Observations on the modern method of inoculating the small-pox / by the same [i.e., George Baker].

XIX. *Obſervations on the modern method of inoculating the ſmall-pox, by* the ſame.

Read at the COLLEGE, SEPTEMBER 19, 1771.

SO much has already been written concerning the modern method of inoculating the ſmall-pox, and the peculiarities of it in its ſeveral ſteps and ſtages, that it ſeems at this time unneceſſary to enter into a particular detail of a practice, which is now not only diſtinctly known by Phyſicians, but is almoſt become a matter of public notoriety.

The proceſs has been generally this.

I. The ſubjects have been prepared by a very abſtemious diet, and by a mercurial purgative given and repeted, previouſly to the infection,

and in the interval between the infection and the beginning of the variolous fever.

II. The infection has been communicated by means of a ſlight elevation of the cuticle raiſed by a lancet infected with crude matter, in a fluid ſtate.

III. Powerful purgatives have been occaſionally given, during the fever, previous to the eruption; during the period of eruption; and even after its completion.

IV. The free uſe of freſh air, and a very cool regimen, have been ſtrenuouſly recommended.

About the time when the great ſucceſs of this method began to be the ſubject of popular converſation, a report was likewiſe propagated of as uncommon a failure of inoculation, among the inhabitants of a conſiderable town in the county of Dorſet.

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Having eſteemed a particular inquiry into the truth of theſe repreſentations well deſerving my attention, I found, that in the counties of Eſſex, Norfolk, and Suffolk, many thouſands of people, of all ages and conſtitutions, and ſome of them under every apparent diſadvantage, had been inoculated, with general good ſucceſs; whereas, at Blandford, out of 384 perſons, who were inoculated, 13 actually died, and many others narrowly eſcaped with their lives, from the confluent ſmall-pox. Theſe facts having been aſcertained, I was of courſe led farther to inquire into the probable cauſes and occaſions of events ſo very different. And having examined how the patients had been reſpectively treated, I could not heſitate in determining, that the good ſucceſs on one ſide, and the misfortunes on the other, were to be referred to no other cauſe than to proper

and improper management. Freſh air, cold water, acid liquors, and purgative medicines, had been uniformly inſiſted on by thoſe, whoſe practice had been warranted by ſucceſful experience; whereas it appeared, that the inoculated at Blandford had been confined in their beds under a warm regimen; and that the whole proceſs of their cure had evidently tended only to aggravate their diſeaſe. "I "do not believe," ſays M. Gatti, ſpeaking of theſe two facts, "that "there is to be found, in the hiſtory "of inoculation, another inſtance of "ſo great a difference in the ſuc-"ceſs of that practice *." And his concluſion is, "that ſo conſiderable "a difference in the ſucceſs cannot "have been the effect of accident;

* Nouvelles reflexions ſur la pratique de l'inoculation, par M. Gatti, Médecin-Conſultant du Roi, et Profeſſeur en Médecine dans l'Univerſité de Piſe, p. 12.

"and

" and that the cauſe of it cannot poſ-
" ſibly have been other, than the dif-
" ference of the method."

UNDER the influence of the ſame opinion, I publiſhed the reſult of my inquiries, as far as they had then been carried. My view was, to excite the attention of others to a courſe of proceding, from which, as I imagined, conſiderable benefit might be reaſonably expected to accrue to ſociety. And that very important benefits have accordingly been derived from it, will readily be acknowledged, when it is known, that inoculation, which was heretofore in a manner confined to people of ſuperior ranks, is now practiſed even in the meaneſt cottages, and is almoſt univerſally received in every corner of this kingdom. It cannot therefore be doubted, but that many valuable lives have hence been ſaved to the community. On the other hand, it would argue an unjuſtifiable

partiality in favour of our modern inoculators, were we to diſſemble, that their practice has not in all reſpects been free from error; and that unfortunate events have not, in particular inſtances, brought it into diſcredit. My intention therefore, in this paper, is, in ſome meaſure, to ſupply, from farther obſervation and experience, what was defective in my former publication; and to point out what parts of this method are evidently liable to objections, and what parts deſerve to be conſidered as real improvements, and worthy to be adopted.

