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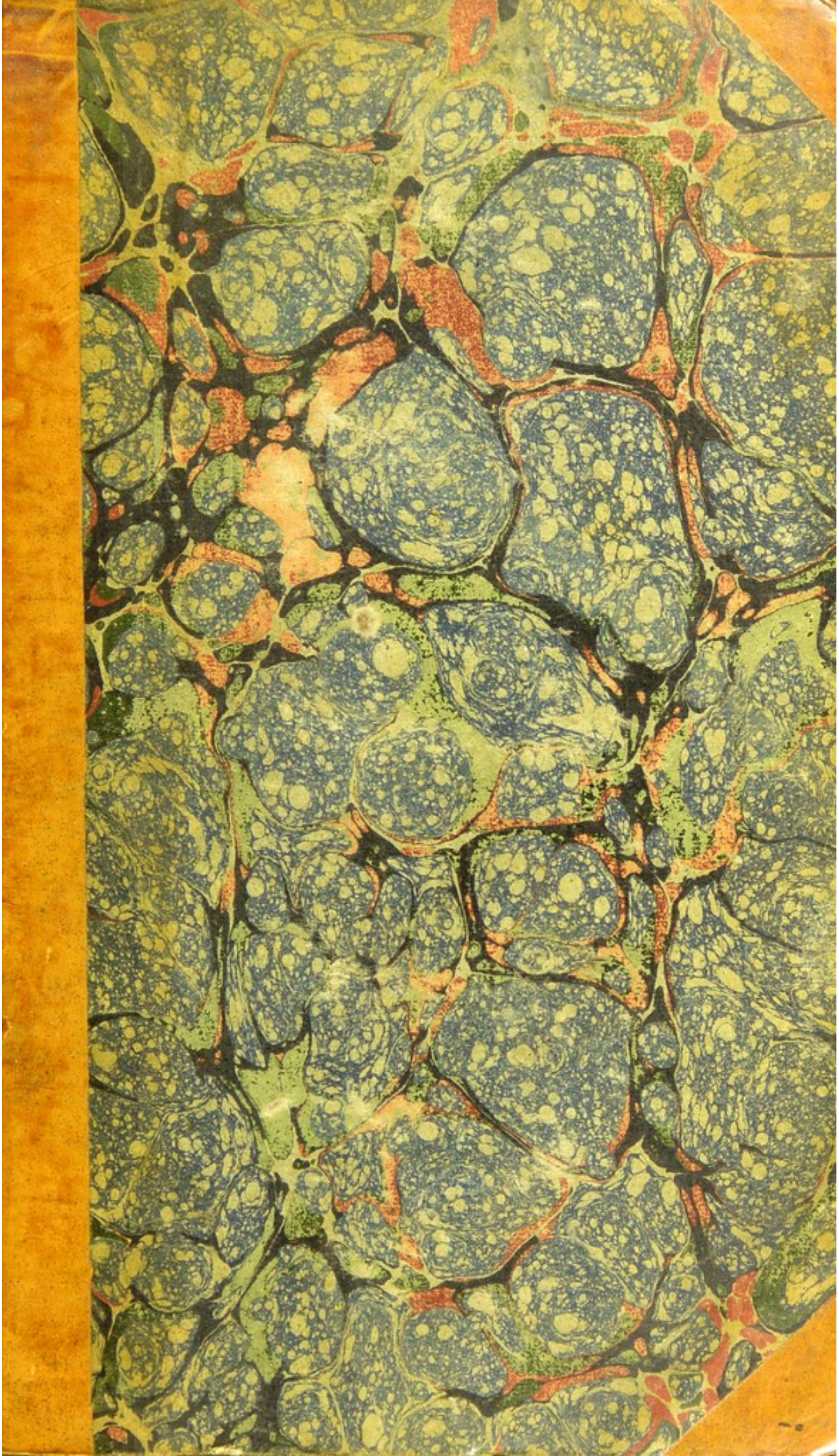

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FACTS DECISIVE

IN FAVOUR

OF THE

COW-POCK

INCLUDING

AN ACCOUNT OF THE INOCULATION

OF THE

VILLAGE OF LOWTHER.

BY

ROBERT JOHN THORNTON, M.D.

Late of Trinity College, Cambridge; Lecturer on Medical Botany at Guy's Hospital; Physician to the Mary-le-bone Dispensary; One of the Council of the London Medical Society; Member of several Literary Societies; Author of the Philosophy of Medicine; A New Illustration of the Sexual System; And the Politician's Creed.

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The higheſt honours have been conferred on heroes both ancient and modern, who have deſolated provinces by the deſtruction of their fellow-creatures: trophies, monuments, and ſtatues, have been erected to commemorate their ſanguinary deeds; but the altar of JENNER is not conſecrated by hecatombs of the ſlain; *his* claim is that of having ſaved and multiplied the human race, of having arreſted the arm which ſcatters death and miſery over the univerſe.

DR. LETTSOM.

T. BENSLEY, Printer, Bolt-Court, Fleet-Street.

CONTENTS.

Sect.

TO THE

EARL OF LONSDALE,

LORD LIEUTENANT OF THE COUNTIES OF WESTMORELAND AND CUMBERLAND, &c. &c.

MY LORD,

THE ſtrength of a nation is its people; hence the preſervation of life has been eſteemed among the duties of legiſlators. Humanity pleads alſo in favour of a plan to annihilate the deaths and miſeries excited by the *ſmall-pox*; and your Lordſhip's high political ſituation, great philanthropy, joined to a moſt acute and penetrating mind, well verſed in all ſciences, firſt led your Lordſhip to obſerve, and ſanction, the ſcheme of *Vaccine Inoculation*, or *Cow-pock*; which will be, we truſt, proved in this book, chiefly from the experiments conducted at LOWTHER, as capable of effecting

ſo deſirable a purpoſe. And whilſt thus bringing your Lordſhip's name publickly forward, as allowing this Dedication for promoting the eſſential intereſts of humanity, I have alſo the pleaſing view of teſtifying how much I eſteem myſelf honoured in having the privilege of expreſſing my gratitude to your Lordſhip for the many acts of private friendſhip ſhewn me by your Lordſhip; and have the honour to remain,

MY LORD,

With unfeigned reſpect,

Your Lordſhip's moſt obliged,

and devoted ſervant,

ROBERT JOHN THORNTON.

PART I.

ON THE

NATURAL

AND

INOCULATED

SMALL-POX.

SECT. I.

DESCRIPTION OF THE NATURAL SMALL-POX, AND ITS RAVAGES.

THERE is no diſeaſe, that the medical writer has to deſcribe, which preſents a more melancholy ſcene than the *natural Small-pox*, as it very frequently occurs.

When the phyſician is firſt called to the bedſide of the patient, he is enabled at once to form a probable conjecture as to the approaching diſorder,

1. From the frequent ſighings and ſobbings of the perſon labouring under an anxiety he is unable to expreſs.
2. By pains felt in the region of the ſtomach, with an inclination, but generally an inability, to vomit.
3. By the racking and frequent ſhooting pains along the back and loins.
4. A general laſſitude and aching of every limb.
5. A moſt unpleaſant ſenſation of cold, not relieved by any external warmth.
6. A continued drowſineſs, and diſinclination to take food.

Then ſucceed

7. Heat.
8. Thirſt.
9. An inflamed eye.
10. Reſtleſſneſs, or a conſtant inquietude.
11. The pulſe is quick and hard.
12. Convulſions now come on in children, and
13. Violent ſweating in adults.

Such are the ſymptoms which uſher in this dreadful foe to the human race, which now manifeſts itſelf,

14. By many ſpeck-like ſpots, reſembling flea-bites, which appear firſt on the face, and upper parts of the body, and afterwards invade the whole trunk, look angry, create pain, and gradually elevate themſelves above the ſkin, taking on the appearance of pimples.
15. By the fifth or ſixth day, theſe are converted into puſtules, containing a tranſparent fluid, and each has an accompanying inflammation around.

At this period of the diſeaſe,

16. The throat becomes inflamed and is painful.
17. The breath is hot and fœtid.
18. Swallowing is difficult.
19. The voice hoarſe.
20. In adults there comes on a ſalivation, and
21. In infants a diarrhœa.

On

On the ſeventh day,

22. The eye-lids ſwell, and are glued together, and the patient has both the ſenſation and apprehenſion of the loſs of ſight.

On the eighth day,

23. The aqueous fluid of the puſtules is changed into thick pus.

24. And the effluvia now iſſuing from the patient is highly noiſome and infectious.

25. Or, inſtead of a yellow pus, or matter, only ichor is produced, which erodes deep, and ends in mortification of the parts.

26. Often, purple ſpots appear in the ſpaces ſurrounding the eruption, which forebodes the approaching cataſtrophe.

27. Often, profuſe hæmorrhages of thin corrupt blood paſs off by the ſeveral outlets of the body.

28. The human face divine, bereft of every feature, then exhibits the moſt diſtreſſing ſight, being one maſs of corruption; and, at this time, ſhould ſleep kindly come in to appeaſe his miſeries, it is diſturbed and ſhort, and he frequently wakes with a ſtart, as if rouſed by ſome dreadful apprehenſion; but more generally the ſleepleſs nights are paſſed in tearing off this maſk of humours, which from a dark brown changes to a black, and each morning preſents a horrid ſcene of gore mingled with corruption.

To behold the poor tortured victim muffied, reſiſting, and finally overcoming every artifice to prevent him tearing his fleſh to pieces, is the moſt melancholy ſight which the fond mother can witneſs. Byſtanders no longer recognize the temper or features of the lovely infant. Happy if he eſcape without actual loſs of viſion, and the dimples of the cherub cheek are not furrowed into deep ſeams and unſightly pits. Parents at ſuch a moment would willingly compromiſe every external grace for the poſſeſſion of life. But fate yet hangs ſuſpended on a thread. The ſwelling of the face abates.

29. The limbs in their turn become tumified.

30. The fever, which had remitted ſomewhat of its firſt violence, recurs, from the matter abſorbed, and the poor tortured victim undergoing a ſecond conflict more dreadful than the firſt, with weakened powers of reſiſtance,

31. Moſt commonly from between the 14th to the 17th day (one out of three or four uſually dying of the natural ſmall-pox) finds a releaſe from his miſeries by the Arrow of Death, now eſteemed as a kind Deliverer, inſtead of the Horror of the Human Conception.

32. Or if Nature ſhould come off victorious, how ſcarred! how each bone protrudes through the ſkin! how the limbs totter! how fretful the

the temper! how emaciated the countenance!
how ſunk the eye! how livid the fleſh!

Perhaps even then the Deſtroyer has ſtill accompliſhed his work, and the patient, too early congratulated, ſinks under

1. A lingering conſumption,

2. Or he is eaten away by ſlow corroding ulcers, commonly called the king's evil, or ſcrophula.

Such is the too faithful picture of this loathſome diſeaſe, that baffles in deſcription all the powers of language, and which deſtroys annually in Great Britain alone 50,000 ſouls, or throughout the habitable globe 20,000,000 of people, excluſive of thoſe who periſh from the impoveriſhed ſtate of the ſyſtem, producing thoſe formidable diſorders, which follow in her train.

THE MORTALITY OCCASIONED BY THE SMALL-POX.

Ἥξει δὲ καὶ πολύπους
Καὶ πολύχειρ, ἃ δεινοῖς
Κρυπτόμενα λόχοις
Καλκοπους Ἐριννύς.

Lo! with unnumbered hands, and countleſs feet,
The FURY comes, her deſtined prey to meet;
Deep in the covert hid, *ſhe glides unſeen.*—

SOPHOCLES.

The reader may form ſome tolerable notion of the ravages committed by the ſmall-pox, by examining the bills of mortality, for in London where

where the climate is temperate, the diſeaſe well known, and the treatment of the ſick very ably conducted, from 2000 to 3000, at the preſent day, annually periſh. *Baron Dimſdale.*

So great was the epidemic of the ſmall-pox at Paris in 1723, that upwards of 20,000 periſhed in that city alone! *Voltaire.*

In 1768, this ſame ſcourge deſtroyed at Naples 16,000 perſons in a few weeks. *Abbé Chappe.*

In Ruſſia the annual deſtruction is eſtimated at 2,000,000. *Baron Dimſdale.*

In China, where the population is immenſe, the number who annually die of the ſmall-pox, the moſt loathſome, next to the leproſy, of all diſeaſes, is incalculable. *Dr. Clark.*

The fatality is ſtill more remarkable among new people, who are wholly ignorant of the means of prevention, and the methods of cure.

The ſmall-pox was firſt introduced into New Spain in 1520, by a negro ſlave, who attended Narvarez in his expedition againſt Cortes. Torribio affirms, that one half of the people in the provinces viſited with this diſtemper, died. The ſmall-pox was not brought into Peru for ſeveral years after the invaſion of the Spaniards; but there too that diſtemper proved very fatal to the natives. *Garcia Origen, p.* 88. cited in *Robertſon's Hiſtory of America, vol. iii. p.* 400.

About fifty years after the discovery of Peru, the small-pox was carried over from Europe to America, by way of Carthagena, when it overran the continent of the new world, and destroyed upwards of 100,000 Indians in the single province of Quito. This account was found by M. La Condamine, in an ancient MS. preserved in the cathedral of that city. This author also observes, that in the Portuguese settlements bordering upon the river Amazons, the small-pox was nearly fatal to all the natives, i. e. original Americans. See his *Mem. sur l'Inoc. p.* 61.

In 1767, never were so many people seen to die as at Kamtschatka, when a soldier introduced the small-pox for the first time; 20,000 perishing from that disease, and whole villages were observed nearly desolate. *Cook's Voyage.*

The small-pox was first introduced into the frozen region of Greenland in 1733, when the mortality of this disease was so great, that it almost depopulated the whole country. See *Crantz's History of Greenland, vol. i. p.* 336.

Even so late as the year 1793, when the small-pox was conveyed to the Isle of France, in the East Indies, by a Dutch ship, 5,400 persons perished there by this distemper in six weeks. *Woodville, vol. i. p.* 28.

THE CONCLUSION.

1. Hence it appears, that had the ſmall-pox ſeized upon a perſon more than once during the period of life, the body being ſuſceptible of more than one attack, as is the caſe with colds, fevers, agues, &c. either the human race would have preſented a frightful ſpectacle of corroded ſcars and mangled deformity, or, what is more probable, would have become extinct, unleſs the inventive genius of man, aſſiſted by God's mercy, had found out a mode to leſſen the fatality and deformity occaſioned by ſo formidable a diſeaſe, either by treatment, or ſome other means.

2. It is likewiſe evident from this ſtatement, that all the wars throughout the whole world (an obſervation worthy the notice of the ſtateſman) have never cut the thread of ſo many lives as this inexorable Devourer of the human race, now happily, as will be ſeen in the following ſections, chained down, it is hoped, never more to turn her deſtructive fury on mankind, and ſtrew the univerſe with dead bodies, mangled victims, and diſconſolate mourners.

SECT.

SECT. II.

ANTIQUITY OF INOCULATION.

The practice of inoculating, or transferring the ſmall-pox from an infected to a ſound perſon, has prevailed from time immemorial in different and remote countries.

Our nature is ſo formed, that although we are inclined to avoid what is hurtful, yet when the evil is to be undergone, we are impatient to get through with it, in order that the reſt of our lives may not paſs in the fearful apprehenſion of what is to arrive, and we wiſh this period to be when we are in the greateſt force to combat with the diſeaſe, and can ſpare the readieſt the time requiſite for its duration.

This probably ſuggeſted the idea of inoculating from the puſtule, as containing the germ of this diſeaſe; like as ignorant people are ſeen daily to carry their children within the reach of infection, in order, as they plead, "to have it over, and at a good age;" and the practice would become popular by obſerving that inoculation produces a milder ſort of diſeaſe, not one in five hundred dying in this way; whereas of the natural ſmall-pox the mortality was one out of three or four, that is more than thirty

in

in an hundred, a meaſure which therefore multiplies greatly the chances of recovery.

The early practice of inoculation, as we might expect, would be extremely awkward.

In China they take the ſkins of ſome of the dried puſtules which are fallen from the body, and put them into a porcelaine bottle, ſtopping the mouth of it very cloſe with wax. When they intend to transfer this diſeaſe, they mix three or four of theſe ſcabs with a grain of muſk, enfolding it in a tent of cotton, which they put up the noſtrils.

This practice probably aroſe from the idea that the ſmall-pox was taken up by theſe parts. Nor were they miſtaken in their expectation.

The ſmall-pox as certainly followed, but with leſs danger than the caſual; yet ſtill with more diſtreſs than was requiſite.

This was proved, ſays the learned Dr. Mead, by me, when making an experiment with a view to this purpoſe. For when, in the year 1721, by order of his ſacred Majeſty, both for the ſake of his own family, and of his ſubjects, a trial was to be made upon ſeven condemned malefactors, whether or not the ſmall-pox could ſafely be communicated by inoculation; I caſily obtained leave to make the Chineſe experiment in one of them. There was among thoſe, who were choſen out to undergo the operation, a young girl of eighteen years of age; into whoſe noſtrils I put a tent wetted with matter taken out of ripe puſtules. The event

anſwered;

anſwered; for ſhe, in like manner with the others, who were infected by inciſions made in the ſkin, fell ſick, and recovered; but ſuffered much more than they did, being, immediately after the poiſon was received into the noſe, miſerably tormented with ſharp pains in her head, and a moſt ſevere fever."

Inoculation in one ſpot of the world aroſe from another cauſe.

It is a well-known fact, although it muſt ſtagger the belief of fathers and mothers, that there exiſts a claſs of people in Georgia, who regularly train up their children for ſale and proſtitution. Forming the ſpeculation, if their daughter has a fine form, and fair complexion, the young Circaſſian is firſt inoculated, and if it ſucceeds, ſome expence is afterwards laid out on external accompliſhments, as muſic and dancing; and when the baſhful bloom of youth ſits on the cheek, the fair virgin is carried to the ſhambles of a Turkiſh market, and a price is given, varying according to the fancy of the purchaſer, who confines her eve rafter in the harem of a ſeraglio, never more to behold the face of any other than this her lord and maſter, and his numerous concubines. Should her features be disfigured, all education is omitted, and ſhe continues in the humbler and happier ſphere of ſubaltern life. Such were the ſordid conſiderations which firſt induced the natives of Georgia to inoculate,

and the method could not fail to be told to the Turks, whoſe religion prevented them from adopting the practice from better motives; nevertheleſs it was performed by the Greeks both at Conſtantinople and Smyrna.

We have a lively deſcription of their manner by Lady Mary Wortley Montague. She writes as follows. "The ſmall-pox, which is ſo fatal and ſo general amongſt us, is here entirely harmleſs, by the invention of *ingrafting*, which is the term they give it. There is a ſet of old women who make it their buſineſs to perform the operation every autumn here, in the month of September. When the great heat is abated, people ſend to one another to know if any of their family has a mind to have the ſmall-pox; they make *parties* for this purpoſe, and when they are met, (commonly fifteen or ſixteen together,) the old woman comes with a nut-ſhell full of the matter of the beſt ſort of ſmall-pox, and aſks where they pleaſe to be inoculated. She immediately pierces that part you offer to her with a large needle, (which gives you no more pain than a common ſcratch,) and puts into the part as much matter as can lie upon the head of her needle, and after that binds up the little wound with a hollow bit of ſhell; and in this manner makes four or five inciſions. The Grecians have commonly the ſuperſtition of making a ſcratch in the middle of the forehead, one in each arm, and one in the breaſt,

to

to make the ſign of the croſs; but this has no very ill effect, all thoſe wounds ſeldom leaving ſcars, and is not done by thoſe who are not ſuperſtitious, who chooſe to have them in the leg or that part of the arm that is concealed. The children, or young patients, play together all the reſt of the day, and are in perfect health to the eighth. Then the fever begins to ſeize them, and they keep their beds two days, very ſeldom more. They have very rarely above twenty or thirty in their faces, which never mark, and in eight days after they are as well as before their illneſs. Every year *thouſands* undergo this operation; and the French ambaſſador ſays, pleaſantly, that they take the ſmall-pox here by way of diverſion. *There is ſcarce an example of any one that has died in it; and you may believe I am well ſatisfied with the ſafety of this experiment, ſince I intend to try it on my dear little ſon. I am patriot enough to take pains to bring this uſeful invention into faſhion in England; and I ſhould not fail to write to ſome of our doctors very particularly about it, if I knew any of them that I thought had virtue enough in them to deſtroy ſuch a* CONSIDERABLE BRANCH *of* THEIR REVENUE, *for the* GOOD OF MANKIND.—*Perhaps, if I live to return, I may, however, have courage to wage* WAR *with them.*"

This communication, ſtating the advantages of inoculation upon indubitable authority, as well as ſimilar accounts of the ſucceſs of this new practice,

orally given by merchants and others, who, from buſineſs or pleaſure, had viſited the Ottoman metropolis, could not fail greatly to intereſt many in this country. Indeed, any ſcheme much leſs plauſible than the preſent, which promiſed to diſarm of its terrors ſo univerſal and deſtructive a diſtemper as the ſmall-pox, muſt have had a ſtrong claim to the attention and patronage of any nation. But an Engliſh example was required before the practice could be adopted, and this was fortunately ſoon exhibited.

Mr. MAITLAND, ſurgeon to the Honourable Wortley Montague in his diplomatic character at the Ottoman court, informs us, that the ambaſſador's lady, being convinced of the advantages of inoculation, was determined that her only ſon, then ſix years of age, ſhould undergo the operation. For this purpoſe ſhe deſired Mr. Maitland to procure the variolous matter from a proper ſubject; which being done, an old Greek woman, many years in the conſtant habit of inoculating, was employed to inſert it. "But," ſays Mr. M. "the good woman went to work ſo awkwardly, and by ſhaking of her hand put the child to ſo much torture with her blunt and ruſty needle, that I pitied his cries, and therefore inoculated the other arm with my own lancet, and with ſo little pain to him, that he did not in the leaſt complain of it." The conſequent diſeaſe was very mild, there being

being only about fifty puſtules; and it may be remarked, that this inoculation, which was performed at Pera, near Conſtantinople, in the month of March 1717, (if the mode of buying the ſmall-pox be excepted,) was the firſt ever practiſed upon any *Engliſh ſubject*.

As ſoon as inoculation came to be introduced into England, as a thing wholly *new*, it was found that this practice had exiſted in South Wales, as far back as tradition could be traced, an account of which we have in the Philoſophical Tranſactions for the year 1722.

Mr. Wright writes to Mr. Bevan as follows: "I received yours the 9th inſt. and, in anſwer to it, will readily give you all the ſatisfaction I can in relation to a very ancient cuſtom in this country, commonly called *buying the ſmall-pox*; which, upon ſtrict inquiry ſince I had your letter, I find to be a *common practice*, and of a *very long ſtanding*, being aſſured by perſons of unqueſtionable veracity and of advanced age, that they have had the ſmall-pox communicated to themſelves in this way, when about ſixteen or ſeventeen years of age: they then being very capable of diſtinguiſhing that diſtemper from any other, and that they have parted with the matter contained in the puſtules to others, producing the ſame effects."

"There are two large villages in this county, near the harbour of Milford, more famous for this cuſtom than any other, namely, St. Ishmael's and

MARLOES. The old inhabitants of theſe villages ſay, that it has been a *common practice* with them *time out of mind*; and what was more remarkable, one W. Allen, of St. Iſhmael's, *ninety* years of age, who died about ſix months ago, declared to ſome perſons of good ſenſe and integrity, that this practice was uſed all his time, and that he got the ſmall-pox that way. Theſe, together with many other informations I have met with, from all parts of the country, confirm me in the belief of its being a very *ancient practice* among the common people; and to prove that this method is ſtill continued among us, I will give you the relation of an elderly woman, a midwife, (who accidentally came into company when your letter was reading,) whoſe name is Joan Jones, aged *ſeventy* years, of good credit, and perfect memory. She ſolemnly declares, that about fifty-four years ago, having the ſmall-pox, one Margaret Brown, then about twelve or thirteen years of age, bought the ſmall-pox of her; and ſhe further ſays, that ſhe has known this way of procuring the ſmall-pox practiſed from time to time above *fifty years*; that it had been lately uſed in her neighbourhood; and ſhe knows but of *one* dying of the ſaid diſtemper when communicated after the method aforeſaid, which accident happened within the two laſt years."

The manner of *inoculating*, or *buying the ſmall-pox*, here alluded to, was not always the ſame, but was varied by different perſons. Dr. Williams ſays,

" They

" They either rub the matter, taken from the puſtules when ripe, on ſeveral parts of the ſkin of the arms, &c. or prick thoſe parts with pins, or the like, being firſt infected with the inoculating matter. Mr. Owen, and five of his ſchool-fellows, " ſcraped the ſkin with a knife until the blood began to flow, before they applied the variolous pus." Others produced the diſtemper, " by holding a certain number of dried puſtules for a conſiderable time in the palm of the hand."

We are alſo informed, that the inhabitants of the *Highlands of Scotland*, for *many ages*, have had recourſe to a ſpecies of *inoculation*, performed by tying worſted threads, moiſtened with variolous matter, round the wriſts of their children.

This vulgar or domeſtic cuſtom of inoculating the ſmall-pox, likewiſe prevailed in many other parts of *Europe*, and in various countries of *Aſia* and *Africa*; and, what is highly curious, in ſeveral of theſe diſtant nations, the practice was, as in Wales, termed BUYING THE SMALL-POX. For it was ſuperſtitiouſly imagined, that inoculation would not produce the proper effect unleſs the perſon, from whom the variolous matter was taken, received a piece of money, or ſome other article in exchange for it, from thoſe whom it was intended to infect.

At *Naples*, Monſ. de la Condamine, in 1769, learned that *inoculation* had been ſecretly uſed by the people there from *time immemorial:* and the celebrated P. Boſcowich aſſured him it was practiſed

in the ſame manner at *Pavia*, where the nurſes often inoculated, without the parents' knowledge, the infants intruſted to their care. For this purpoſe they commonly rubbed the palm of the hand of the child with fluid variolous matter, recently taken from a puſtule.

The practice of *buying* or *inoculating* the ſmall-pox prevailed alſo in *ſome of the provinces* of France, eſpecially in *Auvergne* and in *Perigord*; and ſtill more generally among the ignorant peaſantry in many parts of *Germany*, *Denmark*, and *Sweden*.

In the *northern parts of Europe* this practice ſeems to have been leſs complete than that adopted on the ſouthern and eaſtern coaſts of the *Mediterranean Sea*. For in *Barbary* and in the *Levant*, though they placed implicit confidence in the efficacy of *buying* or purchaſing the variolous puſtules; yet their method of performing the operation was ſuch as could not fail of producing the inoculated ſmall-pox. *The infectious matter was inſerted at a ſmall opening made in the fleſhy part of the hand, between the thumb and foreſinger*; and, according to Dr. Shaw, "the perſon who is to undergo the operation, receives the infection from ſome friend or neighbour, who has a favourable kind, and who is intreated to *ſell* two or three of his puſtules, for the ſame number of nuts, comfits, or ſuch like trifles."

This account of inoculation differs not materially from that practiſed in the kingdoms of *Tripoli*,

poli, *Tunis*, and *Algier*, as related by his excellency Caſſim Aga, in 1728, when ambaſſador to our court. He ſays, "If any one has a mind to have his children inoculated, he carries them to one that lies ill of the ſmall-pox, at the time when the puſtules are come to full maturity. Then the father makes an inciſion on the back of the hand, between the thumb and forefinger, and puts a little of the matter, ſqueezed out of the largeſt and fulleſt puſtules, into the wound. This done the child's hand is wrapped up in a handkerchief, to keep it from the air, and he is left to his liberty, till the fever ariſing confines him to his bed, which commonly happens at the end of a few days. This practice is ſo innocent, and ſo ſure, that out of 100 perſons inoculated not *two* die; whereas on the contrary, out of 100 perſons that are infected with the natural ſmall-pox, there die commonly about *thirty*. Inoculation is ſo *ancient* in the kingdoms of *Tripoli*, *Tunis*, and *Algier*, that nobody remembers its firſt riſe; and it is not only practiſed by the inhabitants of the towns, but alſo by the *wild* Arabs."

That this practice is very common with the Arabs, and is by them alſo called *buying the ſmall-pox*, fully appears from Dr. Ruſſell's communication to the Royal Society. About the year 1758, while this ingenious phyſician was on a viſit at a Turkiſh harem, a lady happened to expreſs much anxiety for a child who had not had the ſmall-pox; the diſtemper at that time being frequent in the

city.

city. None of the ladies in the company had ever heard of *inoculation*, ſo that the Doctor having once mentioned it, was obliged to enter into a detail of the operation, and the peculiar advantages attending it. Among the female ſervants in the chamber was an old Bedouin *Arab*, who having heard the Doctor with great attention, aſſured the ladies, "that the account given by the Doctor was upon the whole a juſt one; only that he did not ſeem to know well the way of performing the operation, which ſhe aſſerted ſhould not be done with a lancet but with a needle:" ſhe added, "that ſhe herſelf had received the diſeaſe in that manner when a child, and *had inoculated many*; that the whole art was well known to the *Arabs*, and that they termed it *buying the ſmall-pox*." In conſequence of this hint, Dr. Ruſſel made further inquiries, by which he diſcovered, "that inoculation had been of long ſtanding among them. They indeed did not pretend to aſſign any period to its origin; but perſons ſeventy years old and upwards, remembered to have heard it ſpoken of as a *common cuſtom* of their anceſtors, and they believed it to be of as *ancient a date* as the diſeaſe itſelf."

Dr. Ruſſell was likewiſe aſſured, "that inoculation was equally common among the *eaſtern Arabs*, being practiſed not only at *Bagdad* and *Moſul*, but alſo at *Buſſora*; and that at *Moſul* particularly, when the ſmall-pox firſt appeared in any diſtrict of the city, it was a cuſtom ſometimes to give notice by a public

public cryer, in order that thoſe who were ſo inclined might take the opportunity to have their children *inoculated.*"

"In *Armenia*," Dr. Ruſſell ſays, "the Turkoman tribes, as well as the Armenian Chriſtians, have practiſed inoculation *ſince the memory of man*; but, like the Arabs, are able to give no account of its *firſt introduction* among them. At *Damaſcus*, and all along the coaſt of *Syria* and *Paleſtine*, inoculation has been long known. In the *Caſtravan* mountains it is adopted by the Druſi as well as Chriſtians. Whether the Arabs of the deſert to the ſouth of Damaſcus are acquainted with this manner of communicating the ſmall-pox, I have not," ſays this phyſician, "hitherto been able to learn; but a native of *Mecca*, whom I had occaſion to converſe with, aſſured me that he himſelf had been inoculated in that city."

From the various accounts of *inoculation* here related, it is *highly curious* that in ſo many *diſtant nations*, differing widely in manners, cuſtoms, laws, habits, and religion, this art ſhould be generally known by the name of "BUYING THE SMALL-POX." It is alſo to be conſidered as a remarkable proof of its *great antiquity*, that the leſs civilized part of mankind, or people of the moſt ſimple and uniform habits, have poſſeſſed this ſalutary cuſtom the longeſt*.

* For a further account of this intereſting inquiry, vide the elaborate Hiſtory of Inoculation by Dr. Woodville, Phyſician to the Small-pox Hoſpital;—a work replete with curious facts and uſeful inſtructions.

SECT.

SECT. III.

THE FORMAL ESTABLISHMENT OF INOCULATION IN ENGLAND.

INOCULATION of the ſmall-pox was firſt *regularly* adopted in England in the month of April 1721; and it was owing to the enlightened and philoſophic mind of Lady Mary Wortley Montague, that GREAT BRITAIN had the honour of adopting this practice the firſt among the nations of Europe. For after this celebrated lady had witneſſed the good effects of inoculation upon her ſon at Pera, ſhe determined alſo to try it upon her daughter, then an infant of three months old. The particulars of the caſe are ſtated by Mr. Maitland in the following manner:—"This noble lady ſent for me laſt April, and when I came, ſhe told me ſhe was now reſolved to have her daughter inoculated, and deſired me to find out matter for that purpoſe. I pleaded for the delay of a week or two, the weather being then cold and wet; for indeed I was unwilling to venture on an experiment altogether new and uncommon in England, in a cold ſeaſon: though I am now convinced it may with due care be practiſed at all times and ſeaſons, but ſtill with more ſafety in the temperate and favourable. I alſo,

alſo prayed, that any two phyſicians, whom they thought fit, might be called in, not only to conſult about the health and ſafety of the child, but likewiſe to be eye-witneſſes of the practice, and contribute to the credit and reputation of it. In the meantime, having found proper matter, I engrafted it in both arms; the child was neither blooded nor purged before, nor indeed was it neceſſary, conſidering the very cool regular diet ſhe had ever been kept to from her infancy. She continued eaſy and well, without any ſenſible alteration, bating the uſual little ſpots and fluſhings, till the tenth night, when ſhe was obſerved to be a little hot and feveriſh. An old apothecary in the neighbourhood being then called, prudently adviſed not to give the child any medicine, aſſuring them there was no danger, and that the heat would quickly abate, which accordingly it did; and the ſmall-pox began to appear next morning. Three learned phyſicians of the College were admitted, one after another, to viſit the young lady; they are all gentlemen of honour, and will on all occaſions declare, as they have hitherto done, *that they ſaw Miſs Wortley playing about the room, cheerful and well, with the ſmall-pox raiſed upon her; and that in a few days after ſhe perfectly recovered of them.* Several ladies and other perſons of diſtinction viſited alſo this young patient, and can atteſt the truth of this fact."

The very favourable event of this firſt trial of the Byzantine mode of inoculation in Britain,

and

and alſo that of a ſecond, made on the ſon of Dr. Keith, which immediately followed, was ſoon generally known in London, and conſequently communicated to the different parts of the kingdom. *For an art ſo new and intereſting to the public, could not fail to excite the attention of people of all ranks, and more eſpecially thoſe of the medical profeſſion, on whoſe concurrent opinions the eſtabliſhment of this foreign practice here was ultimately to depend.*

However, though theſe proſperous inſtances of inoculation had hitherto confirmed the reports of its ſucceſs at Conſtantinople; and though the practice had been introduced among the Engliſh by a woman who, from her brilliant accompliſhments, maſculine underſtanding, and great influence in the faſhionable circles, was, above all others, moſt likely to be followed as an example in the metropolis; yet this valuable art was ſtill regarded with a ſuſpicious caution, and ſeveral months elapſed before a *third trial* of it was made in London.

Even *four months* after the inoculation of Miſs Wortley, this practice was ſtill viewed in ſuch a dubious light, that it was determined that ſeveral culprits, then in Newgate, who had forfeited their lives to the laws of their country, ſhould, on ſubmitting to be inoculated, receive full pardon by the royal perogative: a propoſition which is ſaid by ſome to have been ſuggeſted by the College of Phyſicians to their Royal Highneſſes the Prince and Princeſs of Wales; but Sir Hans Sloane ſtates it

to

to have wholly originated with the *Princeſs of Wales.* Mr. Maitland was accordingly requeſted to perform the operation, which he declined; but leſt the opportunity ſhould be loſt, Sir Hans wrote to Dr. TERRY, at Enfield, who had practiſed phyſic in Turkey, to know his opinion concerning inoculation. The Doctor replied, that he had ſeen the practice there among the Greeks encouraged by the patriarchs, and that not *one* in *eight hundred* had died in conſequence of the operation. Upon which inoculation was performed upon the following ſix criminals at Newgate, on the ninth day of Auguſt 1721, in the preſence of ſeveral eminent phyſicians and ſurgeons.

Mary NORTH - - - - - - - - 36 years old
Ann TOMPION - - - - - - - 25
Elizabeth HARRISON - - - - 19
John CAWTHERY - - - - - 25
John ALCOCK - - - - - - - 20
Richard EVANS - - - - - - - 19

All theſe ſix, who were inoculated by making inciſions in both arms, and on the right leg, obtained a remiſſion of the ſentence of the law on very eaſy terms; for in ALCOCK, on whom the operation produced the greateſt crop of puſtules, the number did not exceed *ſixty*; and EVANS, having had the ſmall-pox the preceding year, of courſe did not receive the diſeaſe a ſecond time.

Theſe

Theſe experiments, no doubt, tended much to the encouragement of inoculation, which in ſo many inſtances had now fully anſwered the utmoſt expectations of its patrons. The trials of it, however, were yet conſidered by the faculty as ſtill *too few* to aſcertain the general ſafety and advantage of the practice.

Early in the ſpring of the year 1722, inoculation began to be adopted in various parts of England; and by order of her Royal Highneſs the *Princeſs of Wales*, it was practiſed firſt upon *ſix*, and afterwards upon *five, charity children*, belonging to the pariſh of Saint James's. The ſucceſs with which theſe trials were attended, induced her Royal Highneſs to cauſe Princeſs AMELIA and Princeſs CAROLINA to be inoculated on the 19th of April 1722; the former being then *eleven* and the latter *nine* years of age. They were inoculated by Serjeant Surgeon Amyand, under the direction of Sir Hans Sloane: but before her Royal Highneſs determined upon the inoculation of the *Princeſſes*, ſhe conſulted Sir Hans reſpecting the propriety and ſafety of the meaſure. He "told her Royal Highneſs, that by what appeared in the ſeveral eſſays, it ſeemed to be a method to ſecure people from the great dangers attending the ſmall-pox in the *natural way*. That the preparations by diet, and neceſſary precautions taken, made that practice very deſirable; but that not being certain of the *conſequences* which might happen, he would not perſuade

nor

nor adviſe the making trials upon patients of ſuch importance to the public." The princeſs then aſked him "if he would *diſſuade her from it:*" to which he anſwered, "he would not in a matter *ſo likely to be of ſuch advantage.*" Her reply was, "that ſhe was *then reſolved it ſhould be done*;" and ordered Sir Hans to go to the King (George the Firſt) who had commanded the Doctor to wait on him upon the occaſion; and it being agreed upon between his Majeſty and Sir Hans, the two Princeſſes were inoculated.

Both theſe younger branches of the Royal Family paſſed through the ſmall-pox in a *very favourable manner:* and inoculation, in conſequence of this illuſtrious example, was now making a rapid progreſs, when the number of perſons inoculated in England amounted to 182, *viz.*

By Dr. Nettleton	61
Mr. Maitland, Surgeon	57
Claud Amyand, Eſq. Serjeant Surgeon	17
Dr. Dover	4
Mr. Weymiſh, Surgeon	3
The Rev. Mr. Johnſon	3
In or near London	145

Brought over—in or near London	145
Mr. Smith, Surgeon, and Mr. Dymer, Apothecary at Chicheſter - - -	13
Dr. Brady, at Portſmouth - - - -	4
Mr. Waller, Apothecary at Goſport -	3
A Woman at Leiceſter - - - - -	8
Dr. Williams, at Haverfordweſt - -	6
Two other perſons near the ſame place	2
Dr. French, at Briſtol - - - - -	1
In all - - -	182

Out of this number (ſays Dr. Jurin) the oppoſers of inoculation affirm, that *two* perſons *died* of the inoculated ſmall-pox; the favourers of this practice maintain, that their death was occaſioned by *other cauſes*.

If, to avoid diſpute, theſe two be allowed to have died of inoculation, we muſt eſtimate the hazard of dying of the inoculated ſmall-pox, as far as can be collected from our own experience at preſent, to be that of *two* out of 182, or *one* out of 91; ſince which time, by a proper preparation by medicine, the favourable chances have been yet more increaſed.

In the natural way the chances are as *one* to 6, which is a wonderful odds in favour of inoculation.

Although

Although the advantages of inoculation were great, in the *firſt place*, as it gave every proſpect of recovery in this otherwiſe often fatal diſeaſe, and *ſecondly*, ſecurity in futur . which removed the terror of apprehenſion, which, like a ſword hung over the head, and was ſure often to preſent itſelf to the ſcared imagination, yet was its firſt introduction, from the oppoſition it experienced, extremely ſlow.

During the year 1723, the practice, however, of inoculation made a conſiderable progreſs in England. It was adopted not only among the nobility of the firſt rank, but (which ſtill more tended to its promotion) it received encouragement from the heads of the church, having been introduced into the family of the Biſhop of Wincheſter, and alſo into that of that learned divine Dr. Calamy. Whence the number of the inoculated *that year*, far exceeded the numbers in the two preceding years taken together. It amounted to 292, which being added to 182, makes the whole number of the inoculations in the years 1721, 1722, and 1723, to be 474, out of which number, as will be ſhewn in the next page, although the treatment was bad, the hot regimen being then in faſhion, only *nine* died.

The Reſult of theſe Caſes are repreſented in the annexed Table, taken from Dr. Jurin.

AGES.	Perſons inoculated.	Had the Small-pox by inoculation.	Had an imperfect ſort.	Had no effect.	Suppoſed to have died of inoculation.
Under One Year - -	11	11	0	0	0
One to Two - - - -	15	14	0	1	2
Two to Three - - - -	31	31	0	0	1
Three to Four - - - -	41	38	0	3	1
Four to Five - - - - -	33	31	0	2	1
Five to Ten - - - - -	140	137	1	2	2
Ten to Fifteen - - - -	82	76	0	6	0
Fifteen to Twenty - -	56	50	1	5	2
Twenty to Fifty-two	62	50	3	9	0
Age unknown - - - -	3	2	0	1	0
Total - - -	474	440	5	29	9

Hence we find, that of the 474 perſons firſt inoculated in England, *nine* died, and their deaths were not unjuſtly ſuſpected to have happened in conſequence of inoculation.

Thus inoculation triumphed, under the auſpices of *royal patronage*; and Dr. Wagſtaffe, after his invidious remark, "*that poſterity will ſcarcely be brought*

brought to believe, that an experiment, practiſed only by a few ignorant women, ſhould ſo far obtain in one of the politeſt nations in the world, as to be received into the Royal palace," had the mortification to find it introduced a "*ſecond time*" into the Royal family. For their Royal Highneſſes Prince FREDERICK and Prince WILLIAM were both inoculated *this year*. The former, who reſided at Hanover, and was then eighteen years of age, ſubmitted to be inoculated by Mr. Maitland on the firſt of May 1724, and the event was extremely favourable; his Royal Highneſs not having more than from eleven to eighteen puſtules. The latter, was about the ſame time inoculated here by Surgeon Amyand, under the direction of Sir Hans Sloane, who likewiſe paſſed through the ſmall-pox without any alarming or even troubleſome ſymptom.

But what tended ſtill more effectually to eſtabliſh the practice of inoculation, was the ſubſequent declaration of the College of Phyſicians, *viz.*

"THE COLLEGE HAVING BEEN INFORMED, THAT FALSE REPORTS CONCERNING THE SUCCESS OF INOCULATION IN ENGLAND, HAVE BEEN PUBLISHED IN FOREIGN COUNTRIES, THINK PROPER TO DECLARE THEIR SENTIMENTS IN THE FOLLOWING MANNER; *viz.* THE ARGUMENTS WHICH AT THE COMMENCEMENT OF THIS PRACTICE WERE URGED AGAINST IT, HAD BEEN REFUTED BY EXPERIENCE; THAT IT IS NOW HELD BY THE ENGLISH IN GREATER ESTEEM, AND PRACTISED AMONG THEM MORE

EXTENSIVELY THAN EVER IT WAS BEFORE; AND THAT THE COLLEGE THINKS IT TO BE HIGHLY SALUTARY TO THE HUMAN RACE."

The words of this famous declaration are, " Quoniam collegio nuntiatum fuit, falſos de variolarum inſitiarum in Anglia ſucceſſu et exiſtimatione apud exteras gentes nuper exiiſſe rumores, eidem collegio ſententiam ſuam de rebus hiſce ad hunc modum declarare placuit: videlicet, argumenta, quæ contra hanc variolas inferendi conſuetudinem in principio afferebantur, experientiam refelliſſe; eamque hoc tempore majori in honore apud Anglos haberi, magiſque quam unquam antea inter eos nunc invaleſcere; atque humano generi valde ſalutarem eſſe exiſtimare. *Vide Taylor Orat. Harv. page* 29.

We may reckon upon inoculation as from this time eſtabliſhed in England, although it be not univerſally practiſed *.

* Vide Dr. Woodville's Hiſtory of Inoculation.

SECT.

SECT. IV.

WHETHER SOCIETY AT LARGE HAS BENEFITED BY THE INTRODUCTION OF INOCULATION?

SOME may ſmile at my quoting the authority of Dr. Buchan, author of the "Domeſtic Medicine," a work ſaid to have produced much domeſtic miſchief *; but I know of no writer, who has more ſenſibly treated on the duties of mankind, and whoſe advice relative to the preſervation of health †, deſerves a more general attention.

"As the ſmall-pox," ſays this benevolent writer, "has now become an epidemical diſeaſe in moſt parts of the known world, no other choice remains but to render the malady as mild as poſſible. This is the only manner of extirpation now left in our power; and, though it may ſeem paradoxical, the artificial method of communicating the diſeaſe, *could it be rendered univerſal*, would amount to nearly the ſame thing as rooting it out. It is a matter of ſmall conſequence, whether a diſeaſe be entirely extirpated, or rendered ſo mild as neither to deſtroy life nor hurt the conſtitution; but that this may be done by inoculation, does not now ad-

* Dr. Beddoes thus humouroufly ſpeaks of it.

† The introduction "On the common Cauſes of Diſeaſe," by this popular writer, is a chef d'œuvre.

mit of a doubt. The numbers who die under inoculation hardly deſerve to be named. In the natural way, one in four or five generally dies; but by inoculation not one of five hundred. Nay, ſome can boaſt of having inoculated thouſands without the loſs of a ſingle patient."

"To this advantage we might add, that ſuch as have not had the ſmall-pox in the early period of life, are not only rendered unhappy, but likewiſe, in a great meaſure, unfit for ſuſtaining many of the moſt uſeful and important offices."

"Few people would chuſe even to hire a ſervant who had not had the ſmall-pox."

"How could a phyſician or a ſurgeon, who had never had the ſmall-pox himſelf, attend others under that malady?"

"How deplorable is the ſituation of females, who arrive at mature age without having had the ſmall-pox! A woman with child ſeldom ſurvives this diſeaſe: and if an infant happens to be ſeized with the ſmall-pox upon the mother's breaſt, who has not had the diſeaſe herſelf, the ſcene muſt be truly diſtreſſing!"

"If ſhe continues to ſuckle the child, it is at the peril of her own life; and if ſhe weans it, in all probability it will periſh!"

"How often is the affectionate mother forced to leave her houſe, and abandon her children, at the very time when her care is moſt neceſſary? Yet ſhould parental affection get the better of her

fears,

fears, the conſequences would often prove fatal. I have known the tender mother and her ſucking infant laid in the ſame grave, both untimely victims to this dreadful malady. But theſe are ſcenes too ſhocking to dwell on."

"Let parents who run away from their children to avoid the ſmall-pox, or who refuſe to inoculate them in infancy, conſider to what deplorable ſituations they may be reduced by this miſtaken tenderneſs."

"I have often wiſhed," adds Dr. Buchan, "to ſee ſome plan eſtabliſhed for rendering this ſalutary practice *univerſal*; but am afraid I ſhall never be ſo happy. The difficulties indeed are many; yet the thing is by no means impracticable. The aim is great; no leſs than ſaving the lives of *one-fourth part of mankind*. What ought not to be attempted in order to accompliſh ſo deſirable an end?"

His plan is,

1ſt. "Removing of prejudices by the clergy.

2dly. The Faculty inoculating, and attending gratis, or if theſe refuſe, then the clergy to do it.

3dly. Douceurs to be given to mothers by government for having their children inoculated.

4thly. And ſhould both the faculty and clergy ſhrink from the unprofitable taſk, [as the Doctor forſees would probably be the caſe,] for parents *themſelves* to perform the operation on their children."

