, ſix, or ſeven days; and by theſe means ſucceſs may be happily attained, as I have myſelf experienced in the moſt perverſe and obſtinate inſtances that have occurred to me in the practice of inoculation.

CHAP. IX.

Several Circumſtances deſcribed, which ſometimes take Place during the Diſeaſe, but not neceſſarily attached to it; ſuch as Teething; Convulſions in Children; Caſualty attending the Progreſs of Infection.—Opthalmies.—The morbillous and variolous Contagion meeting together in the ſame Subject, and affecting him at the ſame Time.—Concluſion.

OF TEETHING.—*So far as its Conſequences are uſually connected with Inoculation at this Seaſon.*

UPON what principle the ſeaſon of teething ſhould have been deemed improper or unſafe for inoculation, I know not, unleſs it be, that at ſuch ſeaſons, children are ſuppoſed to be more expoſed to convulſions than at any other; and ſuch occurrences I agree are very formidable and diſtreſſing. At this age alſo, it may have been ſuppoſed they are ſubject to a heavier load of ſmall-pox, than at a future period; and therefore it has been concluded, that in this infant

infant ſtate, and under ſuch caſualties (ſhould they ariſe) there is a variety of difficulties to contend with, which do not occur at a more advanced age. Under ſuch circumſtances, indeed, I grant, that obſtacles may have formerly ariſen. To the practice which I am now recommending, this very age of infancy preciſely, notwithſtanding all the aggravating circumſtances and caſualties that may be thought to attend it, will, I flatter myſelf be found more eligible and more adviſable for inoculation, than to defer it until this dangerous ſeaſon is ſuppoſed to be paſſed. Convulſion fits, let me however remark, are not abſolutely confined to this age, nor do they attach to dentition only. Children of four, five, or ſix years old, may alſo be attacked with convulſions when they are not cutting teeth, muſt we, therefore, eſpecially in large populous places, wait till after that age alſo has elapſed, and in this long interim, riſque all the anxiety of incurring the ſmall-pox naturally, with all its uſual dangers and deformities, independent of convulſions? In caſe of ſuch ſerious attacks of the diſeaſe, it is well known that convulſions are as formidable and frequent, and even more to be dreaded that way in an un-

prepared

prepared ſtate, than by the moſt ſlovenly practice of inoculation.

In what light ſoever, therefore, we view the caſe, inoculation is clearly to be preferred, preciſely at the time of dentition. Beſides, teething is as much a natural proceſs and effect, as can be produced by any other function of nature; and from experience I can affirm, that it is not any way materially affected, either by the natural or inoculated ſmall-pox. If, indeed, any ſenſible difference at all can be diſcovered or determined by practice, it is this, that the teeth are produced with even greater facility and diſpatch, and attended with leſs troubleſome ſymptoms, than if the patient had not been infected with the ſmall-pox.

Caſualty attending the Progreſs of Infection.

In the courſe of my practice, I have met with only ſix or ſeven inſtances of large cruſted ſcabs ſuddenly appearing upon the inciſed part, on the third or fourth day from inoculation; and which prevented me from immediately determining, whether the patients had received the infection or not: however, as the ſcabs ſcaled off, by about the ſixth or ſeventh day, and as

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no inauſpicious event happened from it afterwards, being at that period enabled to form a proper judgment of the indications and progreſs of infection, thoſe appearances, excepting the firſt, gave me no particular concern. I juſt mention theſe eruptions, as ſuch may happen to others; and by giving ſome little alarm to the patient may prove a temporary embarraſſment to inexperienced practitioners, as they did at firſt to me. The cauſe of theſe ſudden eruptions I cannot preciſely determine. It is probable they might have proceeded from ſome peculiar acrimony in the habit, which juſt at that juncture was about to be depurated and expelled. I do not believe they proceeded from any peculiarity of the variolous matter employed for infecting the patient, becauſe matter from the ſame pock was uſed for other patients, at the ſame time, whoſe arms were not at all affected in this way.