I. Let it then be the firſt object of this inquiry, to examine how far a general plan of preparation, indiſcriminately, or at leaſt, with very little variation, applied to perſons of all ages and conſtitutions, and in every ſeaſon of the year, may be juſtifiable by

by experience. And here it will appear, upon the authority of certain facts, that ſuch a general preparative method, although it has been attended with more ſucceſs than could reaſonably have been expected, has not always been practiſed with impunity. Several hiſtories of caſes, which I have collected, both from my own obſervation, and that of others, abundantly ſhew, that the preparation itſelf has ſometimes produced unkindly effects; that perſons of tender habits have ſuffered greatly from the repeted uſe of ſtrong purgative medicines, added to a ſevere courſe of abſtinence; and that, in a few inſtances of children, convulſions, and even death itſelf, have been the conſequence of this treatment. Such indeed are the effects, likely to be produced in this practice, whenever the diſeaſe is preſcribed to, and not the patient. It may be as neceſſary to

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ſupport the ſtrength of ſome conſtitutions, as to leſſen that of others. The ſame method and medicines cannot rationally be oppoſed to firmneſs, and to relaxation; to ſuperfluity, and to defect; to a man of ſtrong, elaſtic fibres, and denſe blood, and to a weak, hyſterical, cachectic woman. But this argument needs no illuſtration. Experience has ſufficiently ſhewn the truth of it in the ſubject now before us.

It is no new opinion, that mercury has certain ſpecific powers, capable of counteracting the variolous poiſon, and of leſſening its malignity. Phyſicians, who attend hoſpitals, have frequently obſerved the ſmall-pox to be particularly mild in thoſe patients, who have happened to receive the infection ſoon after a mercurial ptyaliſm: and inoculation is ſaid to have been a much more ſucceſsful practice in ſome of our american colonies, ſince the uſe of calomel has been there intro-

introduced into the preparative regimen. The result of my observations on this subject is, that in cases, where there is no particular objection against the use of calomel, it may be considered as an useful evacuant; and that a few grains of it may be properly given with a view to cleanse foul bowels. Boerhaave's idea on this subject seems to have been little more than speculation and conjecture; nor indeed, if the fact be really true, (which however is disputed) that the small-pox, ensuing upon a mercurial ptyalism, is generally a slight disease, does it follow, that such an effect is to be ascribed to any particular qualities of mercury; since it may be referred, perhaps with an equal degree of probability, to the mere evacuation only. This idea is consonant with Dr. Mead's opinion, who observes, that this disease is generally mild, whenever it is contracted soon after

after ſome great evacuation, natural or artificial. The inſtances, which he mentions, are, perſons in general after any acute diſeaſe; women after lying-in; and ſalivated patients in the hoſpital. Theſe he ſpeaks of as caſes quite parallel; nor, in the latter, does he attribute any antivariolous efficacy to mercury. His inference is ſimply this: — *indicium certe ſatis manifeſtum, quamcunque materiæ diminutionem, fomitem igni ſubtrahendo, huic morbo apprime convenire* *. In a word, comparative trials have been made with ſufficient accuracy: mercury has been uſed, and has been omitted, in an equal number of patients, nearly of the ſame age, and under ſimilar circumſtances, previouſly to inoculation: and the reſult of theſe trials has by no means been deciſive in favour of mercury.

* Mead, de Variolis, cap. iv. p. 71.

It is the opinion of M. Gatti, that a perſon, in a good ſtate of health, needs no preparative for inoculation. This propoſition, although ſupported by that author with his uſual ingenuity, ſhould ſeem to be too general. For, according to an old obſervation, conſummate health is very apt to border on its contrary; and it is often ſeen, that men of the ſtrongeſt habit of fibres, and the moſt plethoric health, are the greateſt ſufferers under the attack of an acute diſeaſe. We cannot perhaps define, with a philoſophic preciſion, on what circumſtance depends a diſpoſition to a mild kind of ſmall-pox. But, are we to make no uſe of the knowledge, which we derive from obſervation, becauſe it is a limited knowledge? If we appeal to the authority of thoſe, who were the firſt writers on this diſeaſe, we find them very ſolicitous to prepare their patients

patients againſt it, whenever it was epidemic *. With this intention therefore they preſcribed a cooling diet, and lenient purgatives, forbidding every thing, which might ſeem likely to quicken the motion of the blood, and increaſe heat. From the time of the Arabian writers down to that of the introduction of inoculation into this country, we find very little ſaid concerning preparation. It did not however eſcape the ſagacity of our countryman Sydenham, that great advantages might be obtained by it; for he teſtifies in expreſs terms, that a purgative medicine, twice or thrice repeted before the acceſſion

* They adviſed, that young perſons ſhould be always kept prepared during the ſpring and winter. They had an idea, that by their management, if timely applied, they had a power even to extinguiſh the diſeaſe, and prevent any eruption; or at leaſt to inſure the puſtules being *debiles & paucæ*.

of the variolous fever, had, in his opinion, frequently contributed to render the ſubſequent diſeaſe mild. It will indeed readily be granted, that, ſince the æra of inoculation, too much has often been done in this particular; that practitioners have been led into error by their abundant caution; and that dangers have been multiplied by the very means calculated to prevent them. But it will be remembered, that objections againſt the abuſe of a practice will not avail againſt the proper uſe of it; and that the ſucceſs of every method of cure depends on the diſcrete, juſt, and ſeaſonable application of it.