"We have been more full," adds this benevolent writer

writer upon this ſubject, " becauſe the benefit of inoculation cannot be extended to ſociety by any other means than by making the practice *general.* While it is confined to a *few*, it muſt prove hurtful to the *whole.* By means of it *the contagion* is ſpread, and is communicated to many who might otherwiſe have never had the diſeaſe. Accordingly it is found *that more die of the ſmall-pox now than before inoculation was introduced*; and this important diſcovery, by which alone more lives might be ſaved than by all the other endeavours of the Faculty, is in a great meaſure loſt by its benefits not being extended to the whole community."

The great and learned Dr. Heberden, in his obſervations on the increaſe and decreaſe of different diſeaſes, obſerves, " that he examined carefully the bills of mortality, and comparing the deſtruction occaſioned by the *ſmall-pox* among our countrymen *before* and *ſince* inoculation, reluctantly was brought to this melancholy concluſion, that at the preſent period the *proportional increaſe* of deaths from this diſeaſe was as *five* to *four*."

SECT.

SECT. V.

OBSTACLES TO A GENERAL INOCULATION.

THE obſtacles to a general inoculation are ſuch, as in all probability to prevent a plan of this kind from ever being carried into execution.

1ſt. *The prejudices of the lower orders of mankind.*

The cold calculator might eſtimate the advantages of inoculation to ſociety, and calculate the *comparative number* of *deaths* from the natural ſmall-pox, and artificial diſeaſe; but yet as he muſt allow that *ſome* die under inoculation, the fond mother naturally would thus argue within herſelf: "Can I bring my mind to conſent to what may bereave me of my dear child?—if he were to die, how ſhall I forgive myſelf?—am I ſure, that I am not anticipating an evil that may never arrive?—where is my right to do this?—is he certain to catch the ſmall-pox?—and were this to happen, and he were, alas! to be taken from me at a later period, I ſhall then, relying on Providence, have nothing to reproach myſelf with."

In vain will the philoſopher oppoſe to theſe natural ſuggeſtions of the weak mind,

1. That were the child to die under inoculation, the mother has truly nothing to upbraid herſelf with, having only done her duty.
2. And had not the ALMIGHTY deſigned inoculation to be performed, it would not be endowed with the extraordinary virtue it poſſeſſes of preventing the ſmall-pox, and have a nature infinitely milder than the other.

The more ignorant the perſon, the more ſtubborn againſt the conviction of reaſon, and, as Hudibras ſays,

> " She who's perſuaded againſt her will,
> " Is of the ſame opinion ſtill."

So here, no force of argument, could bring over the unwilling, and words are only loſt in the attempt, and a large claſs of mankind will be *always* found adverſe to inoculation, the poſſibility of death ariſing to the perſon inoculated, being the ſtumbling-block againſt its univerſal acception.

2dly. *The chances that infants at the breaſt have of dying; early age being found moſt unfavourable to the inſertion of the ſmall-pox.*

A fact which ſoon drew the attention of many eminent medical writers, who endeavoured to account for this circumſtance. Thus Dr. Percival.

" I. The number of diſeaſes to which infants are liable, render them unfit ſubjects for inoculation. HIPPOCRATES, two thouſand years ago, remarked,

ætatibus

ætatibus, morboſiſſimi ſunt juniores. And when we conſider the great and ſudden changes, both external and internal, which they undergo at birth; the laxity and wonderful delicacy of their frame; and their extreme irritability perhaps depending upon it; the copiouſneſs of glandular ſecretions, with the difficulty of preſerving that equilibrium, the leaſt deviation from which affects them; it is matter of real aſtoniſhment that life itſelf can be ſupported, under a ſeries of ſuch apparently unfavourable circumſtances. Scarcely hath the little ſtranger been uſhered into the world, but he diſcovers ſigns of indiſpoſition, by his reſtleſſneſs, anxiety, crying, and vomiting; by the ſwelling of his belly; and ſometimes by convulſions. Theſe ſymptoms ariſe from the load of *meconium* with which the ſtomach and bowels are oppreſſed, and generally ceaſe when thoſe organs have been gently evacuated. The jaundice next ſucceeds, and is ſometimes complicated with a very acrimonious ſtate of the fluids, as appears by the eruption of little red puſtules, with which the ſkin is everywhere loaded. The thruſh, watery gripes, and convulſions, obſerve no regular order of time, but attack moſt infants, either ſingly or collectively, according as they are more or leſs obnoxious to the cauſes which produce them. The quick growth of children, in the firſt period after birth, is likewiſe a ſource of numerous ailments; notwithſtanding the proviſions which nature hath made, to guard againſt the inconveniences reſulting

from it, by the laxity of the glandular ſyſtem. And as moſt of theſe cauſes continue to exert their influence after birth, though in a leſs degree, the increment of the young animal proceeds apace, and redundances are formed, which in a healthy ſtate are carried off by one or other of the glandular excretions. But a deficiency or exceſs in any of theſe, neceſſarily produces diſeaſes. And in ſuch feeble, delicate, and irritable ſubjects, the equilibrium cannot long be preſerved. If they are defective, all the complaints which ariſe from plenitude enſue; the child grows feveriſh, dull, and comatoſe; his ſtomach is diſordered; his bowels are oppreſſed with wind; and if his belly be conſtipated, he falls into convulſions. On the other hand, if they are exceſſive, a *diarrhœa* is produced; *aphthæ* and ſevere gripes ſucceed; and the violent irritation ſeldom fails to occaſion epileptic fits. From this ſhort view of the firſt period of infancy, I think it muſt appear evident, that inoculation is ill adapted to that tender ſeaſon of life. Nature, feeble and irritable as ſhe then is, can ſcarcely ſtruggle with the diſeaſes to which ſhe is ordinarily expoſed. It is therefore equally cruel and unjuſt to add to the number with which ſhe is already oppreſſed. For it is demonſtrable from the bills of mortality, that two thirds of all who are born, live not to be two years old; and I think it is more than probable, that a conſiderable proportion of theſe die under the age of ſix weeks."

" II. The

" II. The fears and anxiety of the mother, excited at a time when her ſtrength hath been exhauſted by the pains of labour, and when every uneaſy impreſſion ſhould be cautiouſly avoided, cannot fail to injure her milk. And this is a powerful objection to the early inoculation of infants. If a hired nurſe be employed, her milk may diſagree with the child, ſhe may fall into ſome diſeaſe during the time of inoculation, may be guilty of exceſs in eating or drinking, or may be under the influence of violent paſſions; each of which will aggravate the ſymptoms, and increaſe the danger of the artificial diſtemper under which the infant labours."

" III. It hath been obſerved, by a very able and experienced practitioner, that young children have uſually a larger ſhare of puſtules from inoculation, than thoſe who are a little farther advanced in life; and that, from this circumſtance, ſo many have died, as to diſcourage the practice of ingrafting the ſmall-pox on ſuch delicate ſubjects. This fact is not eaſy to be explained. Whether the greater irritability of infants ſubjects them to be more affected with the variolous *miaſma* than children of two or three years old; or whether the larger eruption, to which they are liable, be owing to the proportionably greater quantity of their fluids; I will not preſume to determine. Both cauſes may poſſibly conſpire to produce this effect; the former by exciting a quicker and increaſed contraction of the heart and vaſcular ſyſtem; the latter by affording a more copious

copious *pabulum* for the variolous ferment. By the ſame principles we may perhaps account for the greater virulence of the lues venerea in infancy, than in the more advanced ſtages of life."

"IV. A conſiderable number of thoſe who die of the natural diſeaſe, before the expulſion of the variolous eruption, are infants, or very young children. This does not ariſe, as Dr. KIRKPATRICK ſuppoſes, from the extreme weakneſs of the *vis vitæ* of infants; for the contraction of their hearts is proportionably ſtronger than in adults, as the quickneſs of their growth evinces; but from the high degree of irritability with which their nervous ſyſtem is endued. Hence the convulſive paroxyſms, which often precede the appearance of the puſtules, and which, though regarded by SYDENHAM as no unfavourable ſigns, are always alarming, and, when they happen to very young infants, are frequently fatal."

"V. If the number of puſtules be ſo great in the mouth or throat as to obſtruct ſuction, the diſeaſe, in all probability, will prove fatal. Even a few pocks in thoſe parts are highly troubleſome and dangerous to infants; for beſides the pain and reſtleſſneſs which they produce, they often terminate in ill-conditioned ulcers. Under ſuch circumſtances the mute wailings, or ſhrieks, of an infant occaſion equal embarraſſment and diſtreſs."

"VI. Thoſe who are affected with cutaneous diſeaſes have been generally regarded as unfavourable

ſubjects

ſubjects of inoculation. Infancy, therefore, which is ſeldom unattended with erruptions on the ſkin, muſt be an improper period for receiving the ſmall-pox by ingraftment."

"VII. The thickneſs of the teguments of infants, which ariſes from the quantity of fluids interpoſed between their fibres, by which the ſkin is rendered ſoft and œdematous to the touch, and their perſpiring leſs than children who are capable of uſing exerciſe, are further objections to very early inoculation."

"VIII. But the moſt forcible argument againſt this practice, is deduced from the ill-ſucceſs which hath attended infant inoculation in general. For it appears by Dr. JURIN's account of the progreſs of inoculation in Great Britain from 1721 to 1726, and by Dr. SCHEUCHZER's continuation of it to 1728, that of fifty-eight children under two years old, who received the ſmall-pox by ingraftment, *ſix* died; whereas of two hundred and twenty-one, inoculated between the ages of two and five, only *three* died."

"It is too common an opinion," ſays that able writer, Dr. Underwood, in his treatiſe on the Diſeaſes of Children, "that a very young infant, ſucking at the breaſt, is the fitteſt ſubject for inoculation; and medical people have ſome difficulty in perſuading parents to the contrary. Children are then ſaid to be clear from humours, their blood mild and balſamic, their food innocent, and they are free

from all violent paſſions of the mind. But all theſe advantages may be counterbalanced by the delicacy of their frame, their diſpoſition to ſpaſm, and their inability to ſtruggle with a ſevere attack of the diſeaſe, if it ſhould chance to fall to their ſhare. And ſuch, indeed, are the facts: infants may have the ſmall-pox very lightly, whether taken naturally or from inoculation, though in both there are a few inſtances of their expiring in a fit at the time of the eruption; but they ſeldom get through the diſeaſe, if they are full, or it proves of the confluent or malignant kind. And this furniſhes a peculiar objection to inoculating infants at the breaſt, which ariſes from their neceſſarily lying ſo much on the arm of the mother or the wet-nurſe, eſpecially in the night; the heat expoſing them to a much more copious eruption than children who are weaned. This I have ſeen clearly exemplified in the inſtance of a child whoſe mother could ſuckle only with the right breaſt; the conſequence was, that the left ſide of the child was perfectly loaded with the eruption, (though the pock was of the diſtinct kind) whilſt the other had only a moderate ſprinkling. The child, however, ſunk under the ſecondary fever at the end of five or ſix weeks, though turned of two years old; the *only* child I have known to die of inoculation at ſo advanced an age. A ſimilar inſtance is related by Mr. Moſs; who not being able to prevail on a young woman whom he had inoculated, to keep her feet (which were very cold)

out

out of the warm aſhes of a hearth-fire, at the time of the eruption, they were, in conſequence, ſo loaded with it, as to appear one continued bliſter; though the diſeaſe was very diſtinct, and went on very favourably in other parts."

"I am aware that many children are inoculated very young, and even in the month, and generally with very good ſucceſs; but the frequency of this practice, among eminent ſurgeons, is owing to the urgent ſolicitation of parents, and their fear of contagion. I cannot therefore avoid ſaying, that however few may die under inoculation, under any circumſtances, the fact is, that the far greater proportion that I happen to have had an account of, is amongſt infants under ſix months old. A remarkable proof of this diſproportion appeared lately under a general inoculation at *Luton*, during the progreſs of a malignant ſmall-pox, which carried off one half of thoſe who were attacked by it in the natural way. In the midſt of this fatality, twelve hundred and fifteen paupers were inoculated, through the humanity of the Hon. and Rev. Mr. WILLIAM STUART, many of whom refuſed all preparatory medicines, and were beſides addicted to the uſe of ſtrong liquors: nevertheleſs, out of the *twelve hundredand fifteen* only *five* died—*all of whom were infants under four months old.* Seven hundred adult people of better condition, in the ſame neighbourhood, were inoculated a ſhort time afterwards, and with the like good ſucceſs with the former."

"From this view of the matter, it is pretty evident, I think, that this operation ought, in general, to be poſtponed to a later period, which is pointed out by the child having cut all its firſt teeth."

Dr. Macdonald juſtly remarks, "that the deaths of infants often happen under circumſtances the more diſtreſſing."

Before me lie the records of two unfortunate families. In the one, a father and four of his children were inoculated for the ſmall-pox; the eruptions proved of the confluent kind: *two children* out of the four died.—The other is a young widow, who loſt her huſband at the early age of 24. *One infant* at the breaſt was left her, which, in her pitiful ſituation, conſtituted her only conſolation. Soon after, the ſmall-pox began to rage in the city where ſhe lived; ſhe therefore was adviſed by her friends to inoculate her little boy. With reluctance, as if preſaging her impending misfortune, ſhe conſented.—Her fears, alas! were but too well grounded: on the day preceding the eruption, the child was ſeized with convulſive fits, and expired on the tenth day.

"One ſmiling boy, her laſt ſweet hope ſhe warms,
Huſh'd in her boſom, circled in her arms;
Daughter of Woe!—ere morn in vain careſs'd,
Clung the cold babe upon thy milkleſs breaſt,——
With feeble cries thy laſt ſad aid requir'd,
Stretch'd its ſtiff limbs, and on thy lap expir'd."

DARWIN.

3d. *Dentition*

3d. *Dentition is found to be a period in which inoculation was hazardous.*

The ſmall-pox is uſually iſſued in by convulſions in children at every age. The period of dentition being very liable to ſuch convulſive attacks, which often prove fatal, would naturally put the practitioner on his guard againſt bringing on, or adding to, an event equally terrific, as it is often fatal.

"It cannot be denied," ſays my learned and eloquent friend Dr. Macdonald, "but the inoculation of the ſmall-pox has proved to mankind a ready means to alleviate and eſcape the danger of a moſt diſtreſſing diſorder; ſtill, notwithſtanding theſe happy effects, the inoculated ſmall-pox is *often* accompanied with ſymptoms which give juſt cauſe of alarm, and *ſometimes* prove fatal under the moſt judicious management."

"Were I to record all the diſtreſſing ſcenes which frequently attend the inoculated ſmall-pox, or relate the ſad hiſtories of thoſe unfortunate families, who, in conſequence of inoculation, have felt the ragings of this dire diſorder; the ſtouteſt heart would ſhrink with horror, and drop a tear of pity over the ſufferings of humanity."

"I would wiſh to relinquiſh this ſubject, for my pen can give but a faint ſketch of thoſe pictures of ſingular diſtreſs, which every phyſician of even moderate experience has witneſſed."

"Paint to yourſelf one of theſe little innocent

ſufferers, ſtretched out, and covered with one continued ſore; threatened with ſuffocation, uttering the agonies he feels, by piercingly heart-wounding groans.—Obſerve how his mouth foams; liſten to the grinding of his teeth; ſee how he thruſts his little trembling tongue betwixt them, and how piteouſly it is wounded!—Look! how he is agitated with the moſt dreadful convulſions! his feeble limbs are twiſted and contorted, and threaten diſlocation; his frame bends backwards, is lifted up and thrown down again!—Theſe fits now increaſe,—then ceaſe;—alas! only to return with redoubled violence.—Miſery calls aloud for help, help;—but calls in vain.—New convulſions ſucceed; he foams,—ſtruggles, gaſps,—gaſps again,—and expires!"

"If at ſcenes like theſe your heart would bleed, what muſt be the feelings of a fond parent, when this deſtroying ſcourge nips in the bud the faireſt bloſſom of his hope?"

4th. *Old age.*

Although this period cannot be alledged as equally unfavourable as either of the foregoing, it is one a practitioner would not prefer; and it ſeems cruel to ſubject a perſon on the verge of the grave to the chance of a diſeaſe that poſſibly may prove extremely ſevere.

5th. *Pregnancy was a ſituation in which inoculation generally produced abortion, and the death of the individual.*

Caſes of this ſort are to be found in every author. In Mead we have the following affecting narrative:

"A lady of quality at the ſeventh month of her pregnancy was ſeized with the natural ſmall-pox, which proved of an unfavourable ſort. On the eleventh day ſhe was brought-to-bed, and ſafely delivered of a male child: on the fourteenth ſhe died. On the fourth day following, the infant was ſeized with convulſions, the forerunner of the eruption, which appeared on that ſame day, and he died in the evening."

The inoculated diſeaſe was found alſo equally dangerous.

"A phyſician at Wincheſter informs me," ſays Dr. Kirkpatrick in his Analyſis of Inoculation, "that in the ſeveral towns of Hampſhire, Suſſex, and Surrey, there have been inoculated 2000, of whom *two* only died, both pregnant women, who admitted this operation contrary to the opinion of their phyſician."

6th. *That it precludes the poor perſon inoculated following his uſual avocation.*

The majority of mankind are deſtined to procure their daily ſubſiſtence by the ſweat of their brow. The earnings of induſtry too frequently are found inadequate to the ſupport of a family, ſo that any thing can be laid up for a rainy day; hence the total inability of the poor to ſuſtain the heavy calamity of a whole family ſuffering under the inoculated ſmall-pox. The mother can ill af-

ford even the attentions required for a ſick family, and the honeſt peaſant is unable to loſe the time requiſite under this diſeaſe, even ſhould the inoculation, and medicines required, be given gratis.

7th. *The many individuals that, from humours and other cauſes, are conſidered unfit ſubjects for inoculation.*

I ſhould tire the reader were I to quote, from Sutton on Inoculation, three long pages deſcriptive of perſons eſteemed unfit to receive inoculation: even very fat children, although otherwiſe healthy, are included among that claſs.

It muſt be acknowledged that the *moſt dreadful diſeaſes* in certain habits, often difficult to diſtinguiſh, are *called forth* by *inoculation*; hence the vulgar prejudice of other diſeaſes, eſpecially the king's-evil, being actually ingrafted with the ſmall-pox.

The learned Dr. Mead took the pains firſt to counteract this vulgar error.

"Some," ſays he, "would attempt to diſſuade us from inoculation, by affirming that there is danger leſt, together with the ſmall-pox, ſome other infectious diſeaſe, inherent in the blood and humours of the ſick perſon, ſhould be tranſmitted into the ſound body: all contagion being very ſubtile, and wonderfully active. And it is indeed not improbable, that ſome other diſtempers, beſides thoſe which are cutaneous, may, by ſuch a way as this, get admittance into the ſkin: and ſuch perhaps are ſcrophulous ſwellings, and the venereal

nereal diſeaſe. Yet I can hardly believe that it ever happens, that the ſeed of one diſtemper ſhould bring along with it, mixed, the procreative matter of another, of a nature quite different from it. However it be, it would be madneſs in a phyſician, without any choice, to take the morbid matter for this purpoſe out of ſick bodies, without diſtinction. The moſt proper ſubjects are infants or children, ſound in all other reſpects, as far as can be judged, and born of healthy parents. Beſides, it is in my opinion more material, into what kind of a body the venom be infuſed, than out of what it be taken. And this I the rather mention, becauſe I have more than once known raſh and unwary ſurgeons to implant the diſeaſe into bodies weak, and of an ill habit, with a fatal event."

" I cannot however," he adds, " but think, that boils, and ſwellings under the ears and in the arm-pits, ariſe *more frequently* after the diſtemper procured by art, than after that which comes of its own accord; for this reaſon, as I ſuppoſe, that the venomous matter is puſhed forward with leſs force, which diſadvantage nature makes amends for this way. Therefore, all poſſible means are to be uſed to ripen ſuch tumours, of whatever kind they are: if this cannot be done, they muſt be opened by inciſion; and when all the matter is drawn out, the body muſt be purged by proper medicines, which

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are to be *oftener repeated* in this than in the natural diſeaſe."

Thus aroſe the practice of preparing before and phyſicking after inoculation, of making iſſues in both arms, inſerting a deep pledget with the ſmall-pox matter on it, or ſetons, to make a great outlet for the eſcape of the peccant humour: but all this is now laid aſide, as being unavailing; for the body being once completely poiſoned, the blood corrupted, and the ſolids enfeebled, nothing of this kind avails; and hence many phyſicians have juſtly ſuſpected the propriety of purges after the ſmall-pox, and even abandoned the practice as pernicious.

8th. *But above all, and laſtly, although an individual advantage may be obtained, yet, as extending the diſeaſe by infection far and wide, it became on that account a public nuiſance.*

This circumſtance ſoon ſtruck the diſcerning mind of Baron Dimſdale, who had the honour of being ſelected from among the Faculty here, and went from England in order to inoculate the Empreſs of all the Ruſſias; which ſucceeding, beſides a penſion, he was made a counſellor of ſtate, and body phyſician to her Imperial Majeſty.

Although every inducement led him to conceal the fact, yet, actuated by the love of truth, and patriotiſm towards a country to which he owed his promotion in life, he came forward to ſound the alarm,

alarm, and ſhew how a ſeeming bleſſing was an actual evil to the ſtate.

"Although the loſs," ſays he, "under inoculation is very inconſiderable, *almoſt the whole* of thoſe that are inoculated recovering, yet by ſpreading the diſeaſe, a greater proportion take it in the *natural* way: *more lives* are now forfeited in London than *before inoculation commenced*, and the community at large ſuſtains a *greater loſs*: the practice therefore is more *detrimental* than *beneficial* to ſociety. In the laſt four years preceding 1776, the London bills from the ſmall-pox aroſe at a medium to two thouſand five hundred and forty-four: this increaſe is truly alarming. The diſeaſe by inoculation at the different public charities throughout London, would ſpread by viſitors, ſtrangers, waſherwomen, doctors, and inoculators; by means of hackney coaches, in which the ſick are to be ſent out to take the air, or by ſound perſons approaching them in the ſtreets."

"The poor in London are miſerably lodged; their habitations are in cloſe alleys, courts, lanes, and old dirty houſes: they are often in want of neceſſaries, even of bedding. The fathers and mothers are employed out conſtantly in laborious occupations and cannot attend the inoculated ſick; ſhould they neglect their occupations, food and neceſſaries would be deficient, and the medicines ordered by the phyſicians would not be regularly complied with. The air in their houſes is impure: they have neither areas, gardens, nor *carriages* for

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the convenience of ventilation, and taking freſh air."

"Sailors and ſea-faring people, many of whoſe lodgings are miſerable in the little houſes bordering on the river, would be liable to catch the diſtemper, and either to fall ſick there without friends or aſſiſtants, or perhaps being infected on ſhore, to carry it to ſea in their contaminated cloaths, and afterwards falling ſick without care or attendance, might ſpread the diſeaſe in foreign climates."

"Country people coming to town for markets, viſits, or pleaſure, would all be ſubject to the danger of infection. Perſons coming from the ſick to public charities, for medicines or advice, by intermixing in the ſtreets, the *public* danger from their infected apparel would be *great* and inevitable: the whole neighbourhood would be expoſed, and in imminent danger, by having the ſmall-pox brought to their doors. The goſſipping diſpoſition of the poor will ſpread it further; and after the ſick recover, ſallying forth in their infected cloaths is certain to add to the miſchief. The children who are able to run about will intermingle in the ſtreets, immediately upon their recovery, with their playfellows: the ſucceſs therefore derived from inoculation muſt be beneficial to a *few* only, but involve a great number of others in danger, to which they would otherwiſe be leſs expoſed."

Dr. Heberden obſerves, "that the poor form the largeſt part of mankind, and only conſider the preſent

preſent moment; and their prejudices are ſtrong, and not to be overcome by reaſon. Hence, while the inoculation of the wealthy keeps up a perpetual ſource of infection, thoſe who either do not chooſe, or cannot afford expence, are more expoſed to this diſtemper. The danger alſo is increaſed by the cuſtom of ſending perſons into the open air in every ſtage of the diſeaſe. Hence, while *inoculation* may be juſtly eſteemed as one of the greateſt improvements ever introduced into the medical art, it occaſions a greater ſacrifice of life by what has been diſtinguiſhed by the appellation of the *natural* ſmall-pox."

As a proof of this poſition, we have the following record from a moſt diligent and careful obſerver of facts, Dr. Willan, in his account of the diſeaſes in London.

" A child having been inoculated in a court (whoſe parent kept a chandlers-ſhop) conſiſting of twenty houſes; the conſequence was, that in this court ſeventeen perſons took the natural ſmall-pox, although the ſeaſon was kind (April); and *eight* of theſe died.

They in their turn became the focus of freſh infection, and thus a private good was converted into a public evil."

The author of this treatiſe has had abundant opportunity to ſee the ſame repeatedly verified in his practice as phyſician to the Mary-le-bone Diſpenſary.

CONCLUSION.

Hence it would appear, that inoculation has done a great injury to ſociety at large, and the difficulty of extending it *generally*, ſo as to convert it truly into a public benefit, is attended with almoſt inſuperable objections: For to make it into a law, that inoculation ſhall be general and periodic, appears both cruel and arbitrary, where ſecurity of life cannot be given to all, and is what no government, grounded on the baſis of general liberty, would venture to adopt.

Hence the laws in our Weſt India plantations, not to encourage, but *againſt*, capricious inoculation; hence the entire prohibition in America of this practice; and, as we ſhall preſently prove, the neceſſity of the ſame ſteps from our Legiſlature, when once the advantages of *vaccine inoculation* (the Cow-pock) ſhall be clearly aſcertained, which we hope to be able to accompliſh in the enſuing pages.

SECT. VI.

ON THE NATURAL COW-POX AND ITS FREEDOM FROM DANGER.

Pock, in old Engliſh, means a puſtule, and where more than one appears, the plural is uſed; and hence the vulgar appellation of *Cow-pox*, to deſignate a puſtular diſeaſe originating in the cow.

The firſt notice we have of ſuch a diſtemper among theſe domeſticated animals is from Dr. JENNER, a phyſician of great eſtimation in Glouceſterſhire, whoſe penetrating genius did not fail to notice and examine into its *ſuppoſed extraordinary power* OF PREVENTING THE SMALL-POX.

From this diſtinguiſhed phyſician, we were firſt informed of the ſymptoms of this diſeaſe.

"It appears on the teats of the cow, in the form of irregular puſtules. At their firſt appearance they are commonly of a paliſh blue, or rather of a colour ſomewhat approaching to livid, and are ſurrounded by inflammation. The animals become indiſpoſed, are off their food, and the milk is conſiderably diminiſhed. *The death of the animal never follows the diſeaſe.* The cow-

pox is ſoon communicated to thoſe employed in the dairy, and ſpreads through the farm until moſt of the cattle and domeſtics feel its unpleaſant conſequences."

The ſymptoms of having taken this diſeaſe in the *human ſubject*, are

1. " Inflamed ſpots, appearing on different parts of the hands of thoſe engaged in milking and ſometimes on the wriſts, which run on to ſuppuration, firſt aſſuming the appearance of ſmall veſications produced by a burn."
2. " Moſt commonly they appear about the joints of the fingers, and at their extremities; but whatever parts are affected, if the ſituation will admit, theſe ſuperficial ſuppurations put on a circular form, with their edges more elevated than their centre, and of a colour diſtantly approaching to blue."
3. " Abſorption next takes place, and tumours appear under each axilla."

The ſyſtem then becomes affected.

4. " The pulſe is quickened."
5. " Shiverings are ſucceeded by heat."
6. " General laſſitude, and"
7. " Pain about the loins and limbs, with"
8. " Vomiting, and"
9. " The head is painful, and the patient is now and then affected with delirium."

Theſe

Theſe ſymptoms varying in their degrees of violence, generally continue from one day to three or four, leaving"

10. " Ulcerated ſores about the hands, which heal ſlowly, and frequently become phagedænic."

" No eruption ariſes from the abſorption of the virus."

The *cow-pox* being a diſeaſe chiefly falling among a poor claſs of people, and confined to certain diſtricts, and *never proving fatal*, it was long unnoticed, and probably had continued in obſcurity to this day, unleſs it had poſſeſſed the wonderful power of SECURING FROM THE SMALL-POX; *for a perſon* (as will be ſoon proved) *having once had the cow-pox, cannot be afterwards infected either by expoſure to the ſmall-pox, or by the actual inſertion of the matter under the ſkin*, as Dr. JENNER firſt, and others have ſince demonſtrated.

The cow-pox is *now* known to exiſt in Glouceſterſhire, which gave origin to its clear inveſtigation; in the counties of Dorſet, Somerſet, Devon, Hants, Middleſex, Norfolk, Bucks, Oxford, Leiceſter, Stafford. It has been alſo traced in Ireland, Italy, and other parts of the continent.

SECT. VII.

PROOFS THAT THOSE WHO HAVE HAD THE NATURAL COW-POX ARE EVER AFTER SECURE FROM TAKING THE SMALL-POX, EITHER NATURALLY OR BY INOCULATION.

THE firſt caſes ever laid before the public on this intereſting ſubject are thoſe by Dr. JENNER.

Proof I.*

JOSEPH MERRET, now under-gardener to the Earl of Berkeley, living with a farmer at Berkeley, had the *cow-pox* in 1770.

In 1795, a general inoculation took place, and Merret with his family, not knowing the preventive power of the *cow-pox*, was inoculated with the reſt.

The inoculator finding that Merret's arm did not riſe, inſerted the matter repeatedly *but without effect*.

* Proofs I. to V. are extracted from a work, dedicated by permiſſion to his Majeſty, entitled, "*An Inquiry into the Cauſes and Effects of the Cow-pox*, by EDWARD JENNER, M. D." which was the firſt publication on this ſubject; a work which will live in the grateful remembrance of poſterity, until time ſhall be no more!!!

Neither

Neither did he take the ſmall-pox, although he continued with his family, all of whom had the *ſmall-pox,* and ſome of them very fully.

Here is a proof at leaſt of 25 years preſervative power from the ſmall-pox from the *cow-pox.*

Proof II.

SARAH PORTLOCK, of Berkeley, had the *cow-pox,* when ſervant to a farmer in the neighbourhood, 27 years ago.

Laſt year her child caught the *natural ſmall-pox,* whom ſhe nurſed throughout the diſeaſe.

Fearful of taking the ſmall-pox ſhe was alſo *inoculated.*

But ſhe was inſuſceptible of the ſmall-pox in either way.

Proof III.

JOHN PHILIPS, a tradeſman of Berkeley, had the *cow-pox* when nine years old.

At 62, Dr. Jenner inoculated him; *but it produced no effect on the ſyſtem.*

Here is a proof of the preſervative power of the *cow-pox* for more than FIFTY years.

Proof IV.

The poor of the village of Tortworth, in Glouceſterſhire, were inoculated by Mr. HENRY JENNER in the year 1795.

Upon inquiring among theſe, *eight* perſons acknowledged they had had the cow-pox.

Upon trial all were found to have taken the ſmall-pox who were inoculated, except theſe *eight*; *neither did they take the ſmall-pox from aſſociating with thoſe labouring under this diſeaſe.*

Equally convincing are all the other facts adduced to prove the efficacy of the *cow-pox*, in preſerving us from the *ſmall-pox*, brought forward by Dr. JENNER, in "An Inquiry into the Cauſes and Effects of the Cow-pox;" to which we refer the reader deſirous of further information, and we proceed with the moſt reſpectable CORROBORATING TESTIMONIES in ſupport of this *wonderful property* in the *cow-pox*.

Proof V.

JEOFFRY TREDWELL, a reputable farmer, and a tenant of mine *, about fourteen years ago had the mortification, as he thought, to find the cow-

* Proofs V. to VII. are extracted from a pamphlet entitled "*Reflections on the Cow-pox, illuſtrated by Caſes to prove it an abſolute Security againſt the Small-pox, by* WILLIAM FERMOR, *Eſq.*" The able production of a gentleman of large landed property, reſiding at his ſeat at Tuſmore in Northamptonſhire; a gentleman endowed with the greateſt urbanity of manners, and poſſeſſing a mind ſtored with claſſic lore, and replete with the warmeſt glowings of philanthropy.

pox

pox in the farm he then occupied, at Chesterton, in this neighbourhood.

His brother WILLIAM TREDWELL, being employed in milking the cows, was infected with the *cow-pox*, and had the disease severely in his hands and fingers.

Jeoffry not being so engaged, did not receive the infection.

About three years after, these two brothers were inoculated with variolous matter, by Mr. Lister, of Charlbury, an eminent practitioner, at a house appropriated for that purpose. WILLIAM TREDWELL, who had undergone the cow-pox, *could not receive the infection*, though he was inoculated several times, and remained in the house with the other patients.

Jeoffry, who had not been infected with it, *had a very full small-pox eruption.*

Proof VI.

ALBAN COLLINGRIDGE had the *cow-pox* about five or six and twenty years ago, at his father's farm, at Poodle, which affected his fingers in a violent degree.

About four years after, he was three times inoculated for the small-pox by Mr. Lister, *without effect.*

Two of his brothers, who had never had the cow-pox, *received the variolous infection.*

He ſlept with them in order to take it, *but no conſequence enſued.*

He has frequently ſince been expoſed to its contagion, and has very lately inoculated his children with the SMALL-POX, *without being in any ſhape infected with it himſelf.*

Proof VII.

Mr. HENRY COLLINGRIDGE, of Godington, a reputable farmer, and a tenant of mine, received the *cow-pox* infection by milking, when he was fourteen or fifteen years of age.

Ten years after he was three times inoculated for the ſmall-pox, *without effect.*

After an interval of ten years more, he had another child inoculated; *but, though fully and frequently expoſed to the contagion, he was not in any degree affected by it.*

Proof VIII.*

On converſing with Sir GEORGE BAKER, Bart. Preſident of the Royal College of Phyſicians, and

The following proofs VIII. to XIII. are extracted from a work entitled, "*An Inquiry concerning the Hiſtory of the Cow-pox, principally with a view to ſuperſede and extinguiſh the Small-pox*; *by Dr.* PEARSON, *phyſician to St. George's Hoſpital*;" one of the brighteſt luminaries of medical and chemical erudition; who has ever ſhewn himſelf the active inquirer after *new truths*, by whoſe accurate teſts we ſtand or fall; and who, not in one, but in very numerous inſtances, has himſelf extended the vaſt empire of diſcovery.

phyſician

phyſician to his Majeſty, concerning the extraordinary circumſtance of the cow-pox rendering people unſuſceptible of the ſmall-pox, Sir George obſerved, "he had been long ſince informed of the fact in ſome papers communicated to him many years back by his relation the Rev. HERMAN DREWE, of Abbotts; but not finding any credit given to the ſtatement, which ſeemed ſo much to border on the *marvellous*, they were withdrawn from publication *." I accordingly wrote, ſays Dr. Pearſon, a letter to this

* Thus was withheld, for a time, from mankind, the benefit of the knowlege of this marvellous fact; and the Rev. Mr. DREWE, removing to another part of the country, relinquiſhed all further inveſtigation of a ſubject which had once arreſted and occupied his attention; and thus *he* loſt for ever the acquiſition of the proudeſt laurel that could have decorated the brow of man!!

When this *truth* was firſt announced to the public by Dr. JENNER, my emphatic friend Dr. MOSELEY, the able writer on "*Tropical Diſeaſes*," in his "*Miſcellaneous Medical Obſervations*," after giving a long ſtring of ſtrange wonders recorded by men of gravity, relates the following anecdote: "The virtues of the COW-POX are ſaid to be an AMULET AGAINST THE SMALL-POX; and this *charming*, this *excellent*, this *delectable* malady, is reported as equally *mild* and *innocent*, and *communicable* with *ſafety* by *inoculation*."

"*Wonderful things* do certainly appear in *all ages*. The great ERASMUS relates, that there was one PHALARIO, an Italian, who in Holland was very much afflicted with *worms*, and, while the worms were in his body, he ſpoke the *Dutch Language*.—The worms being *cured*, away went his knowledge, and he could not then ſpeak one word of *Dutch!*"

clergyman,

clergyman, who then reſided in Dorſetſhire, from whom I obtained the following information.

" That the cow-pox was a diſeaſe known in Devonſhire, Dorſetſhire, and Somerſetſhire; and an opinion prevailed, that this afforded a ſecurity againſt the ſmall-pox. Accordingly, when Mr. BRAGG, ſurgeon of Axminſter, inoculated my pariſh, he rejoiced with me in having an opportunity of clearly aſcertaining this fact.

" He found, out of 53 patients, *three* women who declared they had had the cow pox, but not the ſmall-pox; and theſe were charged with ſuperabundance of ſmall-pox matter.

" *All the others took the infection but the three women, who were not in the leaſt diſordered; nor did they catch the ſmall-pox by aſſociating with thoſe who laboured under it.*

" In my neighbourhood there were *thirteen* ſimilar examples of the ſame kind."

Proof IX.

The Rev. Mr. HERMAN DREWE mentioned that he alſo obtained a further confirmation of the truth of this opinion from the experience of Mr. DOWNE, ſurgeon of Bridport.

" This ſurgeon having inoculated from between ſix or ſeven hundred perſons at one ſeaſon, found only *two* who could not be infected; and upon inquiry he learnt that they had had the *cow-pox*."

His

His other ſource of information was from Mr. Barnes, of Colyton, ſince dead.

Proof X.

"Happening, with Mr. Lucas, apothecary, to be called on profeſſional buſineſs to Willan's farm, adjoining the New Road, Mary-le-bone, which contains from 800 to 1000 milch cows; I availed myſelf (ſays Dr. PEARSON) of this opportunity to make ſome inquiries about the cow-pox.

"I was informed that this diſeaſe was not unfrequent; and in January laſt more than 200 out of this number of cows had been affected with this diſorder.

"Three of the milkers whom I met with there, profeſſed having had the cow-pox, but never the ſmall-pox, and they conſented to my inoculating them. Two other men, who had never had either the cow-pox, or ſmall-pox, agreed alſo to be inoculated with variolous (ſmall-pox) matter."

The caſes of the three firſt are as follows.

Caſe I.

THOMAS EDINBURGH, aged 26, had lived ſervant at Willan's farm the laſt ſeven years.

The firſt year of his coming there he took the *cow-pox* with others.

He had eruptions on the palms of his hands, which left a cicatrix, and were ſo painful that he was obliged to deſiſt from his employ.

A fever

A fever coming on, and tumours ariſing under the axillæ, which were very ſore to the touch, he went into a public hoſpital, where he was diſmiſſed cured.

Caſe 2.

THOMAS GRIMSHAW, aged 30, had the cow-pox at the ſame time as Thomas Edinburgh, but with ſomewhat milder ſymptoms.

Caſe 3.

JOHN CLARKE, aged 26, had the cow-pox at Abingdon, ten years back, and was under a ſurgeon of that place.

Theſe three were inoculated with the ſmall-pox matter by the ſurgeon at the ſmall-pox hoſpital, from a patient in a proper ſtate to take the matter.

It may be proper for readers not converſant with the ſmall-pox inoculation, to relate the uſual progreſs of infection:

A ſmall particle of variolous (ſmall-pox) matter being applied by a ſuperficial puncture of the ſkin, uſually produces, in the courſe of three or four days, or ſooner, a little *elevation* of the punctured part, diſcoverable by the touch, and a *red ſpeck* diſtinguiſhable by the eye.

From this time the *redneſs* advances in a *circular form*, more or leſs rapidly, according to the conſtitutional circumſtances of the patient; and the firſt effect of this ſuperficial inflammation is the

formation of a *veſicle* upon its centre, which uſually appears between the fourth and ſeventh day after the inoculation.

The extent of this veſicle is generally found to bear ſome proportion to the intenſity of the inflammation; and contains a *limpid fluid*, by the abſorption of which the ſmall-pox is produced.

The veſicle ſoon burſts, and the central part of the puncture becomes depreſſed, and often of a *dark hue*; which appearances, together with the *marginal inflammation*, continue to increaſe till the eruptive ſymptoms ſubſide, when the edges of the depreſſed part begin to ſwell with a *purulent fluid*, and the inflammation gradually recedes.

The ſubſequent fever uſually proves on or about the eighth day.

The two men, who had neither the cow-pox or ſmall-pox, exhibited, upon inoculation, the appearances above ſtated, and Kent had 30 puſtules, the other 12.

In the others, for inſtance, in the caſe of Thomas EDINBURGH,

A *ſlight elevation* appeared in the parts inoculated.

The *red ſpeck* and *marginal inflammation* ſeemed too rapid for the ſmall-pox infection.

In leſs than four days the *part inoculated* on the right arm looked more like a *gnat-bite*.

On the left there was a *little ſcab*, which was rubbed off, and left only a ſcarcely viſible red mark.

There

There was no *conſtitutional affection*, or any complaint whatever.

The ſame thing nearly occurred with Thomas GRIMSHAW.

It was ſomewhat different with JOHN CLARKE.

He was inoculated in both arms at the ſmall-pox hoſpital.

On the *third day* there was an inflammation, and a fluid in the parts inoculated: but theſe appearances were judged to be *premature* as far as reſpects the ſmall-pox.

On the *ſixth day* theſe appearances wholly deſerted the left arm.

On the *eighth day* there was inflammation on the right arm.

No ſigns of ſickening, or any eruption, or indiſpoſition.

He was inoculated again, but *without effect*.

It ſhould alſo be remarked, that the three patients abovementioned, who did not take the infection on *inoculation*, had their children afterwards inoculated, who all had the ſmall-pox. Theſe men lived in the ſame apartment with their children during the illneſs of the ſmall-pox, *but not one of them was infected.*

Proof XI.

Mr. ROLF, who was colleague of Mr. GROVE of Thornbury, a famous inoculator for upwards of

forty years, in a letter publiſhed by Dr. Beddoes *, dated June 10th 1795, communicated the following obſervations:

Speaking of a man who could not be infected, although he was repeatedly inoculated for the ſmall-pox, and although he lived in the ſame room with another man who died of the ſmall-pox, Mr. Rolf ſays, "it is worthy of remark, that this man had, ſome years before, a complaint incident to cows, commonly called the *cow-pox*; a malady more *unpleaſant* than *dangerous*, for there is no inſtance of any one dying of the cow-pox. It is received by contact in milking, uſually from chops in the hands.

"In the human being, the complaint is ſometimes *local*, at other times *abſorption* takes place, and the glands in the courſe of the abſorbents become indurated and painful. In either caſe, *I have learned*, from my own multiplied obſervations and the teſtimony of the oldeſt practitioners of inoculation, THAT SUSCEPTIBILITY TO THE SMALL-POX IS DESTROYED. Some advantage may probably, *in time*, be derived from *this fact*."

* Vide "*Queries*" of this great phyſician "*on Inoculation*," ſubjoined to a tranſlation of Gimbernat's New Method, &c. The obligations mankind owe to Dr. Beddoes are incalculable; his high merits are ſuperior to my feeble praiſe. At ſome future period his extenſive views will be fully underſtood; and *then* he will be rightly, and not till *then* rightly appreciated.

Proof

Proof XII.

Abſtract of a letter from Mr. FEWSTER, ſurgeon in Thornbury, dated October 11th, 1798, to Mr. ROLPH. "In the ſpring of the year 1768 I came to live at Thornbury, where I have reſided ever ſince. In that very year, from the following occurrence, I became well acquainted with the diſeaſe called the *cow-pox*. The late Mr. GROVE and MYSELF formed a connection with Mr. SUTTON *, the celebrated inoculator; and, to inoculate

* Mr. ROBERT SUTTON, the firſt of this name who acquired celebrity as an inoculator, reſided at Debenham, in Suffolk, where he practiſed ſurgery and pharmacy. He began to inoculate in February, 1757, from which year to 1767 the number of perſons inoculated by him was 2,514.

Two of his ſons, ROBERT and DANIEL, deſigning to follow the profeſſion of their father, were employed in the diſpenſing of medicines, and in aſſiſting him during the three firſt years of his practice of inoculation: after which, Robert, the elder brother, removed to Bury St. Edmund's, where he became an eſtabliſhed inoculator; while Daniel acted as aſſiſtant to Mr. Bumſtead, a ſurgeon and apothecary at Oxford.—The latter, on his return to Debenham in the year 1763, ſuggeſted to his father (as I was informed by him) a NEW PLAN of inoculation, in which he propoſed *to ſhorten the time of preparation to a few days, and not to confine the inoculated patients to the houſe, but to oblige them to be in the open air as much as poſſible during the whole progreſs of the diſtemper.*

To reduce the proceſs preparatory to inoculation, from a a month, which was then the uſual time, to eight or ten days,

late for the ſmall-pox, we took conjointly a houſe at Buckover. *We* found in this practice, that a *great number of patients could not be infected with the ſmall-pox, notwithſtanding they were inoculated and expoſed*

days, was to obviate the objections that many perſons had made to inoculation, from the great length of time it required. This, therefore, might be thought a meaſure of expediency, to bring a greater number of patients; but obliging thoſe under inoculation to walk out in the *cold air*, during the eruptive fever, ſeems to have been a practice derived from Sydenham, and confirmed by experience. However, Mr. Sutton, the *father*, could not be perſuaded to adopt any *innovation* in his practice of inoculation, and would not hear of his ſon's *new* ſcheme, which he *condemned* as not only *raſh* and *abſurd*, but as *extremely dangerous*. Daniel ſoon afterwards, however, availed himſelf of repeated opportunities of carrying it into effect, and found it to anſwer his utmoſt expectations. The advantages of this *new plan* were ſoon perceived by the *patients*, who now began to manifeſt a deſire of being ſolely under the direction of Mr. D. Sutton. This preference gave occaſion to a diſpute between the father and the ſon, about the end of the year 1763, when the latter determined to practiſe inoculation uncontrolled by parental authority; and for this purpoſe he opened a houſe in the neighbourhood of Ingateſtone, in Eſſex. Here the young adventurous inoculator, by public advertiſements and hand-bills, propoſed to inoculate upon an *improved method*, peculiar to himſelf; and alſo hinted, that, by the *uſe* of *certain medicines*, he could always render the *ſmall-pox* an *innocent* and *tractable diſeaſe*. Three months elapſed before he profited by his new ſituation: but he afterwards ſucceeded ſo well, that at the cloſe of the firſt year his profeſſion produced him 2000 *guineas*: and in the ſecond year, which he ſays was the moſt profitable of any that he

 experienced,

expoſed to the ſtrongeſt contagion of the ſmall-pox. This excited in *us* much ſurprize, and *we* were not able to account for the circumſtance, until a farmer mentioned, that he had had the *cow-pox* lately, and wiſhed to know, whether our failure of repeated inoculation in him did not originate from this cauſe. His expreſſion was, as well as I recollect, "*I have had the cow-pox lately to a violent degree, if that's any odds* *." We took the hint, and, on inquiry, found, that all thoſe who were not to be

experienced, his fees amounted to more than *treble this ſum.* His *fame* was now ſpread to the moſt diſtant parts of the kingdom; and the numbers that reſorted to him for inoculation conſtantly filled the village of Ingateſtone, ſo that it was with great difficulty lodgings could be procured for the purpoſe. His practice in Kent being alſo very extenſive, he was under the neceſſity of employing ſeveral medical aſſiſtants. He alſo eſtabliſhed other connections over the kingdom; and he is reported, by the Rev. Mr. Houlton, chaplain to the Earl of Ilcheſter, (vide a ſermon on Inoculation, preached at Ingateſtone, Oct. 12, 1766,) along with his aſſiſtants, to have inoculated within three years upwards of 20,000 perſons.