Convulſions, and their Cauſe.

Convulſion fits preceding the eruption of the ſmall-pox, originate, I conceive, from ſome nervous ſpaſmodic contractions of the duodenum, a proximate appendage to the ſtomach, which, from its natural ſhape and ſituation, no leſs than

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the ſtomach, under circumſtances of weak digeſtion, and fever, or of defects in the action of the ſolids, &c. inclines to generate acid gas, or fixed air, when indigeſtible impurities are lodged in them. Theſe being pent up, and thus rendered incapable of paſſing up or down, ſpaſmodic contractions may be excited to ſuch a degree, and ſo divert the blood from purſuing its natural courſe, as to throw the whole frame into a general convulſed ſtate; and hence, until ſuch obſtructions are removed, the fits of courſe will be likely to continue.

It muſt have been obſerved, that immediately preceding, and during the fit in an infant ſubject, the belly of the child is always very much conſtipated and diſtended with wind. This circumſtance, amongſt others, induces me to believe, that theſe fits proceed from an unfortunate concurrence of the above-mentioned accidental cauſes.

Whenever ſuch humours and diſpoſitions are found prevalent in infants, who, either from ſome accident are hydrocephalous, or whoſe heads are too large or deformed, and the nerves of whoſe brain are thereby preternaturally extended,

tended, ſo as not to act with regular and due energy, convulſion fits are much to be apprehended; not to mention, that beſide theſe predispoſing cauſes, ſucklings kept in a confined unwholeſome air, or in a continued ſtate of uncleanlineſs, or whoſe wretched food is derived from impure or very ſtale ſources, are ſubjects peculiarly expoſed to convulſions.

The ſigns of convulſions on the inciſed part are as follow: about the ſeventh day from the inſertion of the variolous matter to the attack, which generally takes place on the ninth or tenth evening, the veſicated part of the inciſion being depreſſed, containing but a ſmall portion of lymph, with its outward edge ſharpiſh and irregular, and a conſiderable number of ſmall points being ſeen toward the extremity of the veſicle, reſembling very ſmall pin-holes, and of the colour of thin milk and water, little doubt remains but that the patient will be attacked with convulſions in the evening preceding the commencement of the eruption, unleſs ſeaſonably prevented.

To prevent which, when the foregoing ſigns on the arm are found to exiſt, and the diſtant approach

approach of the fit apprehended, the operator ſhould order and inſiſt upon it, that his patient henceforward be kept perfectly clean, and the body frequently rubbed with the hand, be duly exerciſed in good air, and the unwholeſome nutriment, if ſuch we may call it, be removed. Inſtead of the uſual preparatory purging medicines, the body in this caſe, on the regular days of purging, ſhould be kept open by carminatives; ſuch, for inſtance as the following:

Take of—Succotrine aloes in powder, a drachm and half;
Aromatic powder, one ſcruple;
Rhubarb in powder, two ſcruples.--Mix them together. Of this compoſition, an infant, in a ſpoonful of any convenient liquor ſweetened to the palate, may take fifteen or twenty grains, more or leſs, in order to procure five or ſix laxative motions in the courſe of the day. It may be worked off with water-gruel, in which a tea-cupful of ſimple peppermint water has been added to thrice the quantity of gruel. This with an occaſional uſe of fœtid medicines, ſuch as the following, will act as a good preventive.

Take

Take of—Salt of wormwood, one drachm;
Tincture of wood ſoot, one ounce.—Mix, and name theſe the FŒTID DROPS, of which fifteen or twenty may be taken twice a day in a little tea or coffee, from the firſt appearance of the indications of convulſions on the arm, to the eruption of the ſmall-pox. Should this method not prevent the fit, (which it will in moſt caſes) when the patient is attached, proceed as follows.