Since then we have two opinions concerning a point of medical practice, ſo oppoſite and contradictory to each other, a prudent phyſician will guard himſelf againſt an haſty attachment to either party. The greateſt ſecurity

ſecurity will probably be found between the two extremes. For, on one hand, there are many perſons, who, previouſly to inoculation, have undergone great evacuations, and a ſtrict courſe of abſtemiouſneſs, not only with impunity, but apparent advantage. On the contrary, the ſame method has produced in other perſons very different effects. It has only added to their natural weakneſs, and rendered them leſs fit ſubjects for the ſmall-pox. The practice of phyſic rarely admits of any perpetual precepts; and he will be very apt to err, who will not, as he may find occaſion, deviate from authorities, and follow the dictates of his own judgement and diſcretion, as they ariſe from the caſe before him.

II. With reſpect to the mode of communicating the diſorder, here our modern inoculators have introduced,

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or revived rather, what muſt be acknowledged to be a very conſiderable improvement. How it happened, that the original and moſt ſimple uſe of the needle did not take place with us from the very firſt, I cannot ſay: certain it is, that inoculation never received the ſmalleſt advantage from any of the refinements of art; nay, the formidable apparatus of ointments, and plaſters, and bandages, did in all caſes add to the inconveniences of the diſeaſe, and in ſome, aggravate its ſymptoms. It is a well-known fact, that even ſlight inciſions in the ſkin, when thus treated according to art, have degenerated into troubleſome ſores of long continuance, and of difficult cure. It is likewiſe obſervable, that the eryſipelatous raſh, which, beginning at the arms, uſed frequently to ſpread itſelf over the whole ſurface of the body, and which was apt to return from

time to time in ſucceſſive crops, is now ſeldom or never ſeen under the modern management; nor are inflamed eyes, or ſuppurations of the lymphatic glands, in any degree ſo frequent as formerly. Let me add, what appears to be an advantage of no trivial importance, that we cannot now be at a loſs to determine with certainty, whether or not the patient be ſecured from future infection. This was far otherwiſe, while plaſters were applied to the inciſions. Some ſkins being impatient of all ſuch applications, an inflammation and a conſequent diſcharge were not uncommonly produced, even where no infection had been communicated; and on the authority of this deceitful appearance, perſons were pronounced free from all danger, who afterwards fell victims to the diſeaſe. Whether or not there be any real and eſſential difference between the effects of the crude

crude and the ripe matter, it is not eaſy to determine. There does not, however, appear to be any reaſonable objection to the uſe of the crude matter; nor is it an improbable ſuppoſition, that ſome advantages may ariſe from it.

That the matter more certainly takes effect, when it is applied in a fluid ſtate, ſeems generally to be allowed. And this apparent novelty may be ſupported by the authority of antient uſage; for we are informed by the earlieſt writers on this ſubject, that the Grecian woman, who practiſed inoculation at Conſtantinople, was attended by a ſervant, who brought the matter fluid in her boſom. Mr. Holwell likewiſe teſtifies, that the ſame method prevails among the Bramins in India. And we are alſo informed, that the people of Tripoli, who are deſtined to inoculation, are carried to the houſes of

thoſe, who have the ſmall-pox, in order that they may immediately receive the fluid matter, freſh from the puſtules.

But the preſent method is likewiſe attended with another practical improvement; for, by a daily and attentive obſervation of the parts, to which the poiſon has been applied, the experienced practitioner is enabled not only to view the natural progreſs of the infection, but likewiſe to conjecture, with ſome degree of certainty, concerning the quantity of the future diſeaſe. During the time when ointments, and plaſters, and bandages were in faſhion, every appearance on thoſe parts was uncertain and uninſtructive; every poſſible prognoſtic, which could be founded on it, was precarious.

III. With reſpect to the general treatment of the ſmall-pox, from the com-

commencement of the fever to the maturation of the puſtules, here likewiſe our modern inoculators have opened a large field for medical improvement. For, not contented with being inactive ſpectators of the progreſs of the diſeaſe, they have ventured to adminiſter purgatives, even of a powerful nature, and to repete them more or leſs often, as the occaſion may have ſeemed to require. Whether or not they ought to be conſidered as the original authors of this method, it is not material. The ſame certainly was ſome years ſince recommended by a Phyſician in a *treatiſe on the ſmall-pox*; but he had not ſufficient reputation in the medical world, to give authority to novelties in practice. Be this as it may, it is now ſufficiently evident, that this method of purging in this ſtage, under particular circumſtances, may be followed beneficially to the patient.