* This circumſtance ſhould have led to VACCINE INOCULATION; but the time was not yet come, the honour being reſerved by Providence for another. Had D. SUTTON, or his colleagues, inſtituted VACCINE INOCULATION in lieu of the ſmall-pox inoculation, they would have *ſtill more* earned the plaudits of mankind. To them moſt aſſuredly we owe the extirpation of the *ſweating practice* in the ſmall-pox, and the preferable adoption of the *cool regimen*, as recommended by the great Sydenham.

infected,

infected, had *all* undergone the *cow-pox*. I communicated this extraordinary fact to a medical ſociety of which I was a member, and ever after paid a very particular attention to the circumſtance; and am now ſo convinced of this truth, that I can affirm, that I have not been able to produce the SMALL-POX, *in a ſingle inſtance, among perſons who have had the* COW-POX."

He adds, "This fact was lately clearly aſcertained by me, when I inoculated upwards of two thouſand perſons for the ſmall-pox."

Proof XIII.

About twenty years ago*, when Dr. ARCHER was the phyſician of the hoſpital for inoculation, CATHARINE WILKINS, now Titchenor, from Cricklade in Wiltſhire, who had the cow-pox in conſequence of milking cows, came to her brother in London, (where ſhe is now reſident,) who, being de-

* This curious fact is extracted from a pamphlet intituled "*Obſervations on the Cow-pox by* JOHN COAKLEY LETTSOM, M. D." a phyſician of great repute, whoſe quaker appearance would beſpeak him a man of ſentences, but in whoſe writings are to be found all the graces of diction, and faſcination of eloquence. (Vide motto to this book.) His ſtrong appeal to parents, guardians, and the clergy, on the ſubject of *vaccine inoculation*, can ſcarcely fail of producing its deſired effect; and the *ſhades* of Jenner, Pearſon, and Woodville, with which he has embelliſhed his work, muſt be an acceptable acquiſition to his leſs opulent brethren, admirers of the benefactors of mankind.

ſirous of aſcertaining whether this circumſtance could be depended upon as a preventive of the ſmall-pox, ſent her to the hoſpital for inoculation, when ſhe received the variolous matter from Dr. Archer; againſt which, however, ſhe was proof, and the ſmall-pox of courſe could not be communicated; but *no advantage was derived from this fact* *.

* Archer was a prudent, cautious, and rather timid practitioner, and he advanced much by his attentions to the hoſpital for inoculation at Pancras; but he neither poſſeſſed the ſpirit of inquiry of a Woodville, nor the genius of diſcovery of that Man who was deſtined to form a new æra in medical practice; ſo that the boon offered him by Providence dropt from between his hands!

It is ſomewhat mortifying to human nature to think, that, from ſuch *palpable hints*, men, bred to the profeſſion of phyſic, and more particularly converſant with the ſmall-pox, ſhould not have drawn out an *uſeful inference*.

SECT. VIII.

THE ANTIQUITY OF THE COW-POX, AND THE KNOWLEDGE, THAT IT WAS A SECURITY AGAINST THE SMALL-POX; AND OF SOME RUDE ATTEMPTS FORMERLY MADE OF ACQUIRING THIS DISEASE.

PURSUING the ſame conduct in this diſquiſition, as in that of the *ſmall-pox*, we ſhall find that the knowledge of the ſecurity which the cow-pox gave over the ſmall-pox had long prevailed in many parts of England; and the untutored ſenſe of mankind even led to the adopting the practice of *taking this diſeaſe*, as a ſecurity againſt the ſmall-pox.

PROOF 1. The Rev. JOHN SMITH of Wendover, to whom (ſays Dr. Pearſon) I owe many thanks for very willingly, at my requeſt, taking upon himſelf the trouble of making inquiries in his neighbourhood, informs me, "that the high land of his pariſh does not admit of dairying upon it, and the dairy farmers here know nothing of the cow-pox. But Mr. HENDERSON, the ſurgeon in the pariſh, whoſe practice takes him a little into the vale, tells me, that he has met with the diſeaſe; and that, a few years ago, he three times endeavoured to inoculate a lad,

who had been uſed to milking, but could only excite inflammation upon the arm, without any puſtulous appearance; and, upon inquiry, he found the lad had previouſly been affected with the cow-pox. Mr. WOODMAN, a ſurgeon at Ayleſbury, had met with the diſeaſe among the cow-boys in the vale. Mr. GREY, a ſurgeon of Buckingham, ſays, the diſorder is common among the milkers in his neighbourhood. He had not been led to conſider, particularly, the effects of the diſeaſe; but he remembers *one boy poſſeſſed of the idea that he could not take the* SMALL-POX *by inoculation, becauſe he had had the* COW-POX; and that he could only excite redneſs upon the boy's arm."

2. On calling at Mr. RHODES' milk farm on the Hampſtead Road, where there is a very large ſtock of cows, I found the cow-pox, ſays Dr. Pearſon, had not fallen under his obſervation; but two of the male ſervants were well acquainted with ſome parts of its hiſtory. It appeared, alſo, on inquiry, "that one of the cows had really laboured under the diſeaſe two months before, namely, in May laſt; but the milker was not infected, becauſe he ſaid there were no cuts on his hands, or abraſion of the cuticle. It was deſcribed very clearly to be a different diſeaſe from the common inflammations and eruptions which produce ſcabbed nipples. One of the male ſervants had often ſeen the diſeaſe in Wiltſhire and Glouceſterſhire. The milkers, he ſaid, were ſometimes ſo ill, as to lie in bed for ſeveral days, and

there

there was a fever at the beginning, as in the ſmall-pox, but that *no one ever died of it.* He had known *many perſons* who had laboured under the *cow-pox*, but who had never ſuffered the *ſmall-pox, although it prevailed in their own families*; except in *one inſtance* in which he was told that the perſon who took the ſmall-pox, had gone through the cow-pox when a child. The ſame ſervant ſaid it was a *common opinion*, that people who have been affected with the cow-pox, to uſe his own words, are "*hard to take the ſmall-pox.*"

3. A male ſervant of Mr. FRANCIS, who keeps a farm for milch cows on the road to Somers' Town, who appears to be a very intelligent man, and is ſaid to be a man of veracity, and had lived in dairy farms all his life, ſtated, "that he had ſeen the cow-pox 35 years ago at King's Wood in Somerſetſhire, and frequently there, and in London, ſince that time. The diſeaſe, he ſaid, was then vulgarly called the cow-pox; it appeared on their teats and udders with fiery or flame-like eruptions—was very infectious among the cows and the milkers; but never knew *either human creature or beaſt die of it.* It affects the hands and arms of the milkers with painful ſores, as large as a ſixpence, which laſt for a month or more, ſo as to diſable the ſufferers from continuing their employment. The diſeaſe breaks out eſpecially in the ſpring, but occaſionally at other times of the year. Moſt of the cows in his maſter's (Mr. Francis's) farm were

infected three years ago in the ſpring, at which time many of the milkers were alſo infected. A new cow is very liable to take the diſeaſe.—He had *always underſtood that a perſon who had had the* COW-POX, *could not take the* SMALL-POX, *and never knew in the courſe of his life an inſtance of the ſmall-pox in ſuch perſons.*"

4. Dr. WALL, profeſſor of phyſic at Oxford, writes: "A ſervant who has kept the cows of a conſiderable dairy-farm in this neighbourhood a great many years, told me, that he had had the cow-pox early in life. Yet about ſix or ſeven years ago he wiſhed, for ſecurity, to be inoculated for the ſmall-pox.—The operation was performed three ſeveral times, but no diſorder nor eruption enſued. The *ſurgeon*, a gentleman of *great eminence* in *this place*, aſked him if *he had ever had the cow-pox*; upon his anſwering *yes*, the *ſurgeon* replied, '*Then it is uſeleſs to make any farther trial.*' This ſervant, the next year, had ſeveral children inoculated by Sutton. He was with them all the time till their recovery, but did not receive the infection."

5. Dr. CROFT tells me, that, in Staffordſhire, to his knowledge, *the fact has been long known*, "*of the cow-pox, which prevails in that county, affording an exemption to the human ſubject from the ſmall-pox.*"

6. "My honourable friend, Mr. EDWARD HOWARD," ſays Dr. Pearſon, "has been aſſured, on very good authority, that of a relation, who is an officer in the Oxfordſhire militia, that it is a *received*

opinion among the ſoldiers, *that it is unneceſſary to be inoculated for the ſmall-pox if they have already laboured under the cow-pox*, as many of them have done."

7. *Extract of a letter from* Dr. FOWLER *to* Dr. PEARSON, *dated Sarum, October* 24, 1798.

" My dear Sir,

" The diſeaſe called cow-pox is known in this neighbourhood only to a few farmers, *but they underſtand that it is a preſervative from the ſmall-pox.* This morning, *Ann Francis*, a ſervant girl, aged 26 years, was brought to me. She informs me, that ſome years ago bluiſh puſtules aroſe on her hands, from milking cows diſeaſed by the cow-pox. Theſe puſtules ſoon became ſcabs, which, falling off, diſcovered ulcerating and were very painful, which were treated by a cow-doctor, and were long in healing. Some milk from one of the diſeaſed cows having ſpurted on the cheek of her ſiſter, and on the breaſt of her miſtreſs, produced, on theſe parts of both perſons, puſtules and ſores, ſimilar to her own on her hands. None of theſe three had ſuffered the ſmall-pox, nor have they gone through it ſince that time, although they have been much expoſed to the infection; and the ſiſter abovementioned has been inoculated three times for the ſmall-pox. The cow-doctor who attended theſe three women ſaid, " *he would forfeit his life if any of them ſhould afterwards have the ſmall-pox.*"

" With

"With ſincereſt good wiſhes for the ſucceſs of your inquiries, and all your other undertakings,

"I am, &c. &c.

"R. Fowler."

8. Dr. Pulteney, phyſician at Blandford, informs me, "that a very reſpectable practitioner acquainted him that of *ſeven* children whom he had inoculated for the ſmall-pox, *five* had been previouſly *infected with the cow-pox purpoſely*, by being made to handle the teats and udders of infected cows; n conſequence of which, they ſuffered the diſtemper. Theſe *five*, after inoculation for the ſmall-pox, did not ſicken; the other *two* took the ſmall-pox."

9. Dr. Barry, a very diſtinguiſhed phyſician in the North of Ireland, relates, among other caſes, the following:

"We have a woman here, *who*, 37 years ago, was brought with a *number of other children* to a dairy, for the expreſs purpoſe of being infected with a diſorder incident to cows, called by the Iriſh Shinach; which, according to the *general belief*, would for ever ſecure thoſe ſo affected from the ſmall-pox."

"She was afterwards twice inoculated for the ſmall-pox, but without effect; and the inoculator declined repeating the operation, alledging, *that there was*

was not the ſmalleſt chance of her catching the ſmall-pox, as he could aver from frequent experience."

" She has ſince that period been often expoſed to the ſmall-pox, and even ſlept with her own children in the height of the eruption, but could not take the diſeaſe."

We are next favoured by Dr. BARRY with the extract from a letter received, which more fully confirms this former ſentiment.

" It is full thirty years ſince my *mother* had the cow-pox. She recollects having had two puſtules on the hand, which were much inflamed, looked livid, and afterwards went on to ſuppuration. She was inoculated ſince, and expoſed to the infection of the ſmall-pox repeatedly, but without taking this diſeaſe, which has been *attributed to her having had the cow-pox*, known univerſally among our farmers by the name of SHINACH."

" I was laſt night ſpeaking to my *grandmother* on this ſubject. She had the cow-pox fifty years ago. At the time ſhe had the diſeaſe, ſhe was told there was ſcarcely a ſpring but this diſorder appeared in ſome of the farms among the cows; and *it was univerſally believed, that thoſe who took it were ever after exempted from the ſmall-pox, and that people expoſed themſelves to it as much as poſſible.*"

" My grandmother, who is more than eighty years old, declares, that the opinion of the SHINACH affording ſecurity from the ſmall-pox *always prevailed*

in that part of the country, as long as ſhe can remember any thing *."

In Glouceſterſhire, where Dr. Jenner reſided, the opinion "that the Cow-pox *prevented the* Small-pox" was indeed admitted by ſome: but the ſubject was extremely *doubtful* from the *difficulties* hereafter to be explained, which were ſoon cleared away by the bright emanations of a Jenner!

* Theſe curious facts, which came out *after* the eſtabliſhment of *vaccine inoculation* by the illuſtrious Dr. Jenner, are derived chiefly from the laudable activity of Dr. Pearson in his "*Inquiry*;" or are to be met with in the "*Phyſical Journal*," a medical magazine, which has gained the approbation of its numerous readers by the very candid manner it has conducted the extended information received reſpecting the *Cow-pox*, and the judicious remarks occaſionally introduced on this important diſcovery by its learned editors Drs. Bradley and Batty.

SECT. IX.

THE DISCOVERIES OF DR. JENNER RESPECTING THE COW-POX.

AFTER the peruſal of ſome parts of the two laſt ſections, it might appear ſurpriſing to many, that the *cow-pox* was not *long ago* made a ſubject of general attention, and, by an apparently eaſy tranſition, introduced as a ſubſtitute for variolous inoculation.—But when we conſider how few there are who dare quit the trammels of education, and depart from the beaten track; how few that have activity of mind ſufficient, and reſolution, to inveſtigate a ſubject involved in much obſcurity; and, indeed, how ſeldom fortunate the ſearchers into difficult ſubjects are, ſo as to unravel the whole perplexity, and force conviction upon a world, fearful of becoming the dupes of viſionary ſchemes, and adverſe to the receiving of novelties; no one will, after ſuch a conſideration, refuſe his aſſent to the merit aſcribed to Dr. JENNER.

Inſtead of being dazzled at the newneſs of this ſubject, and overwhelmed with the grandeur of one conception; inſtead of being ſatisfied with the ſingle and important diſcovery, that the *vaccine inoculation* could be made a ſubſtitute for the *variolous* (the COW-POX for the SMALL-POX); "a diſcovery

covery ſo ſalutary to the human race," and ſeemingly ſufficient to ſatiate the fulleſt ambition; this great phyſician patiently laboured throughout the whole ſubject, and traced *alſo* the origin of the cow-pox, its ſeveral ſtages, its diſcrimination from other puſtular diſeaſes with which it might be confounded, and conducted this arduous inveſtigation with a penetration and modeſty the moſt admirable!

The cold ſtatue-like inſenſibility of ſome; the affected indifference of others; the ſneer uttered by this man; the irritable ſelf-love of the other; the attachment of mankind for the practice of their fathers; the hatred of novelty; all the low and vulgar prejudices *; with falſehoods abundantly forged,

* Among theſe can we refrain from reckoning the Queries made by Dr. MOSELEY in his "*Medical Obſervations.*"

"The ſmall-pox (ſays this writer) is undoubtedly an *evil*; but we underſtand the *extent* of that ill, which we *had better bear*

"Than fly to others we *know not of.*"

"The ſubject reſpecting the diſtempers ariſing from the brute creation, of which we know *but little* at preſent, has not been overlooked by the learned and curious, nor is hiſtory deſtitute of *many inſtances* of their *fatal effects* to the human race."

"Who knows what ideas may not ariſe in the courſe of time from a *brutal fever* having excited its incongruous impreſſions on the brain?"

"Who knows, alſo, but that the *human character* may undergo

forged *, and miſtaken facts, aſſailed Dr. JENNER, as

dergo *ſtrange mutation* from quadrupedan ſympathy, and that ſome modern PASIPHAE may rival the fables of old?"

"I write this," adds Dr. Moſely, "to ſtop the hurry of public *credulity*, and guard parents againſt ſuffering their children becoming *victims* to experiment."

"I am truly ſorry," ſays Dr. LETTSOM, "to find my friend Dr. MOSELEY, whoſe learning and extenſive practice muſt have great influence on the public opinion, ſhould have conceived very *falſe notions* of VACCINE INOCULATION, and oppoſe it on account of its *origin*, and even venture ſo far as to brand the *promoters* of the diſcovery of Dr. JENNER, as perſons *infected* with *Cow-mania*." Vide note at page 110.

* "It has been aſſerted, that perſons have had the ſmall-pox after having been affected with the cow-pox; and ſome facts have been publiſhed with a view to ſhow that inſtances of this kind have actually happened. But all theſe, as far as I have ſeen, have been very defective in not affording ſufficient proof, that the affection, ſuppoſed to have been the cow-pox, was in *reality* that diſeaſe." WOODVILLE.

For a full detection of numerous forgeries and errors, vide an elaborate Treatiſe on the Cow-Pox, in two volumes octavo, 500 pages in each volume, containing "*the Hiſtory of* VACCINE INOCULATION, *and an Account of the various publications which have appeared on the ſubject, in Great Britain, and other parts of the world. By JOHN RING, Member of the Royal College of Surgeons in London.*"

"The practice of inoculating with vaccine matter is introduced," ſays this laborious and energetic author, "under the moſt happy auſpices. It was firſt uſhered into the world by a phyſician, endowed *with every accompliſhment that can adorn his profeſſion*; it has ſince been adopted by others, *who have diſtinguiſhed themſelves in ſimilar purſuits*."

"There

as they did our immortal HARVEY, at the onſet; but he ſtood like a rock immoveable:

Ille—velut rupes, vaſtum quæ prodit in æquor,
Obvia ventorum furiis, expoſtaque ponto,
Vim cunctam atque minas perfert cœlique mariſque,
Ipſa immota manens.

VIRGIL.

and

"There are, however, ſome perſons, equally hoſtile to all excellence, and to all improvement, who declare open war againſt this *new light*; like the bat, which cannot endure the face of day. One of them intimates, in the *Gentleman's Magazine*, "that he is determined to go to church through the ſame dirty road where his anceſtors trudged before him; that if his anceſtors had worſhipped Belzebub, he would have worſhipped Belzebub alſo; that he wiſhes to practiſe phyſic, as he always has practiſed it; and that he is a ſworn enemy to all *INNOVATION*, in *religion, politics*, and *phyſic*."

"If innovation in the practice of phyſic is to be excluded, adieu to all improvement! It is therefore to be hoped, that thoſe who entertain the ſame ſentiments, already practiſe it in perfection!"

"For the ſake of others, who have not attained that conſummate excellence, ſo devoutly to be wiſhed,—who conſider medicine as in a progreſſive ſtate,—and, with HIPPOCRATES, deem it an art only to be matured by length of time,—I ſhall extend my reſearches; and endeavour to collect, from every quarter, the *teſtimonies* advanced in favour of this practice, and the *objections* urged againſt it."

"To thoſe who have peruſed all that has been written in its behalf, and ſeen the diſeaſes under the mild aſpect which it now aſſumes, any farther attempt to recommend it may appear like a waſte of argument; but, having conſidered

and patiently liſtening to, and anſwering all objections *, he evinced himſelf both the philoſopher and the gentleman.

1. *Reſpecting the origin of the* Cow-pox Dr. Jenner *offers the following conjecture:*

He remarks "that, the active quality of the virus from the horſes' heels is greatly increaſed after it has acted on the nipples of the cow, as it *rarely* happens that the horſe affects the dreſſer with ſores, and as rarely that a milk-maid *eſcapes* the infection when ſhe milks infected cows. It is moſt active *at the commencement of the diſeaſe*, even before it has acquired a pus-like appearance; indeed I am not confident whether this property in the matter does not entirely ceaſe as ſoon as it is ſecreted in the form of pus. I am induced to think it does ceaſe, and

ſidered the *prejudices that ſtill prevail, owing to ignorance and miſrepreſention*, I eſteem it a SACRED DUTY to try to *diſpel the miſt*, and *free the mind from deluſion*."

"Oh! while adown the ſtream of time thy name
"Expanded flies, and gathers all its fame,—
"Say, ſhall *my little bark* attendant ſail,
"Purſue the triumph, and partake the gale!" Pope.

Certainly it will; and the name of Ring will paſs down the current of time, as one of the moſt active and able champions of the fame of Dr. Jenner; and his work will be eſteemed as a moſt faithful mirror of the various ſentiments excited by, and the progreſs of, this immortal diſcovery!

* Vide further obſervations on the Variolæ Vaccinæ, or Cow-pox, by E. Jenner, M.D. F.R.S. being a vindication of his former opinions, with additional remarks.

that it is the thin darkiſh-looking fluid *only*, oozing from the *newly-formed cracks in the heels* *, ſimilar to what ſometimes appears from eryſipelatous bliſters, which *gives the diſeaſe*. Nor am I certain that the nipples of the cows are at *all times* in a ſtate to receive the infection. The appearance of the diſeaſe in the ſpring and early part of the ſummer, when they are diſpoſed to be affected with ſpontaneous eruptions ſo much more frequently than at other ſeaſons, induces me to think, that the virus from the horſe muſt be received upon them when they are in this ſtate, in order to produce effects: experiments, however, muſt determine theſe points. But it is clear that when the cow-pox virus is once generated, that the cows cannot reſiſt the contagion, in whatever ſtate their nipples may chance to be, if they are milked with an infected hand."

He goes on to ſay, " whether the cow-pox is a *ſpontaneous* diſeaſe in the cow, or is to be attributed to matter conveyed to the animal, as I have conceived, from *the horſe*, is a queſtion, which, though I ſhall not attempt now fully to diſcuſs, yet I ſhall digreſs ſo far as to adduce ſome obſervations, and give my reaſons for taking up an opinion that to ſome has appeared extremely *fanciful*. The aggregate of theſe obſervations, though not amounting to poſitive proof, forms *preſumptive evidence* of ſo forcible a kind, that I imagine it might on any

* This obſervation ſhould be carefully conſidered by experimenters.

other

other perſon have made the ſame impreſſion it did on me, without fixing the imputation of *credulity* *."

" FIRST.

* Relative to Dr. WOODVILLE's oppoſition to Dr. JENNER as to the origin of the Cow-pox, who repreſents Dr. Jenner as "*miſled*," (Dr. W— not ſucceeding in producing the *cow-pox* from the greaſe in horſes,) all we dare at preſent ſay is,"—

" Humanum eſt errare." HOR.

a motto which may be as a ſalvo applied to either party. And we would wiſh the reader to reflect, that, as long as the *Cow-pock matter* is to be procured with facility for inoculation, this ſubject may be deemed *ſpeculative*; and concerning the *prejudice* of taking a diſeaſe from ſo uſeful an animal as a *horſe*, or ſo ſweet an animal as a *cow*, is certainly a point *immaterial*. The head-ache yields as readily to *black* leeches, as if they were beautifully variegated; and the *ſhining ſplendour* of the Spaniſh flies is of little conſideration to one ſmarting under a bliſter, or labouring under ſtrangury. The reader ſhould look only to *facts*; for, whether the *axe* is ſilver or iron, the ſtroke is the ſame.

Dr. Pearſon ſays " that Dr. PARR (not the Rev.) is the only learned man whom he knew oppoſed to the cow-pox." The only eminent author whom I know, who at once conceived a violent prejudice againſt *vaccine inoculation*, is the learned Dr. MOSELEY, ſo often mentioned in the notes. Like a counſellor he took advantage of the difference of opinion betwixt Dr. Jenner and Dr. Woodville " *as to the origin of the cow pox*;" and thus humouroufly treated a ſubject too grave and too important for " ſerious trifling."

" The *cow pox*," ſays this writer, " has lately appeared in England. This is a *new ſtar* in the ÆSCULAPIAN ſyſtem. It was firſt obſerved from the provinces. It is ſo luminous there, that the *greaſy-heeled* hind feet of PEGASUS are viſible to the naked eye; the *hidden parts* of that conſtellation, which have puzzled aſtronomers, as *to the ſex* of Pegaſus, and which HIPPARCHUS, TYCHO, HEVELIUS, FLAMSTEAD, and

"FIRST. I conceived this was its ſource, from obſerving that where the cow-pox had appeared among the dairies here (unleſs it could be traced to the introduction of an infected cow or ſervant), it had been preceded at the farm by a horſe diſeaſed in the manner already deſcribed, which horſe had been attended by ſome of the milkers."

"SECONDLY. From its being a popular opinion throughout this great dairy country, and from its being inſiſted on by thoſe who here attend ſick cattle."

"THIRDLY. From the total abſence of the diſeaſe in thoſe countries where the men ſervants are not employed in the dairies."

"FOURTHLY. From having obſerved that morbid matter generated by the horſe frequently com-

HERSCHEL, could never diſcover. The reaſon now is evident. The medical PYTHONISSAS are divided in their opinions reſpecting this phenomenon."

But, to do juſtice to my friend Dr. MOSELEY, after this diſplay of *deep-reading*, and *queries too ludicrous* to be delivered, I think, in earneſt, he concludes, "I wiſh it to be underſtood, I mean no *diſreſpect* to the *ingenious*, nor to *diſcourage inquiry*; THE OBJECT WELL DESERVES IT:—all I deſire is, that *this ſubject* may undergo a *deep*, *calm*, and *diſpaſſionate* ſcrutiny. *In the mean time*, I would guard parents againſt ſuffering their children becoming *victims* to *experiment*." The language uſed, however, as might be expected, gave univerſal offence; and what was ſaid half in joke, was ſuppoſed to be meant in gravity; and it was imagined that ſuch opinions might ſtifle the inquiry; but, according to an old adage, "Magna eſt veritatis potentia, et prævalebit."—

municates,

municates, in a caſual way, a diſeaſe to the human ſubject ſo like the cow-pox, that in many caſes it would be difficult to make the diſtinction between one and the other."

"FIFTHLY. From being induced to ſuppoſe, from experiments, that ſome of thoſe who had been thus affected from the horſe reſiſted the ſmall-pox."

"SIXTHLY. From the progreſs and general appearance of the puſtule on the arm of the boy whom I inoculated with matter taken from the hand of a man infected by a horſe; and from the ſimilarity to the cow-pox of the general conſtitutional ſymptoms which followed."

"One inſtance has lately occurred to me," adds Dr. JENNER, "of the ſyſtem being affected from the matter iſſuing from the heels of horſes, and of the perſon remaining afterwards unſuſceptible of the variolous contagion; and another, where the ſmall-pox appeared obſcurely."

"THOMAS PEARCE is the ſon of a ſmith and farrier near to this place. He never had the cow-pox; but, in conſequence of dreſſing horſes with *ſore heels* at his father's, when a lad, he had ſores on his fingers which ſuppurated, and which occaſioned a pretty ſevere indiſpoſition. Six years afterwards I inſerted variolous matter into his arm repeatedly, without being able to produce any thing more than ſlight inflammation, which appeared very ſoon after the matter was applied, and

afterwards I expoſed him to the contagion of the ſmall-pox with as little effect."

"Mr. James Cole, a farmer in this pariſh, had a diſeaſe from the *ſame ſource* as related in the preceding caſe, and ſome years after was inoculated with variolous matter. He had a little pain in the axilla, and felt a ſlight indiſpoſition for three or four hours. A few eruptions ſhewed themſelves on the forehead, but they very ſoon diſappeared without advancing to maturation."

"It is a remarkable fact, and well known to many, that we are frequently foiled in our endeavours to communicate the ſmall-pox by inoculation to blackſmiths, who in the country are farriers. They often, as in the above inſtance, either reſiſt the contagion entirely, or have the diſeaſe anomalouſly. Shall we not be able *now* to account for this on ſome rational principle?"

"I fear it would be treſpaſſing too far on the patience of my readers to adduce the *general teſtimony* of our farmers in ſupport of this opinion; yet I beg leave to introduce an extract of a letter on this ſubject from the Rev. Mr. Moore, of Chalford Hill, in this county."

"In the month of November, 1797, my horſe had diſeaſed heels, which was certainly termed the *greaſe*; and at a ſhort ſubſequent period my cow was alſo affected with what a neighbouring farmer (who was converſant with the complaints of cattle) pronounced to be the *cow-pox*, which he at the

ſame

ſame time obſerved my ſervant would be infected with: and this proved to be the caſe; for he had eruptions on his hands, face, and many parts of the body, the puſtules appearing large, and not much unlike the ſmall-pox, for which he had been inoculated a year and a half before, and had then a very heavy burthen. The puſtules on the face might ariſe from contact with his hands, as he had a habit of rubbing his forehead, where the ſores were the largeſt and thickeſt."

"The boy aſſociated with the farmer's ſons during the continuance of the diſeaſe, neither of whom had had the ſmall-pox, but they felt no ill effects whatever. He was not much indiſpoſed, as the diſeaſe did not prevent him from following his occupations as uſual. No other perſon attended the horſe or milked the cow, but the lad above mentioned. I am firmly of opinion that the diſeaſe in the heels of the horſe, which was a *virulent greaſe*, was the cauſe of the ſervant's and the cow's malady."

"The origin of the cow-pox," ſays Mr. RING, the very able advocate of Dr. Jenner, in a letter he publiſhed in the London Medical Review, "is *now* clearly aſcertained. Dr. Jenner lately ſent me ſome matter which Mr. TANNER, of Rockhampton in Glouceſterſhire, produced by inoculating a cow from *the heel of a horſe*; and alſo from the dairy-maid who milked the cow. The former, being taken at a very late period of the diſeaſe, failed; but the

latter took place, and the *true vaccine puſtule* has been excited by it four or five times ſucceſſively."

"When Dr. MARSHALL, of Stonehouſe, was conſulted about the dairy-maid of a farmer in his neighbourhood, he perceived four or five puſtules on the back of her hand. Upon inquiry, it was found that the cow-pox was in the farm; and that the farmer's ſon, one morning when he had been dreſſing *the heels of a horſe*, milked the cow in which the diſeaſe afterwards broke out, becauſe ſhe was too unmanageable for the milk-maid."

"Mr. RANKIN, an eminent ſurgeon, of Eaſtbourn, lately ſent me a caſe of a diſeaſe, occaſioned by matter from *the horſe's heel*, greatly reſembling the cow-pox; and I am informed by good authority, that Sir Chriſtopher Pegge is poſſeſſed of evidence, to prove the truth of the opinion advanced by Dr. Jenner."

In the Medical Journal for November, we have the pleaſure, as hinted above, to find a letter from Sir CHRISTOPHER PEGGE, the learned reader on anatomy in the univerſity of Oxford, concerning the origin of the vaccine virus.

In this letter Sir Chriſtopher Pegge relates a ſeries of facts, tending to eſtabliſh Dr. Jenner's opinion, that the cow-pox is originally produced by the matter of *greaſe*. Theſe facts were communicated to Sir Chriſtopher Pegge by Mr. Lupton, ſurgeon, of Thame.

Sir Chriſtopher Pegge ſays, "the attention of Mr.

Mr. LUPTON was firſt drawn to the preſent ſubject in March laſt; when the ſon of Mr. WRAY, farmer, of Ichford, applied to him on account of a complaint in his hand, attended with ulcerations very much reſembling the cow-pox. There was evidently a very great derangement of the ſyſtem, and the ſymptoms plainly indicated an abſorption of the morbid matter; as the caſe was alſo attended with conſiderable ſwelling of the hand and arm, an enlargement of the axillary glands, rigors, pain in the head and back, together with a greatly increaſed quickneſs of the circulation."

"He could only account for theſe complaints, from his having waſhed *the ulcerated heels of a horſe*; having had no previous communication with the cows."

"Theſe circumſtances led Mr. LUPTON to conceive, that there might be a diſeaſe incident to the horſe, analogous to the cow-pox, and communicable to the cow; and, upon repeated inquiry, he was ſatisfied, that it was not the common greaſe to which horſes are liable, that had produced the above effects."

"Mr. Lupton was ſo good as to communicate this information to me at the time; treating it as a matter of curioſity rather than of *ſerious* inveſtigation; and I heard no more of him on this ſubject, till the 8th of April, when I received the following letter:"

"Dear

"Dear Sir,

"Since my laſt letter reſpecting Mr. WRAY's ſon, I have had another caſe of infection communicated to the human ſubject; owing to matter abſorbed from the *ulcerated heels of a horſe.* The perſon is RICHARD HUNT, a ſervant of Mr. Randolph, of Thame-Park Farm; whoſe firſt ſymptoms were ſtiffneſs and uneaſineſs of the arm, ſwelling of the axillary glands, ſucceeded by puſtules on the hand, and a very painful ſuppuration of the middle finger; which had that blue appearance deſcribed by Dr. Jenner, as indicating the *true vaccine diſeaſe.* Theſe were accompanied with rigors frequently recurring, attended with great heat, anxiety, giddineſs, pain in the head and back, ſickneſs and vomiting."

"Such were the appearances when I firſt ſaw him, which was on Sunday, March 30. On the 31ſt, he had a very bad night, and had been ſlightly delirious; the other arm growing ſtiff and painful. April 1ſt, he was much better in every reſpect, except the painful ſtate of the finger, and the inflammation of the hand and arm. The courſe of the lymphatics was at this time beautifully marked with ſtreaks of a vivid red colour, extending from the wriſt to the axilla. April 2d, he continued better. April 3d, he had a bad night, from the pain of the finger. A puncture was now made, and about two tea-ſpoonfuls of a dark brown coloured fluid were diſcharged."

"April

" April 4th, the cuticle was removed; and diſcovered a ſhining red ulcerated ſurface, in the middle of which was a ſpot of a ſloughy appearance, of the ſize of a ſilver penny. This was covered with the red nitrate of quickſilver. The inflammation, pain, and ſwelling of the hand and arm, were now conſiderably abated; and in other reſpects he was much relieved. April 6th, the finger was much better: the puſtules of the hand had a *dark-coloured depreſſion in the centre, ſurrounded with an elevated margin of matter*. From this time he had no complaint. It muſt be particularly remarked, that this man has not milked any cow ſince laſt Michaelmas."

We are then informed, " that on the 9th of April, JOHN WATSON, another ſervant of Mr. Randolph, applied to Mr. Lupton, with ſymptoms ſimilar to thoſe of the former; in conſequence of having aſſiſted Hunt in dreſſing *the heels of the horſe*. WATSON was employed in milking the cows. Previous to the appearance of ulceration on his hands, the cows had been infected more than a week; and there can be no doubt that the cows had received infection from the horſe, through the medium of this man."

" Whether the ulceration in his hands was the immediate effect of matter received from the heels of the horſe, or of that which had undergone a modification in the teats of the cow," Sir Chriſtopher PEGGE obſerves, " it is not eaſy to decide; but he has

has no doubt that the virus was conveyed by this man from the heels of the horſe to the teats of the cow."

On the 18th of May Sir Chriſtopher PEGGE happened to be at Thame, and was informed by Mr. Lupton, " that a *third* ſervant of Mr. Randolph was affected in a ſimilar manner; and it was evident he had received the infection *from the cows*; as he had never aſſiſted in dreſſing the heels of the horſe. The diſorder from which this virus originates, we are told by Sir Chriſtopher Pegge, is termed by farriers a ſcratchy heel; and conſidered as widely different from common greaſe."

From the laſt of theſe men, Mr. Lupton inoculated ſeveral children; whom Sir Chriſtopher Pegge ſaw on the eighth day after inoculation, with the moſt decided appearance of *true cow-pox* upon them. " This appearance (he ſays) he could not miſtake, after having witneſſed ſo many inſtances of it at his friend's, (Mr. FERMOR's) of Tuſmore; whoſe benevolent and diſintereſted exertions have contributed ſo largely to the ſtock of facts in ſupport of a diſcovery which promiſes to be of the greateſt benefit to mankind."

" In all the children who were inoculated with this matter, the diſeaſe terminated favourably; and as neither of them has had the ſmall-pox, Mr. Lupton inoculated them with variolous matter, but *without effect*."

As the *origin* of the cow-pox appears to be of the

the utmoſt importance, as *the greaſe* of the horſe can produce the cow-pox at pleaſure, or, if not the cow-pox, might itſelf be uſed as a ſubſtitute for it; I ſhall beg leave to treſpaſs a little longer on my readers, and adduce a freſh authority of conſiderable weight.

A young man, a butcher at Middleton near Pickering in Yorkſhire, applied to Dr. Loy on account of painful ſores on both hands.

Theſe ſhewed a ſurrounding inflammation, and formed themſelves into veſicles.

A tumour aroſe alſo under the arm-pits, which ſoon after diſperſed.

A conſiderable degree of fever accompanied for a time the diſeaſe.

The patient could not account for it otherwiſe than from applying remedies to the heels of a horſe affected with the *greaſe*.

Two experiments with different cows were immediately commenced.

Experiment I.

In the *one* the fluid limpid matter immediately iſſuing from the greaſe of the horſe was inſerted into the teat of a cow.

On the *fifth* day the wound appeared rather elevated, and a faintiſh redneſs ſucceeded.

In a few days a veſicle formed containing a large quantity

quantity of watery fluid, of a purple tinge, as in the cow-pox.

Experiment II.

In the *other* cow, the matter was taken from the hand of the patient mentioned above, and inſerted into the udder.

On the *ninth* day there preſented itſelf a veſicle ſurrounded by a roſe-coloured rim.

The udder to a conſiderable extent was hard and painful, ſo that the animal would hardly ſuffer it to be handled.

The veſication continued to ſpread for ſeveral days, until it ſcabbed, and healed without any remedy.

Experiments III. & IV.

From *both theſe cows* on the *ninth day* matter was taken, and inſerted into the arms of two different patients.

The progreſs of the inoculation was cloſely watched, and the veſication, inflammation, and ſcabbing, was found *exactly* to correſpond with the appearances preſented by a mild inoculated cow-pox.

Both theſe children were afterwards plentifully inoculated with the ſmall-pox virus, *but without producing the diſeaſe.*

Experiment

Experiment V.

Dr. Loy's next experiment was with the fluid of the greaſe itſelf not modified by being ingrafted in the cow.

On the *third* day after the inſertion a ſmall inflammation ſurrounded the inciſion.

On the *fourth* the inoculated part was much elevated, and a veſicle, of a purple colour, was completed on the *fifth*.

On the *ſixth* and *ſeventh* the veſicle increaſed, and the inflammation extended, and became of a deeper colour.

Then aroſe the feveriſh ſymptoms, as heat, pain in the head, difficulty of breathing, quick pulſe, tongue white, thirſt, ſickneſs, vomiting, which continued from the *ſeventh* to the *ninth* day.

This patient was inoculated with the ſmall-pox virus, but without its producing the diſeaſe.

Experiment VI.

From this patient, but one remove from the horſe, on the ſixth day matter was taken, and five children were inoculated, which ſucceeded in each, and took on the character of the mild cow-pock.

On the *tenth* day they were each inoculated with the ſmall-pox, but nothing appeared from the inſertion of the variolous matter, except a very ſmall

degree

degree of inflammation, which vaniſhed on the fifth day *.

2. Dr. JENNER *diſtinguiſhes the ſpurious from the real* cow-pox.

"In the courſe of the inveſtigation of this ſubject," ſays this accurate Examiner into nature, "which, like all others of a complex and intricate nature, preſented many difficulties, I found that ſome of thoſe *who ſeemed to have undergone the cow-pox*, nevertheleſs, on inoculation with the ſmall-pox, felt its influence juſt the ſame as if no diſeaſe had been communicated to them from the cow. This occurrence led me to inquire among the medical practitioners in the country around me, who all agreed in this ſentiment, that the cow-pox was not to be relied upon as a *certain* preventive of the ſmall-pox. This for awhile damped, but did not extinguiſh, my ardour; for, as I proceeded, I had the ſatisfaction to learn that the cow was ſubject to ſome varieties of ſpontaneous eruptions upon her teats; that they were all capable of communicating ſores to the hands of the milkers; and that whatever ſore was derived from the animal, was called in the dairy the cow-pox. Thus I ſurmounted a great

* Vide "*An Account of ſome experiments on the origin of the Cow-pox by* JOHN LOY, M.D." A very ingenious pamphlet, which we would recommend to the careful peruſal of thoſe who wiſh to make experiments on this ſubject; as *the greaſe*, from other trials, is proved in the ſame book incapable, in every inſtance, of producing the diſeaſe required.

obſtacle, and, in conſequence, was led to form a diſtinction between theſe diſeaſes, one of which only I have denominated the *true*, the others the *ſpurious* *, cow-pox, as the latter poſſeſs no ſpecific power of guarding the conſtitution."

" This impediment to my progreſs was not long removed, before another, of far greater magnitude in its appearance, ſtarted up. There were not wanting inſtances to prove, that when the *true* cow-pox broke out among the cattle at a dairy, a perſon who had milked an infected animal, and had thereby apparently gone through the diſeaſe in common

* One of the chief objects, then, of our purſuit, as I have obſerved, ſhould be, to learn how to *diſtinguiſh* with accuracy between that peculiar puſtule which is the *true* cow-pock, and that which is *ſpurious*. Until experience has determined this, we view our object through a miſt. Let us for inſtance ſuppoſe, that the ſmall-pox and the chicken-pox were at the ſame time to ſpread among the inhabitants of a country which had never been viſited by either of theſe diſtempers, and where they were quite unknown before; what confuſion would ariſe! The *reſemblance* between the ſymptoms of the eruptive fever and between the puſtules in either caſe would be ſo ſtriking, that a patient, who had gone through the chicken-pox to any extent, would feel equally eaſy with regard to his future ſecurity from the ſmall-pox, as the perſon who had actually paſſed through that diſeaſe.—As far as I could learn, the *ſpurious* puſtules are of a much milder nature than thoſe which ariſe from that contagion which conſtitutes the *true* cow-pox. They are always free from the *bluiſh* or *livid* tint, ſo conſpicuous in the puſtules of that diſeaſe. No eryſipelas attends them, nor do they ſhew any phagedenic diſpoſition as in the other caſe; but *quickly terminate in a ſcab*, without creating any apparent diſorder in the cow. JENNER.

with others, was liable to receive the ſmall-pox afterwards. This, like the former obſtacle, gave a painful check to my fond and aſpiring hopes: but reflecting that the operations of nature are generally uniform, and that it was not probable the human conſtitution (having undergone the cow-pox) ſhould in ſome inſtances be perfectly *ſhielded* from the ſmall-pox, and in many others remain *unprotected*, I reſumed my labours with redoubled ardour. The reſult was fortunate; for I now diſcovered that the virus of the cow-pox was liable to undergo *progreſſive changes* *; and that, when it was applied to the human ſkin in its degenerate ſtate, it would produce the ulcerative effects in as great a degree

* This obſervation will fully explain the *fertile ſource* of thoſe errors which have been committed by many inoculators of the cow-pox. Conceiving the whole proceſs to be ſo extremely ſimple, as not to admit of a miſtake, they have been heedleſs about the *ſtate* of the vaccine virus; and finding it limpid, as part of it will be, even in *an advanced ſtage* of the puſtule, when the greater portion has been converted into a ſcab, they have felt an improper confidence, and ſometimes miſtaken a *ſpurious puſtule*, which the vaccine fluid in this ſtate is capable of exciting, for that which poſſeſſes the perfect character. After the *ninth* day it is uncertain, whether the *genuine* cow-pock will be produced. Another ſource of the *ſpurious* diſeaſe has ariſen alſo from the *true early* matter of the cow-pock being taken on a lancet; this has corroded the iron, and the matter then will only produce a *common ulcerating ſore*, having none of the *genuine* characters of the cow-pock.—Holding the matter before the fire to dry it will immediately take away its ſpecific virtue. The heat of the body has produced the ſame effect. JENNER.

as when it was not decompoſed, and ſometimes far greater; but, having loſt *its ſpecific properties*, it was incapable of producing that change upon the human frame which is requiſite to render it unſuſceptible of the variolous contagion: ſo that it became evident a perſon might milk a cow *one day*, and, having caught the diſeaſe, be for ever ſecure; while another perſon, milking the ſame cow the *next day*, might feel the influence of the virus in ſuch a way as to produce a ſore or ſores, and in conſequence of this might experience an indiſpoſition to a conſiderable extent; yet, as has been obſerved, the *ſpecific* quality being loſt, the conſtitution would receive no change ſo as to render it ſecure from the ſmall-pox."

3. Dr. JENNER *firſt attempts the regular* inoculation *of the* cow-pox.

"During the inveſtigation of the caſual cow-pox, I was ſtruck," continues the great Dr. JENNER, "with the idea that it might be practicable to propagate the diſeaſe by *inoculation*, after the manner of the ſmall-pox, firſt from the cow, and finally from one human being to another. I anxiouſly waited ſome time for an opportunity of putting this theory to the teſt. At length the period arrived."

CASE I.

The firſt experiment was made upon a lad of the name of PHIPPS, in whoſe arm a little vaccine virus

was inſerted, taken from a puſtule on the hand of a dairymaid * who was infected by her maſter's cows, and it was inſerted on the 14th of May, 1796, by means of two ſuperficial inciſions, barely penetrating the cutis. By the *fourth* day a puſtule † appeared. On the *ſeventh* he complained of uneaſineſs in the axilla, and on the *ninth* he became a little chilly, loſt his appetite, and had a ſlight head-ache. During the whole of this day he was perceptibly indiſpoſed, and ſpent the night with ſome degree of reſtleſſneſs, but on the day following he was *perfectly well.*

The appearance of the inciſions in their progreſs to a ſtate of maturation were much the ſame as when produced in a ſimilar manner by variolous matter. The only difference which I perceived was, in the ſtate of the *limpid fluid* ariſing from the action of the virus, which aſſumed rather a darker hue, and in that of the efflorescence ſpreading round the inciſions, which had more of an *eryſipelatous look* than we commonly perceive when variolous matter has been made uſe of in the ſame manner; but the whole died away (leaving on the

* From the ſore on the hand of Sarah Nelmes.—See the preceding caſe and plate, page 28, of Jenner's Inquiry.

† This appearance was in a great meaſure new to me, and I ever ſhall recollect the pleaſing ſenſations it excited; as, from its ſimilarity to the puſtule produced by variolous inoculation, it inconteſtibly pointed out the cloſe connexion between the two diſeaſes, and almoſt anticipated the reſult of my future experiments. JENNER.

inoculated

inoculated parts *ſcabs* and ſubſequent *iſchars*) without giving me or my patient the leaſt trouble.

This caſe inſpired me with confidence; and, as ſoon as I could again furniſh myſelf with virus from the cow *, I made an arrangement for a ſeries of inoculations. A number of children were inoculated in ſucceſſion, one from the other; and after ſeveral months had elapſed, they were expoſed to the infection of the ſmall-pox; ſome by inoculation, others by variolous effluvia, and ſome in both ways; *but they all reſiſted it*, as will be ſhewn hereafter.

Case II.

William Summers, a child of five years and a half old, was inoculated the ſame day with Baker, with matter taken from the nipples of one of the infected cows, at the farm alluded to in note below.

He

* My reſearches were interrupted till the ſpring of the year 1797, when, from the wetneſs of the early part of the ſeaſon, many of the farmers' horſes in this neighbourhood were affected with *ſore heels* (the greaſe in its firſt ſtage) in conſequence of which the *cow-pox* broke out among ſeveral of our dairies, which afforded me an opportunity of making further obſervations upon this curious diſeaſe.

A mare, the property of a perſon who keeps a dairy in a neighbouring pariſh, began to have ſore heels the latter end of the month of February 1798, which were occaſionally waſhed by the ſervantmen of the farm, Thomas Virgoe, William Wherret, and William Haynes, who, in con-

 ſequence,

He became indiſpoſed on the *ſixth* day, vomited once, and felt the uſual ſlight ſymptoms till the *eighth* day, when he appeared perfectly well.

Case III.

From William Summers the diſeaſe was transferred to William Pead, a boy of eight years old, who was inoculated March 28th.

On the *ſixth* day he complained of pain in the axilla, and on the *ſeventh* was affected with the common ſymptoms of a patient ſickening with the ſmall-pox from inoculation, which did not terminate till the *third day* after the ſeizure.

The *efflorescent bluſh* around the part punctured in the boy's arm was truly characteriſtic of that which appears on variolous inoculation.

Case IV.