With all poſſible diſpatch, adminiſter a clyſter, compoſed of five or ſix ounces of warm ſimple peppermint water, as much of plain water, and a drachm of the fœtid tincture, which, in caſe the fits do not yield, ought to be repeated. A tea-ſpoonful alſo of the following ſhould be introduced, if poſſible, by the mouth.

Take of—Cordial confection, two ſcruples;
Simple peppermint water, two ounces;
The fœtid tincture and ſyrup of white poppies, of each half an ounce.—Mix according to art, and ſign it the CARMINATIVE MIXTURE. A tea-ſpoonful ſhould be repeated three or four times in the courſe of as many minutes, if neceſſary; within which time the fit generally goes

off. The child's belly ſhould, in this interval alſo, be rubbed with hot flannels; the extremities kept free from contraction, the dreſs looſened, to give a free circulation to the blood; and if the patient be of a plethoric habit, in addition to the foregoing means, apply leeches to the temples, or draw blood from the arm. Theſe operations however are ſeldom neceſſary. The patient ſhould be conſtantly kept from the extremes of heat and cold, during this violent effort of nature.

I have never tried the following experiments myſelf, nor have I for many years had occaſion to do ſo; but I am much diſpoſed to believe, that after all other means have failed, a large quantity of quick-ſilver poured down the throat might have the deſired effect: a complete immerſion of the body in warm water, and continued during the fit might alſo be tried, and may have its uſe as dernier reſorts.

Ophthalmies, *or* Inflammations *of the Eyes,*

Are fortuitous circumſtances, equally as rare as many others connected with inoculation, and they may be conſidered as caſualties only. They

uſually

uſually proceed from a ſhort ſeries of cauſes, ariſing out of each other. The firſt from an obſtructed perſpiration, while the patient is labouring under the firſt progreſs of a copious eruption; which obſtruction, in this inſtance, ſometimes produces a premature criſis of the ſmall-pox; and this premature criſis ſometimes alſo cauſes inflammation of the eyes; or, the inflammation may proceed ſimply, and in the firſt inſtance, from the patient's being imprudently expoſed to ſtrong currents of chilling air, while in a relaxed weak ſtate, and towards the cloſe of the diſeaſe. I cannot conceive that the inflammation ever proceeds as a primary effect, from any variolous eruption on the ball of the eye, although ſpecks afterwards may be there ſeen to ſuppurate, and have indeed ſome reſemblance to puſtules. Let me only obſerve, that I never convey the infection from ſuch eruptions.

Cure.—In what way ſoever this ſpecies of inflammation is produced, a tumefaction, diſcharge, and cloſing of the eyes ſoon follow. To remove which, firſt let the eye be bathed with a little warm milk and water, ſo as to remove the glutinous matter; then ſearch whether the

hairs of the under eye-laſh, by the patient's rubbing the irritated part with the hand, have not been thruſt under the upper lid, for the contrary rarely happens. Should this prove to be the cauſe of the inflammation continuing, it will ſoon be removed, by an application of the ſame warm fomentation; taking care, by duly cautioning the patient, that the hairs do not get under again by the ſame accident. Should the effect be of a deeper and more ſerious nature, bleed with leeches near to the part aggrieved, or draw blood from the arm. Cooling laxatives alſo muſt not be omitted, and occaſional fomentations, ſuch as the following, may be applied.

Take of—The infuſion of red roſes, two pints;
Liquid laudanum, a tea-ſpoonful.—
Mix, and apply it three times a day, as hot as the cloths can with comfort be borne. In the mean time, to obtund any acrimony in the firſt paſſages,

Take of—Soft water, ſix ounces;
Gum Arabic, in powder, ſix drachms;
Prepared chalk, a drachm and half;
Balſamine ſyrup, half an ounce.

Firſt

Firſt, diſſolve the gum in the water, then add the other ingredients; and of this emulſion give one, two, or three table-ſpoonfuls, according to the age of the patient, twice or three times a day, firſt ſhaking the vial.