What a contraſt then does there appear between this method of treating the ſmall-pox, and that which had generally prevailed, eſtabliſhed by the practice of the moſt able phyſicians! Was it not uſual with them even to promote a coſtive ſtate of the bowels through the whole diſeaſe? And has it not been made a matter of doubt, whether or not even a clyſter might be adminiſtered with impunity? It is to be ſuſpected, therefore, that the old doctrine, "nature cures diſeaſes," —"nature is the ſureſt guide," &c. may in this, as well as in ſome other inſtances, have led practitioners into a dangerous error. As it appeared to be the deſign of this much-celebrated intelligent power within us, to expel a load of miſchief from the center to the circumference of the body, it was held to be the duty of the phyſician to co-operate with that deſign. Upon this principle, medicines were applied,

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under the title of diaphoretic and alexipharmac, ſome of which fortunately are mere inactive ſubſtances, others, as experience has ſhewn, are too capable of doing miſchief. Becauſe a copious perſpiration had frequently been obſerved to precede a mild and diſtinct kind of ſmall-pox, a concluſion was too haſtily made from hence, that, in order to inſure ſafety, no more was required, than to promote a *diaphoreſis*. But this proved to be a fallacy; and an imitation of nature, under a miſapprehenſion of her motions, was attempted by means which tended to counteract and embarraſs them. That natural and unſolicited perſpiration, which is regarded as a prognoſtic ſign of a mild and diſtinct ſmall-pox, may be obſerved not to break out, untill the fever has in ſome meaſure ſubſided. Hot medicines therefore, applied before this criſis, muſt ac-

celerate the blood's motion; and ſo may ſerve only to prevent perſpiration; or if, being continually taken, they do ſuccede in forcing out ſweat, ſuch ſweats are found at leaſt to be unprofitable. In either caſe, the eruption is likely to be precipitated; and the patient to be in a worſe condition than if he had not had the aſſiſtance of art. The true way then of following the dictates of nature, in this caſe, is to endeavour to aſſiſt her in moderating the fever; and a beneficial perſpiration will in general be beſt attempted by antiphlogiſtic medicines, and a cool regimen.

If it be objected to what is here written, that there are, in this country, ſeveral ſucceſful inoculators, who confine their patients, ſweating, in bed, during the whole eruptive fever; I anſwer, that it is the good fortune of inoculation very often to proſper even in the moſt unſkilful hands, and under

der the worſt management; but no accidental ſucceſs can in this inſtance be properly urged as an argument in juſtification of a practice, oppoſed to reaſon and general experience.

The eruption being completed, particularly when the puſtules are numerous, anodynes are uſually given. And here let me take occaſion to obſerve, that Sydenham ſeems to have ſhewn too great a partiality in favour of his *liquid laudanum*; and that there is reaſon to ſuſpect, that his doctrine has, in this particular, been ſometimes too implicitly followed. For, if experience has ſhewn that important advantages have ariſen from the belly being kept in a ſoluble ſtate, it muſt follow, that a medicine, the ordinary effect of which is to occaſion coſtiveneſs, muſt have its inconvenience. Beſides, it is often ſeen in certain conſtitutions and ſubjects, that opium, whether given in a ſmall or a large

large doſe, does not cauſe ſleep, but, on the contrary, even increaſes anxiety and reſtleſneſs; and, if it ſhould ſtupefy the nerves, ſo as to render them leſs ſenſible of pain, ſuch a temporary relief is ſometimes dearly bought by the patient, whoſe head is confuſed, whoſe reſpiration becomes more difficult, whoſe ſpitting is checked. I would not be underſtood to mean, that theſe are conſtant effects of opium, given in the ſmall-pox; and I am very far from ſubſcribing to the opinion of the ingenious M. Tiſſot, who, in his epiſtle to Mr. V. Haller, *de variolis, apoplexia, et hydrope*, condemns the uſe of opium in this diſeaſe univerſally and without exception. For we ſometimes, at leaſt in this country, meet with tender and irritable habits, which require the aſſiſtance of ſuch a medicine, and are relieved by it. In ſuch caſes, if ſome of the inconveniences, above-

above-mentioned, do happen, the advantages, gained by a precious interval of eaſe, will ſometimes be found to be more than an equivalent.