April 5th, *ſeveral children* and *adults* were inoculated from the arm of William Pead.

ſequence, became affected with ſores in their hands, followed by inflamed lymphatic glands in the arms and axilla, ſhiverings ſucceeded by heat, laſſitude and general pains in the limbs. A ſingle paroxyſm terminated the diſeaſe; for within twenty-four hours they were free from general indiſpoſition, nothing remaining but the ſores on their hands. Haynes was daily employed as one of the milkers at the farm, and the diſeaſe began to ſhew itſelf among *the cows* about ten days after he firſt aſſiſted in waſhing the mare's heels. Their nipples became ſore in the uſual way, with *bluiſh* puſtules. Jenner.

Hannah

HANNAH EXCELL, an healthy girl ſeven years old, and one of the patients abovementioned, received the infection from the inſertion of the virus under the cuticle of the arm in three diſtinct points *. The puſtules which aroſe in conſequence, ſo much reſembled, on the *ninth day*, thoſe appearing from the inſertion of variolous matter, that an experienced inoculator would ſcarcely have diſcovered a ſhade of difference at that period. Experience now tells me that almoſt the only variation which follows conſiſts in the puſtulous fluids remaining *limpid* nearly to the time of its total diſappearance; and not, as in the direct ſmall-pox, becoming *purulent*.

CASE V.

From this girl's arm matter was taken and transferred to that of J. BARGE, a boy of ſeven years old.

He ſickened on the *eighth* day, went through the diſeaſe with the *uſual ſlight ſymptoms*, and without any inflammation on the arm beyond the common effloreſcence ſurrounding the puſtule, an appearance ſo often ſeen in inoculated ſmall-pox.

* This was not done intentionally, but from the accidental touch of the point of the lancet, one puncture being always ſufficient. JENNER.

Proofs that theſe having had the cow-pock *were rendered inſuſceptible of the* ſmall-pox.

" In order to aſcertain whether my firſt patient PHIPPS, after feeling ſo ſlight an affection of the ſyſtem from the cow-pox virus, was ſecure from the contagion of the ſmall-pox, he was inoculated the 1ſt of July following with variolous matter, immediately taken from a puſtule."

" Several ſlight punctures and inciſions were made on both his arms, and the matter was carefully inſerted, *but no diſeaſe followed.*"

" The ſame appearances were obſervable on the arms as we commonly ſee when a patient has had variolous matter applied, after having either the cow-pox or the ſmall-pox."

" Several months afterwards he was again inoculated with variolous matter, but *no ſenſible effect was produced.*"

" It did not appear neceſſary, nor was it convenient to me, to inoculate the whole of thoſe who had been the ſubjects of theſe late trials; yet I thought it right to ſee the effects of variolous matter on ſome of them, particularly WILLIAM SUMMERS, (vide Caſe III.) the firſt of theſe patients who had been infected with matter taken from the cow."

" He was therefore inoculated with variolous matter from a freſh puſtule; but, as in the preceding caſes, *the ſyſtem did not feel the effects of it in the ſmalleſt degree.*"

" I had

"I had an opportunity alſo of having BARGE (Caſe V.) and WILLIAM PEAD (Caſe III.) inoculated by my nephew, Mr. Henry Jenner, whoſe report to me is as follows: "I have inoculated PEAD and BARGE, two of the boys whom you lately infected with the cow-pox. On the *ſecond* day the inciſions were inflamed, and there was a pale inflammatory ſtain around them. On the *third* day theſe appearances were ſtill increaſing and their arms itched conſiderably. On the *fourth* day the inflammation was evidently ſubſiding, and on the *ſixth* it was ſcarcely perceptible. *No ſymptom of indiſpoſition followed.*"

"To convince myſelf that the variolous matter made uſe of was in a perfect ſtate, I at the ſame time inoculated a patient with ſome of it who had never gone through the cow-pox, and it produced the *ſmall-pox* in the uſual regular manner."

"Theſe experiments," ſays Dr. JENNER, "afforded me much ſatisfaction; they proved that the matter in paſſing from one human ſubject to another, through five gradations, loſt none of its original properties, J. BARGE being the *fifth* who received the infection ſucceſſively from WILLIAM SUMMERS, the boy to whom it was communicated from the cow."

Theſe caſes of vaccine inoculation, added to a more extended experience, led to the FOLLOWING CONCLUSIONS.

FIRST

FIRST CONCLUSION.

Thoſe who have had the cow-pox, *either naturally, or by inoculation, are ever after inſuſceptible of the* ſmall-pox.

Both theſe poſitions were before proved by Dr. JENNER, and indeed the natural and inoculated cow-pox reſemble each other ſo much, except in the parts * affected, that we ſhould be ſurpriſed, if they were found to differ in their properties. They therefore illuſtrate each other.

When inoculation of the *ſmall pox* was firſt introduced, there was a diſpute whether or not theſe two diſeaſes were one and the ſame. " In the firſt place," ſays the learned MEAD, " there are ſome, who inſiſt upon it, that the eruptions produced by inoculation are not the genuine ſmall-pox, and con-

* The author of this pamphlet has inoculated in the arms, legs, neck, fingers, and different parts of the body, without finding a material difference with reſpect to the diſeaſe. It is ſo uniformly mild, that the ſhades of difference from the parts infected ſeem unimportant. The leg in female infants has been, however, preferred, and in boys the lower part of the arm, as being parts fartheſt removed from the fountain of circulation, and hence leſs ſubject to active inflammation, the chief or only conſideration in this diſeaſe which is often unaccompanied with any conſtitutional affection.

ſequently

ſequently that they cannot ſecure any one from having the diſeaſe *hereafter* *. Moreover, they take pains to bring teſtimonies of patients, who, after having undergone the artificial diſtemper, have nevertheleſs been *afterwards* ſeized with the "true one." "Now," continues Mead, "I own, I cannot underſtand how contagion, that is, the very ſeed of the diſeaſe, ſhould produce, not its own proper diſtemper, but another of a quite different kind. Neither certainly does it matter, by which

* We had not been ſo diffuſe in this part, more than the ſubject indeed merits, unleſs the objection againſt the cow-pox had been frequently urged, "that it only ſecures *for a time*."

"In this *cow mania*," ſays my learned friend Dr. MOSELEY, (who, it is to *me* moſt extraordinary ſhould have been the *firſt* to conceive and propagate the moſt glaring errors reſpecting vaccine inoculation), "it is not," ſays this προφήτης κακῶν, "enough for reaſon to conclude, that the cow-pox may leſſen *for a time* the diſpoſition of the habit to receive the infection of the ſmall-pox. All cutaneous determinations, catarrhal fevers, and every diſeaſe of the lymphatics, and medicines tending to what Sydenham would call depurating the ſyſtem, *do the ſame*." Again, "Who can foretell what miſery, from this cauſe, may not be brought on a family after *many years* of IMAGINARY SECURITY!"—Such, with more weight, were the arguments, as we ſee, urged againſt *variolous* inoculation at its *introduction*, which apply certainly much leſs to the cow-pox, as this diſeaſe is only taken by contact of the virus with an abraded cuticle, and therefore is, in fact, an *inoculation*; and Dr. JENNER with others have given us *certain* proofs of SIXTY-THREE YEARS *ſecurity* ariſing from the *natural*, or *caſual*, *cow-pox*.

way the infection is received, provided it brings forth manifeſt marks of the diſeaſe. And as to thoſe, who, after having been inoculated with ſucceſs, are, notwithſtanding this, ſaid to have ſuffered the ſmall-pox; I muſt proteſt, that, after the moſt diligent inquiry, I have not been able to find out one convincing proof of this kind. I very well know, that *a ſtory* is ſpread abroad, particularly by a late author, of a boy, upon whom, about three years after he had contracted the diſeaſe by inoculation, it broke out again. But I am well aſſured, that this narration is of doubtful credit; and that there were ſome of the family who affirmed, that no ſmall-pox appeared upon the inoculation; that the parents (as we eaſily believe what we wiſh) and that the byeſtanders did not care to take away from them this pleaſing miſtake."

"But, to ſpeak plainly, if ſuch a thing happened once, why do we not ſee it come to paſs oftener? Or what can a ſingle example, ſuppoſing it to be true and certain, avail, when innumerable experiments have produced nothing like it? However, ſome men are infected with an incurable itch of writing, and take great pleaſure in contradicting others, to whom they bear envy. Let us therefore give them leave to applaud themſelves, and enjoy their own vain glory."

SECOND CONCLUSION.

Thoſe who are labouring under the natural, or inoculated cow-pox, *cannot communicate this diſeaſe by* contagion.

The only admiſſion of the *cow-pox* is by actual meeting of the vaccine fluid with an abraded ſurface, as ſome ſore, ſcratch, chop, or crack of the cuticle; for the ſound fleſh, and likewiſe the breath, denies an avenue to this glorious *antidote*, the true *Mithridate*, of one of the moſt tremendous of the animal poiſons, which has laws *peculiar* to itſelf, little known, and deſerving attention.

When the *ſmall-pox* invades a village or town, terror and diſmay are ſpread in every direction. Suppoſing the air to be infected, ſome people carry their fears ſo far that they will not come even within a mile of the infected place; and to paſs the door of the houſe where the ſmall-pox is contained would be eſteemed an act of the greateſt hardihood. In order that we may know how far our fears are grounded, we muſt have recourſe to experiments actually made by inquiring phyſicians.

"Having tried many fruitleſs experiments, I concluded," ſays Dr. O'Ryan, "that the children, the objects of them, could not have eſcaped infection, but becauſe the variolous matter had loſt that ſpring, and that degree of energy, which, perhaps,

it

it may poſſeſs on ariſing immediately from the human body, I therefore placed a perſon, in the eruptive fever of the ſmall-pox by inoculation, at the diſtance of about half a yard from four children properly prepared; each expoſure continued one hour, and was repeated daily for a fortnight, reckoning from the commencement of the fever till the puſtules were become perfectly dry: not one of the four received the infection. Two months afterwards I inoculated three of theſe children: they had the diſtemper in the uſual mild manner, and recovered without difficulty."

"I can," ſays Dr. Currie, "bring many facts, to prove that the contagion has ſpread a very little way into the atmoſphere in ſituations where many patients have been confined together, and conſequently the quantity of effluvia greatly multiplied. Theſe are chiefly from the accounts of our Guinea voyages, in which the ſmall-pox uſed formerly to make, at times, dreadful havoc among the ſlaves. The practice, however, of late years has been, immediately on the appearance of the caſual diſeaſe on ſhipboard, to inoculate the whole cargo; and nothing can ſpeak more forcibly the ſafety of inoculation, than the complete ſucceſs with which it has generally been attended on perſons of all ages, entirely unprepared, and under circumſtances every way unfavourable. As, however, a general inoculation, under ſuch circumſtances, is always followed by unpleaſant, and ſometimes by deſtructive conſequences,

ſequences, it is not now uncommon to ſeparate the diſeaſed perſons, and to truſt to means of prevention for the ſafety of the reſt. Theſe frequently, perhaps, I might ſay generally, ſucceed, provided the voyage is performed with light and favourable winds, which is neceſſary to enable them to make the ſeparation complete. An inſtance of this has juſt occurred in a Guineaman, called the *Golden Age*. Soon after ſhe left the coaſt of Africa the ſmall-pox appeared, and, before the diſeaſe was known, eight perſons were affected; the whole were immediately brought on deck, their apartments waſhed and ventilated with the greateſt care, and the eight perſons ill were placed in the main-top about twenty feet from the deck, where they regularly paſſed through the diſeaſe. Before coming down, they were waſhed, the contagion was extinguiſhed, and the whole cargo, as well as crew, arrived in perfect health in the Weſt Indies. During all this time, the ſlaves, as is uſual, paſſed the day near them; but, though all were ſuppoſed liable to the diſeaſe, not one of two hundred and upwards thus expoſed received the infection. My friend Mr. Beg, formerly ſurgeon, afterwards maſter, of a Guineaman, and now a conſiderable merchant here, informs me, that, in one of his voyages, he practiſed the ſame method of ſtopping the contagion of this diſeaſe, and with the ſame ſucceſs. He acquaints me alſo, that twice, when the ſmall-pox appeared among the ſlaves, while they were at anchor on the coaſt, he put the infected perſons in

a boat

a boat a-ſtern of the ſhip, and effectually ſecured the people on board from the contagion."

I relate theſe facts to ſhew how far the power of our worſt enemy reaches, for, like a lion confined in a den, we may approach the railing to a certain diſtance with ſafety: but unfortunately the poiſon may be, and is often, put up in the clothes, and thus widely ſpreads its baneful influence around.

The *cow-pox* patient, on the contrary, may be approached, as near as we pleaſe, and the apparel does not imbibe one particle of infectious matter to propagate this diſtemper.

"Many inſtances," ſays Dr. Jenner, "have come under my obſervation, which juſtify the aſſertion that the diſeaſe cannot be propagated by effluvia. The firſt boy whom I inoculated with the matter of cow-pox, ſlept in a bed, while the experiment was going forward, with two children who never had gone through either that diſeaſe or the ſmall-pox, *without infecting either of them.*"

"A young woman who had the cow-pox to a great extent, ſeveral ſores which maturated having appeared on the hands and wriſts, ſlept in the ſame bed, with a fellow dairy-maid who never had been infected with either the cow-pox or the ſmall-pox, *but no indiſpoſition followed.*"

"Another inſtance has occurred of a young woman on whoſe hands were ſeveral large ſuppurations from the cow-pox, who was at the ſame time a daily nurſe to an infant, *but the complaint was not communicated to the child.*"

THIRD CONCLUSION.

None die of the Cow-pox *either taken naturally or from inoculation.*

The cow-pox *never kills, the natural and inoculated* ſmall-pox *not unfrequently.*—If the whole merit of the cauſe of *vaccine inoculation* depended on this ſingle point, it might reſt ſecure as the greateſt diſcovery ever made. *The cow-pox never deſtroys life!*—Glorious tidings!—Happy annunciation!—I who have loſt by *variolous inoculation* my firſt-born child; a boy, who, not alone in his parent's eye, but to all who knew him, promiſed the fulfilment of every wiſh, have a juſt right to exult in the preſent fortunate diſcovery of Dr. JENNER. How was his lovely form defaced, and what were his ſufferings, before death ſnatched him to an early tomb, has been drawn by me with a trembling hand, when I wrote my ſection on the ſymptoms and ravages of the ſmall-pox!—So faithful is the portrait that I have often witneſſed tears to flow in abundance, when this ſection has been read by others, as bringing to recollection many a ſimilar diſtreſſing ſcene exhibited by ſome favourite child, or by ſome friend's or relation's child.—*My* tears are *now* wiped away, and may *theirs* be alſo, by the *pleaſing view* of the *preſent ameliorated condition of humanity!*

FOURTH CONCLUSION.

The Cow-pox *never disfigures the countenance.*

To all who have the refined ſentiment of taſte, and contemplate the human form as the maſter-piece of creative power, and acknowledge, that female charms are deſtined by the ALMIGHTY as the zeſt of otherwiſe a vapid exiſtence, muſt grant every praiſe to the *Jennerian diſcovery*, which is never known to disfigure (as does often the natural and inoculated ſmall-pox) "the human face divine."— Although external appearances are not of themſelves ſolely to be deſired, I aſk, where is the parent, who does not wiſh for her daughters to poſſeſs a pure unblemiſhed heart in an elegant and pleaſing perſon? For often at the very firſt glance the ſoul takes fire, and ſoon after joins in holy bands of wedlock, the two ſexes deſtined by PROVIDENCE to make each other happy. But, when the features are all changed, the noſe drawn inward, a ſpeck perhaps in both eyes, and horrid ſeams pervade the pallid cheek, the mind of ſenſibility revolts at the ruins of fair nature, and marriage is prevented unleſs for the ſake of ſordid pelf!— I ſhall here beg leave to make a quotation from Dr. Beddoes's "*Hygeia.*"

" *Hygeia* *." " What impreſſion," ſays this ſagacious writer, " does not a ſallow unwholeſome complexion, *ſeams from the ſmall-pox*, ſcrophulous ſcars, and thoſe marks which debauchery is apt to ſtamp upon the face, make upon the ſpectator? Is he not in general diſpoſed to turn away in diſguſt from theſe appearances? or, if politeneſs forbid him to give way to his feelings, do they not riſe to a greater height for being ſuppreſſed?—And in what manner does the mind of thoſe who perceive themſelves to be objects of averſion react?—Inſtead of going for an anſwer to the theory, which explains how our habits are formed, I ſhall bring one of the moſt ſagacious of ſelf-obſervers to ſpeak for himſelf. The late profeſſor, J. GEORGE BUSCH, whoſe memory the city of Hamburgh is at this moment employed in honouring, tells of his having had the *ſmall-pox* at nine years old, and, though they were attended with no imminent danger, they left him *badly marked*. " I was afterwards informed," ſays this philoſopher, " that previouſly to this affliction I had a comely appearance. For myſelf, I had never attended to the point. But one thing I know well. After this time, I perceived that thoſe who viſited my parents, univerſally withheld from me that kindneſs of attention, which with

* " *Hygeia, or a ſeries of Eſſays on the means of avoiding habitual ſickline ſs, and premature mortality, on a plan entirely popular, by* THOMAS BEDDOES, M. D." A work admirably conceived, and likely to be productive of the greateſt benefit to the human race!

a child is the firſt motive to render himſelf agreeable, though they ſhewed it to my well-looking brothers and ſiſters, all the pranks that I, poor *pock-pitted* boy, to whoſe feet no dancing-maſter had given the right poſition, or drawn the head from between the ſhoulders, played in my vivacity, might indeed have been performed with an ill grace."

"This too, I ſhould obſerve, was the period when the chief art of education conſiſted in hard words and blows. On me reproaches rained from all quarters. When my parents, who alone treated me with any degree of ſenſe, carried me to Haarburg, my grandmother and a briſk grand-aunt ſo *maltreated* poor George, that my father and mother were extremely unwilling I ſhould repeat the viſit. In my grandfather's favour I ſtood all the higher, for he was ſtock-blind; ſo could not judge of me by my exterior."—From his ſubſequent hiſtory—particularly from the hypochondriacal complaint into which he afterwards fell—it ſhould ſeem that this man, wiſe and uſeful as he proved, never entirely recovered of the wound inflicted on his tender mind. What then can be hoped where fewer reſources exiſt, and fewer favourable circumſtances concur in riper years?

FIFTH CONCLUSION.

The Cow-pox *never deprives any one of ſight.*

There ſcarce needs a comment on the advantage of the *cow-pox* over the *ſmall-pox*, as here ſtated.

ſtated.—The bleſſing of viſion, ſo often deſtroyed by a *ſmall-pox puſtule* ſettling on the eye, is but too obvious to be much inſiſted on. How feelingly does MILTON deplore this loſs!

——— Thus with the year
Seaſons return; but *not to me returns*
Day, or the ſweet approach of ev'n or morn,
Or ſight of vernal bloom, or ſummer's roſe,
Or flocks, or herds, or human face divine;
But cloud inſtead, and ever-during dark,
Surrounds me,—from the cheerful ways of men
Cut off,—and for the book of knowledge fair
Preſented with an univerſal blank
Of nature's works, to me expung'd and raz'd,
And wiſdom at one entrance quite ſhut out.

SIXTH CONCLUSION.

The Cow-pox *does not leave any bad humours after it.*

The *ſmall-pox* has been juſtly accuſed of often leaving the body in that ſtate of wretched debility, as to make life afterwards only a continued ſeries of excruciating affliction. Beſides other horrid diſfigurations of the perſon, *ſcrophula*, or the king's-evil, not unfrequently follows the natural or inoculated ſmall-pox. The inſertion of the humour of a brute into the human body in *vulgar* conception led *à priori* to the expectation of a loathſome diſtemper. But fortunately for the human race a more benign diſeaſe than the *ſmall-pox* was the conſequence, and

one only ſimiliar to it, in having a ſomewhat reſembling puſtule *, and in the property, of ever after ſecuring from that fatal and loathſome diſtemper.

" Every practitioner in medicine," ſays Dr. Jenner, " who has extenſively inoculated with the *ſmall-pox*, or has attended many of thoſe who have had the diſtemper in the natural way, muſt acknowledge that he has frequently ſeen ſcrophulous affections, in ſome form or another, ſometimes rather quickly ſhewing themſelves after the recovery of the patients. Conceiving this fact to be admitted, as I preſume it muſt be by all who have carefully attended to the ſubject, may I not aſk, whether it does not appear probable that the general introduction of the ſmall-pox into Europe has not been among the leaſt conducive means in exciting that formidable foe to health? Having attentively watched the effects of the *cow-pox* in this reſpect, I am happy in being able to declare, that the diſeaſe does not appear to have the leaſt tendency to produce this deſtructive malady."

* In the *ſmall-pox* the inoculated puſtule is angulated, and numerous puſtules ſurround it; in the *cow-pox*, the puſtule has its edges regularly circumſcribed, and ſtands ſolitary; the *ſmall pox* puſtule contains firſt a fluid, then opaque matter, the *cow-pox* puſtule a gelatinous fluid, which never becomes converted into pus; the edges of the *one* is more elevated, in the *other* more depreſſed; the ſcab is alſo much darker and harder in the *cow-pox*. JENNER.

SEVENTH

SEVENTH CONCLUSION.

The Cow-pox *may be inoculated under all circumſtances.*

In our introductory remarks, when giving our reaſons why the inoculation with the *ſmall-pox* could not be made *general*, we enumerated, and explained the ground of thoſe *exceptions*, which have been juſtly made againſt *variolous inoculation*; as, *early infancy*, *time of teething*, *humours in the body*, *pregnancy*, *and old age*; *the danger of ſpreading the natural diſeaſe*,&c.—NOW NONE OF THESE OBJECTIONS apply to *vaccine inoculation*. Experience hath taught that it may be employed in all *ſeaſons*, and under *every circumſtance*, even the moſt *adverſe* to the *ſmall-pox inoculation*.

1. *Early infancy*.—Dr. JENNER relates, "that he cauſed an infant, but twenty hours old, to be inoculated for the cow-pox by his nephew HENRY JENNER; and this little ſtranger, ſo newly uſhered into life, felt but a very ſlight diſeaſe; and, being afterwards inoculated for the ſmall-pox, and expoſed to its contagion, *reſiſted* all attempts to communicate the ſmall-pox."

2. *Time of teething*.—We may adduce here the authority of Dr. DENMAN, one of the moſt eminent

accoucheurs in London, in confirmation of the experience of Dr. JENNER. "It became now the duty," ſays Dr. DENMAN, writing in the Phyſical Journal for April 1800, "of medical men, eſpecially of thoſe who are much engaged in the practice of inoculating for the ſmall-pox, or who are much conſulted in *infantile diſeaſes*, to declare their experience about vaccine inoculation, and examine into it with the greateſt poſſible care. For my own part, I can affirm, that I have ſeen inoculated with the cow-pox through my ſon-in-law, Mr. CROFT, a great many children *at all ages*, and they went through the diſeaſe without the leaſt ſign of danger, and even without much fever or indiſpoſition."

3. *Humours in the body, and other diſeaſes.*—As *ſcrophula* does not appear to be called into action by the cow-pox (vide Sixth Concluſion, p. 133.); but, on the contrary, there are caſes where this cruel diſorder has been found to be not only mitigated by vaccine inoculation, but alſo wholly removed, the dread of the ſubject being *humoury* is unimportant. Fat and lean children do equally well.—In my experience at Lowther the reader will find a caſe of *tinia capitis*, which was not at all increaſed under inoculation. Dr. Pearſon has recorded two caſes of *pſora* (itch), which, being unknown to me at the time, were inoculated; and from the puſtule, which was broken, vaccine matter was conveyed to different parts of the body, producing a very ſevere diſeaſe, which

appeared

appeared *puſtular* ſolely from this cauſe. The pſora, therefore, muſt be allowed to be a ground of excluſion to this, or any other inoculation: the only exception I am at preſent acquainted with.

"More than a thouſand ſubjects," ſays Mr. Dunning, ſurgeon at Plymouth Dock, "have been *vaccinated* in this neighbourhood during the laſt year. Some hundreds of them have fallen to my ſhare. Complete ſucceſs has been invariable in every caſe, where the vaccine character has been unequivocally expreſſed. With a very few exceptions, the indiſpoſition has been none at all, or the leaſt imaginable, and I know of no ſhade of accident that can fairly be attributed to the new practice. In one child a very general and obſtinate cutaneous complaint, which had previouſly reſiſted much external and internal medicine, very ſoon *diſappeared* after vaccination. *Health* and *firmneſs* have ſhortly ſucceeded it in ſeveral weakly children, under my own obſervation, and I have heard of many ſimilar occurrences; this has ſo *often* and ſo *ſtrikingly happened*, that it has more than once been propoſed to me to vaccinate *ſickly* children."

Beſides *humours* which militate againſt the ſmall-pox inoculation, *there are variety of diſeaſes*, which, if they attack at the ſame time the child labouring under the *ſmall pox*, or ſoon after, uſually prove fatal: a combination, however, not found to become aggravated by, or increaſe, the *cow-pox*.

"Miſs R—,

"Miſs R——, a young lady about five years old, was ſeized, on the evening of the eighth day after inoculation with vaccine virus, with ſuch ſymptoms as commonly denote the acceſſion of violent fever. Her throat was alſo a little ſore, and there were ſome uneaſy ſenſations about the muſcles of the neck. The day following a raſh was perceptible on her face and neck, ſo much reſembling the efflo-reſcence of the *ſcarlatina anginoſa*, that I was induced to aſk whether Miſs R—— had been expoſed to the contagion of that diſeaſe. An anſwer in the affirmative, and the rapid ſpreading of the redneſs over the ſkin, at once relieved me from much anxiety reſpecting the nature of the malady, which went through its courſe in the ordinary way, but not without ſymptoms which were alarming, both to myſelf and Mr. Lyford, who attended with me. There was no apparent deviation in the ordinary progreſs of the puſtule to a ſtate of maturity, from what we ſee in general; yet there was a total ſuſ-penſion of the *areola*, or florid diſcolouration around it, until the *ſcarlatina* had retired from the conſti-tution. As ſoon as the patient was freed from this diſeaſe, this appearance advanced in the uſual way."

"The caſe of Miſs H—— R—— is not leſs in-tereſting than that of her ſiſter above related. She was expoſed to the contagion of the *ſcarlatina* at the ſame time, and ſickened almoſt at the ſame hour. The ſymptoms continued ſevere about twelve hours, when the ſcarlatine raſh ſhewed itſelf faintly

faintly upon her face, and partly upon her neck. After remaining two or three hours it ſuddenly diſappeared, and ſhe became perfectly free from every complaint. My ſurpriſe at this ſudden tranſition from extreme ſickneſs to health, in great meaſure ceaſed, when I obſerved that the inoculated puſtule had occaſioned, in this caſe, the common efflorescent appearance around it, and that as it approached the centre, it was nearly in an eryſipelatous ſtate. But the moſt remarkable part of this hiſtory is, that, on the fourth day afterwards, as the efflorescence began to die away upon the arm, and the puſtule to dry up, the *ſcarlatina* again appeared, her throat became ſore, the raſh ſpread all over her. She went fairly through the diſeaſe, with its common ſymptoms."

" That theſe were actually caſes of *ſcarlatina* was rendered certain by two ſervants in the family falling ill at the ſame time with the diſtemper, who had been expoſed to the infection with the young ladies *."

I had a ſimilar caſe of ſcarlet fever and cow-pox in the child of Mr. White, coachman, Adams Mews. The efflorescent areola was arreſted, but became viſible after the ſcarlet fever ceaſed.

" I have met with," ſays Mr. Ring, " three caſes of the co-exiſtence of cow-pox and meaſles within the laſt ſix months. The firſt was in the child of Mr. Shepherd, in Phœnix-yard, Oxford-ſtreet. The

* From Jenner's Inquiry.

ſecond

ſecond was the child of ——— Hardey, No. 45, Peter-ſtreet, Weſtminſter. This caſe I ſhewed to Dr. Jenner and his friend Dr. Marſhall of Glouceſterſhire. It was alſo ſeen by Mr. Miſſiter. The third caſe was in the child of —— Groom, World's-end-paſſage, Newington-cauſeway."

" Mr. H. Jenner lately met with a ſimilar caſe.—In theſe different inſtances, the periods of the reſpective eruptions were various. In the firſt that occurred to me, the meaſles appeared on the ſecond day, and went through their regular courſe; yet in no degree retarded the progreſs of the vaccine puſtule. In the ſecond inſtance the meaſles appeared on the eighth day; and in the third inſtance on the fourth day; yet neither diſtemper interrupted the other. In the caſe which occurred to Mr. H. Jenner, the meaſles appeared the eighth day, without checking the progreſs of the puſtule. In thoſe caſes which I have ſeen, the areola ſurrounding the puſtule was perfect. This was alſo remarked by Dr. Jenner, in the caſe which I ſhewed him. Dr. Marſhall aſſured me, that nothing but ocular demonſtration of ſuch a caſe, could have convinced him of the poſſibility of its exiſtence."

" I have had," ſays Dr. Jenner, " an opportunity of trying the effects of the cow-pox matter on a boy who, the day preceding its inſertion, ſickened with the meaſles. The eruption of the meaſles, attended with cough, a little pain in the cheſt, and the uſual ſymptoms accompanying that diſeaſe, appeared

peared on the third day, and ſpread all over him. The diſeaſe went through its courſe without any deviation from its uſual habits; and, notwithſtanding this, the cow-pox virus excited its common appearances, both on the arm and on the conſtitution, without any ſenſible interruption; on the ſixth day there was a veſicle.

" 8th. Pain in the axilla, chilly, and affected with head-ache.

" 9th. Nearly well.

" 12th. The puſtule ſpread to the ſize of a large ſplit pea, but without any ſurrounding efflorescence. It ſoon afterwards ſcabbed, and the boy recovered his general health rapidly. But it ſhould be obſerved, that, before it ſcabbed, the efflorescence, which had ſuffered a temporary ſuſpenſion, advanced in the uſual manner.

" Here we ſee a deviation from the ordinary habits of the ſmall-pox; as it has been obſerved, that the preſence of the meaſles ſuſpends the action of variolous matter. However, the ſuſpenſion of the efflorescence is worthy of obſervation."

" A caſe of co-exiſtence of the cow-pox and the chicken-pox, which occurred to Mr. Little of Plymouth, is publiſhed by Mr. Dunning in his Obſervations on Vaccination. In that caſe the chicken-pox appeared on the tenth day of vaccine inoculation. The vaccine puſtule was at that time arrived at its height of inflammation, and maintained its ſpecific character."

A moſt

A moſt remarkable caſe occurred to me. A girl, aged about nine, living with the Dowager the Counteſs of C——, fell from the baluſtrade of the ſtair-caſe, from the height of above 40 feet, and pitched on her ſkull on the ſtone landing-place. The fracture was extenſive, and the largeſt piece of bone ever remembered was taken away by Mr. Heaviſide, which is to be ſeen in his invaluable muſeum. A ſilver plate now defends the brain. This child was cautiouſly watched in order that ſhe might not catch the natural ſmall-pox; and Dr. Turton and Mr. Heaviside were juſtly apprehenſive of inoculation. Their good ſenſe at once, however, coincided that ſhe ſhould be inoculated by me with *vaccine matter*, and ſhe paſſed through the diſeaſe without one day's illneſs, with only the ſlight inconvenience of the puſtule on the arm.

4. *Pregnancy*.—"I have inoculated," ſays Dr. Marshall, "a great number of females at different periods of pregnancy, and never obſerved their caſes to differ in any reſpect from thoſe of my other patients. Indeed the diſeaſe is ſo mild, that it ſeems as if it might at all times be communicated with the moſt perfect ſafety *." The ſame ſucceſs is recorded by Henry Jenner, who relates

* From Jenner's Inquiry, p. 161. Second Edition.

a caſe,

a caſe, where he inoculated a perſon a week previous to the accouchment *.

5. *Old age* no exception.—For confirmation of the truth of his poſition, I ſhall give the Report of the Committee of Vaccine Inoculation † at Paris, inſtituted by order of government.

" Report. The vaccine affection appears to us to be of a nature the moſt benign, and which hardly deſerves to be called a malady; not ſo much as one accident occurred to the hundred and fifty ſubjects who have been inoculated."

" The vaccine inoculation is no leſs practicable than exempt from accidents, *whatever be the age of the perſons* on whom it is performed. Infants have been inoculated in the arms of their nurſes; others at the age of one, two, and three years to fifteen. Perſons of the age of forty, and even fifty to ſeventy years, have alſo been inoculated, and always with the ſame ſucceſs."

" Nineteen ſubjects, ſubmitting to the operation, have been inoculated with freſh pus, taken every time from a variolous infant preſent. The commit-

* Vide Jenner's Inquiry, p. 174.

† The moſt diſtinguiſhed phyſicians at Paris were ſelected for this purpoſe; as,

Thouret, Director of the School of Medicine.

Pinel, Profeſſor of Phyſic in the School of Medicine.

Leroux, Clinical Profeſſor.

Parfait, Inſpector of the Military Hoſpitals, &c. &c.

tee,

tee, for the purpoſe of rendering the experiments more deciſive, employed in many of the ſubjects very deep inciſions, ſuch as, according to the inoculations, neceſſarily occaſion puſtules. In fourteen the inciſions were ſoon obliterated without any ſymptom of complaint. In the remaining five the effect can be conſidered in no other light than as the effect of local irritation, produced by the puncture of the ſkin."

EIGHTH CONCLUSION.

The inoculated Cow-pox *does not hinder the patient from following his daily avocations.*

The ſeveral objections that are to be urged againſt the *ſmall-pox inoculation* have no force againſt the *cow-pox inoculation.* Theſe two diſeaſes, as experience proves, are, *toto cælo*, different *, except in

* That this is the caſe is learnt from a full acquaintance with this important inveſtigation; and to effect this, we have been obliged to ſay a good deal on the ſmall-pox, and chiefly in appoſition, the one being as a foil to ſet forth the advantages of the other.—That theſe are different diſeaſes is proved from the following fact.—It is in vain you try to inoculate the cow with the *ſmall-pox.* No brute, as John Hunter aſcertained by repeated experiments, could be thus infected. But no ſooner is the vaccine matter, even taken from a human ſubject under vaccination, inſerted, than the *cow-pox* immediately ſucceeds, and this may be paſſed repeatedly from the one to the other.

the property of ſecuring from the ſmall-pox the perſon who has had either of the two. The *cow-pox* caught in the natural way proves ſometimes ſevere from the number of inoculated places in the hands (vide note, in page 147); but the inoculated cow-pox has one puſtule; hence this diſeaſe has oftener gone by the appellation of THE COW-POCK, than by the term *cow-pox*. Some writers call that the *cow-pox*, which is immediately derived from the cow; and the *cow-pock*, the inoculated diſeaſe.—Both terms have been indiſcriminately uſed by us to expreſs either diſeaſe, although the term *cow-pock* was adopted in the title, and in our humble eſtimation deſerves the preference.

The inoculated cow-pox being then only a local diſeaſe, and not accompanied with a fever to confine any one to bed, hence the cauſe of the ſtrong teſtimony of the brave commander of the Endymion, on board which ſhip Dr. Marſhall was, who declared, "that he would not fear to meet the enemy, with his whole crew, under vaccine inoculation."

4. *Dr.* JENNER *eſtabliſhes with the* method *of* inoculation, *the* medical treatment *when required.*

The mode of inoculation, as done by Dr. JENNER, is extremely ſimple. The lancet being held upright is made to puncture the puſtule on the ſixth, ſeventh, or eighth day. Soon there iſſues a globule of the aqueous cow-pock fluid, which keeps riſing

on the ſurface gradually. The point of the lancet held nearly horizontal is immerſed in this fluid, and in the ſame direction, without raiſing blood, inſerted between the cutis and the cutis vera, the two ſkins, and the lancet being withdrawn is wiped over the inoculated part *.

The cow-pock being a local diſeaſe, uſually without much conſtitutional affection, and this fever being the product of the local irritation produced †, there

* As the fluid of the *cow-pox* is a leſs active matter than that of the *ſmall-pox*, this inoculation is very apt to fail; and to perform the inſertion of the vaccine matter in that delicate manner I have witneſſed Dr. Jenner do it, requires both attention and practice. Children are alſo made with difficulty to remain quiet; and if blood is fetched, as it flows it is apt to carry out the inſerted virus. As a leſs frightful inſtrument of inoculation, and as producing the deſired effect with more certainty, I employ for children a common pin of a moderate ſize, and twirling it round horizontally, it penetrates without pain the two ſkins, even to ſome extent, and when drawn out leaves an opening devoid of blood. The pin being ſtruck with a hammer, and immerſed in the cow-pock fluid, is then introduced into the ſame aperture, and the matter is with eaſe lodged in the hollow. The cow-pock fluid is alſo depoſited at the orifice, and thus the inoculation is ſecured, without exciting the leaſt alarm. A moderate-ſized needle will ſerve equally the ſame purpoſe.

† As the caſes of inoculation multiply, I am more and more convinced of the extreme mildneſs of the ſymptoms ariſing merely from the primary action of the virus on the conſtitution, and that thoſe ſymptoms which (as in the accidental cow pox) affect the patient with ſeverity, are entirely ſecondary, *excited* by the irritating proceſſes of inflammation and

there is ſeldom required any medical attention, and that only as far as regards the puſtule.

"In the early part of this inquiry," ſays Dr. JENNER, "I felt far more anxious reſpecting the inflammation of the inoculated arm than at preſent; yet that this affection will go on to a greater extent than could be wiſhed, is a circumſtance ſometimes to be expected. As this can be *checked*, or even *entirely ſubdued* by very ſimple means, I ſee no reaſon why the patient ſhould feel an uneaſy moment, and in general an application may not be abſolutely neceſſary. About the tenth or eleventh day, if the puſtule has proceeded regularly, the appearance of the arm will almoſt to a certainty indicate whether this is to be expected or not. Should it happen, no-

and ulceration; and it appears to me that this ſingular virus poſſeſſes an irritating quality of a peculiar kind; but as a ſingle cow-pox puſtule is all that is neceſſary to render the variolous virus ineffectual, and as we poſſeſs the means of allaying the irritation, ſhould any ariſe, it becomes of little or no conſequence.

It appears then (as far as inference can be drawn from the preſent progreſs of cow-pox inoculation) that it is an accidental circumſtance only which can render this a *violent* diſeaſe, and a circumſtance of that nature, which fortunately it is in the power of almoſt every one to avoid. I allude to the communication of the diſeaſe from cows. In this caſe, ſhould the hands of the milker be affected with little accidental ſores to any extent, every ſore would become the *nidus* of infection, and feel the influence of the virus; and the degree of violence in the conſtitutional ſymptoms would be in proportion to the number and to the ſtate of theſe local affections. JENNER.

thing more need be done than to apply a ſingle drop of the *Aqua Lythargyr. Acetati* upon the puſtule, and having ſuffered it to remain two or three minutes, to cover the efflorescence ſurrounding the puſtule with a piece of linen dipped in the *Aqua Lythargyr. Compoſ.* The former may be repeated twice or thrice during the day; the latter as often as it may feel agreeable to the patient."

"When the ſcab is prematurely rubbed off, (a circumſtance not unfrequent among children and working people,) the application of a little *Aqua Lythargyri Acet.* to the part, immediately coagulates the ſurface, which ſupplies its place, and prevents a ſore."

"The *ſcepticiſm*," ſays Dr. JENNER, "that appeared even among the moſt enlightened of medical men, when my ſentiments on the important ſubject of the cow-pox were firſt promulgated, was highly *laudable* *. To have admitted the truth of a doctrine, at once ſo novel and ſo unlike any thing that had ever appeared in the annals of medicine,

* How remarkable this moderation! May we not *now* call *ſupineneſs* and *medical ſcepticiſm* a baſe dereliction of our duty, a crime againſt the ſtate, and againſt humanity?

without

without the teſt of the moſt rigid ſcrutiny, would have bordered upon temerity; but now, when that ſcrutiny has taken place, not only among ourſelves, but in the firſt profeſſional circles in Europe, and when it has been uniformly found in ſuch abundant inſtances, that the human frame, when once it has felt the influence of the genuine cow-pox in the way that has been deſcribed, is never afterwards, at any period of its exiſtence, aſſailable by the ſmall pox, may I not with perfect confidence congratulate my country and ſociety at large on their beholding, in the mild form of the cow-pox, an antidote that is capable of extirpating from the earth a diſeaſe which is every hour devouring its victims; a diſeaſe that has ever been conſidered as the ſevereſt ſcourge of the human race!"

Well may this great and philanthropic phyſician exclaim—

Jamque opus exegi, quod nec Jovis ira, nec ignis,
Nec poterit ferrum, nec edax abolere vetuſtas.
Cum volet illa dies, quæ nil niſi corporis hujus
Jus habet, incerti ſpatium mihi finiat ævi:
Parte tamen meliore mei ſuper alta perennis
Aſtra ferar, nomenque erit indelebile noſtrum.

We now haſten to a *confirmation* of *theſe diſcoveries*, by adducing the moſt reſpectable corroborating teſtimonies, and my own experience, eſpecially thoſe deciſive experiments I made at Lowther in the North of England, when under the roof of the Earl of LONSDALE.

SECT. X.

THE EXPERIENCE OF HENRY JENNER, SURGEON.

There is not, perhaps, in the annals of medicine, to be found, an example of an experiment, or rather inquiry, where the life and health of ſuch numbers already born, and of all to be born, were implicated, that has been taken up *more generally*, received *more candidly*, or conducted *more prudently*, than this concerning the COW-POX.

From *Dr. Bradley's Medical Journal.*

"I TRUST," ſays this able vindicator of the diſcoveries of his uncle, "that the importance of the ſubject will be a ſufficient apology for making this (I hope my final) appeal to the candour and good ſenſe of the public. Confident of the ſtrength of the foundation on which I ſtand, I fear not the blaſts of baſeleſs detraction. Conſcious of no motives which an honeſt and a feeling mind would bluſh to avow, I would wiſh ſeriouſly to impreſs the *importance* of VACCINE INOCULATION.

"I ſhall commence, according to the mode adopted by Dr. JENNER, by fairly ſtating, in the way of compariſon, the peculiar differences which mark the ſmall-pox and cow-pox; at the ſame time premiſing, that I can with the utmoſt confidence affirm, that the ſtatement is in every particular confirmed by very extenſive experience."

SMALL-

SMALL POX.	COW-POX.
1. Very frequently calls *latent diſeaſes into action*; in theſe are included the various ſpecies of *ſcrofula*.	We may ſafely conclude, from a long and careful obſervation of this diſeaſe, as communicated from the cow, and from no limited experience in its inoculation, that it excites no diſpoſition to other complaints. It is a pure diſeaſe, proceeding from the healthieſt and the moſt cleanly of all animals, the heifer.—Nor is that animal ever ſubject to ſcrofula.
2. Is *contagious* and communicable by effluvia.	Numerous experiments teſtify, that this never happens in the cow-pox.
3. Cannot be communicated with ſafety to *children* when *cutting teeth*.	This circumſtance forms no objection to inoculate with vaccine matter.—Numerous experiments juſtify the aſſertion.
4. In ſickening with the ſmall-pox, children are *frequently* afflicted with *alarming fits*; and when their conſtitutions are delicate, they *ſuffer materially in their health during life*.	Nothing of this kind has ever appeared in this diſeaſe; and the conſtitutions of children have been improved by its communication.
5. Is oftentimes *fatal*.	No inſtance of the kind has ever occurred.
6. Is attended with eruptions, and very often *diſfigures* the countenance.	In this diſeaſe (even in the natural way) I never obſerved any puſtules.

7. Perſons

SMALL-POX.	COW-POX.
7. Perſons afflicted with this diſeaſe cannot mingle with thoſe who have never been affected by it.	This objection does not apply to the cow-pox, as it is neither contagious, nor communicable by effluvia.
8. *Medicines* are neceſſary to be adminiſtered.	Here no medicines are required.
9. Notwithſtanding the preſent improved ſtate of inoculation, parents and friends muſt feel a conſiderable degree of *anxiety* for the ſafety of relatives, &c.	Little anxiety can be felt in this diſorder, as it is never attended with the leaſt danger.
10. Requires often a *nurſe*.	This diſeaſe does not.

" The above compariſon of the advantages which are to be derived from the ſubſtitution of the *vaccine diſeaſe* for the *ſmall-pox*, is founded upon principles which experience has proved to be fixed upon the ſolid baſis of truth. I am certainly entitled to ſpeak with confidence on the ſubject; as, in conjunction with my uncle, Dr. JENNER (who, with indefatigable induſtry, has completely inveſtigated the nature of the cow-pox), I have had a very extenſive acquaintance in this part, of medical practice; but *prejudice* and *illiberality* will ever be on the watch to ſtop the progreſs of improvement, and to overturn the edifice of well-earned fame. The hiſtory of the advancement of ſcience exhibits this truth in every page; but the ſame detail will inform us that ſucceeding ages have never failed

failed to place in its proper nook, in the temple of renown, the diſcoverer of any thing beneficial to human kind. Ignorant as we are what place may be conſigned to Dr. JENNER by the *preſent age*, he may confidently appeal, by the juſtice of his claims, to an unprejudiced, impartial *poſterity*."

The author concludes this able pamphlet * as follows: "Were it neceſſary, I could produce volumes of evidence and clouds of witneſſes to prove the truth of the facts which I have adduced concerning the cow-pox and ſmall-pox. I could refer the public to medical gentlemen of the firſt charac-

* Vide a pamphlet, entitled, "*An Addreſs to the Public on the Advantages of Vaccine Inoculation, with the Objections to it refuted*;" *by* HENRY JENNER, *Surgeon, F. L. S.* This diſtinguiſhed ſurgeon, who practiſes at Berkeley in Glouceſterſhire, might be ſuppoſed to be influenced by partiality in favour of his uncle's diſcovery, and his evidence would of courſe be admitted by many with ſome caution; but, when we conſider the reſpectability of the parties, and their education, and the certainty of their ſentiments meeting with a minute examination, the evidence muſt then be allowed its due weight. Mr. JENNER has much merit in the able concentration he has made of the comparative advantages of the two diſeaſes, and has ſucceſsfully proved, by the moſt certain characters, that all the caſes publiſhed in the different magazines and newſpapers in oppoſition to his uncle's facts, were examples of *ſpurious cow pox*; which, inſtead of making againſt *the fact*, only ſhewed the *ignorance* on the ſubject of the publiſhers, who appear to have been wholly unacquainted with *the cauſes*, and thoſe *ſigns* of *diſcrimination* of the *true* and *ſpurious cow-pox* pointed out by Dr. JENNER in his works.

ter

ter and higheſt eminence in their profeſſion, who would corroborate my aſſertions reſpecting the *peculiar* properties of the *vaccine diſeaſe*. But, waving this for the preſent, I cannot avoid obſerving that I ſhould conſider myſelf as the grand enemy of ſociety if I were to recommend the general introduction of a practice, if experience, the teſt of theory, and the only ſure guide of conduct, did not fully warrant its *higheſt commendation*. Nay, in what light ſhould I conſider myſelf as a profeſſional man, and I truſt an honeſt member of ſociety, if I were to enforce a practice which involves in itſelf the deareſt intereſts of ſociety; which comprehends in its influence the healths and *lives* of my fellow creatures; if I were not aſſured of its *inevitable ſafety*, and its *numerous advantages*."