Should the viſion be affected, and the patient complain of ſeeing as through a ſmoaky medium, when the inflammation and pain are going off, to prevent ſpecks forming on the eye, the following ointment may be uſed to very great advantage.

Take of—Purified hog's-lard, one ounce;
White precipitate of mercury, one drachm.—Mix them uniformly together; and the eye, for the purpoſe being ſhut, as in a ſtate of ſleep, rub over it the quantity of a large pea every night. The application of this ointment ſhould extend upwards and downwards, from the eye-brow to the cheek-bone, and from the ridge of the noſe near to the hair on the ſide of the head; taking care that the ointment be not rubbed into the eye, becauſe it will induce, for a ſhort time, the ſame ſenſation as is occaſioned by ſoap and water getting into the eye in

waſhing the face. It will be prudent to continue the ointment for a few weeks.

Obſervations on the MORBILLOUS *and* VARIOLOUS *Contagion meeting together in the ſame Subject, and affecting him at the ſame Time.*

I cannot call to my recollection any medical author, ancient or modern, who has noticed the diagnoſtic appearances which take place on a ſubject who has caught the contagion of the ſmall-pox and of the meaſles alſo, at or about the ſame time; ſuch an occurrence, ſpeaking from my own experience, is extremely rare, and, as the diagnoſtics produced by ſo ſingular a coincidence of eruptive diſeaſes, are very remarkable and extraordinary, and are ſometimes ſucceeded by much danger, it ſeems to me therefore neceſſary, on this account, to deſcribe them and their reſpective tendencies, together with the meaſures to be purſued under ſuch a combination of infections, in the cleareſt manner I can. In theſe caſes, the diagnoſtics, as well as the prognoſtics, ſeem to have no affinity with thoſe incident to either diſeaſe a-part: I mean when not attached to, or connected with each

each other, but ariſe from a fortuitous combination of the two.

To be thoroughly underſtood, I muſt preſume the poſſibility of a ſubject's having caught the meaſles at or about the time of his being inoculated for the ſmall-pox; in ſuch caſe, the febrile ſymptoms of the meaſles will attack the patient about the criſis of the ſmall-pox; the progreſs of the former infection proceeding ſlower in its courſe to eruption by ſeven or eight days than the latter.

Diagnosis Favorable.—Should it ſo happen that the criſis of the ſmall-pox has taken place before the onſet of the morbillous fever, the whole ſurface of the patient will, on or about the ſecond day of the fever, begin to inflame, and a general tumefaction will immediately follow, reſembling the inflation of an animal juſt killed and blown up by a butcher; this ſwelling and inflammation will continue three, four, or five days; and when they have entirely ſubſided, the cuticle will peel off in large flakes, or bran-like ſcales. Theſe ſeemingly alarming appearances, from firſt to laſt,

are a ſure preſage of a favorable and happy event; nor ought nature to be diſturbed by any applications, either externally or internally. In all the caſes which have occurred to me, ſhe has ever been fully competent to anſwer the purpoſes of perfect ſafety, aided only with the ordinary precautions of the nurſery. A doſe or two of ſome gentle purging medicine however, after the dead cuticle has been rubbed off, appears to be all that is neceſſary.

I have not met with any material variation in the diagnoſtics of thoſe who have paſſed the criſis of the ſmall-pox before the morbillous fever comes on, but the number of caſes of this ſort occurring to my recollection may not have amounted to more than ſix or eight.

Should the patient catch the meaſles ſome four, five, ſix, or more days from the inſertion of the ſmall-pox matter, after having been enjoined the uſe of the ordinary preparatives, medicinal and dietetic, very uſeful perhaps in both caſes, I do not apprehend that any danger from either diſeaſe will at any time enſue.