But I would ſpeak ſomething further of the uſe of purgatives, not only in reſpect of the diſorder before us, but more generally. Should it not ſeem then that the beneficial effects of them, in this and other eruptive diſeaſes, reſult chiefly from that peculiar relation, which is obſervable between the affections of the ſkin and the inteſtines? The perſpirable matter, checked ſuddenly, and thrown back upon the conſtitution, is in all caſes very apt to affect the bowels; and, *vice verſa*, I have more than once known a *diarrhœa*, which has reſiſted other remedies, yield intirely to the uſe of a warm bath. If, upon this principle, purgatives, under certain reſtrictions, were more generally given, phyſicians perhaps would be more

ſucceſful in their treatment of ſome other fevers, attended with eruptions on the ſkin. I am convinced by experience, that the prudent application of this practice to the milliary fever has been of ſingular advantage: and it is worthy of obſervation in this place, that the ſymptoms of the meaſles are often rendered leſs formidable, when, during this diſeaſe, the patient has every day two or three evacuations by ſtool. Nature herſelf frequently points out in what manner ſhe ought to be relieved, by raiſing a ſpontaneous *diarrhœa*; and experience has ſhewn, that the diſcharge is ſalutary, and cannot be reſtrained with ſecurity. I have even reaſon to think, that the dangerous peripneumony, conſequential to the meaſles, is by no means ſo effectually to be prevented, as by the method of cure, which is here ſuggeſted.

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BUT, as every powerful remedy is, by the abuſe of it, convertible into a powerful poiſon, this method of purging in the ſmall-pox has, in many inſtances, been productive of miſchief, which has ſurely ariſen from the want of judgement and diſcrimination in ſome of our inoculators. I have collected many hiſtories of caſes on this ſubject; from whence it appears, that various are the ill effects, which have been produced by the indiſcrete uſe of purgatives, given with a view to ſuppreſs and repel the eruption. The moſt common, as well as the moſt fatal of theſe ill effects, is a conſumption of the lungs. The late Dr. Blanſhard informed me, that out of ninety perſons, who had been inoculated in one village, ten died conſumptive, ſoon after their recovery from the ſmall-pox; three only of which number had ſhewn any diſpoſition to diſeaſed lungs before their

inoculation. Upon inquiry, he learned, that all theſe people had taken ſtrong purgative medicines, as well through their preparative courſe, as through every ſtage of the diſeaſe. The ſame gentleman ſhewed me two inſtances of a *gutta ſerena*, moſt probably from the ſame cauſe. This ill-judged treatment has likewiſe not unfrequently been the cauſe of various diſorders of the hyſterical and ſpaſmodic kind; of dropſies; and of the moſt obſtinate pains in the limbs. To this account may be added various eruptions on the ſkin, particularly puſtules reſembling thoſe of the ſmall-pox; and abceſſes in various parts of the body; all ſeeming to indicate, that the conſtitution, forced from the ordinary manner of relieving itſelf, makes every irregular ſtruggle to ſhake off its oppreſſion, and to diſlodge the enemy by any means, and at whatever expence and hazard.

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Several caſes have occurred to myſelf, which have ſeemed to juſtify ſuch a reflection; and from many parts of this kingdom, in which I have had an opportunity of inquiring, I have received accounts correſponding intirely with what has been here repreſented; and yet certain it is, notwithſtanding, that the misfortunes, which have attended this modern mode of inoculation, have been greatly over-balanced by its general ſucceſs.

It appears then from what has been premiſed, that the uſe of purgatives, regulated by diſcretion, is capable, under certain circumſtances, of leſſening the violence, and averting the danger, of the ſmall-pox. It appears likewiſe, that the ſame medicines, given injudiciouſly with reſpect to time or quantity, and without due attention to the ſtrength and habit of the patient, have produced very ill effects. In ſo critical a ſituation,

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by what rules ſhall the phyſician determine his conduct? By none, which can eaſily be deſcribed. Here therefore eſpecially, is the uſe and importance of a man of ſkill, deliberation, and judgement. Such an one will make it the firſt object of his conſideration, how far it may be neceſſary or expedient to do any thing, which may poſſibly interrupt the progreſs of the diſeaſe; and whether the whole buſineſs may not more ſafely be committed to nature. Should he find reaſon for attempting to leſſen and retard the eruption, he will not have recourſe to any preſcribed form of medicine; but will endeavour to accommodate his remedies to the age, ſex, conſtitution, and other peculiar circumſtances of the patient. In a diſeaſe, which is ſubject to ſuch a variety of *phænomena*, to be confined to any eſtabliſhed method of cure, would

would be as irrational, as to be guided by no rule, no method at all.

IV. The great benefits, which perſons, under the proceſs of inoculation, derive from the free uſe of cold air, were the principal object of my pamphlet formerly publiſhed. And here it would argue the utmoſt want of candour in us, not to acknowledge, that phyſic is greatly indebted to our modern inoculators. If it be objected to them, that, in this reſpect, they have introduced nothing of novelty; for that Rhazes and the other Arabian phyſicians, whoſe writings are come down to us, both taught and practiſed the cold regimen, according to the moſt extenſive ſignification of the words; and that our own countryman Sydenham, having, as he himſelf teſtifies, found the medical world divided between patrons of the hot, and of the cold method,