"Theſe advantages will doubtleſs be embraced by the ſerious and reflecting. The mind of feeling, anxious for the health and ſafety of relatives and friends, will pauſe and conſider before the *ſmall-pox* be admitted, while *ſo mild* and *ſo efficacious a ſubſtitute* is offered. The imminent danger, the disfigured ſkin, the ſubſequent ſcrofula of the one will be contraſted with the unmarked countenance and perfect ſafety of the other. But, if *prejudice* ſhould ſtill continue to operate on the general mind, I am confident a time will come when thoſe who have neglected to take advantage of the preſent opportunity will lament their conduct, and poſſibly lament it with unavailing ſorrow; for ſorrow muſt

be

be unavailable for breathleſs friends: nor can "flattery ſooth the dull cold ear of death."

Conſcious as I equally am of the *purity of my intentions*, and of the *truth of my aſſertions*, I leave theſe remarks with the candid judgment of the public."

"——— 'Tis EVIDENCE * ſo full—
If the laſt trumpet ſounded in my ear,
Undaunted I ſhould meet the ſaints half way,
And in the face of Heav'n maintain the fact."

DRYDEN.

* His brother, the Rev. Mr. JENNER, who has been not leſs engaged in the vaccine inoculation, had he favoured the public with his ſentiments, inſtead of quoting from a poet, would have given us this text from heavenly writ: "If they believe not Moſes and the prophets, neither would they believe though one roſe from the dead."

SECT.

SECT. XI.

DR. MARSHALL'S EXPERIENCE *.

First Letter to Dr. Jenner.

"DEAR SIR,

"MY neighbour, Mr. Hicks, having mentioned your wiſh to be informed of the progreſs of the inoculation here for the cow-pox, and he alſo having taken the trouble to tranſmit to you my minutes of the caſes which have fallen under my care, I hope you will pardon the further trouble I now give you

* Dr. MARSHALL has been indefatigable in the important inveſtigation of the COW-POX. When *great truths* are brought forward, they cannot fail to rouſe the active powers of men; and hence we find this phyſician, accompanied by Dr. WALKER, who was inſpired with an equal zeal, leaving the comforts of home, and an extenſive buſineſs, to communicate the benefits of *Vaccine Inoculation* to other parts of the habitable globe. They accordingly ſet out in July 1800, for the glorious purpoſe of inoculating, under a burning ſun, (which they accompliſhed with the happieſt events,) the *ſoldiers* and *ſailors* contending for us gentlemen at eaſe; ſecuring them ever after from an enemy which no bravery can ſurmount, the natural ſmall-pox, whoſe fatality is truly dread-

ful

you in ſtating the obſervations I have made upon the ſubject."

"When firſt informed of it, having two children who had not had the ſmall pox, I determined to inoculate them for the *cow pox* whenever I ſhould be ſo fortunate as to procure matter proper for the

ful when it aſſails an encamped army, or a number of ſailors, cooped up, from neceſſity, in a rocking cabin.

Dr. MARSHALL was kindly received at Gibraltar, by General O'Hara, who ſet the example to the garriſon, by having firſt his own ſon inoculated;—from thence he went to *Minorca*, and returning, was conveyed by Admiral Lord Keith to *Malta*, where the governor, Sir Alexander Ball, eſtabliſhed an hoſpital for the gratuitous inoculation of the inhabitants under the name of the JENNERIAN INSTITUTION. From Malta this indefatigable philanthropiſt ſailed to Sicily, and reached *Palermo* in March 1802, where the King of Sicily and Sardinia immediately eſtabliſhed an inſtitution ſimilar to the one mentioned above, under the ſame title. Arriving at *Naples*, the ſame inſtitution for gratuitous vaccine inoculation was eſtabliſhed there, and ſurgeons were deſired to bring children from every quarter of the Iſland, and returning in every direction, the rich treaſure being contained in the puſtule, vaccine inoculation was diffuſed like the rays of the ſun, and thus extended its benign influence to every quarter; and each inoculation being the focus of a leſſer circle, the rapidity of the inoculation of the iſland of Sicily was amazing, and in a few weeks reached to the remoteſt corners. Previous to Dr. MARSHALL's leaving Sicily to return to England, after two years devoted to this ſervice of benevolence, his SICILIAN MAJESTY preſented him with an elegant gold medal, and appointed him his phyſician extraordinary.

purpoſe.

purpoſe. I was therefore particularly happy when I was informed that I could procure matter from ſome of thoſe whom you had inoculated."

"In the firſt inſtance, I had no intention of extending the diſeaſe further than my own *family*; but the very extenſive influence which the conviction of its efficacy in reſiſting the ſmall-pox has had upon the minds of the people in general, has rendered that intention *nugatory*, as you will perceive by the continuation of my caſes incloſed in this letter, the detail of which would be ſuperfluous; by which it will appear, that ſince the 22d of March I have inoculated *an hundred* and *ſeven* perſons; which, conſidering the retired ſituation I reſide in, is a very great number."

"There are alſo other conſiderations which, beſides that of its influence in reſiſting the ſmall-pox, appear to have had their weight; namely, the peculiar mildneſs of the diſeaſe, the known ſafety of it, and its not having in any inſtance prevented the patient from following his ordinary buſineſs."

"In all the caſes under my care, there have only occurred two or three which required any application, owing to eryſipelatous inflammation on the arm, and they immediately yielded to it. In the remainder the conſtitutional illneſs has been ſlight, but ſufficiently marked, and conſiderably leſs than I ever obſerved in the ſame number inoculated with the ſmall-pox."

"Neither

" Neither does there appear in the cow-pox to be the leaſt exciting cauſe to any other diſeaſe, which in the ſmall-pox has been frequently obſerved; the conſtitution remaining in as full health and vigour after the termination of the diſeaſe as before the infection."

" Another important conſideration appears to be, the impoſſibility of the diſeaſe being communicated, except by the actual contact of the matter of the puſtule; and conſequently the perfect ſafety of the remaining part of the family, ſuppoſing only one or two ſhould wiſh to be inoculated at the ſame time."

" Upon the whole, it appears evident to me, the Cow-pox is a *pleaſanter*, *ſhorter*, and *infinitely more ſafe diſeaſe* than *the inoculated ſmall-pox*, when conducted in the moſt careful and approved manner; neither is the local affection of the inoculated part, or the conſtitutional illneſs, near ſo violent. I ſpeak with confidence on the ſubject, having had an opportunity of obſerving its effects upon a variety of conſtitutions, from *three months old* to *ſixty* years; and to which I have paid particular attention."

" In the caſes alluded to here you will obſerve, that the removal from the original ſource of the matter has made no alteration or change in the nature or appearance of the diſeaſe, and that it may be continued, *ad infinitum*, (I imagine,) from one

perſon to another, (if care be obſerved in taking the matter at a *proper period*,) without any neceſſity of recurring to the original matter of the cow."

"I ſhould be happy if any endeavours of mine could tend further to elucidate the ſubject, and ſhall be much gratified in ſending you any further obſervations I may be enabled to make."

"I have the pleaſure to ſubſcribe myſelf,

"Dear Sir, &c.

Eſtington, Glouceſterſhire, April 26th, 1799. "JOSEPH H. MARSHALL."

"The gentleman who favoured me with the above account," ſays Dr. JENNER, "has continued to proſecute his inquiries with unremitting induſtry, and has communicated the reſult in another letter, which, at his requeſt, I lay before the public."

Dr. Marſhall's Second Letter.

"DEAR SIR,

"Since the date of my former letter, I have continued to inoculate with the cow-pox virus. Including the caſes before enumerated, the number now amounts to *four hundred* and *twenty-three*. It would

would be tedious and uſeleſs to detail the progreſs of the diſeaſe in each individual—it is ſufficient to obſerve, that I noticed no deviation in any reſpect from the caſes I formerly adduced."

"The general appearances of the arm exactly correſponded with the account given in your firſt publication."

"When they were diſpoſed to become troubleſome by eryſipelatous inflammation, an application of equal parts of vinegar and water always anſwered the deſired intention."

"I have already ſubjected *two hundred* and *eleven* of my patients to the action of variolous matter, *but every one reſiſted it.*"

"The reſult of my experiments (which were made with every requiſite caution) has fully convinced me *that the true Cow-pox is a ſafe and infallible preventive from the ſmall-pox; that in no caſe which has fallen under my obſervation has it been in any conſiderable degree troubleſome, much leſs have I ſeen any thing like danger; for in no inſtance were the patients prevented from following their ordinary employments.*"

"I cannot now entertain a doubt that the *inoculated cow-pox* muſt *quickly ſuperſede* that of the *ſmall-pox.*"

"If the many important advantages which muſt reſult from the new practice are duly conſidered, we may reaſonably infer that public benefit, the ſure teſt of the real merit of diſcoveries, will render it *generally extenſive.*"

"To you, Sir, as the *diſcoverer* of this highly beneficial practice, mankind are under the higheſt obligations. As a private individual, I participate in the general feeling; more particularly as you have afforded me an opportunity of noticing the effects of a ſingular diſeaſe, and of viewing the progreſs of the moſt curious experiment that ever was recorded in the hiſtory of phyſic.

"I remain, Dear Sir, &c.

"JOSEPH H. MARSHALL.

"P. S. I ſhould have obſerved, that of the patients I inoculated and enumerated in my letter, one hundred and twenty-ſeven were inoculated with the matter you ſent me from the London cow. I diſcovered no diſſimilarity of ſymptoms in theſe caſes, from thoſe which I inoculated from matter procured in this county."

"No puſtules have occurred, except in one or two caſes, where a ſingle one appeared on the inoculated arm."

"No difference was apparent in the local inflammation."

"There was no ſuſpenſion of ordinary employment among the labouring people, nor was any medicine required."

"I have frequently inoculated one or two in a family, and the remaining part of it ſome weeks afterwards.

afterwards. The uninfected have ſlept with the infected during the whole courſe of the diſeaſe without feeling it; ſo that I am fully convinced the diſeaſe cannot be taken but by actual contact with the matter."

"I had nearly omitted mentioning another great advantage that now occurs to me in the inoculated cow-pox; I mean the ſafety with which pregnant women may have the diſeaſe communicated to them. I have inoculated a great number of females in that ſituation, and never obſerved their caſes to differ in any reſpect from thoſe of my other patients."

Indeed the diſeaſe is ſo mild, that it ſeems as if it might at all times be communicated with the moſt perfect ſafety."

SECT. XII.

DR. WOODVILLE'S EXPERIENCE.

NEXT in time and higheſt in rank comes the experience of Dr. WOODVILLE.—It was not to be expected that the phyſician of the ſmall-pox hoſpital would be an inactive ſpectator of the great ſcenes that were performing; accordingly we find the learned and ſagacious Dr. Woodville early turning his thoughts to the important revolution about to be eſtabliſhed, and the ſmall-pox hoſpital was converted into a place of experimental inquiry, and it brought to light ſome hidden properties in the cow-pox wholly unexpected.

In the two firſt caſes, thoſe of MARY and ELIZABETH PAYNE, "there was only the *inoculated pock*, and no eruption. The diſeaſe took its uſual progreſs, and terminated favourably."

"Theſe children were after this inoculated plentifully with ſmall-pox matter, *but without its producing the diſeaſe.*"

"They were alſo brought to the bedſide of a perſon labouring under a ſevere natural ſmall-pox, and handled and kiſſed by the patient, *but both were found to be ſecure from the infection of the ſmall-pox.*"

In the third caſe, on the 7th day, in the evening, Dr. WOODVILLE obſerved "two puſtules * appear exactly

* Vide "*Reports of a ſeries of inoculations for the variolæ vaccinæ, or cow-pox, with remarks and obſervations on this diſeaſe, conſidered as a ſubſtitute for the ſmall-pox by* WILLIAM WOODVILLE, M. D. *Phyſician to the Small-pox Hoſpital.*"—The authority of Dr. Woodville being the higheſt poſſible; and his work, which was eagerly read by all ranks of people, the reſult of a learned candid ingenuous mind; although a faithful tranſcript of *facts*; it gave ſome check to the progreſs of *vaccine innoculation*: for it was ſuſpected that theſe eruptive examples *reported* were real caſes of cow-pox; and Dr. Jenner's aſſertion "of its being always a diſeaſe of a *ſingle puſtule*, where the matter was inſerted, and never accompanied, like the ſmall-pox, with a crop of engendered puſtules," was for a time called in queſtion, until Dr. JENNER took up the pen, and attributed with all the temper imaginable this difference of opinion to a contamination of the cow-pox matter with the ſmall-pox virus, producing in conſequence an *hybrid diſeaſe*.—This produced an anſwer from Dr. Woodville with the following very extraordinary dedication.

To EDWARD JENNER, M. D. F. R. S. F. L. S. &c.

"Sir,

"That the vaccine matter, with which the inoculations have been carried on in the hoſpital, was contaminated with that of the variolous, and that a *hybrid* diſeaſe has in conſequence been propagated, not only by me, but alſo by others, who have been ſupplied with that matter, is a *charge* which I know to be *unfounded*, and which it is my duty to refute."

"The performance of this taſk has, however, been very painful to me, from being unable to avoid a certain de-

exactly reſembling the ſmall-pox, on the 11th day there were nine, on the 13th nine others, on the 14th ſix more, making in all twenty-four."

From

gree of *recrimination*, which attaches to a *man*, for whom I have long entertained a friendly regard, and to whom the public is under the great obligation by having been made acquainted with a diſcovery which promiſes the moſt important benefits to ſociety.

" I am,

" Sir,

" Your obedient ſervant,

" W. WOODVILLE."

Ely-Place, July 1ſt, 1800.

" I feel myſelf," ſays Dr. WOODVILLE, " impelled to addreſs the public a ſecond time on the ſubject of the inoculation for the cow-pock, not only becauſe an enlarged experience of it has now enabled me to produce more deciſive evidence of its *advantages*, but becauſe ſome remarks upon my practice of this new inoculation have lately been made, which call upon me for an immediate reply."

" I truſt it will be generally acknowledged, that the obſervations and opinions formerly adduced by me on this ſubject, are ſtrictly impartial and unprejudiced; alſo, that the facts on which they are founded, have been related without the leaſt reſerve, and with the moſt ſcrupulous fidelity: notwithſtanding, my concluſions in reſpect to a point of conſiderable importance have been oppoſed in a manner which I deem wholly *unwarrantable*. I allude to the puſtular eruptions which appeared on more than half the patients firſt inoculated for the cow-pock, under my direction; Dr. Jenner, in a late publication, having maintained that thoſe puſtules could *only* pro-

ceed

From a great many trials of vaccine innoculation in this place, before wholly dedicated to the ſmall-

ceed from variolous matter, introduced by inoculation into the conſtitution along with that of the vaccine. That objections would be made to this effect might be foreſeen, and they were accordingly anticipated in my *reports*, where ſeveral facts and arguments are brought forward to prove, that all the caſes which I had repreſented as caſes of cow-pox, were produced from the inoculation of the matter of that diſeaſe, uncontaminated with any other. Having done this in a manner which has generally been deemed ſatisfactory, I did not now expect that any gentleman would publicly attempt to ſubvert my concluſion, without firſt doing me the juſtice to ſhow, that the reaſons on which it was founded were defective or fallacious. Although I have been diſappointed in this expectation, yet as I have no other object in view than a diſcovery of the truth, I will fully ſtate all the reaſons which the ingenious inventor of the new inoculation has advanced in ſupport of a contrary opinion. He firſt enters upon the conſideration of *puſtules* at page 7, where he ſays, ‘ When I conſider the great number of caſes of caſual inoculation immediately from cows, which have from time to time preſented themſelves to my obſervation, and the many ſimilar inſtances which have been communicated to me by medical gentlemen in this neighbourhood ; when I conſider too, that the matter with which my inoculations were conducted in the years 1797, 1798, 1799, was taken from different cows, and that in no inſtance any thing like a variolous puſtule appeared ; I cannot feel diſpoſed to imagine that eruptions, ſimilar to thoſe deſcribed by Dr. Woodville, have ever been produced by the *pure uncontaminated cow-pox virus* : on the contrary, I do ſuppoſe, that thoſe which the Doctor ſpeaks of *originated* in the action of variolous matter which crept into the conſtitution with the vaccine: and this, I *preſume*, happened from the inoculation of a great number of the patients with a variolous matter,

pox, it turned out, that the vaccinated patients became alſo infected with the contagion of the ſmall-pox; and hence the appearance of both diſeaſes at the ſame time on the ſame perſon. For example:

"About two months ago," ſays Dr. WOODVILLE, "a girl, eleven years of age, was admitted into the inoculation hoſpital, where ſhe was inoculated with vaccine matter. Five days afterwards ſhe was ſeized with all the ſymptoms of ſmall-pox, and an eruption of puſtules (about 200) took place. On the 10th day of the inoculation, one of the variolous puſtules appeared diſtinctly within the margin of the vaccine tumour. I charged a lancet with matter taken from the centre of the tumour, and with it inoculated a child in whom it produced a regular caſe of cow-pock. Mr. Wachſel, the apothecary to the hoſpital, who inoculated three children with matter taken from the puſtule in the vaccine humour, found that it communicated the cow-pox to all of them."

The diſcovery which this led to, as alluded to above, was, that, although the inoculated cow-pox did not ſuperſede the ſmall-pox, yet the latter was

(ſome on the third, others on the fifth day,) after the vaccine had been applied; and it ſhould be obſerved, that the matter thus propagated became the ſource of future inoculations in the hands of many medical gentlemen, who appear to have been previouſly unacquainted with the nature of the real genuine cow-pox." "NON NOSTRUM INTER VOS TANTAS COMPONERE LITES."

rendered,

rendered, although taken in the natural way, even more mild than the inoculated ſmall-pox uſually turns out, and the *puſtular* caſes *diminiſhing*, at length *wholly diſappeared*, and the *cow-pox* reared its TRIUMPHANT STANDARD in the houſe conſecrated to the *ſmall-pox*, and now reigns there alone.

Dr. WOODVILLE's *public report is*

"It was not to be expected that a diſeaſe originating in brutes ſhould be recommended as a ſubſtitute for the ſmall-pox, and for this purpoſe be transferred to the human race, without exciting much obloquy and oppoſition: indeed, ſeveral of the moſt valuable diſcoveries in medicine have met with a ſimilar reception; among theſe may be included inoculation of the ſmall-pox, againſt which the clamour became ſo conſiderable, that it fell into diſuſe for ſeveral years. To regulate the diſputes which the introduction of that practice into this country occaſioned, and to direct the controverſy to the true points at iſſue, Dr. JURIN, then ſecretary to the Royal Society, judiciouſly ſtated, that the fate of inoculation depended upon the deciſion of the two following queſtions:"

"*Firſt*, 'Whether the diſtemper, given by inoculation, be an *effectual ſecurity* to the patient againſt his having the ſmall-pox afterwards in the natural way?'

"*Secondly*, 'Whether the *hazard* of the inoculation

tion be conſiderably *leſs* than that of the natural ſmall-pox?"

"The application of theſe remarks to our inquiries into the merits of the vaccine, compared with thoſe of the variolous, inoculation, is too obvious to require being pointed out. Now, if by diſtemper in the firſt query we underſtand that of the cow-pox, and if in the ſecond we add new immediately before inoculation, and ſubſtitute inoculated for natural, I would anſwer both queſtions in the affirmative, preſuming that the facts already brought forward on the ſubject clearly decide the cow-pox inoculation to be *preferable* to that of the ſmall-pox."

"An opinion has been propagated, and with ſeveral perſons has had conſiderable influence, that the power of reſiſting the infection of the ſmall-pox, which the conſtitution derives from the vaccine diſeaſe, will continue only for a few years: but this is mere conjecture, contradicted by facts of caſual caſes of cow-pox, and contrary to analogy."

"In regard to the comparative mildneſs of the vaccine and variolous diſeaſes, as produced from inoculation, I have been enabled to give a very different report from that which I publiſhed laſt year. The reaſon why ſeveral of the cow-pox caſes then at the hoſpital proved ſevere, like thoſe of the inoculated ſmall-pox, has already been ſufficiently explained, and will, I truſt, have the effect of placing the cow-pock inoculation in a more advan-

tageous

tageous point of view than my former *reports* preſented."

"I have before obſerved, that of the laſt 2000 caſes of cow-pox under my care, not a ſingle alarming ſymptom was excited; and I may now add, that during the laſt eight months I have not met with one inſtance of the vaccine diſeaſe, which has not been as favourable as the mildeſt caſes of variolous inoculation. I have no doubt, therefore, that the inoculated cow-pox is *as much milder* than the inoculated ſmall-pox, as the latter diſeaſe is milder than the caſual ſmall-pox: nay, it ſeems to me from the very benign form in which the vaccine pock has of late invariably appeared, that it may be conſidered as a diſeaſe perfectly *harmleſs* in its effects.—Indeed, upon this conſideration, ſeveral perſons have been perſuaded to have their children inoculated for the diſeaſe, although they were very doubtful of the reality of its antivariolous power: for, if it proved a ſecurity to the children againſt the infection of the ſmall-pox, the object would be attained by the ſafeſt means: if it did not, no harm would ariſe from the experiment, ſince it was tried merely as a preliminary expedient to the inoculation for the ſmall-pox. The reſult, however, has conſtantly furniſhed additional evidence in favour of the new inoculation, and of courſe has tended greatly to promote the adoption of it in London."

"Another conſiderable conſideration, highly important to the community is, that as the cow-pox, unleſs

unleſs from the adventitious circumſtances before-mentioned, very rarely, *if ever*, appears with variolous-like puſtules, it would ſeem incapable of propagating itſelf by effluvia. Hence by the ſubſtitution of the vaccine for the variolous inoculation, the caſual ſpreading of the ſmall-pox from the inoculated, a circumſtance which has greatly contributed to ſwell the bills of mortality for the metropolis, and of which the public has *long juſtly complained*, is completely avoided. Nor is it unreaſonable to conclude, that if the new inoculation were to be *univerſally* adopted, the variolous diſeaſe, in proceſs of time, may be *wholly extinguiſhed.*"

The French nation, then at war with this country, could not but behold this great diſcovery with an eye of aſtoniſhment, and became eager to aſcertain the fact, and participate in the bleſſing.

Dr. WOODVILLE was accordingly induced to viſit France for this expreſs purpoſe. Our Government on that occaſion ſhewed it carried on war not with a ſpirit of mortal animoſity, but with that high honour "which makes ambition virtue;" a paſſport was granted, and he arrived in France as a GUARDIAN ANGEL come to ſtay the peſtilence.

He began the vaccine inoculation upon three children at Boulogne, where he firſt landed on his way to Paris, and placed them under the care of Dr. Nowell, an Engliſh phyſician, who was deſired to ſend vaccine matter upon lancets to Paris, as ſoon

as

as the arms of thoſe children produced a ſufficient quantity for the purpoſe. This precaution proved to be very fortunate; for, five days afterwards, when the matter of the ſame pock was tried at Paris, it produced no effect whatever; and the cow-pock, which Dr. Thouret had received from Geneva, and which had not been longer than four or five days upon the thread, was found to be equally incapable of producing the diſeaſe.

The diſappointment from the above trials was not, however, of long continuance. The inoculation at Boulogne ſucceeded; and from them Dr. Woodville was ſupplied with matter at Paris, which fully anſwered his expectation. Dr. Colon's only child was the firſt perſon inoculated in this city; and other medical men, in order to teſtify the confidence they placed in the new inoculation, followed the example; ſo that Dr. Woodville had the ſatisfaction to ſee the practice extended, not only amongſt the children in different hoſpitals, but alſo in private families in Paris, where, no doubt, it will ſoon become general *.

The

* For an account of the progreſs of vaccine inoculation in France, and I may add throughout the habitable globe, vide the elaborate work of Mr. Ring, entitled, "*A Treatiſe on the Cow-pox, or Hiſtory of Vaccine Inoculation.*" I ſhall, therefore, juſt inform my readers, and in the way of note, as my work is intended as a popular production, only comprehending the moſt prominent facts reſpecting vaccine

The number inoculated by Dr. Woodville at the preſent time amounts to upwards of 7000 perſons, and out of theſe more than 3000 have been inoculated with the ſmall-pox matter, and a conſiderable number expoſed to the contagion of the ſmall-pox; but in every inſtance they have *reſiſted* the ſmall-pox, being rendered by the cow-pox inſuſceptible of its influence.

cine inoculation, and its early domeſtic triumphs, that not long after the arrival of Woodville at Paris, Dr. Colon prepared for the preſs, and publiſhed a pamphlet on the cow-pox.

" Firſt, having pointed out the advantages of vaccine inoculation, Dr. Colon proceeds to anſwer the different objections urged againſt the practice. It is the lot, ſays he, of all uſeful diſcoveries, to have to combat, at their commencement, all that the ſpirit of *party*, or of *intereſt*, can invent, to arreſt their progreſs. He obſerves, that the vaccine experiments were ſcarcely commenced, when certain perſons raiſed an outcry, about the danger of introducing into the human body matter taken from a brute. Theſe apprehenſions, too violent and premature, as Dr. Colon remarks, to be ſincere, were ſpread with great induſtry. They are not, however, confirmed by experience; for our author tells us, he himſelf has inoculated above a hundred children with the cow-pox; of whom not one had any ſerious indiſpoſition. It is proved, in a ſatisfactory manner, by the experience of Dr. Colon, and ſince by all the other practitioners in France, that the vaccine virus does not degenerate, by repeated tranſmiſſions, in the human ſubject. The learned author refutes the abſurd arguments advanced againſt this practice. He contends, that it ought to be adopted as a ſubſtitute for the ſmall-pox; which is ſo highly dangerous to pregnant women, and children in a ſtate of dentition; and that every partial inoculation of the

ſmall-pox, in a populous neighbourhood, becomes a new focus of infection. Dr. Colon informs us, that before he had abſolute proofs of the benefit of this new method, he had formed an eſtabliſhment for the inoculation of the cow-pox, at his houſe at Vaugirard; but now, ſince it is proved to demonſtration that it is ſo innoxious both to the individuals who are ſubjected to the operation, and to the public, he is returned to Paris, in order to inoculate at their own houſes all thoſe who put themſelves under his care. Such is the report of the ſucceſs of vaccine inoculation, preſented to the world by an eminent phyſician of one of the moſt enlightened nations in Europe. If any thing can add to the well-deſerved fame which this ineſtimable practice has already acquired, this tranſplanting muſt enſure its triumph, and complete its glory." RING.

SECT.

SECT. XIII.

DR. PEARSON'S EXPERIENCE.

It alſo could not be expected that the active mind of the learned Dr. Pearson would be unengaged by the grand revolution now ſo publicly announced; accordingly we find this able phyſician, next in time to Dr. Woodville, took up the inquiry; and, beſides the acceſſion of freſh information * on the ſubject, corroborating the diſcoveries of Dr. Jenner, he eſtabliſhed a PUBLIC INSTITUTION, for the cow-pock inoculation, under the patronage of His Royal Highneſs the Duke of York, conceiving it the beſt plan imaginable to ſpread information among ſuch as were unacquainted with this practice; for determining all doubtful points relative to it; and for diſcovering the cauſe of failures if ſuch exiſted; ſince every caſe was to be regiſtered, and every new trial to be made under the medical eſtabliſhment belonging to that inſtitution; and the reſults of the practice to be reported to the governors who were both numerous and reſpectable, paying a ſmall ſum annually to the inſtitution. A far-

* Vide note *, page 92.

ther

ther conſiderable public benefit aroſe from a ſtock of vaccine matter being always ready for the public uſe.

THE REPORT WITH DIRECTIONS.

" 1. The vaccine pock matter being generally, when firſt taken from the veſicle, a thin limpid fluid, it becomes, when dried, ſcarcely viſible, either on *glaſs*, or on the end of a *lancet*, even on a quite new one. If the matter be taken on thread, it will be perceived by the ſtiffneſs of it when dried."

" 2. If the matter is not uſed immediately on its being taken from the vaccine pock, it will of courſe be *dry* ; and when employed, it ſhould be ſoftened by the ſmalleſt particle of hot water; and to avoid too great dilution, that ſhould be done by a particle of hot water hanging on the extremity of a needle."

" 3. The inoculation muſt be performed in the ſame manner as for the ſmall-pox; but it may be uſeful to recommend, that,

" 4. Matter may be inſerted in one place only in each arm, by a very ſmall ſcratch or puncture of the ſkin."

" 5. One armed lancet ſhould be uſed for only one, or at moſt two punctures."

" 6. If the infection take, there will be ſeen in the inoculated part, in *four* days, or leſs, a red ſpot, like a ſmall gnat-bite.—In *ſix* days there will be generally a very ſmall veſicle.—In *nine* days, a circular veſicle appears, as large as a pea, often ſurrounded by a ſmall red areola.—In *twelve* days, the red areola will generally ſurround the veſicle, which then begins to dry, and turn black in the middle."

" Between the *eighth* and *eleventh* day, a ſlight fever often takes place."

" By the *fourteenth* day, the veſicle is uſually changed into a circular dark brown ſcab, which ſhould by no means be removed, but left to fall off, which it will do in two or three weeks, leaving a pit."

" If in four days the *gnat-bite* appearance be not manifeſt, the inoculation ſhould be repeated."

" 7. Of above four thouſand perſons who have had the inoculated cow-pock, not one has died."

" 8. Not a ſingle well-atteſted inſtance has been produced, among more than 4000 of the above perſons known to have had the inoculated vaccine-pock, and who were ſubſequently inoculated for the ſmall-pox, of this diſeaſe being ſubſequently taken; although many of theſe were alſo expoſed to the infectious effluvia of the natural ſmall-pox: and traditionally, this fact has been eſtabliſhed time immemorial, with regard to the caſual cow-pock."

" 9. It

"9. It may now ſafely be affirmed, that the inoculated cow-pock is generally a *much ſlighter* diſeaſe than the inoculated ſmall-pox; and that the proportion of ſevere caſes in the latter is to the former at leaſt ten to one."

"10. It does not appear that the genuine vaccine inoculation can be propagated like the ſmall-pox, by effluvia from perſons labouring under it. Hence, if the vaccine inoculation ſhould be *univerſally* inſtituted in place of the ſmall-pox, it is reaſonable to conclude, that this moſt loathſome and fatal malady will be eradicated; and, like the ſweating ſickneſs, plague, certain kinds of leproſy, &c. be known in this country only by name."

"11. It does not appear that the vaccine virus, like that of the ſmall-pox, can be conveyed ſo as to produce the diſeaſe indirectly from diſeaſed perſons, by adhering to clothes, furniture, bedding, letters, &c. Hence no danger of its propagation in theſe channels is to be apprehended from the *univerſal* practice of the inoculation of the cow-pock."

"12. It has been found that a perſon, whoſe conſtitution has diſtinctly undergone the vaccine diſeaſe, is in future unſuſceptible of the ſame diſorder. Hence no objection can be made to the new inoculation, as was once urged, on account of its being imagined that, by the commutation of the ſmall-pox for the vaccine pock, an eruptive diſeaſe would be introduced, to which the ſame perſon would be repeatedly liable."

" 13. It does not appear that thoſe who have already gone through the ſmall-pox are ſuſceptible of the vaccine diſeaſe, as was formerly thought *. Hence no objection can be urged on the ſcore of perſons who have already gone through the ſmall-pox being liable to a new infectious diſeaſe, by the introduction of the vaccine inoculation."

" 14. Experience ſhews, that there is no reaſon to apprehend the ſmalleſt chance of deformities of the ſkin from the vaccine inoculation."

" 15. The extenſive practice of the vaccine inoculation in the preſent year, and the accounts of the diſeaſe in the caſual way, do not ſhow that any other diſeaſe will be excited ſubſequently, which is peculiarly imputable to the old practice."

" 16. Conclusion.—From the above comparative ſtatement it is manifeſt that it is highly to the intereſt of the Britiſh public to adopt *univerſally* the inoculation of the vaccine pock in the place of ſmall-pox."

* Theſe two laſt poſitions (12 and 13) Dr. Pearson lays the claim of having diſcovered.

SECT. XIV.

THE EXPERIENCE OF WILLIAM FERMOR, ESQ.

It is fortunate for ſcience, when gentlemen, not of the profeſſion, take the trouble to inveſtigate ſubjects whoſe eſtabliſhment is of the utmoſt importance to ſociety. The world liſtens with attention to their ſtatement, as they can have no ſelf-intereſt to ſerve, and when fortune ſmiles on the author, as in the preſent inſtance, all he ſays is heard with that attention which the preſent writer ſo amply merits.

"Although the original virulence of the ſmall-pox," ſays Mr. FERMOR *, "and its fatal effects have of late years been conſiderably diminiſhed by the modern practice of inoculation, it does not appear that its contagious influence has been much abated; on the contrary, its univerſality has certainly been much extended. Hence it has compelled almoſt

* This extract is made from a ſmall pamphlet, entitled, "*Reflections on the Cow-pox*," &c. The judicious writer has the following motto, deſcriptive of his own conviction:

Segnius irritant Animos demiſſa per Aurem,
Quam quæ ſunt oculis Subjecta fidelibus.

HORACE.

For a further account of this work, vide note, * page 70.

every individual to ſubmit to inoculation, notwithſtanding conſtitutional habits and family complaints may have rendered its good effects *precarious*. Nay, how few parents are there who have not had many anxious moments on account of the reſult, notwithſtanding they have employed the moſt eminent in the profeſſion and the cooleſt mode of treatment."

"How neceſſary it is likewiſe to chuſe a ſequeſtered ſpot for its communication, detached from places inhabited by the commonalty, who, from prejudice or diſinclination, refuſe to avail themſelves of the ſalubrious effects of this important diſcovery! What an expence has the Government of the country incurred by inoculating the army alone, and how have the military contributed to ſpread the diſeaſe, by communicating it to the inhabitants of the places they paſſed through, as well as to thoſe amongſt whom they afterwards reſided."

"What an abſence from duty was neceſſary for the ſoldier, during its progreſs, and what a diminution of bodily ſtrength, even under its moſt favourable appearances! What conſiderable danger frequently aroſe from the intemperance and miſconduct of the patient; and how many lives were often loſt by their fatal conſequences!"

"Let us now review the *nature* of the cow-pox, and its *effects*. The diſorder requires no previous or ſubſequent regimen. No infection attends it; the complaint is in general merely local; and no abſence from ordinary employments, nor is any medicine

dicine neceſſary. In a national and civil light, what an important diſcovery!"

Theſe *concluſions* were the reſult from an experience of 326 perſons, who were inoculated by, or in the preſence of, this gentleman, of whom 136 were re-inoculated for the ſmall-pox, but were found *proof* againſt this diſeaſe *.

"I am happy," ſays Mr. Fermor, "to ſay, that my experiments have been made with the moſt liberal concurrence, and under the inſpection of many of the moſt reſpectable and learned profeſſors of the Univerſity of Oxford, and the moſt noted practitioners of its environs, whoſe names will appear in the annexed account; and who, from motives of humanity, and principles truly patriotic, have been ſo kind as to give up much of their time and attention to this very intereſting ſubject."

"Amongſt the reſt, I feel myſelf particularly indebted to Dr. WALL, of diſtinguiſhed profeſſional abilities, and clinical profeſſor in that univerſity; to Sir CHRISTOPHER PEGG, the public reader in anatomy there; to Dr. WILLIAMS, the regius profeſſor of botany; who have not only encouraged me in this undertaking, but have been witneſſes of its ſalubrious effects. I feel myſelf likewiſe under particular obligations to Mr. GROSVENOR, a very eminent ſurgeon there; who had been ſo kind

* Vide Mr. Fermor's excellent pamphlet, in which will be found the names and pariſhes of each individual inoculated.

as to inoculate ſome of our patients afterwards with variolous matter, and to give up much of his time to the inſpection of them after their inoculations. I am happy in having this opportunity of acknowledging likewiſe my obligations to Meſſrs. DAVIS, ſurgeons of eminence at Biceſter; to Mr. BRAINE, ſurgeon, of the ſame place; to Mr. OLLEY, of known profeſſional ſkill, at Brackley; and to Mr. WATSON, ſurgeon, at Aynho; who have been ſo good as to inoculate, with variolous matter, the patients I had previouſly inoculated here with the cow-pox."

" During the courſe of theſe experiments, upon ſo conſiderable a number of different ſubjects of all ages, from *eleven days* to *ſeventy-five years*, no puſtule appeared on any of them, but on the inoculated part, except in two inſtances; a ſingle puſtule on the forehead of one, and one upon the arm of another. No ſickneſs of any conſequence enſued, nor any loſs of time from ordinary avocations. The diſorder was not communicated by contagion to any who refuſed to ſubmit to its inoculation. The ſymptoms which generally occurred were, a pain in the axilla, or in the head, ſometimes in both; but no ſickneſs, or, one may ſay, much conſtitutional illneſs. Indeed, ſome of them were entirely free from all the above complaints. An efflorescence generally appeared about the punctured part, and ſometimes extended, though without pain, down the fore-arm, and up to the ſhoulder. But

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this happened very ſeldom. No medicine of any ſort was adminiſtered, nor had any of them any inflammation on their arms that could create much uneaſineſs."

" It is not neceſſary for me to ſay more on this truly intereſting ſubject. I leave the impartial reader to his natural reflections; but I think, in conſequence of the above premiſes, I may venture to ſay, that he will *now* be of opinion that the *genuine* COW-POX *is mild in its effects, congenial with every ſituation and employment of life, totally void of contagion, and a certain preſervative againſt the baneful influence of the ſmall-pox. And that no conſtitutional or family complaint can interfere with its effects, or prevent its adoption.*"

SECT.

SECT. XV.

MR. KELSON'S EXPERIENCE.

FROM the obſervations of Mr. KELSON, of Seven-oaks, publiſhed in the Medical and Phyſical Journal for July 1800, it appears "that the vaccine virus may be intermixed with the variolous, without being chemically combined with it. Hence two ſorts of eruptions were produced; one of pink, fiery-looking *bliſters* *, the other of *puſtules*. Thoſe who were inoculated from the former, had the cow-pox;

* This appearance is thus deſcribed by Dr. Pearſon. "Sometimes, but *in very few inſtances*, I have found, after inoculation for the cow-pock, moderate ſized pimples, but containing little or no limp, and never any pus, to ariſe, and this chiefly about the arm, where the original vaccine puſtule has been rubbed off, or in irritable habits has gone on unkindly, and likewiſe after the diſeaſe has gone through its progreſs; theſe ſpots, ſo unlike the ſmall-pox," he continues, "gave no trouble, and were of ſhort duration, and according to Dr. Jenner are unworthy of medical conſideration." I mention this fact here, from obſerving that ſuch pimply eruptions have ſometimes excited uneaſineſs in parents, and that they may ariſe *occaſionally*, eſpecially with children about the teeth, where there has been no expoſure to the ſmall-pox. —In the caſe of Mr. Squib's child, inoculated for the cow-pock by me whilſt the ſiſter laboured under a very bad confluent ſort of natural ſmall-pox, there was a number of theſe pimples,

pox; thoſe who were inoculated from the latter, had the ſmall-pox; and where the cow-pock and ſmall-pox puſtules interfered with each other, matter being taken from this, produced the two diſeaſes, with the two kinds of eruptions."

"In one of Mr. Kelſon's firſt caſes the vaccine diſeaſe appeared in the mildeſt form poſſible. The matter taken from this patient, Mr. Kelſon ſoon learnt to prefer. From this *no eruptions* occurred, in upwards of a *hundred* patients, whom he inoculated, from *two weeks* old to *eighty years*. In the autumn he received a freſh ſupply of matter from Dr. Pearſon; with which he inoculated as many more, without having *one eruptive caſe*."

Mr. Kelſon is of opinion, "that the vaccine diſeaſe, when unattended with eruptions ſimilar to variolous, *is a thouſand times more trifling than the ſmall-pox*; he ſcarcely had a patient ſufficiently ill to prevent amuſement or labour." He ſays, "the local inflammation is not to be dreaded; only requiring a ſinged rag, when the puſtule happens to be rubbed off,—and that it is not an infectious diſeaſe."

"To determine this laſt point, he ſelected about forty people in the workhouſe, and inoculated half of them, ſome in both arms, and fixed them to ſleep with thoſe who had not had the diſorder; but

pimples, which appeared on the face only, and the patient eſcaped the ſmall-pox, no variolous puſtules having taken place.

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in no inſtance was it communicated to the others. He broke the puſtules, and frequently made them ſmell the parts; but to no effect."

"After giving the diſeaſe to the remainder, the following experiments were made, in order to aſcertain whether it was a ſecurity againſt the ſmall-pox. *Firſt*, he inoculated the whole party with the moſt virulent matter he could procure; but nothing enſued, except local ſuperficial inflammation for the firſt ſix or ſeven days.—He *then* introduced a wretched family, juſt recovered from a very bad ſmall-pox, their dirty clothes unchanged, and divided theſe in different beds among them; but to no purpoſe."

"He after this inoculated with the cow-pox an infant, and as ſoon as he was ſatisfied that infection had taken place, had it put into the bed with its ſiſter, who had the moſt dreadful confluent ſmall-pox; but no inconvenience enſued."

"The greater part of theſe patients Mr. Kelſon has *ſince* inoculated again, both with vaccine and variolous matter; but without effect. Moſt of the others whom he inoculated, have had variolous matter inſerted afterwards, for the ſatisfaction of themſelves or friends."

"He never knew an inſtance of its occaſioning ſcrophula, or any cutaneous diſeaſe; and has never given a ſingle doſe of phyſic, either before or after inoculation."

SECT.

SECT. XVI.

MY OWN EXPERIENCE.

After ſo much has been preſented to the public on the *cow-pox*, it might appear ſuperfluous in me to ſay any thing on this ſubject; but conſidering the queſtion of the utmoſt importance to ſociety and the comfort of families, and believing that the inoculation of the village of Lowther, and the proofs that were manifeſted there, of the *cow-pock* affording an abſolute ſecurity from the ſmall-pox, muſt have equal weight here, as in the northern counties; and knowing alſo that prejudices yet exiſt againſt this ſalutary improvement; I am induced to add my teſtimony to the maſs of evidence already brought forward; taking up this queſtion, indeed, from no perſonal motives, but for the intereſts of humanity, and to ſettle, as far as my humble ability will permit, the public mind, and to ſolicit, from the rulers of a generous nation, that reward to which ſo extraordinary a diſcovery is in juſtice entitled to.

The *firſt* PUBLIC INSTITUTION where the *cow-pock* was introduced was that over which I have the honour to preſide as phyſician, and the vaccine inoculation, as daily performed by me *gratis*

to

to every applicant at the ST. MARY-LE-BONE GENERAL DISPENSARY, was advertiſed at my expence frequently in the public papers, and otherwiſe made known by printed accounts and oral communications, ſo that the maſs of evidence derived from this ſource is very conſiderable: but I have rather preferred relating to the public *my experience* in *one ſpot*, as the evidence is in *a quarter* where the facts are concentered, their authenticity eaſily aſcertained, the concluſions from the number ſufficiently ſatisfactory, and as tending to ſhew, that the *general inoculation* of the *cow-pock* is not a *chimerical idea*, and the *extirpation* of the *ſmall-pox* an *improbable event*.—Whenever I contemplate this intereſting ſubject, I always ſmile within myſelf, by thinking, that as other wiſe men have found out interpretations for other hieroglyphicks, that in this I behold fulfilled the ſtory of ST. GEORGE, our tutular ſaint, *fighting*, and *overcoming* the DRAGON.

From viſiting the Marquis of Exeter at Burghley, near Stamford, I proceeded on profeſſional duty, to Raby caſtle, in the North Riding of Yorkſhire, the ſeat of the Earl of Darlington, and from thence went to the Earl of Lonſdale's at Lowther, in Weſtmoreland. In this excurſion I found the cow-pox was a diſeaſe equally unknown to profeſſional men as to the inhabitants of thoſe quarters; and the following circumſtance led to its firſt eſtabliſhment in the Northern Counties.

Soon after my arrival at *Lowther*, after having

firſt had the honour of being ſhewn by his Lordſhip the wonderful proſpects ſurrounding this old illuſtrious ſeat of great and diſtinguiſhed characters, I was taken to *Lowther-town* to ſee the manufactories eſtabliſhed there by his Lordſhip. Here I was ſhewn carpets, worth from three to four hundred pounds, which excel in taſte and workmanſhip the Bruſſels; and here it is, that more than an hundred orphans taken out, and apprenticed to his Lordſhip, from the Foundling Hoſpitals of London and York, have found a peaceful protection, and are inſtructed in labour by the ſuperintendent Mr. Bloom, who is furniſhed by his Lordſhip with all the materials for theſe uſeful and ornamental labours, and has a yearly ſalary affixed for conducting the whole, and a piece of ground allotted for the cultivation of flowers, in order that the embelliſhments of theſe elegant productions of art may be faithful tranſcripts from nature, with permiſſion alſo to keep a few cows in his Lordſhip's park.—A manufactory of woollen ſtockings of exquiſite workmanſhip is likewiſe carried on in the ſame place by Mrs. Bloom.

Being myſelf a parent, I could not fail to notice at the manufactory a lovely little boy, who with native ſweet ſimplicity ſeemed "unheedful" of the company he was in, and was in all kinds of anticks. This child appeared to be, and was in fact, a very great favourite of his grandfather and grandmother, the ſuperintendents of the manufactory, and he was the more endeared to Mrs. Maſon, his

fond

fond and virtuous mother, from having a conſtitution naturally weak from his birth, and as being the firſt and only pledge of her huſband, who had been then abſent from her (from cauſes I have neither inclination, or wiſh, to inquire into, or unfold) for upwards of three years.

The anxious thought of the whole family was how they could ſecure this favourite child from the natural ſmall-pox; hence he was always kept in ſight, nor would they have ventured with him to the village of Lowther, or any of the neighbouring towns, for the world: nor, indeed, were ſuch apprehenſions altogether groundleſs; for, not many years back, the ſmall-pox had broken out in *Lowther-town*, when the blackſmith, his ſiſter, and two ſervants of his Lordſhip, and the ſon of the park-keeper, were ſwept off by that dreadful peſtilence, one only out of ſix ſurviving!

His Lordſhip, knowing the apprehenſion entertained by theſe people, propoſed to me that Maſter Maſon ſhould be inoculated with the cow-pock, and, with his Lordſhip's natural condeſcenſion and goodneſs, explained in a clear manner the difference between the two ſpecies of inoculation, and the ſuperiority of the one over the other.

The propoſal was gladly embraced, and I was deſired by his Lordſhip to ſend for vaccine matter from London, and through the favour of Mr. Ring, who with the moſt laudable zeal has been indefatigable not only in propagating himſelf this inocula-

tion, but in furniſhing opportunity for others to do the ſame, by freely ſupplying medical gentlemen with vaccine matter to all parts of the world, I ſoon procured from him on ſeveral lancets the means of of carrying this intention into execution. Accordingly, October 4, 1800, I inoculated DANIEL JAMES BLOOM in both arms.

As Mr. Bloom is a very intelligent man, I requeſted him to remark the ſymptoms ariſing from the cow-pock, and to draw up a ſtatement of particulars, which he did as follows.

" The EARL OF LONSDALE accompanied by Dr. Thornton, as they were going out an airing, honoured me with their preſence, when the NOBLE EARL witneſſed the firſt inoculation of the cow-pock in this country, which was performed by two punctures juſt piercing the ſkin, ſo as to fetch no blood, the end of the lancets being firſt moiſtened with ſaliva, and the cow-pock matter mixed with it by means of the two lancets being rubbed at the points againſt each other. At the end of two days there appeared a little redneſs where the cow-pock matter was inſerted, and on the third day there was a pimple like a flea-bite, which increaſed in ſize until it loſt its pimple-like appearance, which was about the eighth day, and became like a puſtule of the ſmall-pox, the ſides diſtending, and the top flattening, when a red circle of inflammation, reſembling the burr of the moon in a miſty night, appeared, and the fleſh around the puſtule was as hard as any

boil whatever, and ſeemingly as much diſtended, and inflamed. On the ninth day I became rather alarmed, the child began to droop in the evening, his eyes looked heavy, he felt ſick, but could not vomit, complained of head-ach, grew to be very hot, was very reſtleſs, and paſſed a feveriſh night. The ſymptoms abated towards morning, but returned the following evening, but much ſlighter; and on the following day he was cheerful and as well as ever. The puſtule had turned, it became a hard brown ſcab, commencing in the middle, and ſo extending itſelf over the whole puſtule. The florid inflammation was converted into a faint purple. The ſkin by the thirteenth day ſurrounding the puſtule became white, and next peeled off. The tenſion and hardneſs of the arm diminiſhed, and the pain and ſmall ſwelling under one arm-pit by the fifteenth day was quite gone.—The inoculation only took place in one arm, and when the ſcab came away it left a deep-pit, as with thoſe inoculated for the ſmall-pox."