DIAGNOSIS UNFAVORABLE.——Should the ſmall-pox not have arrived at its criſis, when the febrile ſymptoms of the meaſles commence, the ſmall-pox puſtules, in whatſoever ſtate they may be, or however few their number (ſuppoſe fifty or an hundred only) will continue at a ſtand as to their variolous progreſs, and not proceed to a criſis at the uſual time, and the centre of the puſtules will alſo, in a few days, begin to turn a little brown, and of a livid caſt, but inſtead of their drying away, and falling off in their uſual time, every puſtule will gradually ſpread to the ſize of a ſixpenny-piece, or thereabout; and the outward edge thereof will appear to be filled with a matter of a whitiſh hue, and different from the colour of that which at its criſis is variolous. In this ſtate, each puſtule continues to form a ſmall ſphacelus, or gangrene, until the concluſion of the fatal cataſtrophe, which ſeldom takes place before the twenty-firſt or twenty-ſecond day from the firſt attack of the morbillous fever.

It is to be obſerved, that during the whole of this interval, the patient's appetite continues pretty good, the ſleep but little interrupted; natural ſtools, as to conſiſtency, deſcend daily, but

but are rather whiter than uſual; the back part of the tongue is rather furred; and the pulſe ſomewhat more feeble and quicker than in a natural ſtate of health; the face rather pallid than otherwiſe.

CURE, *unſucceſsfully attempted.*—I have had the misfortune to experience two of theſe unconquerable caſes. The firſt depended on my own abilities: the ſecond had the joint advice of myſelf and the late Sir Richard Jebb; who, in order to reſiſt the progreſs of a ſuppoſed putrefaction, which to him appeared to be coming on, from the livid appearance of the puſtules, directed the bark in decoction, with ſome acidulated cooling julep, and the mindererus's ſpirit. The caſe, he ſaid, was new to him, but upon the whole it appeared to him not very dangerous, and he had little or no idea of the fatal iſſue. The child died ſuddenly, and without pain, as we were informed.

CURE.—Since the foregoing caſe, I have met with only one inſtance of the kind, in which I ſucceeded to my wiſhes, by the following ſimple practice. Judging the latent evil might with more ſucceſs be reſiſted by certain antiphlogiſ-

tics,

tics, I adviſed that the patient (three years old) ſhould be plentifully ſupplied with a ſaline mixture, and occaſionally to take of rough cyder whey, made of equal parts of cyder, water, and milk; of this, nearly two pints were drank daily for the firſt five days; by this time I perceived the extended puſtules began to contract, as if they were diſpoſed to ſcale off ſoon. The child's appetite at this time began to mend, and the face which had hitherto appeared wan and pallid, began now to aſſume a healthy colour. However, the ſaline mixture and the whey were continued three or four days longer, in reduced quantities, at which time the ſcabs were in general peeled off. I therefore ordered a little rhubarb, to procure two or three laxative motions, and to ſtrengthen the tone of the digeſtive powers; which being repeated a few days after, and the child being perfectly reſtored to health, I took my leave.

CONCLUSION.

MY anxiety for the preſervation of the human ſpecies, and the ſincere regard I bear for the comfort and honor of a profeſſional character, make me, I confeſs, reluctant to quit the ſubject of inoculation, until every poſſible veſtige of danger from it be done away. I ſhall therefore cloſe this Work with ſuggeſting a few general obſervations, which I am fearful have not yet been fully explained. Firſt, As it is woefully known, in the natural way of receiving the ſmall-pox, one patient at leaſt dies out of five or ſix, ſo we ſhould alſo bear in mind, that one in that number will probably require our beſt abilities to bring the ſmall-pox to a benign ſort, by inoculation. Secondly, Judging from my experience, the diſeaſe is not to be ſubdued in any better way, or more agreeable to the patient, than by adminiſtering the preparatives to them in a ſtate of health. Thirdly, Whenever patients come under the unfavorable indications, impreſs on their minds the neceſſity of purging well; for by ſo doing, danger is not to be feared; but by neglecting to enforce this neceſſary