zealouſly attached himſelf to the latter opinion; yet let it be remembered, firſt, that as to what regards the Arabians, reaſons, apparently plauſible, were objected to the imitation of their practice; namely, that it was well adapted to the warm countries, in which they lived, but would be very injudiciouſly followed in our northern climate: and, with reſpect to Sydenham, it is manifeſt, even from his own words, that, in his general practice, he fell ſhort of his principles and perſwaſion, and was reſtrained by the obloquy of his contemporaries from openly purſuing a plan, which, in his private judgement, he heartily approved. And it is as certain, that from the time of Sydenham, down to that of the introduction of the modern improvements, the antiphlogiſtic method of treating the ſmall-pox was in reality, and in ſubmiſſion to the prejudices

and

and tenderneſs of women and friends, more talked of by phyſicians, than preſcribed; more praiſed than practiſed.

It is however to be lamented, that the liberty of uſing freſh air has been exerciſed in too free and unlimited a manner, ſometimes for the patients themſelves, but generally for the neighbourhood and community. The contagion has thus been propagated: the unſuſpecting and the unwary have been ſurprized with the diſorder, and have ſuffered; and a practice, ſo beneficial to individuals, has, in many inſtances, become detrimental to ſociety. This evil, and that other of country-practitioners, who have opened houſes of reception in or near large towns, I ſhall content myſelf with having mentioned. I fear it cannot be remedied, unleſs by the interpoſition of the legiſlature.

FROM this free, and, I hope, fair examination of the merits of our modern inoculators, we may draw the following concluſions.

FIRST, when we conſider to how full a diet (conſiſting principally of groſs, heavy, unctuous, animal food) the people of this country are accuſtomed, we cannot doubt of the general utility of a ſhort courſe of abſtemiouſneſs, as a preparative for the ſmall-pox. And, upon the ſame principle, we may conclude, that the ſeveral purgatives, given at this time, have contributed their part to the general ſucceſs of the practice. If this method of preparation has ſometimes ſeemed not to have been attended with good effects, our cenſure ought to fall, not on the method itſelf, but on the miſapplication of it in particular inſtances.

SECONDLY,

SECONDLY, Theſe operators have derived ſingular advantages from the manner of communicating the infection, which they have practiſed.

THIRDLY, They have introduced the uſe of purgative medicines, with a view to abate the fever, and leſſen the eruption. And although the indiſcriminate application of the ſame method has, as might have been expected, in ſome caſes, done miſchief, yet phyſicians, in this reſpect, may even from the errors of theſe men, derive uſeful inſtruction to themſelves.

FOURTHLY, They have experimentally ſhewn, that freſh air, if it be not an antidote to the variolous poiſon, is the great preſervative againſt the dangers, which frequently attend the ſmall-pox.

FIFTHLY, They have proved, that the idea of the poſſibility of accumulating the infection of the ſmall-pox (an idea which prevailed long, and which appears to have been ſtrenuouſly maintained by Mead) is wholly without foundation; and that, when the poiſon has once affected the ſkin, the patient is ſecured from any farther degree of contagion. This they have ſatisfactorily proved by their cuſtom of admitting, without the leaſt ſcruple, and with impunity, perſons, who come to their houſes, in order to be inoculated, into the company of their variolous patients, ſometimes ſeveral hours before the matter is inſerted. From the ſame cuſtom we may likewiſe deduce the following very curious truth, *viz.* that the ſmall-pox, by inoculation, out runs and anticipates accidental infection. This truth is ſtill more confirmed by a remarkable caſe, which

which once happened within my own knowledge; and again, lately, in the practice of Dr. Watſon, with little or no variation of circumſtances. A poor woman, who had an infant at her breaſt, was ſeized with the ſmall-pox, which proved confluent. On the fourth or fifth day after the eruption, the child was inoculated, and, at the uſual time, had the diſeaſe, and paſſed through it without danger or difficulty. The mother, in both caſes, died.

Before I finiſh this paper, I beg leave to add a few words concerning the inoculation of pregnant women, and of infants at the breaſt. The ſmall-pox has ever been found to be ſo hazardous a diſeaſe to women, during pregnancy, that one would ſcarce have imagined, that in ſuch a ſtate, inoculation could ever have been thought of, except only under circumſtances of extreme neceſſity.