The following queries were made to Mr. Bloom.

Qu. What is the age of your grandſon?
Anſ. Four years and a half.
Qu. Is he healthy?
Anſ. On the contrary; he is a very ſickly child.
Qu. Did the inoculation produce puſtules?
Anſ. None, except the one on the arm.
Qu. Had he fever in conſequence?
Anſ. A conſiderable degree of fever.

Qu. On

Qu. On what day after inoculation did this fever come on?

Anſ. On the ninth day.

Qu. Had he any tumour under the axilla?

Anſ. Stiffneſs and pain in that part, and a gland was felt there enlarged to the ſize of a pea.

Qu. Was his health impaired?

Anſ. He appeared not in the leaſt to have ſuffered from the inoculation.

Qu. Was he inoculated ſince?

Anſ. Being ſo certain that he was ſecure from the ſmall-pox by the vaccine inoculation from what I ſaw, I refuſed to have him inoculated for the ſmall-pox, as I could not ſee it would anſwer any uſeful purpoſe, the evidence of the fact from the inoculation at the village of Lowther being ſufficient to convince every reaſonable mind.

The miſtreſs of the inn at Crackenthorpe, having heard of his Lordſhip's kindneſs to Mr. Bloom's family, and wiſhing to avail herſelf of a ſimilar advantage, petitioned his Lordſhip, whoſe tenant ſhe was, to have her children likewiſe inoculated with the cow-pock, being ſeven in number, and they were accordingly all inoculated from Maſter Maſon.

I had the following anſwer to the queries by an apothecary, who carefully watched the ſymptoms.

CHARLOTTE IVES, æt. 9.

Qu. How many puſtules?

Anſ. One.

Qu Any fever?

Anſ. Very ſlight.

Qu. What were the ſymptoms?

Anſ. A Degree of heat on the ſkin, and want of appetite, with a ſenſe of wearineſs.

Qu. How long did this continue?

Anſ. One night, and the following day.

Qu. At what period after inoculation did it come on?

Anſ. On the ninth day.

SOPHIA, æt. 6.

Qu. How many puſtules?

Anſ. One.

Qu. Any fever?

Anſ. Very ſlight.

Qu. What were the ſymptoms?

Anſ. As the other, but with ſome thirſt.

Qu. On what day after inoculation?

Anſ. On the ninth, but rather earlier in the day than her ſiſter, more reſtleſs at night, but the next day was as well as ever.

Qu. Any ſwelling under the arms?

Anſ. None.

LYDIA, æt. 2 years.

Qu. How many puſtules?

Anſ. One.

Qu. Any

Qu. Any fever?

Anſ. None.

HENRY, æt. 1 year.

Qu. How many puſtules?

Anſ. One.

Qu. Any fever?

Anſ. No complaint whatever.

JOHN, æt. 10.

Qu. How many puſtules?

Anſ. One.

Qu. Any fever?

Anſ. A conſiderable degree, which came on the eighth day, aggravating a ſevere cold caught at this time; complained of great head-ach, and he had a troubleſome cough which continued a fortnight, but he got well of this, and was as well afterwards as before inoculation.

Qu. Any ſwelling under the axilla?

Anſ. None.

JAMES, æt. 7¼.

Qu. How many puſtules?

Anſ. One where the inoculation was, and a ſmaller one that roſe regularly about two inches from the other.

Qu. Any fever?

Anſ. The fever ſeemed to be much in his head; he had thirſt, great laſſitude, and this continued for two days and two nights.

Qu. On what day after inoculation did this come on?

Anſ. The tenth day.

Qu. Any ſwelling under the axilla?

Anſ. One, the ſize of a pigeon's egg, under the right arm-pit, which appeared on the ninth day, increaſed for three days, then gradually diminiſhed, and, at the end of the week, diſperſed.

Qu. Was this tumour painful?

Anſ. It produced a ſtiffneſs, and gave, upon motion, ſome uneaſineſs.

OBSERVATIONS.—In theſe *eight* caſes the reader has the common phænomena of the cow-pock inoculation. Two out of eight were free from fever. The fever, however, was rather more conſiderable than uſually ariſes from the vaccine inoculation, the period of its arrival was from the eighth to the tenth day, but, as being unaccompanied with danger, it claims, as the tooth-ache, little regard with the medical practitioner. There was no general eruption in any of theſe caſes. The ſolitary puſtule near the inoculated one in a ſingle inſtance is a circumſtance that may, perhaps, occur once in ſeveral hundred trials. Two patients had an affection under the axilla, a gland there being enlarged. This circumſtance is not unuſual; but as being unattended

tended with danger, and only a temporary uneaſineſs, is of trifling conſideration. In the *firſt caſe*, a ſickly child, much affected with worms, was inoculated with the cow-pock. He is rendered thereby ſecure from the ſmall-pox ever after. All the parents' fears about the child were inſtantly diſperſed. The probability in this caſe, had he been inoculated with the ſmall-pox, is, judging from example, (but to ſuch inoculation the parents I am perſuaded never would have conſented,) that he would have died, or his conſtitution been ſo much impoveriſhed, that he would have lingered out a very painful exiſtence.—In the *other inſtances*, I need not ſtate, what would be the diſtreſs at an inn from ſo many labouring under the ſmall-pox, the anxiety it muſt have created, the trouble, and the ſuſpenſion for a time of part of the buſineſs of the houſe. The ſuppoſition of death with theſe patients, and other miſeries, will not here enter our calculation.

Inoculation of the village of LOWTHER.

We haſten now with pleaſure to the inoculation of the *Village of Lowther*. This is a moſt pleaſant picturesque village, ſituated two hundred and eighty miles from London, ſeven miles from Penrith, and a mile from the ancient famous manſion of Lowther, and was built by the preſent Earl of Lonſdale, in the Italian taſte, is regularly ſaſhed, contiguous, from two to three ſtories high, each houſe being of ſtone,

and, without doubt, is the moſt taſty village in the kingdom. It contains about four hundred inhabitants.

His Lordſhip, obſerving, with great acumen, the cauſe of the proſperity of the North of Ireland, after having built in this delightful ſpot a village unique of its kind, ſufficient to contain five hundred inhabitants, ſent over to Ireland for manufacturers of cloth to ſet the example of the true welfare of a nation. Here it is all his Lordſhip's linen, as table-cloths of damaſk, napkins of the ſame, towels, ſheeting, and long-cloth, in ſhort, every article of linen in uſe, have been fabricated, and no other is at preſent employed either at his Lordſhip's eſtabliſhment in London, or at Lowther. Beſides theſe manufacturers, all his Lordſhip's labourers reſide here, rent free, and are paid a regular ſtipend both ſummer and winter, and, however old, are paid equally as when they could exert their youthful ſtrength. It was with pleaſure that I witneſſed, in the winter, potatoes given as uſual, meat, and bread; and when any of the wives are near their time to be brought-to bed, they ſend to Lowther for linen, and are allowed beer-caudle during the month. The villagers indeed generally lament that there is no public-houſe throughout the whole place; but his Lordſhip no leſs regards their temporal than their eternal welfare.

——————————Agricolæ
O fortunati nimium ſua ſi bona norint!
VIRG.

Hence

Hence it is that the village of Lowther exhibits what ſhould be the pride of Engliſh nobility, a fine healthy induſtrious peaſantry, ſupported by, and contiguous to, a rich domain.

Let the reader of ſenſibility contemplate the difference between that pride of nobility, which deſolates a country to extend a park, and that patriotic ſpirit, which, at a conſiderable expence, eſtabliſhes towns and villages, for the purpoſe of manufacture.

Every thing ſeemed to conſpire to render our experiment the moſt deciſive imaginable. His Lordſhip obſerving with a true patriotic eye, which looks beyond the *narrow* circle of *private* advantage, conſidering only the *public* welfare, had ſhewn himſelf adverſe to *partial* inoculation; hence the younger part of the whole village for upwards of twenty years were exempt from the ſmall-pox, and therefore liable to this diſeaſe.

As fortune would have it, during the period Daniel Maſon was under vaccine inoculation, one of the induſtrious little villagers, a lad aged nine or ten years, had picked up muſhrooms, which at that time were uncommonly abundant, and carried them for ſale to Penrith, unknown to his parents, where the ſmall-pox then raged, and had ſwept off a number of perſons. This child took, in conſequence, the natural ſmall-pox, and exhibited ſigns of it, when Daniel Maſon had juſt recovered; and Rose, æt. 9, the child of his Lordſhip's porter,

was

was in a right ſtate for propagating the vaccine inoculation.

It was now harveſt time in the north, both for hay and corn, and there was not to be an idle hand throughout the whole village. No language can expreſs the diſmay that was ſpread from this event. Amidſt this univerſal conſternation and dread of the ſmall-pox, ſeen by groups of old people anxiouſly converſing of the impending calamity, his Lordſhip ordered the glad tidings of a general inoculation with the *cow-pock* to be proclaimed, the advantages of which were ſtated, had been ſeen, and were believed, and the whole aſſembly were ordered to appear in review at Lowther before his Lordſhip.

Upon going to ſee the child labouring under the natural ſmall pox, I found his face greatly tumified, not a feature to be diſcerned; blind, covered with puſtules from head to foot, the whole face was one ſmear of blood and gore, and the parlour he lay in being ſmall, the ſtench was ſo intolerable, that I was obliged ſoon to quit the room to hinder myſelf from being ſick. I propoſed inoculating the other two children with the ſmall-pox; but the mother was much prejudiced againſt inoculation, and had rather "truſt them to God's will," hence I foreſaw that I ſhould obtain a full completion of my views *.

The

* The ſmall-pox being a diſeaſe, whoſe laws are little known by the majority of people, I have endeavoured in this

The happy villagers now thronged to his Lordſhip's domain; and it was a moſt pleaſing ſight for me to ſee aſſembled at Lowther in the ſteward's room, in the preſence of his Lordſhip, ſo many perſons to whom I was about to render the moſt eſſential ſervice; at the ſame time I was enabled to

this pamphlet to inſert alſo the moſt prominent features of the ſmall-pox; and here, therefore, I would obſerve that infection only commences after the eruptive fever, and takes from ſeven to fourteen days before the ſeeds of this diſeaſe when ſown manifeſt themſelves: and this curious fact is the moſt frequent cauſe why ſome idly boaſt of being themſelves, or having children, proof againſt the ſmall-pox, and why all may eſcape the danger, which warns like the *rattle ſnake*, before it ſeizes on its prey. "Many inſtances," ſays the great and learned Dr. Heberden, "have occurred to me, which ſhew, that one who never had the ſmall-pox might ſafely aſſociate, and even lie in the ſame bed, with a variolous patient, for the two or three firſt days of eruption, without receiving the infection."

By comparing this obſervation with the facts contained in Dr. Haygarth's work on the ſmall-pox, it appears, that when one perſon is accidentally ſeized with the ſmall pox in a family where others are liable to it, the reſt may generally avoid the natural infection, either by ſeparation or immediate inoculation.

Maturation appears to be the ſeaſon when the variolous miaſms are emitted moſt copiouſly; the poiſonous pus being expoſed, at that period, naked to the air, according to the accurate deſcription of the faithful Sydenham. "Uſque ad hunc diem" octavum a primo inſultu "puſtulæ, quæ faciem obſederant, læves ad tactum fuere atque rubræ, jam verò aſperiores evadunt (quod quidem primum eſt incipientis maturationis indicium) et ſubalbidæ, paulatim inſuper *ſuccum* quendam luteum, colore a favo non abludentem, *evomunt*."

make

make the moſt deciſive experiments reſpecting a practice, which promiſed to be an epoch in the annals of medicine, and I flatter myſelf that the importance of the ſubject, and the preſent period of time, when Dr. Jenner's claim is before the Houſe, will be a ſufficient apology for my publiſhing the ſcattered obſervations I at that time made, and without the ſmalleſt view to their publication.

MEMORANDUMS.

1. Mary Bryham, æt. 20, is a *good-looking well-grown* girl, of a very florid complexion, the daughter of a groom of his Lordſhip's, William Bryham, who has ſuperintended his Lordſhip's ſtables upwards of forty-eight years. The arm roſe finely, puſtuled, and then ſcabbed, but there was not the ſlighteſt conſtitutional affection.

Observations on this case. Having paſſed through the vaccine diſeaſe (as far as regards the eſſential circumſtance, a proper puſtule forming itſelf, and going through its reſpective ſtages, which occupies a ſpace of from fifteen to twenty days,) I introduced her to where lay my wretched patients in the natural ſmall pox, one child was hardly recovered, and a ſecond was in a deplorable condition, blind, and at that time dreadfully moaning. I ſhall never forget the expreſſion of alarm manifeſted by the girl's countenance, ſhe having never

ſeen

ſeen this diſeaſe before. The blackneſs had not quite worn off the face of *one*, a *ſecond* was at its height, and a *third* ſickening; and if fear increaſes the predispoſition to take infection, there was no want of this here *, and with the utmoſt difficulty I could get her to come near theſe children; but having, after much perſuaſion, the firſt ſurpriſe being over, conſented to let me inoculate her plentifully with the variolous matter in both arms, ſhe afterwards was induced to touch the children labouring under the ſmall-pox with her hands, and catch their breath, but to no purpoſe, for having had the cow-pock, ſhe was inſuſceptible of the ſmall-pox, in whatever way attempted to be given; ſhe was indeed *proof* againſt this diſeaſe, as much, if not more ſo †, than if, inſtead of the cow-pock, ſhe had had the inoculated ſmall-pox.

* Beſides the horror of the ſcene, *another cauſe* might have conſpired. There lives in the ſame village along with her, ANN ROPER, the daughter of her mother's ſiſter, and this girl was ſo dreadfully ſcarred by the SMALL POX, that ſhe was rendered, to uſe the vulgar phraſe, a *perfect fright*; ſhe was ſaid before to have been a *bonny laſs*, and I might add, that ſhe has from the ſame cauſe a ſpeck over her right eye, of which ſhe is blind.

† For there are a few authenticated caſes of perſons having had twice the ſmall-pox, but I ſhould doubt ſuch facts, unleſs for *the authorities:* but rather than believe them, may I not be allowed to ſay "humanum eſt errare."

2 & 3. THOMAS NICHOLSON, æt. 6, and JOHN, æt. 1, his brother, a child at the breaſt, paſſed through this diſeaſe, as is common. On the eighth day the acceſſion of fever came on, rather ſtronger marked than uſual, the ſymptoms of which were heavineſs, a want of appetite, diſinclination for food, an increaſe of heat, the ſleep at night reſtleſs. Sometimes theſe ſymptoms, eſpecially with infants, are accompanied with nauſea, and actual ſickneſs; but theſe in a day or two paſs off, and the patient is left in perfect health. There was no eruption in either of the two caſes.

OBSERVATIONS. The firſt reflection that muſt naturally ſtrike the reader is, that the child who was in arms, labouring under the cow-pock, did not communicate this diſeaſe to the mother, who never had had the cow-pock, hence this diſeaſe is not infectious; ſecondly, being next door neighbours to the Smiths, and after the cow-pock had ſcabbed, being permitted to viſit their former playmates, that they had reſiſted the ſmall-pox. Beſides this chance, they were each inoculated by me plentifully with the ſmall-pox matter; and not ſatisfied with this, I had them put *naked into bed* * with their neighbour's child covered with

* The examples of this ſort, furniſhed by my practice as Phyſician to the Mary-le-bone Diſpenſary, are extremely numerous. I ſhall mention, however, only a very few ſtrong caſes,

with maturated puſtules; but it was all to no pur-
poſe, they were rendered by the cow-pock inſuſ-
ceptible

caſes, thinking that more would be needleſs and tireſome to the reader.

Two years back I inoculated JOHN KING, æt. 3, and THOMAS, æt. 1½, children of the publican, who lives in Margaret-ſtreet, at the corner of Great Portland-ſtreet, with the cow-pock, and they ſcarcely ailed any thing. Mr. King's niece not long after came out of the country, and on her arrival in town fell ill of the natural ſmall-pox, and had them very full. John King *ſlept* with her the whole time; they both were with her in the day; and the mother relates that, frequently ſince, they have been in company with children labouring under the ſmall-pox, never wiſhing them to avoid it. And to complete the deciſiveneſs of this fact, I had them both, at two ſeparate times, inoculated for the ſmall-pox; but having had the cow-pock, they were rendered thereby inſuſceptible of the ſmall-pox.

I inoculated JOHN, THOMAS, and WILLIAM PLANT, who live in Edward-yard, Edward-ſtreet, and they had the cow-pock the uſual mild way; a fourth child was inoculated with the ſmall-pox, and a plentiful crop of puſtules were produced. The children being in the ſame houſe, eat, drank, and were conſtantly together, but no infection took place. I then inoculated theſe three repeatedly with the ſmall-pox: but they were found ever to be *proof* againſt that diſeaſe.

ELIZABETH RESTIEAUX, living at 38, Caſtle-ſtreet, Oxford-market, was inoculated by me three years ago, and had the cow-pock in the uſual mild way. A year after this ſhe was in the ſame houſe where there were three children who were ſeized with the natural ſmall-pox in a very bad manner, and ſhe was conſtantly with them, and has ſince been taken repeatedly to houſes at my inſtigation in which the ſmall-pox

was;

ceptible of the ſmall-pox in whatever way attempt-to be given.

4, 5, & 6. JOHN HUTCHINSON, æt. 9, WILLIAM,

was; and ſhe has alſo been inoculated by me twice with the ſmall-pox and once with the cow-pock, at different intervals, but without theſe producing the ſmalleſt effect more than a ſlight ſcratch from a lancet.

MARGARET PITCHET was inoculated by me two years ago. Some months after ſhe had had the cow-pock, a child in the ſame houſe, No. 8, Duke's-court, Bow-ſtreet, took the natural ſmall-pox, and was covered with puſtules from head to foot. Theſe children were together as uſual: but no ſmall-pox was communicated; and having inoculated her at leaſt a dozen times ſince, at different periods, I found her in every inſtance *proof* againſt the ſmall-pox.

MARY, ROBERT, THOMAS, and ALEXANDER ROUTLEDGE, living in St. Ann's-court, were inoculated by me for the cow-pock. MARY was *purpoſely* ſent to a relation's, whoſe child had juſt taken the natural ſmall-pox, and continued there three weeks, but never caught the ſmall-pox, having previouſly had the cow-pock. A lodger in the ſame houſe refuſing to have her two children inoculated with the cow-pock at this time, a few weeks after, loſt both by the natural ſmall-pox.

Mrs. HUTCHINGS, houſekeeper of the Rev. Mr. Townſend, author of the "Guide to Health," having come to live in town with her huſband, had her child inoculated by me with the cow-pock; with this child in her arms ſhe nurſed a friend's child labouring under the natural ſmall-pox, who with difficulty recovered from it; nevertheleſs her infant did not take the ſmall-pox, having previouſly had the cow-pock.

The ſame was the caſe with Mrs. BRITAIN, No. 3, Pit-ſtreet, whoſe child eſcaped the ſmall-pox from having had the cow-pock,

LIAM, æt. 7, and THOMAS, æt. 2, went properly through the ſeveral ſtages of the cow-pock puſtule. JOHN and THOMAS had an acceſſion of Seven on the eighth day. WILLIAM ailed nothing.

OBSERVATIONS. Theſe were next door neighbours to the Smiths, on the right, and being ſuffered to enter the houſe of their old playmates after the *cow-pock* had ſcabbed, they were expoſed to the contagion of the ſmall-pox for hours together; they were alſo plentifully inoculated by me for the ſmall-pox, but were all three inſuſceptible of that diſeaſe.

7. THOMAS JOHNSON, æt. 13, was inoculated like the reſt in the arm. The occupation of this lad was to drive a cart, uſually in company with his father, for the Earl of Lonſdale, and going to Penrith on the fifth day after inoculation, he drank a pint of ſtrong-beer given him by one Pellet, at Mr. Hutchinſon's brewery, and came back that ſame day with his team, having walked upwards of fifteen miles, in conſequence there was an attempt towards forming a kind of eruption, one puſtule appearing on the breaſt, and another on the

pock, although two children died of the natural ſmall-pox, at the next houſe, to which her child was often taken.

Two of my own children, CHARLES, and ANNA MARIA, who were inoculated by Dr. Jenner for the cow-pock, and ailed nothing but the puſtule on the arm, were both afterwards inoculated by me for the ſmall-pox, but without its producing that diſeaſe.

cheek, which actually ſcabbed over, and he paſſed a reſtleſs and feveriſh night, and continued feveriſh the next day and night, after which he was able to drive his team and three horſes as uſual, and being inoculated by me with the ſmall-pox matter, and frequently expoſed to the influence of the ſmall-pox in the houſe of the Smiths, he was found unſuſceptible of that diſeaſe.

Observation. What would have been the conſequence of ſuch imprudence under variolous inoculation as was exhibited in this caſe I leave to the conjecture of the ſenſible reader! The appearance of a couple of puſtules, and theſe maturating, is a very rare occurrence; for this diſeaſe is almoſt invariably confined to the inoculated puſtule, and moſt probably aroſe from his blood being overheated by the beer and exerciſe.

8. Maria Johnson, æt. 16, his ſiſter, had the cow-pock without any accompanying fever.

Observation. She was inoculated twice for the ſmall-pox, and rubbed her hand over Smith's children, and was frequently in the infected houſe, but was found unſuſceptible of that diſeaſe.

9. William Hodging, æt. 13, was inoculated in both arms; the puſtule took, however, only in one. He is carpenter to the Earl of Lonſdale, and works with his father in the raff-yard. On the ninth day he had an acceſſion of fever, but not ſo much as to make him leave off work.

Observations. This youth lives but two doors

from the infected houſe, was taken by me into this houſe, and brought ſo near to the children as to receive their breath, and at ſeven different times was inoculated both for the ſmall-pox, and as many times for the cow-pock, but having had the latter deceaſe, no proper puſtule roſe, performing its regular ſtages, or exciting the leaſt conſtitutional affection, and hence he may be ſafely declared unſuſceptible of either diſeaſe.

10. Mary Henley, æt. 14, was inoculated alſo in both arms. It took effect in both places, and the puſtule on the left arm roſe finely, and did extremely well; but that on the right arm got rubbed by ſome means, formed itſelf into an ugly ſcabby ſore, producing real pus under it, and as faſt as the ſcab came away, it formed a larger ſore, very deep, and was a very troubleſome wound for more than ſix weeks, the ſcab filling up the place, extending to nearly the ſize of half a crown; and this would have been ſet down as an untoward caſe of vaccine inoculation, depending upon ſome peculiarity in the conſtitution, unleſs fortunately we had inoculated both arms, and the one had done ſo kindly. She had no fever, or any conſtitutional affection. Was taken into the houſe, where the natural ſmall-pox was, and inoculated then, and ſeveral times after, but to no purpoſe; ſhe was unſuſceptible of the ſmall-pox.

11. Maria Fry, æt. 7, had one pock, the fever was of one day and night's continuance, and her

ſather deſcribed her "as burning like a coal, ſick, but not to vomit, and as rambling in her ſleep."

Obeservations. When ſhe had gone through the cow-pock I made a double experiment; I inoculated her with the ſmall-pox, and at the ſame time her ſiſter Charlotte, æt. 15, who had had the ſmall-pox when ſeven years old, and was terribly disfigured by it, with the cow-pock; and, contrary to my expectations, there was a puſtule formed in Maria Fry's arm, and a general conſternation took place among the villagers; but upon examination, there was no bur of inflammation round it, no hardneſs, no regular puſtular riſing; it ſcabbed on the fourth day *, and produced no conſtitutional diſeaſe, or any puſtules, the cow-pox in Charlotte Fry died away like a common ſcratch.

It may not be irrelevant to mention here, that Jane Mattinson and Mary Dunn, both preſented themſelves to be inoculated, but from their own account it was more than probable they had had the ſmall-pox. The former had nurſed a child

* In a few inſtances where a puſtule has been formed of either kind, the progreſs was found to be very different from the true puſtule, and this kind, like a ſeed ſown on ground, or in a climate, not congenial, came forward, and ſoon paſſed off, whereas the other has its regular ſtages of riſing, falling and ſcabbing. Thoſe who have the baſtard puſtules, if I may ſo call them, have complained of much *itching*, which I have not obſerved in the other ſorts, and at the end of ten days the puſtule was gone without leaving behind the uſual large and deep ſcar.

who

who died of that diſeaſe; it was the child of his Lordſhip's park-keeper before mentioned. At the ſame time I inoculated theſe with the cow-pock, I alſo inoculated the brother of Mattinſon, a young man who was dreadfully ſcarred and marked with the ſmall-pox, and JAMES BROOM, who had alſo the marks of that diſeaſe; and theſe were done with both ſorts, but in each inſtance there was only produced a ſlight temporary local irritation, and both places before the fourth day died away. It appears, therefore, from theſe and other facts, that thoſe who have had the cow-pock are inſuſceptible of the ſmall-pox, and *vice verſa*.

12. RICHARD WALKER, æt. 24, carpenter, on the ninth day was attacked with a fever, was light-headed, wanted to get out of bed, the next day, the tenth was enabled to do ſome work, could not work much, had the fever return at night, after which he ailed nothing, continuing his labour as uſual all the while, except on the one day mentioned. Inoculated with both the cow-pock and ſmall-pox, but neither took effect.

13. HARRIET FLETCHER, æt. 18, had only one puſtule, and ſays ſhe was able to follow all her domeſtic concerns as uſual, never being laid up a ſingle day. Inoculated with the ſmall-pox, but was found like the reſt, inſuſceptible of that diſeaſe.

14. JOHN SAUNDERSON, æt. 10, had one puſtule and ailed nothing, his brother

15. JOSEPH SAUNDERSON, æt. 7, had a fever for

two days and nights, was hot and reſtleſs, the fever came on on the ſeventh day. Both were inoculated with the ſmall-pox, but without effect.

16. William Patterson, æt. 9, had one pock, alſo a ſmall one underneath, which came out a few days after the other, feveriſh two days and nights, the fever commenced on the ninth day. Inoculated with the ſmall-pox, but it took no effect.

18. Hannah Mandle, æt. 2, had one pock, never ailed any thing.

19. Mary Falofield, æt. 11, one pock, feveriſh on the eighth and ninth nights, but played in the interval.

20. John Henley, æt. 16, one pock, never ailed any thing.

21. Hannah M'Cran, æt. 9, one pock, never ailed any thing.

22. Sarah M'Cran, æt. 7, one pock, and another came out an inch below it, which was much ſmaller, and which went in ſtages, and ſcabbed like the other; ailed nothing.

23. Thomas Richardson, æt. 4, one pock, no fever.

A particular observation. He is terribly ſcarred in the face and body, a year before, his clothes catching fire, when the child was nearly burnt to death.

General observation. Theſe ſix having had no perceptible conſtitutional affection, they were inoculated again with the cow-pox, but this took no effect,

effect, alſo with the ſmall-pox, but they were likewiſe proof againſt both.

THE CONCLUSION or INFERENCE.

Fearful that continuing the ſame monotony would only fatigue my readers, and imagining to urge more facts might be conſidered as an inſult even to the meaneſt comprehenſion, I ſhall therefore juſt ſum up, that *forty-eight* inhabitants of the village of Lowther, of different ages, who had never had the ſmall-pox, were inoculated by me for the cow-pock, and having paſſed through this diſeaſe without riſk or danger of life, or perſon, that they were nearly all, at leaſt the majority, inoculated afterwards at two remote periods for the ſmall-pox, and expoſed to its infection by being brought into the room where the ſmall-pox was, but in not a ſolitary inſtance did any receive this diſeaſe. Such an eſcape in ſuch a number cannot poſſibly be attributed to any peculiarity of conſtitution: but it muſt be allowed to the true cauſe, the preventive influence of the cow-pock. This law amounts therefore to an abſolute certainty, or demonſtration; for whence do we form the notion that fire burns the fleſh? My perſonal experience and traditional report does not approach to half the number of inſtances reſpecting the preſervative power of the cow-pock, nor has indeed any one a more ample or better ground for be-

lieving that cork ſwims. To diſbelieve *now* the efficacy of the cow-pock, muſt therefore ariſe either from IGNORANCE or PREJUDICE; and indeed there are reported to be even *at this time* a few doctors, who do not credit the thing, but I flatter myſelf, this report is unfounded, for an ignorant doctor is a *miſnoma*; and reſpecting vulgar prejudices * theſe mental miſts will, it is hoped, ſoon vaniſh before the clear ſunſhine of truth.

PROGRESS OF THE VACCINE INOCULATION IN THE NORTH.

From ſuch demonſtrative evidence of the ſuperior advantages of the cow-pock, the Counteſs of DARLINGTON, daughter to the Ducheſs of Bolton, who is ſiſter to the Earl of Lonſdale, had her laſt child inoculated with the cow-pock, although Lord Barnard and four other children of the Earl of Darlington had had a mild diſeaſe from the ſmall-pox inoculation. Colonel LOWTHER, Member for the county of Weſtmoreland, who was with his Lordſhip, had a child of his inoculated with the ſame, although he had ſeven before inoculated with the ſmall-pox; and Colonel SATTERTHWAITE, member for Cockermouth, a borough of his Lordſhip's, being at Lowther, having lately loſt a grand-child by ſmall-pox inoculation was rejoiced to embrace this opportunity, and had vaccine matter from me ſent to

* Theſe prevail more in the South than in the North.

his

his ſon-in-law, Dr. Head; Captain PRESTON of Warcop, coming to Lowther, followed the example, mentioning "that the reaſon why he had not had his child before inoculated with the ſmall-pox, was the fear of bringing this diſeaſe into his village." And ſuch indeed was the general conviction of the *country people* of the efficacy of the cow-pock, (namely, its power of rendering the conſtitution inſuſceptible of the ſmall-pox, and that it was a diſeaſe infinitely milder than the ſmall-pox, never killing, not infectious, and giving little or no trouble) that the whole country around Lowther came to ſolicit a participation of the benefits reſulting from the cow-pock, and on ſeveral days I was engaged in inoculating to the amount of 110 * perſons, Mr.

* SPECIMEN OF ONE DAY'S INOCULATION, THE NAMES BEING OBLIGINGLY TAKEN DOWN BY MR. STOREY.—Ann Davidſon, æt. 23; John Pearſon, æt. 2; Chriſtopher Thompſon, æt. 3; Hannah Lancaſter, æt. 1½; George Sanderſon, æt. 4; John Powley, æt. 5; William Powley, æt. 6; Chriſtopher Stephenſon æt. 17; *from Great Strickland.* William Rigg, æt. 4; Mary Rigg, æt. 6; *from Little Strickland.* Henry Hodging, æt. 3; Joſeph Hodging, æt. 1; *from Pattindale.* Elizabeth Jackſon, æt. 15; John Jackſon, æt. 19; James Jackſon, æt. 15; Mary Jackſon, æt. 8; William Jackſon, æt. 4; Iſabella Scott, æt. 11; Jane Wilkinſon, æt. 18; Richard Mounſey, æt. 2½; John Mounſey, æt. ½; *from Martindale.* Joſeph Ireland, æt. 3; John Shepherd, æt. 10; *from Newton.* Sarah Robinſon, æt. 14; Joſeph Robinſon, æt. 12; Mary Robinſon, æt. 10; Hannah Robinſon, æt. 8; Elizabeth Robinſon, æt. 6; Ann Robinſon, æt. 4; Thomas Robinſon, æt. 1½; William

Mr. STOREY, his Lordſhip's apothecary, kindly aſſiſting me in this work of humanity.

It

liam Thompſon, æt. 5; *from Barton.* John Nelſon, æt. 8; Henry Nelſon, æt. 6; William Nelſon, æt. 4; *from Whale.* Peggy Ballentine, æt. 2½; *from Knipe.* Mary Hayton, æt. 3; Andrew Harding, æt. 2; *from Aſhham.* Eſther Wilſon, æt. 2; Eſther Coulthard, æt. 6½; George Coulthard æt, 4; William Wilſon, æt. 18; Jane Wilſon, æt. 1; *from Penruddock.* Sarah Coalſon, æt. 5; *from Cleborn.* Mary Graham, æt. 2; *from Hachthorp.* Sarah Nicholſon, æt. 1½; John Nicholſon, æt. 3½; Hannah Parker, æt. 16; John Dalton, æt. 4; Joſeph Dalton, æt. 1½; Francis Moor, æt. 28; Mary Tours, æt. 5; Wilſon Tours, æt. 2; Eſther Todhunter, æt. 8; Joſeph Todhunter, æt. 14; Nelly Todhunter, æt. 10; *from Spartnit.* Ann Wilſon, æt. 24; Mary Wilſon, æt. 4½; Sarah Parker, æt. 19; Mary Jackſon, æt. 28; *from Thackthet.* John Fidler, æt. 6; Lucy Fidler, æt. 4; Ann Fidler, æt. 2; Thomas Fidler, æt. ¾; *from Roan.* Francis Hodgſon, æt. 42; Thomas Hodgſon, æt. 14; Richard Hodgſon, æt. 12; Mary Hodgſon, æt. 11; John Hodgſon, æt. 1½; John Docher, æt. 2; George Davidſon, æt. 2; *from Newton.* John Sewell, æt. 2; *from Bolton Moor.* Robert Watſon, æt. 3; *from Wainſton.* Ann Forſter, æt. 18; *from Milkenthorp.* William Pooley, æt. 10; Richard Pooley, æt. 6; *from Barton Church.* Joſeph Jackſon, æt. 20; *from Thackthwaite.* John Morland, æt. 8; Mary Moreland, æt. 6; Jenny Morland, æt. 4; Thomas Morland, æt. 1; *from Swindale.* John Waterhouſe, æt. 13; *from Dacre.* Barb. Dodd, æt. 8; Elizabeth Dodd, æt. 5; Ann Dodd, æt. 2½; Jane Robinſon, æt. 2; *from Morland.* William Brown, æt. 1; Francis Brown, æt. 2; William Newton, æt. 1; *from Newbiggin.* Francis Walker, æt. 2; Margaret Teaſdale, æt. 1½; Elizabeth Teaſdale, æt. 4; John Caſtlow, æt. 15; Sarah Caſtlow, æt. 12; Elizabeth Caſtlow, æt. 10; William Jackſon, æt. 13; Elizabeth Howgarth, æt. 19; Bella Howgarth, æt. 15; Agnes Howgarth,

It was a moſt charming ſight to behold the fineſt peaſantry in the world aſſembled at Lowther for the purpoſe of having themſelves, or of giving the cow-pock to their children, to ſecure them ever after from the horrid ravages of the ſmall-pox; and ſuch was the courage diſplayed, that out of 110 perſons mentioned in the note as inoculated in one morning, I do not recollect ſeeing more than one frightened at the ſight of the lancet, nor were the fears of this child communicated to the reſt. So thronged were the carts and waggons and horſes loaded with the rich treaſures of the country, that, as at fairs, there were women who came to Lowther with cakes and fruit, and the turnpike man deſired I would go through his gate toll-free, ſaying, "he had never

garth, æt. 12; *from Roſſgill.* William Wills, æt. 3; Jane Wills, æt. 4; John Nicholſon, æt. 5; Thomas Nicholſon, æt. 6 weeks; *from Soenbridge.* Jane Sinton, æt. 36; *Penrith.* The reader will find the number of inoculated perſons on this morning, to be 110, from 6 weeks old to 42 years of age, and when the queſtion was aſked, whether they would have come in ſuch numbers to have the ſmall-pox? there were very few, who did not declare, that they diſliked the ſmall-pox, each aſſigning different reaſons: but the principle objection was, "they had known ſuch, and ſuch, *die* from the inoculated ſmall-pox," and "that they could not *ſpare the time* to attend upon a ſick family," and ſeveral ſmilingly ſaid, "they could not *afford to pay for it*;" nor did a ſingle individual expreſs the ſmalleſt diſtruſt of the virtue of the cow-pock, but all received the inoculation both *cheerfully*, and *thankfully!*

had

had ſo many people paſs his gate before." The number inoculated by me at Lowther, amounted in all to above a thouſand, and calculating what others have done from my example, I ſhould ſuppoſe that the number muſt have riſen ſince to many thouſands.

Sir JAMES GRAHAM of Netherby near *Long-Town*, on the borders of Scotland, being much indiſpoſed, came to the Earl of Lonſdale's at his Lordſhip's deſire, on purpoſe for my advice, and having witneſſed the good effects of the cow-pock, he took matter back with him to have his nephew (the child of the Rev. Mr. Graham, the rector of Arthuret) inoculated, and that he might extend this bleſſing to his tenantry *. Of the pleaſing reſult of this caſe I have the ſatisfaction of laying the following letter before my readers.

" Dear Sir,

" I have had the pleaſure to receive your kind letter. My little boy has had the cow-pock ſo very favourably, that little or no fever has attended the complaint, if any; it was very trifling on the eleventh

* Sir James Graham, M. P. is a baronet of equal philanthropy and urbanity, married to the daughter of the Earl of Galloway, and is ſaid to have the beſt concentered eſtate in the kingdom, the whole of Netherby being his poſſeſſion, and this one eſtate yielding 12,000 per annum.

night;

night; *ſeven* children were inoculated from him yeſterday. I am happy to hear Lord Lonſdale is better, and hope you will ſoon reſtore him to perfect health; I beg my reſpects to his Lordſhip. My brother is conſiderably better from your ſkilful advice.

" I am, dear Sir, with great eſteem,

" Your's, moſt faithfully,

Arthuret, " FERGUS GRAHAM.
Nov. 24, 1800.

" P. S. The inflammation on the arm was about the ſize of a ſhilling."

I was equally anxious to eſtabliſh the cow-pock at *Carliſle*, which is ſituate but nine miles from Long-Town, and Dr. HEYSHAM, an eminent phyſician of that city, propoſed ſetting the example by having his own child, only ſix weeks old, inoculated; but my firſt attempt failed, as the following letter ſhews.

Carliſle, Nov. 1, 1800.

" Dear Sir,

" I received your very obliging favour on the 23d ult. and delayed anſwering it till now that I might have it in my power to acquaint you with the reſult. Agreeable to your advice the infant was inoculated

inoculated with the lancet the very day it arrived. The operation was performed by a ſurgeon who is much in the habit of inoculating, and who did it very neatly, and without drawing blood; and the lancet was wiped on the part agreeable to your directions, notwithſtanding which, I am ſorry to inform you, no effect has been produced. Had ſhe fortunately received the infection, ſeveral of my friends were diſpoſed to have had their children inoculated from her, and the practice, I have no doubt, would ſoon have become *general* in this neighbourhood."

"I ſhall incloſe the lancet in this letter, and flatter myſelf you will have it in your power to return it in a few days, loaded with freſh matter, and the child ſhall be inoculated again, and I hope with more ſucceſs."

"If, however, you cannot favour me with recent matter, I will make the experiment with the old which you ſent upon the cotton thread; but I ſhould greatly prefer freſh, becauſe if it ſhould fail a ſecond time, it might be the means of diſcouraging the practice, which I feel very anxious to promote."

"I am, dear Sir, with great reſpect,

"Your much obliged humble ſervant,

To Dr. Thornton, Lowther. "JOHN HEYSHAM."

As

As a more certain mean of imparting the cow-pock, I agreed with the parents of one of the villagers, who had the puſtule in a proper ſtate, to ſet out on horſeback, for Carliſle, with his child, Mary Brown, a girl only five years old, which was conſented to; and immediately upon reaching Carliſle, after a journey of twenty-ſix miles, *nine* perſons were inoculated from her by Dr. Heyſham, of which event the following letter is a document.

Carliſle, Nov. 13, 1800.

" Dear Sir,

" I return you my beſt thanks for your very obliging letter, and am certain the inhabitants of this city are under great obligations to you for your kind attention in ſending a healthy ſubject under the action of the cow-pock. Nine children have been already inoculated from her under my inſpection, and ſeveral more will follow their example to-morrow. As ſoon as the infection takes place, I ſhall advertiſe a *general inoculation* at our diſpenſary; by which means I doubt not but the practice will become *univerſal* in this part of the country. My little girl was inoculated with your ſecond lancet the moment it arrived, but without effect, and a third time yeſterday with one received per favour of Sir James Graham. I ſhall attend to your P. S.

and

and will recommend to all the ſurgeons to make uſe of very clean lancets, and matter taken early in the diſeaſe *."

" I am, dear Sir, with great reſpect,

" Your much obliged humble ſervant,

" JOHN HEYSHAM."

The pleaſing reſult of the firſt trials at Carliſle will be ſeen from the following letter.

Carliſle, Dec. 6. 1800.

" Dear Sir,

" Mr. Alderman Richardſon left your favour yeſterday evening, when I was out of town; and as I underſtand he means to return to Lowther, either this day, or early to-morrow morning, I embrace this opportunity of informing you that all who have been inoculated here where infection took place, ſince you ſent the little girl, have done extremely well. Not one of them was affected with any conſiderable fever, or any kind of ſickneſs to excite the ſmalleſt uneaſineſs.

* This P. S. alluded to the power of ruſt in deſtroying the ſpecific virtue of the cow-pock matter, and producing, in conſequence, the *ſpurious* inſtead of the *true* puſtule; alſo to the cow-pock puſtule loſing its ſpecific virtue after the ninth or tenth day; vide note * page 114.

" With

"With reſpect to my own child we have been rather unlucky, as ſhe has not received the infection though inoculated three times with the dry matter you were ſo kind as to ſend. And ſince we received the recent matter we have been under the diſagreeable neceſſity of changing her nurſe no leſs than twice, and at preſent, on account of an indiſpoſition common to children, muſt poſtpone the inoculation.

"I have the honour to be, dear Sir,

"Your much obliged humble ſervant,

"JOHN HEYSHAM."

Upon the return of the little child, after this expedition, I was careful in obſerving the effects of ſo long a journey, at this ſeaſon of the year; and I remarked with pleaſure that the fever had been ſlight, but two puſtules came out on the face, which completely maturated, and ſcabbed. Dr. Heyſham generouſly diſcharged all the father's expences at Carliſle; Mrs. Graham at Low-Houſe, in the neighbourhood, who had her child vaccinated, gave him ten and ſixpence; and Dr. Blamire, who took ſome vaccine matter from the child, gave the father a crown; and he alſo received many other preſents, which he very honeſtly mentioned, refuſing what I had agreed to pay him; but I inſiſted upon fulfilling the terms of our original agreement.

The two following letters will ſhew my endeavour to eſtabliſh the cow-pock at *Whitehaven*.

" Sir, Whitehaven, Oct. 25th, 1800.

" I delivered your obſervations, relating to the cow-pox, to Dr. DIXON, who deſires me to ſay that he thinks himſelf highly obliged to you, and requeſts you will ſend him a little of the matter for inoculation, with proper directions how to uſe it, thinking it would be the means of ſaving a great number of lives here *.

" I am, Sir,

" Your moſt obedient and humble ſervant,

Dr. Thornton, " JOHN BOWNESS."
Lowther.

" Sir, Whitehaven, Nov. 21ſt, 1800.

" Receiving a letter from my father laſt night, ſtating, that you wiſhed to hear how my brother came on after his inoculation, enables me to embrace the opportunity of returning my grateful thanks for introducing the cow-pock to my brother and myſelf, who have both got through the ſame exceedingly well. I have inoculated ſeveral children at Whitehaven and Workington; likewiſe have fur-

* Dr. Dixon, Dr. Croſtwaite, and Mr. Hamilton, have ſince introduced the vaccine inoculation into the Whitehaven Diſpenſary, and have inoculated a great many.

niſhed ſeveral doctors with matter to do the ſame. They are all fully convinced of the great advantage ariſing from the cow-pock; yet, they inform me, from the bigoted notion of the public, they fear they ſhall not be able to get it introduced. What they allege appears *ſtrange* to me; as with thoſe I had opportunity to inoculate I found it not difficult to do away *any prejudice* that tended to injure the introducing ſo uſeful a diſcovery to the human race. On the 22d inſtant I ſhall have to inoculate near *twenty* of his Lordſhip's work-people's children.

" I remain your moſt obedient

" humble ſervant,

Dr. Thornton, Lowther. " WILLIAM BRYHAM *."

Lancaſter was not forgot, as the following letter will evince.

" Dear Sir, Lancaſter, Dec. 10th, 1800.

" I have this evening received from Mrs. Dilworth (Mr. Yarker's daughter) a little vaccine matter, for which I find I am indebted to you, and for which accept my ſincere thanks. I have found

* William Bryham ſuperintends Lord Lonſdale's collieries, and ſince this period has inoculated above 500; his ſiſter's caſe is in page 204, being among the firſt inoculated in the village of Lowther.

great difficulty in introducing the new inoculation here; and had it not been for a ſenſible and intelligent *lady*, Lancaſter would not yet have witneſſed its introduction. Since then I have inoculated ſeveral, perfectly to my ſatisfaction; and the other day I made propoſals to my friend Mr. Baſendale, who is ſurgeon to the Lancaſter Diſpenſary along with myſelf, to inoculate the poor in this town and its vicinity, gratis. With pleaſure I inform you it met with his approbation, and with that of Dr. Campbell, and in a few days we begin the buſineſs.

"I am, dear Sir, with great reſpect,

"Your obedient and faithful ſervant,

"J. A. BRATHWAITE."

Nor was *Appleby* forgot, as the following letter will ſhew.

Appleby, Dec. 17, 1800.

"Dear Sir,

"This day week I inoculated fifteen with fluid cow-pox matter, all of whom, excepting one or two (which are dubious), have taken the infection, and the puſtules look charmingly. The prejudices of the common people againſt the operation are ſinking to nothing; and I am fully perſuaded, that in a very little time the inoculation will become

general.

general. I will not fail to tranſmit to you a regular account of thoſe under my care.

" I remain, dear Sir, with great reſpect,

" Yours moſt ſincerely,

" JOHN BUSHBY."

Nor was even *Ulverton* omitted by me.

" Dear Sir,

" With the lancet you *laſt* ſent me I inoculated RIGGE, but am much afraid, from the appearance of the inciſions, or rather punctures, not with the ſucceſs which has attended my other operations in this new and excellent practice. I have here matter taken from the arms of ſome of my patients; but, from a prejudice which you will eaſily allow for, his friends here will not allow the diſeaſe to be produced in him by any other means than ſuch as originates from you *directly*. I muſt, therefore, trouble you to ſend me a little freſh matter for him as ſoon as convenient. In ſending ſmall-pox matter to a diſtance, I have found it very certainly ſent by having two ſmall ſquare pieces of glaſs, one ſurface of each being beſmeared with the matter, applied together, and tied by a piece of thread.

" I have already inoculated between twenty and thirty of different ages, from matter you firſt ſent, and they have had little or no fever or any obſerv-

able complaint, ſave the local inflammation of the punctured parts; except in one inſtance, a daughter of Mr. Sandy's of Grathwaite-Hall, who became feveriſh the fifth day after being inoculated, and had three puſtules upon her face, which were filled with a much more tranſparent fluid than ſmall-pox generally contains, and theſe literally ſcabbed like the inoculated puſtule on the arm.