practice,

practice, it is to be apprehended. We had far better, therefore, inſiſt on a few ſtools too many than too few: For example, ſhould twenty-four or twenty-five ſtools be the total amount of the five purging powders, twenty-eight or thirty would be amply ſufficient in the worſt caſes, provided the laſt doſe has its full effect. The regimen alſo had better be continued a day or two too long, than give it up a day or two too ſoon; the calls of nature at ſuch times are a good guide to us. At the cloſe of the eruptive ſymptoms, never preſs the patient to take food, when it is evidently not well reliſhed: nor ſhould we neglect preparation, and rely too ſanguinely on our abilities, during the worſt ſort of eruptive ſymptoms, to repel danger by the uſe only of febrifuge medicines adminiſtered in that ſtage.

This practice has been tried, I underſtand, on infants, probably on account of the daily difficulty of getting them to take the neceſſary preparatory medicines; from an idea of the impoſſibility of materially altering the quality and quantity of their food, and alſo from an erroneous notion, that, on account of their tender age, they may be conſidered as a claſs of

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ſubjects ſafer than adults, and not requiring this formality; or, laſtly, becauſe the eruptive fever with infants is in general more under controul.

Now, in reſpect to the firſt of theſe arguments, if it be one, in favor of ſuch conciſe practice, I muſt confeſs I have experienced little or no difficulty with infants, at leaſt not more than what one ſhould expect to meet with during the fever; and as to the breaſt milk, or other food, that may very eaſily be reſtricted, if found expedient

With regard to the latter ideas, on this head, my experience by no mean warrants me to give a preference in particular to the ſeaſon of infancy, more than what I have already noticed, nor hardly to any other age. The advocates, therefore, for this conciſe mode of practice when they ſucceed, are, I am apprehenſive, more fortunate than prudent. They cannot, ſurely, expect ſo uniform a ſucceſs as they would be likely to experience under a well-regulated preparatory regimen. Beſides, let me candidly declare, that I never experienced any diſagreeable accidents from the uſe of this preventive

practice.

practice. Nor have I, even under what I have judged to be the moſt favorable perſonal advantages, dared to delay the antiphlogiſtic preparatives beyond the third or fourth day after inoculation; and in ſome of theſe trials, I have neither been fully ſatisfied with my conduct nor my ſucceſs.

What opinion the Faculty at large may entertain of my theory, or ſpeculative reaſoning on the nature of this diſeaſe, I know not; nor am I very ſolicitous about it. This, however, I will ſay, that what I have here detailed is done with the greateſt poſſible fidelity. Whatever, therefore, becomes of my theory, I hope the practical obſervations will be thought worthy of ſerious notice.

I have deſignedly not noticed ſome of the ordinary febrile ſymptoms, as unneceſſary to be remarked; ſuch as yawnings, cold ſhiverings, tranſient pains in the limbs, back, &c. The fœtidneſs of the breath, which is perceived to proceed from ſome patients, may, in ſome meaſure, be imputed to accidental cauſes, and not ſimply to the effect of the fever, becauſe in ſuch caſes every patient, in this ſtage of infection, would have

have an offenſive breath in a greater or leſs degree, according to the quantum of the fever, which, at leaſt, my olfactory nerves have not been ſufficiently keen to have made the diſcovery. I therefore notice this effect rather as a caſualty only.

In a word, the main deſign of this publication, however uncouth and immedical it may be, in point of arrangement or expreſſion, is to add ſomething to the profeſſional treaſury; ſomething whereon future Practitioners may erect a more diſtinct and fairer edifice, than I have done. One truth more may be relied upon, that every perſon to whom I have been long and intimately acquainted, on reading the Work, will be fully ſatisfied, from the ſtile and manner of expreſſion, that it is the genuine production of my own pen.

FINIS.