And yet even in this ſituation it has been adviſed, nay ſometimes practiſed with ſafety. But, it ſhould ſeem, that nothing leſs than a multiplicity of ſucceſful experiments can juſtify this practice. And as it does not appear, that a ſufficient number of ſuch ſucceſsful experiments have as yet been made, we may at preſent be allowed to reaſon on the ſubject. Is it not then generally obſervable, in the caſe of pregnant women, that the pulſe is quicker and fuller than natural; and that they are liable to be hot, thirſty, coſtive, nay to become feveriſh on the ſlighteſt occaſions? Does not the blood, when drawn from their veins, exhibit thoſe appearances (whatever may be the cauſe of them) which are uſually found to attend inflammation? Is not the general irritability of the habit conſiderably increaſed, during pregnancy? And laſtly, is not the natural ſmall-pox, when it

happens

happens to a pregnant woman, found by experience to be more than ordinarily formidable? Theſe are conſiderations which render the expediency of inoculation, under ſuch circumſtances, greatly queſtionable; and it ſhould ſeem to be an act of temerity to recommend it, with any view, except only to prevent a greater evil, which might otherwiſe probably be immediate, and unavoidable. Several unfortunate caſes have been reported to me, which ſhew this practice to have been attended with extraordinary danger, more eſpecially to the *fœtus*. I ſet down the following, becauſe the event fell under my own obſervation. An healthy young woman was inoculated in the ſixth month of her pregnancy. The puſtules appeared at the uſual time, and in moderate numbers; and nothing untoward happened, until the evening of the fourth day from the eruption. She

was

was then ſeized with ſymptoms of a premature labour; and a ſudden and violent hæmorrhage following, ſhe very ſoon died convulſed.

Dr. Mead ſpeaking of pregnant women having the ſmall-pox, ventures to aſſert, that, "if there be no "miſcarriage, the child will be free "from the diſeaſe during his whole "life, unleſs he happen to be born "before the puſtules are come to ma-"turity *." This aſſertion is not confirmed by later experience; nay, the reverſe of it is proved to be true by the following undoubted fact. Two pregnant women, having been inoculated, had the ſmall-pox in a very favourable manner; and afterwards brought forth their children, perfectly healthy, at the uſual time. Both theſe children, when they had attained the age of about three years, were

* Mead, de Variolis, cap. iv. p. 66.

inocu-

inoculated with effect, and had a moderate eruption.

This general poſition of Dr. Mead being thus ſhewn to have no foundation, it would be of importance in the practice of inoculation, if we could go farther, and aſcertain whether or not a child in the womb be liable to the ſmall-pox. Dr. Mead * has taken the affirmative ſide of this queſtion; and has even aſſerted, that the *fœtus* may be infected, though the mother be free from the diſeaſe; and, in confirmation of this opinion, he relates the following hiſtory. "A woman, "who had formerly had the ſmall-"pox, and was now near her reckon-"ing, attended her huſband in that "diſtemper. At her full time, ſhe "was delivered of a dead child, whoſe "body was intirely covered with "puſtules; a manifeſt ſign, that it

* Mead, de variolis, cap. iv. p. 66.

"died

" died of the ſmall-pox, before it was " brought into the world." With reſpect to this caſe, which, it is to be obſerved, the author relates from memory, there is great reaſon to ſuſpect, that the puſtules were not variolous, there being frequently ſeen on the ſkin of children, who have ſome time been dead in the womb, veſicular appearances, which may be eaſily miſtaken for the ſmall-pox, eſpecially by one, who examines it under the influence of a pre-conceived opinion. What is here ſaid of this caſe is likewiſe applicable to that recorded by Mauriceau *.

While I am upon this ſubject, let me take notice of another aſſertion in the ſame chapter of Dr. Mead's book *de variolis*, the truth of which is not proved, and which indeed appears to be founded on an overſight and miſconſtruction. His words are what

* Mauriceau, ſur la groſſeſſe et l'accouchement des femmes, Obſervation 600.

follow:

follow: "Illud tamen auctarii loco "adjiciam, fieri interdum poſſe, ut "infans etiam in utero ab hac ægri- "tudine incolumem ſe expediat, eva- "neſcentibus ante partum morbi in- "diciis." In order to eſtabliſh this opinion, he refers the reader to a caſe related by Mauriceau, in his book *ſur la groſſeſſe et l'accouchement des femmes, Obſervation* 576; which *obſervation* contains only the following hiſtory: "A woman was delivered "of a male child at the ordinary "term, herſelf as well as the infant "being in good health, notwithſtand- "ing that, in the fifth month of her "pregnancy, ſhe had the ſmall-pox "in a ſevere manner; of which diſ- "eaſe, however, there did not ap- "pear on the body of the child any "mark, which could teſtify, that he "had been infected in the womb." It is evident from hence, that Dr. Mead intirely miſunderſtood Mauri-

ceau;

ceau; and that he drew a concluſion from this hiſtory, directly contradictory to the whole tenour of it, and to the author's meaning *.