" You will accept my beſt thanks for your kind attention, and believe me,

" I am, dear Sir,

" With the greateſt eſteem,

" Your much obliged, and obedient ſervant,

" WILLIAM. HARRISON."

Ulverſtone,
Dec. 1, 1800.

I could alſo mention *Penrith*, *Kendal*, *Temple-Sowtherby*, and many other towns about Lowther, in which I introduced the vaccine inoculation: but am fearful it would too much treſpaſs on the patience of my readers. I ſhall, therefore, haſten to the pleaſing contemplation of having, I think, been inſtrumental by this means in the extirpation, for the preſent, of the ſmall-pox from this diſtant part of England: for having requeſted, a year after my inoculation of the village of Lowther, that Mr. STORY would re-inoculate

re-inoculate theſe villagers with ſmall-pox matter, I received from him the following letter.

Penrith, Nov. 7, 1801.

" Dear Sir,

" I received your favour, and would with pleaſure comply with your requeſt, if I could get any matter for inoculation. I have ſent to *Carliſle*, *Keſwick*, *Appleby*, &c. and I am well informed *that there is no ſmall-pox in this country at preſent, owing to your inoculation with the cow-pox.* I firſt went, as you wiſhed, to Lowther, to acquaint Lord Lonſdale with the contents of your letter; and his Lordſhip ſays, he has not the leaſt objection to the children in the village being inoculated with the ſmall-pox matter, which would be directly done, provided I could get the matter, which at preſent I cannot; but whenever I am able to procure any, you may reſt aſſured, that I will with much pleaſure comply with your requeſt; and

" I have the honour to remain, dear Sir,

" Your moſt obliged humble ſervant,

" RICHARD STORY."

Hence I had occaſion to ſend down to Penrith the ſmall-pox matter between two pieces of glaſs

for Mr. Story, to re-inoculate the inhabitants of Lowther village, and his report was as follows.

" Dear Sir, Penrith, Nov. 20, 1801.

" The glaſſes with the ſmall-pox matter arrived ſafe, and with conſiderable pleaſure I ſet about re-inoculating thoſe perſons who the laſt year had been inoculated by you with the cow-pock in the village of Lowther; and I remarked with much ſatisfaction that I found none whom I inoculated to take the ſmall-pox, the places of inſertion of the matter in a few days dying away. This makes the experiment at Lowther deciſive. It afforded much pleaſure to his Lordſhip, who deſires to be kindly remembered to you, and wiſhing you, ſir, all the rewards your great exertions for the good of mankind, and advancement of ſcience, ſo juſtly merit,

" I have the honour to be,

" Dear Sir,

" Your obliged faithful ſervant,

" RICHARD STORY."

GROUND FOR HOPES OF THE TOTAL EXTIRPATION OF THE SMALL-POX.

The diſappearance of the ſmall-pox from ſo *many towns* in the north of England from the cow-pock inoculation, muſt give the moſt heartfelt ſatisfaction to every mind endowed with ſenſibility, and as being an epitome of the greater conqueſt, namely, the extirpation throughout the globe of the ſmall-pox, in our humble opinion, merits to be recorded as the *harbinger* of that effulgent day, when the benign radiance of the cow-pock like the ſun will extend its glorious influence throughout every clime. Already it has been *partially* received in all the civilized countries of the habitable globe, and promiſes ere long to realize the juſt expectations of its warmeſt advocates, by being *generally* adopted from the judicious and proper interference of the LEGISLATIVE POWERS †.

† Vide Note * page 238. When the ſmall-pox was firſt introduced into Otaheite, and the deſtruction was ſo great, as to threaten the entire ſubverſion of the ſtate, theſe *ignorant ſavages* formed laws, by which they ſtopt the progreſs of the calamity. MEAD.—How much more reaſon have we then to expect the ſubjugation of this formidable enemy of the human race, in a more enlightened period, and from more enlightened ſtateſmen, an eaſier mean being now in our power, that reſtrictive laws to prevent infection, namely the cow-pock,

pock inoculation, which, perhaps, might be enacted in each ſtate, for no one is born for himſelf alone; each being placed with reference to the community!—And thus there being no longer left any *fewel* for the ſmall-pox to blaze up into a great national calamity, hence the delightful proſpect of the ſpeedy and certain annihilation of the ſmall-pox throughout the whole habitable globe.

Dr. JENNER's PETITION.

A Petition of Edward Jenner, Doctor of Phyſic, was preſented, Wedneſday, March 17, 1802, by Admiral Berkeley, to the Houſe of Commons, and read; ſetting forth, "That the Petitioner having diſcovered that a diſeaſe, which occaſionally exiſts in a particular form among cattle, known by the name of Cow-pox, admits of being inoculated on the human frame with the moſt perfect eaſe and ſafety; and although its ſymptoms are ſo mild as ſcarcely ever to prove even a temporary impediment to the ordinary courſe of health, yet it is attended with the ſingularly beneficial effect of rendering through life the perſon ſo inoculated ſecure from the infection of the ſmall-pox; and that the Petitioner, after the moſt laborious and attentive inveſtigation of the ſubject, ſetting aſide all conſiderations of private advantage, and anxious to promote the ſafety and welfare of his countrymen, and of mankind in general, did not wiſh to conceal a diſcovery ſo made, on the mode of conducting this new ſpecies of inoculation, but immediately diſcloſed the whole to the public, and, by communication with medical men in all parts of this kingdom and in foreign countries, ſedulouſly endeavoured to ſpread the knowledge of his

his diſcovery and the benefit of his labours as widely as poſſible; and that, in this latter reſpect, the views and wiſhes of the Petitioner have been completely fulfilled, for, to his high gratification, he has to ſay, that this inoculation is in practice throughout a great proportion of the civilized world, and has in particular been productive of great advantage to this kingdom, in conſequence of its being introduced, under authority, into the army and navy, and that the ſaid inoculation hath already checked the progreſs of the ſmall-pox, and from its nature muſt finally annihilate that dreadful diſorder; and that the ſeries of experiments by which this diſcovery was developed and completed, have not only occupied a conſiderable portion of the Petitioner's life, and have not merely been a cauſe of great expence and anxiety to him, but ſo interrupted in the ordinary exerciſe of his profeſſion, as materially to abridge its pecuniary advantages without their being counterbalanced by thoſe derived from the new practice; and that the Petitioner, with a view to obviate doubts, which of late were *falſely* * repreſented to have ariſen in a foreign country reſpecting the efficacy and certainty of the vaccine inoculation, and thereby to enable himſelf with better confidence to ſolicit the favourable attention of the Houſe, was induced to delay his

* Vide the Appendix, page 237.

application,

application till after the time limited by the Houſe for receiving petitions of a private nature was elapſed; and therefore praying, That leave may be given to exhibit a petition, that the Houſe will be pleaſed to take the premiſes into conſideration, and grant him ſuch remuneration as to them ſhall ſeem meet.

ORDERED, That, in conſideration of the particular circumſtances ſet forth in the ſaid petition, leave be given to preſent the petition as deſired.

Then a petition of EDWARD JENNER, Doctor of Phyſic, being offered to be preſented to the Houſe, Mr. ADDINGTON, Chancellor of the Exchequer, (by His MAJESTY's command,) acquainted the Houſe, That HIS MAJESTY, having been informed of the contents of the ſaid petition, recommends it to the conſideration of the Houſe.

Hence the ſaid petition was brought up and read, containing the ſame allegations as the preceding petition; and praying the Houſe to take the premiſes into conſideration, and to grant him ſuch remuneration as to them ſhall ſeem meet.

ORDERED, That the ſaid petition be referred to the conſideration of the Committee, and that they do examine the matter thereof, and report the ſame as it ſhall appear to them to the Houſe.

And

And a Committee * was appointed accordingly, and they have power to ſend for perſons, papers, and records.

ORDERED, That five be the quorum of the ſaid Committee.

* Being ſummoned before this Committee, I had the honour perſonally of preſenting them the preſent work, preſuming, that as a medical man I ſhould ſtand excuſed the liberty I took; and I ſhall conclude with hoping, that when the rulers of a generous nation ſhall have decreed a full remuneration to Dr. JENNER (for here liberality and juſtice are the ſame) that they will alſo make wiſe regulations againſt the ſmall-pox inoculation, here proved to be a Public Nuiſance, as *deſtructive* as, at the preſent period, it is *unneceſſary*. Whether an order for a *general inoculation* of the *cow-pock* is conſiſtent with a free ſtate may be doubted by ſome, but laws againſt the *ſmall-pox*, as againſt the *plague*, are not only allowable, but called for; and this, with the ſanction of Parliament to Dr. JENNER, would operate more than any thing elſe to obtain the full eſtabliſhment of the cow-pock inoculation in theſe united kingdoms.

APPENDIX.

WITH a view to counteract the influence of falſe reports in England reſpecting vaccine inoculation, induſtriouſly ſpread to prejudice the public mind, the following TESTIMONIAL was drawn up and ſigned by the moſt reſpectable practitioners in London, and publiſhed in all the periodical pamphlets and newſpapers.

"Whereas many unfounded reports having been circulated, which have a tendency to prejudice the public againſt the inoculation of the cow-pox; we, the underſigned phyſicians and ſurgeons, think it our duty to declare our opinion, that thoſe perſons who have had the cow-pox are *perfectly ſecure* from the future infection of the ſmall-pox.

"We alſo declare, that the inoculated cow-pock is a much *milder* and *ſafer diſeaſe* than the inoculated ſmall-pox.

LONDON PHYSICIANS.

William Saunders, M.D.
Matthew Baillie, M.D.
Henry Vaughan, M.D.
Maxwell Garthſhore, M.D.
J. C. Lettſom, M.D.
Nathaniel Hulme, M.D.
James Sims, M.D.
John Sims, M.D.
Gilbert Blane, M.D.
William Liſter, M.D.
Robert Willan, M.D.
William Blackburne, M.D.
J. M. Hayes, M.D.
Andrew Thynne, M.D.
C. Stanger, M.D.
Edward Fryer, M.D.
Alexander Crichton, M.D.
Thomas Bradley, M.D.
Sayer Walker, M.D.
Richard Denniſon, M.D.
Thomas Denman, M.D.
W. G. Maton, M.D.
Michael Underwood, M.D.
John Squire, M.D.
Richard Croft, M.D.
R. J. Thornton, M.D.
Robert Batty, M.D.
Thomas Garnett, M.D.
John Gibſon, M.D.
Robert Hooper, M.D.
Edward Bancroft, M.D.
Lewis Poignand, M.D.

SURGEONS.

SURGEONS.

John Abernethy,
William Blair,
G. M. Burrows,
Samuel Chilver,
Henry Cline,
A. P. Cooper,
David Dundas,
Thomas Farquhar,
Henry Fearon,
Edward Ford,
James Gilder,
J. M. Good,
John Griffiths,
James Higgins,
James Horsford,
Joſeph Hurlock,
Francis Knight,
Edward Leeſe,
Lewis Leeſe,
James Leighton,
William Lynn,
John Mackinder,
Jonas Malden,
William Maſſie,
Joſeph Millington,
James Moore,
William Morris,
Thomas Paytherus,
John Pearſon,
J. W. Phipps,
Thomas Pole,
John Ring,
Thomas Rolph,
John Ruſh,
Thomas Seagrum,
James Simpſon,
H. L. Thomas,
Jonathan Wathen,
Thomas Whateley,
Stephen Woolriche.

The REPORT of the Committee of vaccine inoculation at Paris, inſtituted by the order of Government, ſigned by the moſt eminent practitioners there, may be ſeen page 143 of this work.

THE END.

T. Bensley, Printer, Bolt-Court, Fleet-Street.

A

LETTER

TO

DR. PERCIVAL,

ON

THE PREVENTION

OF

INFECTIOUS FEVERS.

AND

AN ADDRESS

TO THE

COLLEGE of PHYSICIANS at PHILADELPHIA,

ON THE

Prevention of the American Pestilence.

"Hunc lenire dolorem
"Possis, et morbi magnam deponere partem."
HOR. EP. I. I. 34.

Read to the Literary and Philosophical Society of Bath.

BY

JOHN HAYGARTH, M.D.

F.R.S. LOND. F.R.S. AND R.M.S. EDINB. AND MEMBER OF THE AMERICAN ACADEMY OF ARTS AND SCIENCES.

BATH, PRINTED BY R. CRUTTWELL;
FOR
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1801.

TO

THOMAS PERCIVAL, M.D.

F.R.S. AND A.S. LOND. F.R.S. AND R.M.S. EDINB.
MEMBER OF THE
ROYAL SOCIETY OF MEDICINE AT PARIS;
OF THE ROYAL SOCIETY OF AGRICULTURE AT LYONS;
AND OF THE
AMERICAN PHILOSOPHICAL SOCIETY AT PHILADELPHIA;
AND PRESIDENT OF THE
LITERARY AND PHILOSOPHICAL SOCIETY OF MANCHESTER.

I. PRELIMINARY PRINCIPLES.

MY DEAR FRIEND,

YOU were involved, for a considerable time, in many difficulties and anxieties in consequence of the exhortations which I have addressed to you, on different occasions, to adopt effectual measures for the prevention of that infectious Fever which had long and fatally prevailed in

Congratulations.

and near Manchester. But I trust that you always forgave my importunities, even when they had brought you into the greatest embarrassments, and that you now feel the purest heartfelt satisfaction, on the complete triumph of truth and humanity, which you have finally obtained. Your good sense, discretion, and firmness, aided by the like excellent qualities which your colleagues, the physicians of the Manchester Infirmary, fortunately possess, have, I hope, with unexampled success, vanquished every prejudice. Both in your alarms and your joy my mind has cordially sympathized with your's.*

* The institution of the HOUSE of RECOVERY at Manchester originated from the proposals on this subject, which, in our correspondence, I had frequently communicated to Dr. PERCIVAL on various occasions, for above twelve years. An extract from one of my letters to him, which was accidentally discovered during the contest concerning this Establishment, for the reception of Fever patients, is thus published in the Manchester Gazette, on the 23d of April, 1796:—

" BOARD

The difficulties with which you had to struggle, will, in the end, be highly beneficial to our cause. This very con-

"BOARD OF HEALTH.

"The Committee have thought it adviseable to lay the following extract before the publick, in order to shew, that they have not been governed in the measures which they have adopted, by mere opinion, as has been alleged, but by WELL-AUTHENTICATED FACTS and LONG EXPERIENCE.

"*Extract of a letter from Dr. HAYGARTH to Dr. PERCIVAL, dated Chester, Dec. 29th, 1794.*

"A typhous Fever became very epidemical among the poor in Chester, about the time it began in Manchester; our Fever wards in the Infirmary became crowded to a greater degree than they have been since the establishment of this regulation, near a dozen years ago. But these measures have checked the progress of the epidemick; very few Fever patients are now heard of in the whole town. The regulations proposed by your physicians will undoubtedly be of service; but, in my opinion, are inadequate to cure the malady. A Fever Hospital annexed to your Infirmary, to hold about twenty patients of each sex, would save a multitude of lives in your populous town. Your physicians who visit the home-patients, are exposed to imminent danger of contagion; in a well-ventilated, clean hospital, the medical attendant is not, I apprehend, liable to infection. I am, and have been for several years, collecting facts to illustrate various questions relative to this interesting subject."

test

test has been the means of noticing and recording numerous interesting facts; it has more generally excited the publick attention to this subject; the transaction has attracted the observation, not only of physicians, but of other leading characters in society, who are most eminent for their knowledge and beneficence. Whenever an epidemical Fever spreads fatally among the people, the most intelligent part of mankind will now recollect how easily and effectually the calamity may be prevented.

Fatal Effects of Contagion

I have long thought, that there is no subject on which a physician could employ his time and ability more advantageously for the benefit of his fellow-creatures, than in the investigation of the nature of febrile Contagion, in order to ascertain the laws by which it is communicated, and by what means it may be prevented. It is well known to be the

cause

cause of very extensive destruction among mankind; especially in the army, the navy, and all large towns. These calamities appear to proceed from error and ignorance, rather than from the inevitable danger of the Distemper. By an attentive observation of facts, and by rational arguments founded upon them, conclusions of great importance seem to be brought fairly within our comprehension and knowledge.

First Proposal of Fever Wards.

So long ago as 1774, you may remember, that an enumeration of the inhabitants of Chester was undertaken under my direction. Upon this occasion, I instituted such medical investigations as so fair an opportunity presented. My attention was particularly attracted by two epidemical Distempers, the Small-Pox and an infectious Fever, which, that year, had prevailed in the city. But the latter Contagion had spread in no unusual degree,

gree, and would undoubtedly have passed without notice, if the questions necessary for the purpose of numbering the inhabitants had not brought it under my special consideration.

Out of sixteen columns of inquiry which were answered in this survey, seven of them were engaged in ascertaining the state of these two Distempers. In the paper "*on the Population and Diseases of Chester*," which was re-printed in the Philosophical Transactions in 1775, the original idea of checking the progress of infectious Fevers among the poor is fully and explicitly proposed in the following words:—

"Another reason of mortality in the suburbs (of Chester) seems to be, that their inhabitants in general are of the lowest rank: they want most of the conveniencies and comforts of life: their houses are small, close, crowded, and dirty."

dirty." "In these poor habitations, when one person is seized with a Fever, others of the family are generally affected with the same Fever, in a greater or less degree.

"If a regulation could be universally adopted, of immediately removing out of the family such of the poor people as are seized with Fevers, it is evident that the most salutary consequences would follow. Reasonable objections might be made to receive such patients into the general Infirmary, even into separate wards, lest the Infection should spread through the whole house. But might not this and every other objection be obviated, by erecting on the ground which adjoins and belongs to the Infirmary, a small building to be divided into spacious airy apartments, where patients infected with Fevers, and properly recommended, might be received on any day of the week? Besides

medical

medical assistance, they would here enjoy clean linen, airy rooms, careful attendance, and wholesome diet."

This proposal excited no attention until 1783, when the inhabitants of Chester were alarmed by the progress of an infectious Fever, which was fatal to some of our most respectable fellow-citizens.

The Progress of infectious Fevers first noticed.

In 1777, I began to ascertain, by clinical observations, according to what law the Variolous infection, and in 1780 and 1781 according to what law the Febrile infection, is propagated. I found that the pernicious effects of the variolous miasms were limited to a very narrow sphere. In the open air, and in moderate cases, I discovered that the infectious distance does not exceed half a yard.* Hence it is probable that, even when the Distemper is malignant, the infectious influence extends but to a few yards from

* See the INQUIRY *how to prevent the Small-Pox*, p. 97.

the

the poison. I soon also discovered, that the Contagion of Fevers was confined to a much narrower sphere. Upon these principles, which it is the main purpose of this letter to explain and establish, I discerned the safety and wisdom of admitting Fever patients into separate wards of the Chester Infirmary itself, instead of an adjoining building, as I had proposed in 1774.

We are more accurately acquainted with the properties of the variolous than any other febrile poison; because the infecting matter is perceptible by our senses of sight, touch, and smell; and because the practice of inoculation has greatly extended our knowledge on this subject. For these reasons, the same mode of investigation will be pursued on this question, as was followed in the "INQUIRY *how to prevent the Small-Pox*," and in the "SKETCH *of a Plan to exterminate the casual*

casual Small-Pox from Great-Britain," which I published in 1784 and 1793.

Typhus described.

The following observations on Contagion are chiefly confined to what has been denominated the low, slow, nervous, putrid, petechial, malignant, pestilential, jail, ship, camp, hospital, &c. Fever, or Typhus. For the sake of accuracy, a brief description of it may be proper.

You know that the Typhus is commonly caught from infection, though it is probably sometimes produced by other causes. It usually begins with slight irregular chills, alternating with heat. The following symptoms succeed—a remarkable prostration of strength; great lassitude; pain on the exertion of muscular motion; a languid countenance; depression of spirits; sighs; a loss of appetite, with a loathing of food; frequently sickness, sometimes attended with vomiting; thirst; deafness; watchfulness, or disturbed

turbed slumbers with disagreeable dreams. The bowels are sometimes costive, sometimes loose, with an increased discharge of bile. The pulse is generally weak, and often, but not always, frequent. The heat of the body is generally less increased than in most Fevers, but is sometimes so great as to give a sense of burning heat, when the skin is touched. The patient has very often a head-ach, but seldom any fixed pain in other parts of the body. This Fever is of very uncertain duration, but usually continues for several weeks; and sometimes, even with these symptoms of the *mild* Typhus, proves fatal.

In this Fever, more malignant symptoms often appear, as, *subsultus tendinum*, with more general tremblings and twitching; hiccup; delirium; brown, or black sordes on the teeth and tongue; *petichiæ*; *vibices*; clammy sweats; an offensive bilious or bloody dysentery, with other

signs

signs of putrefaction; *coma*; involuntary excretions.

First Observations on the Nature of Febrile Infection.

My first observations to discover the laws by which the febrile Infection is communicated, began in two Cheshire villages; at Raby in 1780, and at Barrow in 1781. As the latter afforded the most instructive cases, I shall particularly state them.

Mr. CHEERS, a farmer of Barrow, on the 21st of April, 1781, went a journey to Manchester, Cheadle, &c. and returned home on the 24th.* At that time, his family and neighbours were entirely free from all epidemical Distempers. He was attacked by an infectious Fever on the 22d of May, that is, on the 29th day after his arrival at his own house. Sixteen other persons in this family were affected with a similar Fever, at the periods stated in the I^st. Table. His

* See Table I.

wife,

wife, who was his constant nurse, and exposed to the infectious miasms from the beginning, did not sicken till the 37th day. In regard to the intimacy of intercourse among the rest of the family, a sufficiently accurate statement of facts was not recorded.

Latent Period of Typhous Fever

You will recollect, my dear Friend, that at this time (1781) my attention was much engaged in the investigation of the nature of the variolous poison. I was struck with the difference of the periods in these two Distempers, during which the infection remains in a *latent state*, that is, the interval of time which elapses between the patient's exposure to the pestilential influence, and the commencement of the Fever. In the *Typhus*, this period appeared to be much longer than in the Small-Pox.

In this family, the proportion of persons infected with the Fever was much greater

greater than I had expected. Such views of the nature of the poison excited my attention, and an anxious desire to determine, whenever future opportunities might occur, whether these laws were established or confuted by more extensive observations.

Symptoms of the Fever.

It will be proper to give a short description of the Distemper which attacked the first family. The Fevers which are denominated low, nervous, putrid, &c. may possibly be of different species or varieties. They may be subject to different laws in regard to the period during which the infection remains in a *latent* state in the body; the quantity of poison required to produce infection; and the proportion of mankind liable to receive the Distemper. In this family, the symptoms were—chilly and hot fits; lassitude; head-ach; pain of the back; giddiness; loss of appetite for food; thirst;

watchfulness

watchfulness or disturbed dreams; delirium; deafness. Two had a looseness. The father, who brought the Fever into the family, was ill of it for more than two months. They all recovered.

By whom Cases observed.

Clear, distinct, and instructive cases of Fevers communicated by infection are with difficulty obtained. The eight following families* (the II. III. IV. V. VI. VII. VIII. and IX.) came under the observation of Mr. CONNAH, and the three subsequent families (X. XI. and XII.) were attended by Mr. MANNING, when apothecaries of the Chester Infirmary. In almost all these eleven families, the accuracy of their statement was confirmed by my own knowledge of the facts. The account of the progress of Infection in the nineteen next families, (from the XII. to the XXX. inclusive) was communicated in consequence of my inquiries on this

* See Table I.

subject,

subject, by Mr. TAYLOR, surgeon and apothecary, of Middlewich in Cheshire. Of the fidelity of these reports, I have reason to be fully satisfied, knowing, from long and frequent intercourse with these medical practitioners, that they were all well qualified to give a faithful and judicious account of the progress of the Distemper.

Reduced to a synoptical View.

The conclusions submitted to your consideration are deduced from cases so authenticated, and are accurately but succinctly stated in the form of Tables. If they had been otherwise related, the narration would have occupied many pages, and would have exhibited a tedious, and much less distinct, representation of facts. In this synoptical view, are impartially exhibited all the cases which I have been able to ascertain with sufficient correctness.

In

In March 1798, just before my departure from Chester, I received some information relative to an infectious Fever, which had spread through some Cheshire villages, perhaps propagated from the Distemper which I had noticed at Raby, as before-mentioned, in 1780, being in the same neighbourhood. But the facts had happened at some distance of time, before my questions on this subject were proposed, and I ceased to have personal and professional intercourse with my medical informer; so that my intelligence was not so full and accurate as was requisite to establish any useful and satisfactory conclusions.

Tables of Fevers.

In the first place, let me desire you, my good Friend, to examine, with minute attention, the following Tables, which explain the progress of infection through families. Weigh well the facts therein stated. This may seem to be an irksome task, and

to many readers it might be so. But I know, from our long and intimate friendship, how highly you value information relative to facts, which can advance medical knowledge, especially if it can be applied to alleviate human misery. You may be, as I was, surprised to find what a large proportion of mankind are capable of receiving this Fever, when fully exposed to the influence of the infectious poison; that is, when confined for days and nights, in the same small close and dirty room, with a patient ill of the Typhus.

TABLES.

TABLES

OF

FEVER CASES.

TABLE I.

Progress of infectious Fevers in Families.

Families.	Patients.	Date when attacked.	Date when Fever began after exposure to Infection.	Infected.	Uninfected.
I.	1. Mr. Cheers.	May 22, 1781.	29th,		
	2. Mr. Jas. Cheers.	June 13,	23th,		
	3. Nancy Walkley,	June 20,	30th,		
	4. Nelly Oulton,	—— 20,	30th,		
	5. Tho. Langley,	—— 20,	30th,		
	6. Master Cheers,	—— 27,	37th,		
	7. Mrs. Cheers,	—— 27,	37th,		
	8. Miſs Cheers,	—— 27,	37th,	17	3
	9. Mr. S. Cheers,	—— 27,	37th,		
	10. John Nield,	—— 27,	37th,		
	11. 12. Mary Newport and husband,	—— 27,	37th,		
	13. Nancy Rowlands,	July 4,	44th,		
	14. Jas. Thomson,	—— 8,	48th,		
	15. Mary Deakin,	—— 24,	15th,		
	16. Martha Sefton,	—— 24,	63d,		
	17. Robt. Bentley,	Aug. 7,	23d,		
II.	18. Mich. Adams,	Feb. 28,			
	19-20. S. & E. Adams,	March 25,	26th,	4	0
	21. John Adams,	—— 25,	26th,		
III.	22. Ann M'Donald,	March 10, or April 3,	1st or 25th,	1	0
IV.	23. Eliz. Fleet,	April 3,	25th,		
	24. Sarah Fleet,	May 5,	33d,		
	25. T. Fleet, jun.	May 28,	56th,	6	0
	26. Tho. Fleet, sen.	—— 30,	58th,		
	27. Mary Fleet,	June 1,	60th,		
	28. Wm. Fleet,	—— 4,	63d,		
V.	29. Wm. Griffith,	March 8,			
	30. Mary Griffith,	—— 30,	23d,	2	0
				30	3

PROOFS AND ILLUSTRATIONS.

1. Mr. Cheers went a journey to Manchester, Cheadle, &c. on the 21st of April, and returned home on the 24th.

2-16. These cases except the 15th were reckoned from the commencement of Mr. Cheers's Fever.

1-17. Four of this family, two of them nurses, were said to have remained uninfected. But as this part of my intelligence was received in consequence of inquiries, after sixteen years had elapsed, and as one of the four (the 4th in the I[st] Table) was noted by me, at the time, to have had the Fever, it is probable that some of the rest might have suffered slight symptoms of it, which escaped notice or recollection. However, I have allowed in the Table that three remained uninfected. This family received frequent visits from four relations and neighbours; yet none of them was infected; probably because none of them, during each visit, had been exposed to an infectious dose of the poison.

15. Mary Deakin was a char-woman, taken into the house on the 10th of July. Her Fever commenced on the 24th, which is the 15th day after exposure to Infection.

TABLE I. continued.

Families.	Patients.	Date when attacked.	Date when Fever began after exposure to Infection.	Infected.	Uninfected.
				30	3
VI.	31. Eliz. Robinson,	March 30,		2	0
	32. Mary Robinson,	May 3,	35th,		
VII.	33. A. Darlington,	June 14,		5	0
	34. T. Darlington,	—— 30,	17th,		
	35. E. Darlington, jun.	July 8,	25th,		
	36. E. Darlington, sen.	—— 10,	27th,		
	37. Job Darlington,	—— 22,	6th,		
VIII.	38. Mary Hughes,	June 30,		3	0
	39. Thomas Hughes,	July 14,	15th,		
	40. John Hughes,	—— 26,	27th,		
IX.	41. Eliz. Bithel,	—— 21,		2	0
	42. Edward Bithel,	Aug. 17,	28th,		
X.	43. Thomas Edson,	July 19,	Not more | Not less	5	0
	44. Jane Edson, sen.	Aug. 1,	16th, 12th,		
	45. Jane Edson, jun.	—— 16,	28th, 24th,		
	46. John Edson,	—— 18,	30th, 26th,		
	47. Humphrey Edson,	—— 31,	31st, 27th,		
XI.	48. Jane Parry,	July 31,	17th,	1	0
XII.	49. J. Edwards, jun.	June 12,	5th,	4	0
	50. Sarah Edwards,	July 5,	24th,		
	51. H. Edwards,	Aug. 1,	51st,		
	52. J. Edwards, sen.	—— 26,	76th,		
XIII.	53. Hoskinson. Son,	July 27, C. home 28		7	0
	54. —— Mother	Aug. 23,	27th,		
	55. —— Father	—— 24,	28th,		
	56. —— Daughter	—— 24,	28th,		
	57. — Another Child	—— 29,	33d,		
	58. —— Another	Sept. 25,	60th,		
	59. —— Another	—— 31,	60th,		
				59	3

PROOFS AND ILLUSTRATIONS.

37. Job Darlington came home into the infectious family July 17th.

43. Tho. Edson was admitted into the Chester Infirmary on the 23d of July, which was the 5th day of his Fever. This house was particularly offensive, with a pig-stye on one side. There was no window to admit a thorough air.

48. Anne Parry became a night-nurse of the Fever Wards of the Chester Infirmary on the 7th, and was discharged on the 17th of July. Her Fever began on the 31st.

49. "J. Edwards visited a boy ill of a Fever on the 8th of June."

53-58. "This family were all equally exposed, as the house consisted of a very small kitchen and one room over it only, which contained two beds, in which all the family slept, and were in a most dirty wretched condition. The mother (54) died on the 11th day. The father's (55) Fever came to a crisis on the 14th day. The manner in which the first patient (53) received the Fever cannot be traced; probably from some of the neighbours who were then ill of it."

TABLE I. continued.

Families.	Patients.	Date when attacked.	Date when Fever began after exposure to Infection.	Infected.	Uninfected.
				59	3
XIV.	60. Littlemore. 1st child	Aug. 5,			
	61. —— Mother,	—— 31,	27th,		
	62. —— 2d child,	Sept. 2,	29ht,	5	1
	63. —— 3d child,	—— 5,	42d,		
	64. —— 4th child,	Uncertain,			
	65. —— Father,	Not infected,			
XV.	66. Dod. Wife,	Sept. 14,	40th,	2	0
	67. —— Husband,	Oct. 4,	21st,		
XVI.	68. Thomas Davis,	June 13,	9th,		
	69. Alice Parkinson,	Aug. 1,	50th,		
	70. Joseph Walton,	—— 8,	57th,		
	71. Joseph Davies,	—— 12,	13th or 61th		
	72. Miss E. Sutton,	—— 13,	15th or 62d		
	73. S. Davies,	—— 14,	63th,		
	74. Miss B. Sutton,	Sept. 27,	46th,		
	75. Mr. Sutton,	75-85. These			
	76. Mrs. Sutton,	eleven patients		18	0
	77. Mr. T. Sutton,	were all affect-			
	78. Mr. Jos. Sutton,	ed with Fever,			
	79. Mr. John Sutton,	but not so as to			
	80. Mr. A. Sutton,	confine them.			
	81. R. Br.	They had head			
	82. A man-servant,	ach, pain of the			
	83. Another.	limbs, thirst,			
	84. Another,	languor, &c.			
	85. Another.				
XVII.	86. Eliz. Davies,	July 4,	22d,	3	0
	87. Joseph Davies,	—— 30,	48th,		
	88. John Davies,	Aug. 14,	16th,		
				87	4

PROOFS AND ILLUSTRATIONS.

60-65. "This family lived ina small dirty house; slept in the same room, and were all, except the father, equally exposed to Infection. He is a boatman, and seldom at home. He never slept at home during the time the family had the Fever; therefore was not sufficiently exposed."

66. "I. Dod's wife attended Littlemore's (XIV.) family from the first attack of his daughter, (60) which was the 5th of August. She communicated the Fever to her husband. They were old people, and both died on the 6th day."

XVI. 68-85. "Mr. and Mrs. Sutton, of Kinderton-Hall, with seven sons and daughters, three men and six women servants, in all 18, were infected. T. Davies (68) first brought the Fever into the family. He was at Middlewich on the 5th of June, at a house adjoining to one where some people were ill of a Fever. A. P. (69) sat up with the said patient from the first attack on the 13th of June. No. 70 was in the same room with No. 68 frequently during his illness. No. 71 was occasionally with his brother 68 from his first attack. No. 73 was often with his brother (68); also with his father, who was ill from the 30th of July. B. Sutton (74) was not exposed to 68, the utmost caution being used, but lay with her sister (72) from her first attack of Fever, Aug. 13th. She had a slight affection some time before. No. 86, the mother of No. 68, who attended him, sickened July 4th; and No. 87, the father, July 30th. Both these patients, as well as 69, were often in the kitchen, and Miss E. Sutton was often with them, so that in all probability she received Infection from 87, on the 15th day after exposure."

XVII. "Eliz. Davies, (86) mother of 68 in Mr. Sutton's family, attended him night and day from the 13th of June. She had but a slight Fever, and was not confined to her bed. J. Davies (87) attended his son (68) at Kinderton-Hall, from June 13th, at intervals, night and day. He was very ill, but still able to sit up in the kitchen. No. 88 was a child infected by his father (87) or else by P. Walton (89)."

TABLE I. continued.

Families.	Patients.	Date when attacked.	Date when Fever began after exposure to Infection.	Infected.	Uninfected.
				87	4
XVIII.	89. P. Walton,	July 28,	——		
	90. Mary Walton,	Aug. 12,	16th,		
	91. Betty Walton,	—— 20,	24th,		
	92. A child,	Sept. 28,	63d,	8	0
	93. Another,	Doubtful,	——		
	94. Another,	Doubtful,	——		
	95. Another,	Doubtful,	——		
	96. Another,	Doubtful,	——		
XIX.	97. R. Dod's wife,	Aug. 21,	21st,		
	98. R. Dod,	Sept. 13,	24th,	4	0
	99-100. Two Infants,	Doubtful,			
XX.	101. Johnson. Son,	Sept. 26,			
	102. —— Mother,	Oct. 25,		2	1
	103. —— Father,	Not infected Dec. 1.			
				101	5

PROOFS AND ILLUSTRATIONS.

XVIII. "This family lived in a small but clean house. The two last were slightly affected."

XIX. 97. "Called at Walton's (XVIII.) 1st of Aug."

XX. "This family lived next door to Hoskinson's (XIII.) The wife attended and slept in the same room with her son. A small house. Father not infected on 1st Dec."

XXI. "The

TABLE II.

Families at Middlewich, who laboured under continued Fever of the low putrid and petechial kind in 1795 *and* 1796, *attended by Mr. Taylor.*

Families.	Patients.	No. in a Family.	Infected.	Uninfected.
XXI.	J. Griffith,	3	3	0
XXII.	T. Almon,	9	9	0
XXIII.	S. Limeburner,	5	3	2
XXIV.	J. Eaton,	3	3	0
XXV.	N. Postles,	8	7	1
XXVI.	T. Wolsey,	6	5	1
XXVII.	R. Siddell,	4	4	0
XXVIII.	T. Percival,	4	4	0
XXIX.	E. Authorn,	7	7	0
XXX.	J. Archer,	9	9	0
XXXI.	C. Hool,	7	7	0
XXXII.	W. Prince,	3	3	0
XXXIII.	J. Houghton,	12	3	9
XXXIV.	Mr. Pott, *Cotton-Hall*,	16	15	1
			183	19

PROOFS AND ILLUSTRATIONS.

XXI. "The Fever was petechial, in a lodging-house, small, close, and dirty."

XXII. "The whole family lay in the same room. The house was close and filthy. No change of linen. A bad nurse."

XXIII. "Next door to the above house. Not certain whether the children were slightly affected with the Fever. If they were, it was imperceptible by the mother."

XXIV. "Eaton's wife attended Almon's family." XXII.

XXV. "Small close house. All lay in the same room. The one exempted lay with the others, and was never heard or observed to be affected."

XXVI. "T. Wolsey is a boatman; slept at home only once or twice with his wife, who was only very slightly affected. The rest of the family were very ill. A very small dirty house; a few doors from XXV."

XXVII. "The next door to XXVI.; was small and dirty."

XXVIII. "A few doors from XXVII. Husband and wife slightly affected."

XXIX. "Opposite to XXVIII. All slept in one room. All slightly affected."

XXX. "A remarkable filthy house and filthy family; caught the Fever at Macclesfield. The father was the only one who had the Fever slightly; says he was very ill one day with head-ach and pain of his limbs. Very poor."

XXXI. "Very poor. A remarkable filthy small house."

XXXII. "Mother of W. Prince; caught the Fever from him and died."

XXXIII. "A cotton factory, which employs several hands besides these twelve, who sleep in the house. Several rooms. In this family the utmost caution was used to prevent the spreading of the Infection, by ablution of the face and hands of the sick persons with warm vinegar, frequent changes of linen, white-washing the walls; washing the floors; burning pitch; sprinkling vinegar; frequent ventilation; removal of the chamber-pots, and every thing that could tend to accumulate the infectious vapour."

XXXIV. "The one exempted was a child four months old, on the breast, while the mother was ill. The utmost pains were taken to prevent the spreading of the Fever."

TABLE III.

Days when Fever commenced, after exposure to Infection, in Seventy-Two Cases, arranged out of the first Table.

Day.	Cases.	Total.	Day.	Cases.	Total.
1st	22?	1?	33d	24, 57	2
5th	49	1	35th	32	1
6th	37	1	37th	6, 7, 8, 9, 10, 11, 12	7
9th	68	1	40th	66	1
13th	71?	1?	42d	63	1
15th	15, 39, 72?	3	44th	13	1
16th	44, 88, 90	3	46th	74	1
17th	34, 47	2	48th	14, 87	2
21st	67, 97	2	50th	69	1
22d	86	1	51st	51	1
23d	2, 17, 3	3	56th	25	1
24th	50, 91, 93	3	57th	70	1
25th	22, 23, 25	3	58th	26	1
26th	19, 20	2	60th	27, 58	2
27th	21, 36, 40, 54, 61	5	61st	71?	1?
28th	42, 45, 55, 56	4	62d	72?	1?
29th	1, 62	2	63d	16, 28, 73, 92	4
30th	3, 4, 5, 46, 102	5	66th	59	1
31st	47	1	76th	52	1
		44			31
					44
					75

Out of 202, the whole number of persons stated in the I^st^ Table, only 19 escaped Infection. But it is manifest, from the circumstances related in the explanatory notes, annexed to the Table, that, in the three following families, several individuals were not sufficiently exposed to the poison. Proportion liable to infectious Fevers.

Families.	Persons not sufficiently exposed.	Not infected.
XIV.	— 1	— 1
XXVI.	— 1	— 1
XXXIII.	— 12	— 9
	14	11

Therefore, from 202 should be substracted 14, and there will remain 188, the number exposed. And from 19 should be substracted 11; then 8 will remain, the number who escaped Infection. Eight in 188 is less than *one in twenty-three.*

If, in like manner, we deduct the whole first family consisting of 20 persons,

as

as there were some doubts whether they were all sufficiently exposed, and whether 3 of them entirely escaped the Fever; then there will remain only 5 uninfected out of 168 exposed to Infection, or less than *one in thirty-three.*

Though an induction from facts never amounts to a demonstrative proof, yet the farther it is carried it approaches the nearer towards a complete discovery of the laws of nature. The cases here adduced are sufficiently numerous to establish a pretty accurate conclusion. They clearly prove that a very large proportion of mankind are susceptible of infectious Fevers. It hence appears that as many persons are liable to receive the Typhous as the Variolous Contagion, and probably more, even if the persons who have had the Small-Pox be excluded from the comparison; and, in a far greater number, if we take into consideration that

that the latter Distemper can only be suffered once, but the former an indefinite number of times.

Clear Conclusions deducible from these Facts.

The truth of this proposition being fully proved, deductions from it may be received with confidence. Upon this foundation, it may fairly be argued in what circumstances febrile Infection is communicated, and where there is perfect safety from danger. Though the exact line between hazard and security might be drawn with some uncertainty, yet at any distance, upon each side of it, we can speak with decisive confidence.

The same mode of reasoning as was successfully employed in the INQUIRY *how to prevent the Small-Pox*, may be equally applicable to the present question. It was there calculated, upon the *datum*, that only 1 person in 20 is naturally exempted from the Distemper; that if two together have escaped, the probability

that they were never both exposed to an infectious quantity of the poison is above 400 to 1; if three in a family have escaped above 8000 to 1.*

The truth and accuracy of this calculation have been warranted by subsequent experience, as explained in the SKETCH *of a Plan to exterminate the Small-Pox*, p. 536, 7, 8, and 9. The conclusion therein-stated, as the result of general observation, by my medical correspondents, as well as by my own, is comprehended in these words. "Therefore when three or more persons, together, have escaped the Small-Pox, we are warranted to infer, upon evidence of high authority, that all of them have not been exposed to the Contagion."

It is too obvious to require a remark, that this mode of reasoning is as ap-

* This mode of reasoning is fully explained in the INQUIRY, (p. 24—31) which pages the reader ought to peruse and attentively consider.

plicable,

plicable, and on clearly convincing evidence, to the Typhous, as to the Variolous Infection; whether the proportion naturally exempted from the former Distemper be 1 in 23, or 1 in 33.

If all the cases in succession, where persons have breathed the air of a chamber of a patient ill of a contagious Fever, and yet have escaped Infection, were estimated in this mode of calculation, the chances would be not only of thousands but of millions, indeed *many millions*, to one, that such persons had not been exposed to an infectious dose of the poison. But facts of this kind are so generally known and so frequently fall under the observation of every medical visitor, that no calculation can be required to establish this truth. The conclusions are sufficiently obvious to common sense.

What dose of Typhous Poison infectious.

By the assistance of these preliminary principles we are well prepared to inquire

quire what dose of the Typhous poison is required to produce Infection. The quantity will undoubtedly vary according to different circumstances, but we shall be enabled to judge with some accuracy, what are the limits of this variation.

In this whole investigation, you will, I am certain, keep in mind one medical truth, it cannot be called a theory, a term often applied to doubtful disquisitions. The larger the dose of a poison or drug, the greater in general is the effect which it produces. Many of the most powerful and salutary medicines, when taken in too large a quantity, are poisons, as, opium, antimony, mercury, hemlock, aconite, foxglove, &c. Even arsenic itself, the most virulent and unmanageable of all poisons, by the skill and attention of physicians, has been reclaimed from the class of mischievous substances, and by a diminution of the dose is held, on good authority, to be a safe and useful remedy.

On this subject, a farther analogy ought to be taken into consideration. In different constitutions, and in different indispositions, there is a certain degree of variety in the operation of any drug; in some more than others. Few drugs are so uncertain in their effects as antimony; four or six times the dose of it may be required for one patient more than for another, or for the same person in different diseases. In most other medicines and poisons, the difference between the least and greatest operating dose is much less than what is here stated. The mischievous quantity of infectious miasms, as might be expected, from the analogy here explained, admits of some degree of variation. They propagate the Small-Pox, however, with much uniformity, as has been proved in the INQUIRY and the SKETCH. It is not improbable that debility, or indisposition, or fear, or exposure

to

to cold or fatigue, or, as some suppose, a difference of diet, may occasion greater variety in the quantity of poisonous miasms requisite to produce an infectious Fever than the Small-Pox. In these peculiar circumstances, a sufficient, which can only be a small, allowance may be made for the difference, without much difficulty.

The Typhus not infectious in a clear, large, airy room.

With the facts recorded in the I^st^ Table and these remarks in our view, let us proceed to contrast them with other facts of general notoriety which have fallen under my own observation, and, in incomparably greater numbers, have been witnessed by other practitioners. When the chamber of a patient ill of an infectious Fever is spacious, airy and clean, few or none even of the most intimate attendants will catch the Distemper. Among the middle and higher ranks of society in Chester and its neighbourhood, during a period of 31 years, I scarcely recollect a single instance

of

of the Typhous Fever being communicated to a second person, not even during the epidemicks of 1783 and 1786, which excited a general alarm in that city. Fresh air and cleanliness were the only means which I employed to prevent Infection. Doors and windows were kept open as far as the season and other circumstances would permit. Curtains were drawn to exclude light, but not the free circulation of air. All clothes, utensils, &c. used by the patient, were immersed in a vessel of cold water immediately, and when taken out of it carefully washed. The floors were kept clean, and vinegar was sometimes but not always employed to sprinkle them. It was thought to be more easy and more safe to remove than to correct the poison.

The performance of these regulations, was required with great punctuality. They

They were found to be fully adequate to the purpose.

Infection seldom soon caught even from the concentrated impregnation of the air.

Again, medical practitioners are exposed to still more imminent danger. They visit patients ill of infectious Fevers, even in small, close, and dirty apartments. Sometimes, indeed, they unfortunately suffer: but many thousands of such visits escape without injury, for one instance of Infection. During four years attendance in the hospitals of Edinburgh and London, and afterwards during thirty-one years in private practice in Chester,* and fourteen years and a half in the Chester Infirmary, and three years at Bath, I have been in the habit of breathing air strongly impregnated with the infectious miasms of Fever. In many, very many instances, I have visited patients ill of infectious Fevers in small, close, and dirty rooms; yet never but

* Till 1783 infectious Fevers were excluded from the Chester Infirmary.

once,

once, above thirty years ago, had a Fever. Your physicians of the Manchester Infirmary for many years, and particularly during the late widely-spreading epidemicks, in your large and populous town, have, with great fortitude and humanity, constantly visited the home patients, that is, they have, in innumerable instances, breathed the most pestilential air, in the most concentrated state. Their and my safety manifestly proceeded from this circumstance; we remained but a short time in the patient's room. We did not respire an infectious dose of the poison.

Hence it appears, that air strongly impregnated with infectious miasms may be breathed for a short time, and air weakly impregnated for a long time, without any injury. We might hence be led to believe, that the poisonous miasms do not generate a Fever, till they have been respired without interruption, for several

days

days together. And it is not improbable that, in some persons, such an accumulated quantity of the poison may be required.

Yet Infection is sometimes suddenly caught.

But, on the contrary, other facts manifestly prove, that a short exposure to a pestilential atmosphere can, in some instances, produce a Fever. The case of Mr. Cheers (I[st] family) is manifestly of this kind. In a few days he visited different towns and several old acquaintance, and consequently could not have remained long together in any particular situation. The numerous examples of Infection being caught by medical visitors, in the chambers of their patients, although they seldom remain for half an hour,, and generally for a much less space of time, in the pestilential atmosphere, manifestly prove, that a short and probably a momentary exposure to the Contagion, in some instances, excites a Fever. Two of

my

my patients, who were physicians, ascribed their Infection to a short exposure to the poison. One of them thought, that he caught the Fever by creeping behind, in order to assist, his patient; the other by inspecting morbid fæces.