With reſpect to the propriety of inoculating infants at the breaſt, there are two oppoſite opinions; and ſpecious arguments are uſed in ſupport of each opinion. To avoid a repetition of what has been urged on both ſides, I leave this queſtion to be determined wholly by experience. And, if I have not been miſinformed, the deciſion will not be in favour of an early inoculation of children; for, having been diligent in my inquiries

* The words of Mauriceau are, "— dont il "ne paroiſſoit aucune marque ſur le corps de "l'enfant, qui puſt témoigner qu'il en euſt été "auſſi lui-même infecté dans le ventre de ſa "mere." — Dr. Mead's conſtruction of theſe words conveys a very different idea: *Evanuerant ante partum morbi indicia.* According to the author, *no marks of the ſmall-pox appeared*; according to the tranſlator, *the marks of the ſmall-pox had diſappeared.*

on

on this ſubject, I learn, that much the greateſt proportion of deaths, which have happened here in London in conſequence of inoculation, have happened to children under the age of two years. Of theſe ſome have died in convulſions, previous to any eruption; but the majority of them have ſunk, oppreſſed by an inſuperable load of diſeaſe, at an advanced period of the ſmall-pox. And yet, notwithſtanding the force of this practical objection, an infant may eaſily be ſuppoſed ſo circumſtanced, as not to be likely to eſcape accidental infection. In ſuch a caſe, the apprehenſion of the greater danger ought, it ſhould ſeem, to over-rule that of the leſs; and even doubtful means of ſafety ſhould be hazarded.

While I have been engaged upon this ſubject, ſome points have occurred to me, upon which, as I have not been able to ſatisfy myſelf clearly, I ſubmit

I ſubmit them, as matter of inquiry, to more general conſideration.

QUERIES.

I. SINCE it has not been ſuppoſed, that the ſmall-pox of the Arabians, differed either in its nature or effects from the diſeaſe ſo called, with which we are converſant, how are we to account for the ſilence of Rhazes, and other Arabian writers, with reſpect to its two remarkable peculiarities, namely, its being communicated by contagion, and being once only incidental to the ſame perſon * ?

II. SINCE no mode of preparation has hitherto been found effectual for

* They ſpeak of this diſeaſe, as ariſing from the ebullition of the blood, and particularly incident to the age between childhood and youth. Nay, it is aſſerted by Aaron, that it is liable to return to the ſame perſon twice or thrice, *præcipue cum ſanguis ſit acutus.*

reducing

reducing the natural ſmall-pox to that degree of ſecurity, which generally attends the practice of inoculation; and ſince, in numberleſs inſtances, inoculation has been ſucceſful, even without the aſſiſtance of any preparative regimen; to what circumſtance ought we to attribute ſuch different effects of the ſame poiſon? Is it to be ſuppoſed, that there is a greater degree of activity and virulence in thoſe contagious particles, which are received in the form of *effluvia?* or ſhould it ſeem, that, in the natural ſmall-pox, the poiſon is applied immediately to a vital, moſt intimate, and very ſenſible organ; whereas, in the caſe of inoculation, it is applied to a diſtant extremity, and of leſs importance in the animal œconomy? In a word, does the difference lie in the quality of the poiſon itſelf, or in the part firſt poiſoned?

III. BEFORE the variolous poiſon, when inſerted, takes effect, an inflammation ever ariſes on the place of its inſertion. Where no ſuch inflammation appears, no ſmall-pox enſues in conſequence of inoculation. The ſame thing is obſervable of another animal poiſon, generated, like this, by diſeaſe, namely, that which is infuſed into a wound made by the bite of a mad dog. Although this wound ſometimes readily heals up, yet it conſtantly breaks out afreſh and inflames, before any of the terrible ſymptoms appear. May it not then be ſuppoſed, that theſe poiſons are for ſome time confined in the part to which they were applied, and do not enter into the habit, till, by a topical inflammation, they have ſhewn their powers and energy for further miſchief? If ſuch a ſuppoſition be probable, does it not, in the caſe of the bite

bite of a mad dog, confirm the propriety of an obvious experiment, whether the cutting out or burning the part wounded might not prevent the effect? This has been propoſed; if ineffectual, perhaps a ſufficient quantity of fleſh has not been deſtroyed; and it is natural to ſuppoſe, that ſuch an operation may have been performed in too much haſte, under the influence of a preſumption that it muſt be uſeleſs, if not immediate; or poſſibly with too great tenderneſs for the unhappy ſufferer. But if the poiſon be only confined in the wounded part, may not the operation be expected to be ſucceſful at any interval, provided only it be before the inflammation and other bad ſymptoms begin to appear? One can hardly ſuppoſe a caſe, in which ſuch an experiment would be tried in the inoculation of the ſmall-pox. But, in ſupport of this reaſoning, I am informed,

that the cutting out the parts ſurrounding, and at the bottom of, a recent venereal ulcer, ſo that none of it be left, has intirely prevented any farther ſymptom of the diſeaſe; the wound having healed like a common wound, without any uſe of mercury.

XVIII. *An*