Medical, not less than other visitors, liable to Infection.

Some have imagined, that medical persons are less liable to be affected with the infectious poison than others, because they are more frequently accustomed to breath a certain portion of it. But this argument is carried much farther than analogy will warrant. Take an example where the efficacy of a drug is most remarkably diminished by long and frequent use. Opium, perhaps more than any other medicine, requires a gradually-increasing dose, to produce the same effect. But, if opiates are omitted, even for a short interval, the patient, on the recommencement of their use, perceives the ordinary effect from the ordinary quantity

quantity. Whereas medical men are never constantly in the habit of breathing pestilential air, nor is the dose of it gradually increased. Consequently, after a short interval of time, during which they cease to breathe poisonous miasms, they become as susceptible of mischief from the poison as any other person.

Prisoners less liable to Infection.

But prisoners, confined in the pestilential vapour of a jail, are in a situation totally different. The quantity of poison which they breathe may gradually increase, and by this means, they are enabled to bear, with impunity, a much longer dose of it than others. Thus it is a well-known fact, that felons have worn clothes without injury which nevertheless communicated Infection to fresh persons in a court of justice.

The poison is infectious at a greater distance in air vitiated by respiration.

Another view of the subject deserves consideration. It is generally allowed, that putrid Fevers are *generated* by a great number

number of persons crowded together into the same room, as in a ship, jail, &c. probably from some depravation or corruption of the air by respiration. To this cause we may probably ascribe some events, which might otherwise seem to be exceptions to the preceding observations. Several instances have been recorded, where Infection was communicated, in crowded courts of justice, at a greater distance from the poison, than in the cases above related, as what is the uniform result of my own observations. May not this difference be fairly ascribed to air vitiated by a crowd of people? It is well known, that a court of justice is always a very spacious apartment, and that the doors and windows in it are generally open for the admission of fresh air. It is directly contrary to what happens in a private apartment, that so many persons and at so great a distance from the

the poison in a large and well-ventilated room, should be infected together. I am warranted to make this observation by the uniform testimony of all my own experience, for a long series of years, during which I have carefully attended to this question. And the testimony of my medical brethren will fully confirm this remark with perhaps some apparent exceptions, which may be explained upon the principles here advanced.

It may be a subject of consideration, whether the mischief produced by the Contagion of prisoners in a court of justice may not be ascribed to the increase of malignity in the febrile poison when it has long lodged and putrified in dirty clothes and confined air in a state usually denominated *Fomites*.

Whether the causes above assigned, or what other cause may have produced the difference, it might be difficult absolutely

to

to determine by satisfactory proofs. But it appears evident that these famous examples are not conformable to the law usually observed by nature in the propagation of this poison, but that they are exceptions to the law, for some local reason.

To the same cause I am disposed to attribute another very interesting and well-authenticated fact. From a letter of Mr. W. Henry, printed in the Manchester Chronicle in June 1796, and from other information, it appears that medical students who attend the Fever patients in the Edinburgh Infirmary, have sometimes unfortunately caught the Infection. In such large and well-ventilated apartments it cannot be apprehended that an infectious Fever could be communicated, unless, as in this case, when the students are "very numerous, and constantly crowd around the beds of the patients afflicted with

with Fevers." Two causes of Fever appear to be here combined. The air is vitiated both by respiration, and by febrile miasms. Some might ascribe the calamity which has been produced in courts of justice to the supposed greater malignity of pestilential *Fomites*, heightened by the putrefaction of a jail. But in the wards of an Infirmary, where the strictest attention to cleanliness is known to be observed, no such *Fomites* can possibly be suspected.

The Variolous Poison infectious at a greater distance than the Typhous.

The whole evidence which I have been able to collect incontestibly leads to this very important conclusion, that febrile Infection extends but to a very narrow sphere from the poison. It was upon this solid foundation that I ventured originally to propose the reception of patients ill of infectious Fevers, into wards appropriated to the purpose in the Chester Infirmary. The uniform success of this establishment

fully warranted my repeated recommendations of like regulations to check the fatal progress of Fevers at Manchester, particularly in answer to your inquiry relative to this subject in Dec. 1795.* You

* In a letter to me from Dr. PERCIVAL, dated Dec. 30th, 1795, there is the following paragraph. "We have this afternoon had a meeting at my house, to consider of the best means of stopping the progress of the low Fever now so prevalent in Manchester and the small towns in the neighbourhood. It has been agreed to call together some of the most intelligent persons of this place, and to propose to them the formation of a BOARD of HEALTH on a general and comprehensive plan. Permit me to request, that you will weigh this interesting subject in your mind, and that you will furnish me with your observations upon it in time for communication to the gentlemen when they assemble on Thursday the 7th of January."

The following is an extract from my answer, of which the chief part was published in the Manchester Newspapers, and in the first Report of the BOARD of HEALTH.

To Dr. PERCIVAL.

"*Chester, Jan. 6th*, 1796.

"YOU may remember that, for the last twelve years, we have received all infectious Fever patients who require assistance, into two Fever Wards, one for each sex, appropriated to this purpose, in the Chester Infirmary.

will recollect that, upon this very interesting occasion, I assured you that the pernicious atmosphere of infectious Fevers was limited to a much narrower extent than even that of the Small-Pox.

Infirmary. This institution arose from the speculations on the nature of Contagion, which, you know, had engaged much of my attention. Numerous facts having proved, that a person liable to receive the Small-Pox was not infected by a patient in the Distemper, when placed at a very little distance; I next considered the nature of the Contagion which produces putrid Fevers. I soon discovered, that their infectious atmosphere was limited to a *much narrower* extent than even that of the Small-Pox. I observed, that in a clean, well-aired room, of a moderate size, the contagious poison is so much diluted with fresh air as very rarely to produce the Distemper, even in nurses exposed to all the putrid miasms of the breath, perspiration, and other discharges. Whereas, in the close, dirty, and small rooms of the poor, the whole family, in general, catch the Fever. On these considerations I ventured to propose the admission of Typhous Fevers into the attick story, on one side of our Infirmary, to be separated into two wards. From the experience of TWELVE YEARS I am warranted to maintain the *safety* of this measure, if conducted under very easy practicable regulations. During this period, it never was *suspected* that Infection has been communicated to a *single patient* in other parts of the House.

" Farther,

My Friend knows me too well to suspect that I should advance such an assurance upon doubtful authority. But in order to discern the full force of this remark, it is proper to consider, in what

"Farther, I maintain that an establishment of this kind is indispensibly necessary in all Infirmaries to preserve them from what is called the Hospital Fever. You may remember that I have collected a considerable number of cases to prove that febrile Contagion, in some instances, remains in the body for many days, and even weeks, in a *latent* state, before the symptoms of Fever commence. Patients ill of other disorders are admitted into the Infirmary, from infectious houses, where they have caught the Distemper. The Fever begins *after* their admission, and frequently infects others in the same ward; when there is not a due attention to fresh air and cleanliness; or when several patients, thus previously infected, are admitted into the same ward. But in the Chester Infirmary, every Fever patient, as soon as observed, is immediately removed into the Fever Wards; so as to preserve all the rest of the House perfectly free from Contagion.

"During the war, Chester has been unusually exposed to the danger of putrid infectious Fevers. Many new-raised regiments, coming from Ireland with numerous recruits taken out of jails, remained in Chester for a few weeks after their voyage. Great numbers of these soldiers, and their wives, were ill of putrid Fevers, and were immediately received into the Fever Wards of

our

circumstances, and at what distance from the poison, the Infection is communicated in each of these Distempers. One case is recorded in the INQUIRY, (p. 97) where the Infection of the Small-Pox was caught at Chester from a patient passing in the

our Infirmary. If such contagious patients had been distributed in the small publick houses and poor lodging houses through the city, the consequences to many of our inhabitants must have been dreadful.

" By taking out of a house the first person who sickens of a Fever, we preserve the rest of the family from Infection, together with many of their neighbours, who would otherwise catch it. At this very time, when the inhabitants of Manchester, and of many other places, are afflicted with a fatal contagious Epidemick, only two patients are in our Fever Wards, and both convalescent: and the Apothecary to the Infirmary, who attends the out-poor of the whole city, informs me, that he has *not a single* Fever patient under his care.

" To one of your superior discernment, it would be superfluous to say, that the observations above advanced are founded upon such numerous facts, that they must give conviction to every impartial inquirer, not only of the *safety* but of the *efficacy* of the proposed regulations. I am confident that our two Fever Wards do ten times more real good in the prevention of misery and the preservation of life, than all the other parts of the Infirmary."

open

open air upon the walls, and another (p. 32) in the rows, a kind of covered gallery, open on one side to the air.

It appears to be highly improbable that the Typhous Infection should ever be communicated, in the open air, by the common intercourse of society: because visitors, and even attendants, with very few exceptions, escape the Fever, when exposed to it in even the same chamber, if clean, airy, and spacious. The quantity of miasms respired in the latter is incomparably more than it can be in the former situation. It is not, however, intended to be asserted that such an event is impossible, if a person on purpose, or by some rare accident, were to breathe the air which immediately issues from a patient, or from clothes fully impregnated with the poison. During my long attention to this inquiry, not a single instance ever occurred to prove that

persons

persons liable to the Small-Pox could associate in the same chamber with a patient in the Distemper without receiving the Infection.

Clothes exposed to Typhous Miasms not infectious.

Another question upon this subject ought to be investigated. Is it to be apprehended that the clothes of visitors, &c. exposed to febrile miasms, can acquire a pestilential quality so as to communicate Infection? I answer decidedly in the negative, and for all the reasons given in the INQUIRY, p. 67, 86; and in the SKETCH, p. 217, 369, 384, 386, 404, 542. If the arguments against such an opinion in regard to the Small-Pox be not fresh in your memory, I must request you to take the trouble, upon this occasion, to peruse with attention the passages above quoted. The proofs which refute any such idea in regard to the Small-Pox, apply much more forcibly to infectious Fevers; because a much larger dose of air,

air, and more fully impregnated with the latter than with the former poison, is required to produce the pernicious effect. The clothes, &c. of medical and other visitors, exposed to febrile miasms, excite false and injurious alarms, which truth and the interests of mankind require to be refuted.

We have no certain knowledge in what manner infectious Fevers are received into the body. According to the most plausible conjecture, they appear to be communicated by poisonous vapours which issue from the breath, or the insensible perspiration or the excretions of a patient in the Distemper. These miasms are probably taken into the body by the absorbents of the mouth, nostrils, lungs, stomach, or skin.

Typhous Miasms invisible.

Every chemist must be convinced, that the insensible perspiration is dissolved in the air, because it is insensible. And the vapour

vapour which arises from respiration is also dissolved, except when made visible by cold air. No one can doubt that the breath of animals discharges as much moisture when the air is warm as when it is cold. And the loss of weight more than can be accounted for by all sensible evacuations, as discovered by the celebrated Sanctorius, and confirmed by others who have repeated his experiments, clearly proves that there is a constant emanation of vapour from the surface of the human body. If a patient in an infectious Fever had emitted a *visible* vapour, so remarkable a circumstance must, for ages past, have been noticed by every medical visitor. The fact being admitted that the infectious miasms are invisible, it is chemically demonstrable that this poisonous vapour is united with air by solution. Disprove the fact, or admit the conclusion. For it is maintained that no

two

two substances do, in any instance whatever, exist together, in a perfectly pellucid state, unless they are chemically united with each other. It is the invisibility of the poison which renders it dangerous; if seen, mankind would soon be taught to avoid the pestilential vapour.

In a medical as well as philosophical light, it is an important question whether the febrile miasms are merely diffused in air, or whether they are united to it by solution. I maintain the latter opinion, not hypothetically, but from theory founded on the facts here stated. The general doctrine indeed which I wish to establish would not be invalidated on either supposition. But some important conclusions may be deduced from an accurate investigation of this question. If the febrile miasms be dissolved in air, and attracted from it by clothes, they could not, in the same circumstances, on any known

known principle, be again attracted from clothes by air. This would be contrary to the law of elective attraction, which is as well founded as any in natural philosophy. Again, when a menstruum dissolves any substance, and is sufficiently agitated, every particle of it is equally impregnated.—But, let this theory be determined how it may, the principles laid down in this letter do not rest upon it, but upon the evidence of numerous facts carefully and faithfully ascertained.

Typhous Contagion dangerous at a greater distance than fermenting liquor or fire.

Having employed some pages in an attempt to refute what appear to be false alarms, and to remove imaginary difficulties, in the prevention of epidemical Fevers, I wish now to draw your attention to some opposite, but full as dangerous errors. In France, Germany, and other enlightened parts of the continent of Europe, an opinion has very generally prevailed, that infectious Fevers, the

Small-

Small-Pox, and even the Plague, are never caught, except by contact of the patient or poison. However, as this erroneous notion has never been generally adopted, and at most has only prevailed in a local and temporary manner in Great-Britain, it will not be worth while to engage any of your time in its refutation.* But there is another theoretical opinion delivered on the credit of a physician, whose memory I shall ever hold in the highest reverence, which appears to be so erroneous and so dangerous as to require a full refutation. Fortunately, this can be accomplished in a satisfactory manner, in a few lines.

I received the following intelligence from undoubted authority. A celebrated Professor, 'when treating upon the 'cause of Fever, in his Lectures on the 'practice of medicine, expressed himself

* The reader, who may wish to consider this point more fully, is referred to the SKETCH, p. 93—100.

'in

' in the following manner:' " Contagion " is a matter always deriving its origin " from the human body. It has been " imagined that Contagions are widely " diffused in the atmosphere, but it has " been proved that, when they are dif- " fused, and at a distance from their " source, they are rendered harmless. " This is similar to vapours of fermenting " liquors, and of fire, which, near to their " source, are destructive of animal life, " but, at a small distance, become inno- " cent, either by mixture or diffusion. " This appears to be the case in Conta- " gions."

To refute this very dangerous and erroneous doctrine, it will be sufficient to remark that, in a small, close, dirty room, neither a common fire, nor the fermentation of beer, has any fatal, or even a pernicious effect. Whereas, in a situation exactly similar, the febrile poison infects

infects all who are exposed to it, except about 1 in 23, or a still less proportion.

As neither a common fire, nor fermenting liquor, could have any injurious effect in the wards of a hospital, this theory unfortunately confirms the pernicious practice of some places, where infectious Fevers are admitted, and indiscriminately mixed with patients ill of other diseases.

In candour it should be observed, that the Professor's doctrine which has been thus freely discussed, was contained in an abstract of a Lecture taken as it was delivered. Though the pupil who wrote it is a very intelligent physician, it is not improbable that some explanation, such as the following, might be omitted in his notes. The Professor might, as he certainly ought to, have said, " I adduce the examples of fire " and fermenting liquors as a vague and " remote analogy, not as a literal illustra-

" tion

" tion of the nature of Contagion. If you " mistake my meaning and act upon it " in a strict sense, fatal mischief might be " the consequence. In an affair of so " much importance, I cannot leave a " doubt upon your mind whether my " meaning be literal or metaphorical."

How early is a Typhous Fever infectious.

In an investigation of the nature of Typhous Contagion, it is necessary to inquire how early after its commencement the Fever becomes infectious.

In the X^th^ family of the I^st^ Table, it is noted that Edson's Fever began on the 19th of July.* He was taken out of his own house into the Chester Infirmary on the 23d, which was the 5th day of his Fever. His wife and children all seem to have caught the Infection before his departure. Upon this point, from an unfortunate accident, my information is much less complete than might be wished. To ascertain on what day of a Fever the

* See p. 232.

infectious

infectious quality begins, I had collected some important facts. But the person who had communicated to me this interesting intelligence, inadvertently burned the papers, which I had returned to him with questions and remarks, in order to obtain such explanations and illustrations as were required to discover the law that nature follows in the propagation of this poison.

On this point, I have made some farther inquiry, but have not yet received answers to my questions. The establishments of Fever Wards at Chester, Manchester, Liverpool, &c. will afford excellent opportunities to ascertain at what period of the Fever its infectious quality commences, by an induction of facts similar to what is related concerning Edson. Let the day of the Fever, and of the patient's removal to the Infirmary, be dated, and when the house was cleansed: then note whether the remaining individuals

of

of the family were attacked by the Fever, and on what days the first symptoms commenced.

Latent period of Typhous Infection.

From the time when a person receives the Infection till the commencement of Fever, the poison remains in a *latent* state. It is, I believe, a common opinion, that Fevers frequently begin immediately after exposure to Contagion, without the intervention of any latent period whatever. But out of the seventy-two cases here collected, it was not suspected, except in one single instance, that the Fever began immediately from the time when the Infection was caught. And probably the belief of this solitary example proceeded merely from fear and imagination, as the woman's real illness (Table Ist, Case 22^{d}) was not manifest before the 25th day after exposure to Infection. Till this period she performed her usual labour, a sufficient proof, or at least a strong presumption, that she had previously no Fever.

However, as I am always solicitous to state evidence fairly and candidly on both sides the question, it is proper to mention that, some years ago, I had two patients, who believed themselves affected with Fever immediately from the time when they had caught the Infection. They were both eminently capable of forming an accurate opinion on this subject, being two physicians highly distinguished for their habits of observation and sagacity. Their characters are generally known, and greatly respected by the medical world. The former instance was that tedious Fever of our friend Dr. DOBSON, in which you know I attended him at Liverpool, in September and October 1779. The other you will recollect to be your own case, in which I visited you at Manchester in October 1783. However, with all my deference for the opinion of such accomplished judges, and in their own

cases, yet it is proper to remark that physicians, frequently in the habit of visiting patients ill of infectious Fevers, might previously and unconsciously have caught the Contagion. No one supposes that either the casual or inoculated Small-Pox ever commences immediately on exposure to Infection: the Variolous Fever is *always* preceded by a latent period.

On examination of the III[d] Table it appears that out of seventy-two cases the latent period of the *Typhus* (allowing four* days of Fever before the patient becomes infectious) was less than ten days in only five, or probably in only three cases: that it was less than seventeen days in only eleven or thirteen: that it fell upon some of the days between the 17th and 33d day in forty-one, which is considerably more than half the cases.

* See Table I[st], Family X[th].

It

It may be suspected that the remaining sixteen patients who did not sicken, till a still longer period had elapsed, might not be early and sufficiently exposed to the Contagion. For this reason, it will be proper to specify particularly the circumstances of each case, as explained in the notes on the Tables. From each of the following numbers the period of four days is in like manner substracted.

Cases.	Day on which Fever began after exposure.	PROOFS AND ILLUSTRATIONS.
13th	40th	Were patients in large farm-houses, and the closeness of intercourse with the patient is not stated.
14th	44th	
87th	44th	In farm-houses; but these patients had previously attended infectious cases both night and day so as to be fully exposed to them.
69th	46th	
70th	53d	
73d	59th	
63d	38th	The exposure, in all these cases, is fully explained to be as much as possible, either in small dirty cottages, or by lying in the same bed with the patient.
51st	47th	
25th	52d	
26th	54th	
27th	56th	
28th	59th	
59th	64th	
52d	72d	

The 13th and 14th cases first came under my own observation. The 25th, 26th,

26th, 27th, and 28th, were witnessed both by Mr. CONNAH and myself. The 52d was visited by Mr. MANNING; and the remainder, which were nine, by Mr. TAYLOR. So that you have the united testimony of four witnesses to prove what may appear to be extraordinary facts, a caution which I know you will approve.

On the whole, it appears, that the *latent period* of Infection varies from a few days to two months. Indeed, the number of examples which occurred under ten days, are so few as to occasion some doubt whether those patients might not have received some previous but unobserved Infection.*

* "At the Old Bailey, in April 1750, in a crowded Court and weather hotter than usual, within a week or ten days at most, many people present at Clerk's trial were seized with a Fever of the malignant kind; and few who were seized recovered. In less than six weeks time the Fever entirely ceased."—Foster on the Crown Law, p. 74.

This statement differs a little from my observations. But the report is not given by a medical author, nor is the latent period of each case separately dated. Besides,

Fevers

It is proper to remark, that from the number of days stated in the Tables, to denote the time between the commencement of the first and succeeding cases of Fever in the same family, there should be deducted four days, the period between the beginning of the Fever and the time when it becomes infectious, in order to determine with precision for what number of days the poison remained in a *latent state*.

Opinions vague and erroneous.

To many, the various minute details I have thought necessary to give in the investigation of these different questions, may be thought tedious and irksome; but to you, who are fully aware how highly important it is to ascertain, with accuracy, all the properties of a poison alone so extensively fatal to mankind, the description of every little circumstance in such a manner as to remove all doubts, will

Fevers arising partly from air vitiated by respiration in a crowded room, may have a shorter *latent* period, than Fevers produced from mere Typhous poison alone.

afford

afford satisfaction. You very well know how vaguely these things have been considered. Opinions have been formed upon the authority of respectable names, without knowing what facts support those opinions. Some have entertained alarming apprehensions that patients in infectious Fever, if placed near the centre of an area of 38,000* square yards, might communicate the Distemper to the inhabitants of the surrounding

* See the Manchester Gazette, April 10th, 1796.

"BOARD OF HEALTH.

"At a General Meeting held this day at the Bridgwater Arms, T. B. BAYLEY, esq; in the Chair; the following Resolutions were unanimously agreed on:—

"V. That the House of Recovery is situated on an area, including more than THIRTY-EIGHT THOUSAND square yards, unoccupied by any other buildings, except those appertaining to the Infirmary.

"VI. That the Board have the fullest evidence, from WELL-AUTHENTICATED FACTS, and LONG EXPERIENCE, at Chester, that an asylum for Fever patients may be so conducted, as to be perfectly innoxious to the inhabitants in its vicinity.

"VII. That, impressed with a conviction of these truths, the Board has observed, with surprize and concern,

houses. Others, on the contrary, are so little aware of the pernicious effects of this Contagion as to admit infectious Fevers into the same wards of a Hospital with other patients. Both these opinions have been maintained by men of superior understandings; yet both are erroneous; both are highly injurious. Hence appear the propriety and utility of stating, in detail, a sufficient number of cases, that the reader may form his own opinion, and see upon what foundation his conclusions are supported.

cern, the alarm which has been taken at so important, so salutary, and, as they believe, so unexceptionable, a a part of their undertaking. Yet, sensible, of the force and diffusive nature of fear, even though unfounded, and paying due attention to the feelings, as well as to the opinions, of many respectable fellow-citizens, they are willing, from *motives* of *conciliation*, to relinquish the present situation of the House of Recovery, whenever another more eligible shall be provided."

II.

PRACTICAL CONCLUSIONS.

I^st^.

Rules to prevent Infection.

Medical, clerical, and other visitors of patients in infectious Fevers, may fully perform their important duties with safety to themselves.

This proposition I cannot better illustrate than by inserting the following directions, which I communicated some time ago to THOMAS BARNARD, esq; a man whose superior understanding and beneficent disposition are generally known. At his request they were published by the "Society for Bettering the Condition of the Poor," with a view to their being distributed, so that a printed copy may be put up in every house where there is an infectious Fever.*

* Any number of printed copies of these RULES *of Prevention*, may be had of the Bookseller of this Society, HATCHARD in Piccadilly.

"It

" It may be proper previously to observe, that this febrile poison, in a small, close, and dirty room, infects a very great proportion of mankind; not less than 22 out of 23, or a still higher proportion; but in a large, airy, clean apartment, even putrid Fevers are seldom or never infectious. When this poisonous vapour is much diluted with fresh air, it is not noxious.—From a large collection, and an attentive consideration, of facts relative to this Distemper, have been formed the following

RULES TO PREVENT INFECTIOUS FEVERS.

" 1. *As safety from danger entirely depends on cleanliness and fresh air, the chamber door of a patient ill of an infectious Fever, especially in the habitations of the poor, should never be shut; a window in it*

it ought to be generally open during the day, and frequently in the night. Such regulations would be highly useful, both to the patient and nurses; but are particularly important, previous to the arrival of any visitor.

"2. *The bed-curtains should never be close drawn round the patient: but only on the side next the light, so as to shade the face.*

"3. *Dirty clothes, utensils, &c. should be frequently changed, immediately immersed in cold water, and washed clean when taken out of it.*

"4. *All discharges from the patient should be instantly removed. The floor near the patient's bed should be rubbed clean every day with a wet mop, or cloth.*

"5. *The air in a sick room has, at the same time, a more infectious quality in some parts of it than in others. Visitors and attendants should avoid the current of the*

the patient's breath,—the air which ascends from his body, especially if the bed-curtains be closed,—and the vapour arising from all evacuations. When medical or other duties require a visitor or nurse to be placed in these situations of danger, Infection may be frequently prevented by a temporary suspension of respiration.

"6. *Visitors should not go into an infectious chamber with an empty stomach; and, in doubtful circumstances, on coming out, they should blow from the nose, and spit from the mouth, any infectious poison, which may have been drawn in by the breath, and may adhere to those passages.*"

II[d] PRACTICAL CONCLUSION.

In any house, with spacious apartments, the whole family, even the nurses of a patient ill of a typhous Fever, may be preserved from Infection.

Infection not caught in large, airy, and clean apartments.

The truth of this proposition chiefly rests upon the faith of my own experience, fully related in the preceding pages, which need not be repeated.

No additional instructions are required to preserve the attendants from Infection: even when the wife, mother, or daughter, is the nurse, and extreme anxiety of mind is added to the other causes of Fever. To them, a rigid observance of the rules of cleanliness and ventilation is particularly important. One caution, however, though of a different kind, may be useful. A nurse should never sleep, nor even sit in a current of air, between an open door and window of the sick chamber.

I am

I am well aware that in the most commodious houses, and under the care of the most eminent physicians, the typhous Fever is frequently suffered to spread through a part, or even the whole, of a numerous family. I speak from authentick testimony. By mentioning these facts, I do not mean, however, to impute any peculiar blame to individuals, either for want of knowledge or attention. Such calamities manifestly proceed from general ignorance on the subject. The nature of this poison has never been completely investigated. It has never been proved by what easy methods the Contagion may be avoided.

III[d] PRACTICAL CONCLUSION.

Schools may be preserved from febrile Infection.

Schools may be preserved from infectious Fevers.

On the visitation of a contagious Distemper in a large boarding-school, I have frequently witnessed that the master or governess suffered the greatest anxiety and dismay. And before I had discovered the laws by which the poison is communicated, and by what method the mischief may be prevented, my mind has often sympathized in these alarms. In many of our large schools through the kingdom, such Distempers have frequently produced dreadful effects. In some instances, the scholars have been permitted to associate together, till the Infection had spread to a fatal extent: in others, they have been sent home, not only to the great detriment of their education, but

but so as to occasion much danger and alarm, by conveying the Distemper among their own relations. The poison, as above explained, generally remains so long in the body in a *latent* state, that a scholar may travel many hundred miles in perfect health; and yet, when he is received into the bosom of his own family, may communicate to them the Contagion of the school. I have heard of parents who regarded the arrival of their own children with terror, even from such scenes of imminent danger.

If the principles above explained be well-founded, much mischief may be with certainty prevented. In every boarding-school, a large airy room ought to be appropriated to the reception of scholars ill of infectious Distempers. Where the patients are numerous, or where there are several patients in different boarding-houses, near each other, it would

would be more commodious, though by no means indispensably necessary, to provide lodgings for them in a separate house. The poison might perhaps be more easily and more inadvertently conveyed from one room to another, in the same house, than from one house to another. But, even in the latter situation, too great security would be dangerous, and in both cases, a strict observance of the *Rules of Prevention* is fully adequate to the purpose of safety. To prove that these assertions do not merely depend upon speculation, I will recall to your recollection an account of some facts, published upon another occasion,* which fully evince the doctrine which is here maintained.

" In April 1779, Master PLUMBE, the son of a gentleman of fortune near Liverpool, was attacked in a dangerous degree, with a scarlet Fever and sore throat, in the house of his school-master, the Rev.

* See SKETCH, p. 347.

Mr.

Mr. VANBRUGH, at Chester. There were at this time thirty-seven young gentlemen, boarders in the family, most of whom, it is highly probable, were disposed to receive this dangerous Contagion. My patient's chamber was situated in the middle of the house, at the landing of the first pair of stairs: all the scholars went close past his door several times a day. At this season, Winchester and several other large schools in England, sent home and dispersed their scholars, on account of this Distemper, which had alarmingly spread among them. Whether this measure, with all its inconveniences, was not advisable, became a serious question. The numerous facts which I had then collected to prove that the Variolous Infection, though probably the most virulent we are acquainted with in this climate, exerted its baneful influence but to a small distance only from the

poison, encouraged me to hope that the Contagion of a scarlet Fever was incapable of producing more extensive mischief. The *Rules of Prevention* were placed on the door of the patient's chamber, and rigid attention to their faithful observance was required. The event fully justified my hopes. Though all the thirty-seven scholars remained in the same house and family during the whole disease, yet not one of them was infected.

"I do not recollect any observations recorded by authors to determine what proportion of mankind are liable to the attack of the scarlet Fever. In October 1778, out of forty young ladies at a boarding-school in Chester, all but four had the Distemper, twelve very severely, and two most dangerously. This comparative statement of facts shews, beyond all reasonable doubt, to what a little distance from the poison the infectious miasms extend,

extend, and that the *Rules of Prevention* are in this respect fully adequate to their purpose."

It is universally known that the scarlet Fever, with a sore throat, is extremely infectious. From some cases which I have observed and noted, it is manifest, that in this Distemper the *latent* period of Infection is much shorter than in the Typhous Fever. In some instances it did not exceed a week. The facts above related are of such magnitude, and so fully authenticated, that they convey the most useful instruction. It may be applied with confidence, in all boarding-schools, and, as far as we yet know, in all infectious Distempers.

Chester is much celebrated as a place of education for the youth of both sexes, especially for young ladies. Ever since 1779 I have strenuously injoined the high importance of a strict observance of the

the *Rules of Prevention*, and an implicit confidence in their efficacy. In some instances, I have known a Distemper communicated to several scholars before it was supposed to be infectious, and before any separation took place. But in the whole period of nineteen years, and in all the boarding-schools of Chester where I was consulted, when the Rules were faithfully observed, I do not recollect a single example where the Infection was communicated to a second scholar.

You will observe, my Friend, that the doctrine which I advance, and the practical conclusions deduced from it, are fully applicable to the Small-Pox, Measles, Scarlet Fever, Chin-cough, Mumps, &c. I could farther explain how certain Catarrhs, particularly the Influenza, are produced by Contagion, and might be prevented. I wrote a paper to explain in what manner the latter Epidemick is

communicated,

communicated, some years ago, addressed to a most respectable Society of Physicians, which may sometime be published. But these disquisitions would lead me too far from the business of the present Letter.

Another caution, however, ought not to be neglected. Many Fevers, which commence with inflammatory symptoms, become contagious. All doubtful cases of Fever ought therefore to be immediately separated from the healthy scholars. In such disorders, the most sagacious physician cannot insure perfect safety, that the Distemper has no infectious quality.

The Regulations here recommended for boarding-schools are strictly applicable to nurseries of children. In this situation, I have frequently observed, that when a Fever, Catarrh, &c. attacks one child, it generally affects the rest, with their parents, nurses, &c. By removing the

the first patient ill of any Fever out of the nursery into a separate apartment, the Contagion may be prevented from spreading through the family.

It will frequently happen that so many children in a school may have caught a Fever before the Distemper is supposed to be contagious, that all the patients cannot possibly be accommodated in one apartment. But even in this extremity, nothing can be more easy, safe, and effectual, than to provide spacious, airy, and commodious lodgings in the neighbouring houses. To this arrangement there can be only one objection, proceeding from the erroneous idea that the whole atmosphere of the place is become pestilential. At Manchester you have sadly experienced the pernicious effects of such groundless alarms. And you may recollect that, in the introduction to my INQUIRY *how to prevent the Small-Pox*,* it is mentioned, that

* Page 5.

that a physician of great reputation, Dr. Ash, of Birmingham, asserted, that he had known the influence of the variolous poison to extend for *thirty miles*. No physician of his time was honoured with a higher reputation than Dr. Ash, which, according to the opinion of competent judges, he was thought to merit. If a man of superior understanding could act upon such erroneous principles, how extensive and pernicious must these professional errors prove, when generally adopted by persons less capable of judging for themselves. But the foundation of these alarms may be determined, in every instance, by the test of observation. What proportion of mankind is liable to receive the typhous Contagion I have already attempted to estimate. Upon these *data* we may safely reason. When many individuals of a family remain in health, we may be fully convinced that neither the

whole

whole atmosphere, nor even the air of the whole house, has any pestilential quality. It need scarcely be intimated that these arguments are restricted to the typhous Fever, which proceeds from personal Contagion. It is quite foreign to the present discussion to inquire what numbers in a family are affected by Fever in an unhealthy climate or marshy situation.

In the military profession, it is justly thought of importance to know what is a safe distance from the shot of a cannon, or a musket. If we were to read in the Gazette that a General had ordered a garrison to retreat from a fort because it might be attacked with musketry from a hill at the distance of a mile, all the world would reprobate his ignorance or his cowardice, as most disgraceful.

The apprehension of a physician, that the poison of *Typhus* might communicate the Distemper, through the open air, at the

the distance of ten yards, is equally visionary and groundless. We hear of people frightened at the danger of passing through a street, because in one of the houses, a patient lies ill of a Fever. The numerous facts related in this Letter incontestably prove, that such fears are quite ridiculous. When danger is uncertain and indefinite, we know not the limits of perfect security.

IV^th PRACTICAL CONCLUSION.

In an Hospital, infectious Fevers ought never to be admitted into the same wards with patients ill of other diseases.

Infectious Fevers improperly admitted into wards with other patients.

It having never been accurately ascertained in what circumstances infectious Fevers are communicated, it happens, as might be expected, that some physicians, and of the greatest eminence, act under the influence of superfluous fear. Others,

on

on the contrary, not less distinguished for medical knowledge, rashly permit and advise an intimacy of intercourse which is extremely dangerous. Of the latter kind, undoubtedly, is the error of admitting Fevers promiscuously with other diseases, into the same wards of an Hospital. It is well known, that all the patients, who are associated in the same wards with Fevers, are not infected. And this is another proof that the pestilential influence extends but to a narrow sphere from the poison. But the inhabitants of an Hospital have been unaccustomed to the habits of cleanliness, and on that account, the danger of spreading Infection is greatly increased. Wittingly to allow the admixture of a poisonous ingredient, as arsenic, into the diet of an Hospital, though in so small a proportion that it might not be discovered by its pernicious effects, if taken for weeks together, would be highly

and

and justly condemned. It has been proved, that typhous poison, in a full dose, will infect a large proportion of mankind. It may be presumed that a poison which is so generally injurious, might, even in a small dose, be sometimes productive of mischief. Under the name of the Hospital Fever, there cannot be a doubt that it occasions many fatal consequences. The Manchester and Liverpool Infirmaries, from their first institution, have strictly prohibited the admission of Fever patients; yet into both of them the typhous Contagion was inadvertently received, and it spread in so alarming a degree that the patients were taken out of the wards in order that they might receive a thorough purification. If such pernicious effects were produced in Infirmaries, which were protected by such judicious regulations, what fatal consequences may be justly apprehended in other

other Hospitals where infectious Fevers are indiscriminately admitted.

In this way, I had reasoned, upon general principles, on the pernicious effects of mixing Fevers with the other diseases of an Hospital. No particular facts had occurred to my observation to prove, in a direct manner, the truth of this conclusion.

On submitting these remarks, in the words above stated, to some very intelligent medical friends, I was favoured with these interesting and instructive facts. Sir WILLIAM WATSON informed me, that "in St. Thomas's the three physicians I studied under all fell victims to Hospital Fevers, to wit, Drs. AKENSIDE, RUSSELL, and GRIEVE, and Mr. WARING, surgeon." To these may be added, according to Dr. WOODVILLE, two other physicians of St. Thomas's, namely, "Drs. WATKINSON and KIER, and one of Guy's, Dr. HINCKLEY." But Dr. SAUNDERS,

SAUNDERS, who confirms all these facts, assures me, that "no physician or surgeon "in Guy's Hospital, for upwards of thirty "years, has suffered by a typhous or con- "tagious Fever. He explains this differ- ence in a very judicious and satisfactory manner so as clearly to confirm the doc- trine advanced in this Letter. "The room "in which the out-patients were pre- "scribed for was of a very small dimen- "sion, and extremely crowded, at St. "Thomas's Hospital. The room for the "out-patients in Guy's was large."

Again, I have been informed, that "three physicians and a medical student "of one of the largest Hospitals in Lon- "don died within the space of eight "years of malignant Fevers; the causes "of which, though they could not be "traced to the Hospital, were probably "derived from it." This intelligence I received from the physician who suc-

ceeded

ceeded the last who died; but he did not chuse that his name, or that of the Hospital, should be mentioned.

As the cause of these calamities is so fully explained, and as the means of preventing them is so obvious and so easy, I hope that, in future, no physician, surgeon, or medical student, will ever in future be infected with a typhous Fever in an Hospital.

From the fatal effects of this practice upon known characters, who suffer only a temporary exposure to the Contagion, and are supported by a generous diet, we may form some conjecture of the mortality produced by such measures upon the unknown multitude admitted into these Hospitals, exposed constantly, for weeks, night and day, to breathe an atmosphere impregnated to a considerable degree with these pestilential miasms.

So long ago as 1774 I published an observation, which proves the healthy state

of the Chester Infirmary, that only 1 in 26 dies of all the patients who are admitted. The fatality appears to be *double* this proportion in Hospitals where patients ill of infectious Fevers are indiscriminately received.

V^th^ PRACTICAL CONCLUSION.

Use of Fever Wards.

When an infectious Fever is in a small house, the family cannot be preserved from it unless the patients are removed into a separate building.

From the whole tenour of this Letter, you will perceive the reasons why, in our former correspondence, I uniformly and strenuously objected to the measures by which it was attempted to check the progress of the epidemical Fever which so long and so fatally prevailed at Manchester, with assurances that your regulations

for

for this purpose would be unsuccessful. You clearly see the necessity of taking poor patients, ill of Fevers, out of their small, close, and dirty dwellings, into spacious, airy, and clean apartments.

You will remark, that the whole of this inquiry was instituted, before our ingenious friend Dr. CARMICHAEL SMYTH had published his experiments and observations on this subject. He has produced very strong evidence in support of the method which he recommends, to destroy the pestilential Contagion by the vapour of nitrous acid. But I have had no opportunity to make any trial of a process, which so highly merits the attention of medical men, from the respectable testimony by which it is recommended, and from the great benefit which might hence result to mankind. The preliminary facts stated in this Letter will enable others to determine, what efficacy

is possessed by the vapour of mineral acids superior to the method of purification, which solely depends upon cleanliness and fresh air.

As the Fever Wards of the Chester Infirmary, in size and situation, are peculiarly favourable to the success of such an establishment, a description of them may be useful, and may suggest the adoption or construction of similar Wards in other Hospitals, for the same important purpose. In the year 1783, on looking out for proper accommodation, I found the attick story on the north side of the building unoccupied, and merely a lumber room. It is ninety-six feet long, twenty-one broad, and being not ceiled, it is open to the roof, which is sixteen feet high. This chamber is divided by a partition in the middle, thus forming two wards of forty-eight feet each in length. Through them is admitted a very free circulation

of air, by nine windows, which are placed on all sides of the wards, and by others in the adjoining passages; by a door in the partition between the wards, and by a large aperture in the upper part of the partition. Several of these windows are constantly open during the day, nor are they all closed even at night, if the patients be numerous, and the weather moderate.

Adjoining to the west end of these wards is a room for the nurse, into which a Fever patient is sometimes admitted. At the east end of the wards, a wash-house is conveniently situated, so that no foul clothes need be brought among the other patients. On the same side and floor, there is placed a separate necessary, which prevents all personal intercourse with the rest of the Hospital.

In order to complete this description it will be proper to insert the following account of the Chester Fever Wards, which

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was written in the form of a Certificate, to be signed by the medical and other governors of the Infirmary. It was, however, from some particular circumstances, you know, communicated in a Letter to yourself merely on my own private authority, to obviate the alarms at Manchester, lest your House of Recovery, placed in a spacious area, should communinate the infectious Fever to the neighbouring inhabitants.

"*April 27th*, 1796.

"THE Chester Infirmary is a close square building. Its inner area is eighteen yards and a half by fourteen yards. The attick story of all the north side of the house, divided into two wards, has been appropriated to the reception of patients in infectious Fevers ever since the year 1783. Patients who have no Fever are lodged under them, and on all the other sides of this area. The windows

of

of the Fever Wards, during the day, are almost constantly open into the area; from whence windows open into all the other wards. One ward is situated within THIRTEEN YARDS of the FEVER PATIENTS, with whom it communicates on the same floor by a passage and doors frequently open; and yet, during the whole period of this establishment, now above twelve years, it has never been suspected that the patients in other parts of the house have caught any Infection from the Fever Wards by any contamination of the atmosphere; nor from any transgression of the *Rules of Prevention*; which require ventilation, cleanliness, and separation, and may be seen in Howard's account of Lazarettos, p. 209. Some dwelling-houses are placed at but a little distance from the Fever Wards: and Stanley-Place, inhabited by very genteel families, is not far distant from them."

You

You will remember at what a very critical moment this intelligence arrived. It is strongly marked in your answer which I have annexed, dated the next day, the 28th of April, 1796.

" Your letter is this instant arrived. A simple relation of facts as you have stated them, without the formality of a Certificate, will completely answer all our purposes. I shall therefore, as there is not sufficient time to obtain your permission, state at our meeting *to-morrow*, (which must be *decisive* of the scheme) on the authority of information, which I will pledge to be accurate, that " The Chester Infirmary, &c."

Visitors never, and Nurses seldom, infected in the Chester Fever Wa

At the commencement of this Institution, at Chester, apprehensions of the danger of Infection were so prevalent, that no nurse could be persuaded to attend the Fever Wards. In these difficulties, a surgical patient was prevailed on to undertake

undertake this office in the men's ward. He caught the Fever, and died of it.

When a proper nurse was procured, she (LOWRY THOMAS) had the care of both wards for eleven years, with only occasional assistance. During this period she was infected by the Fever several times, and died of it in July 1794, on the fifth attack, after a week's illness. The nurse who succeeded has twice caught the Fever, and was each time very ill of it, but otherwise has enjoyed good health, for four years. A night-nurse, as before-mentioned, I[st] Table, No. 48, caught the Fever. And other occasional nurses may probably have suffered Infection.

But as far as has come to my knowledge, these four are the only instances of Infection communicated in the Fever Wards at Chester, during a period of fourteen years and a half; from August 1783 till March 1798. Both these nurses (LOWRY THOMAS

THOMAS and JANE BIRD) were susceptible of Fever. They both exposed themselves to Infection without reserve; even more than was necessary and useful, especially the former. In spite of cautions and exhortations to the contrary, which I have often given her, she used to approach those who were very weak and ill, so close that she must have inspired the infectious breath of a Fever patient, with very little dilution of other air, in thousands of instances, without receiving Infection. Indeed the escape of these nurses from the danger to which they were exposed, must be, in some measure, ascribed to a cause before-mentioned. They had been accustomed, for months, and even years, to breath a dilute pestilential atmosphere. It is probable, on this account that a larger dose of it might be required to produce Infection in them than in other persons.

No

No medical or other visitors were ever suspected to have caught Infection in these Wards, though they have touched the patients in innumerable instances. Yet the apothecary (Mr. MANNING) was susceptible of Infection. He caught a very dangerous putrid Fever, by visiting a poor sick family (which I also visited) as out-patients, in a close dirty room: unreasonable prejudices prevented these poor people, when attacked by the Fever, from accepting the benefit which the Infirmary offered to their choice, of being admitted into the house.

In the vehement contest which you, with difficulty, sustained, for the existence of the House of Recovery at Manchester, you thought it an important truth to establish, by the facts which the institution at Chester has supplied, that the febrile Contagion could not be conveyed through the air to the distance

of

of "THIRTEEN YARDS" from the poison. Upon the evidence of the facts above related, you now would not hesitate to pronounce that a separation one hundred times less, from one room to another, would insure safety from all danger.

As I hope that our proceedings merit imitation, I will here insert the directions given in 1783, which have ever since been observed with complete success.

RULES *for the* FEVER WARDS; *to prevent the* INFECTION *of other Patients in the* CHESTER INFIRMARY.

I. *Fresh water and coals are to be brought up to the Fever Wards every morning; and other necessaries on ringing a bell.*

II. *No Fever patients, nor their nurses, are suffered to go into other parts of the house. No other patient is allowed to visit the Fever Wards; nor any stranger, unless accompanied by the apothecary or his assistant.*

III. *Every*

III. *Every patient, on admission, is to change his infectious for clean linen; the face and hands are to be washed clean with warm water, and the lower extremities fomented.*

IV. *All discharges from the patients are to be taken out of the ward as soon as possible.*

V. *The floors of the wards are to be washed very clean twice a week, and near the beds every day.*

VI. *All foul linen is to be immediately thrown into cold water; and carefully washed twice out of clean water, in the adjoining room.*

VII. *Blankets, and other bed and body clothes, are to be exposed to the open and fresh air for some hours, before they are used by another patient.*

VIII. *All the bed clothes of the Fever Wards are to be marked* Fever Ward, *and all the knives, forks, pots, cups, and other utensils, are to be of a peculiar colour, lest they be inadvertently taken among other patients.*

IX. *Several windows in the Fever Wards are to be kept constantly open in the day, except the weather be very cold or wet; and*

some

some of them should not be shut in the night, if the patients be numerous, and the weather moderate.

X. *No patient can be suffered to wear, nor any acquaintance to take away, any linen unwashed, nor other clothes, till they have been long exposed to the fresh air.*

Success of Fever Wards at Manchester.

After the dry disquisitions and tedious details which I have thought necessary to submit to your consideration, in order to illustrate this obscure but highly interesting subject, I recall, with heartfelt satisfaction, a bright and most chearing prospect to your view. To you and to your associates, particularly your medical associates of the *Board of Health*, it will afford the highest gratification as the reward of your own meritorious exertions.

The proceedings of our Fever Wards at Chester being unopposed, did not excite any particular attention. They have accomplished their beneficent purposes without

without noise and almost without notice. Hence their value in the prevention of Fevers has never been accurately appreciated. For the opposite reasons, the result of your exertions has become most perspicuous, highly to your own honour, and to the inestimable benefit of your fellow-citizens and of mankind,

"BOARD OF HEALTH.

"*Manchester, March* 2, 1797.

"*Comparison of the number of patients ill of Fever, admitted on the physician's books, at the Infirmary, at different periods, in Portland-street, Silver-street, and other streets in this pile of buildings in the neighbourhood of the House of Recovery.*

From Sept. 20, 1793, to May 20, 1794,	8 months,	400
From Sept. 20, 1794, to May 20, 1795,	8 months,	389
From Sept. 20, 1795, to May 20, 1796,	8 months,	267
	24	1056

From

From July 13, 1796, (less than two months subsequent to the opening of the HOUSE of RECOVERY) to March 13, 1797, being 8 months* - - - - - 25

These wonderful and highly instructive facts are recorded on the most authentick evidence, by "the books of the physi-"cians, which are kept with the greatest "regularity." Besides, the warm and intelligent opposers of this institution would have detected and exposed any fallacy, if any had existed in this report.

"The bills of mortality for 1796 shew, that there has been a decrease in the burials, amounting nearly to 400."

"In 1797, the expence of pauper coffins was diminished one third."

These few lines, taken from "the RE-"PORT of the BOARD of HEALTH, at "the second annual meeting, May 26th, "1797," contain so great a number of

* Of these, in July last, there were five; in August last, one; in September last, none; from the 4th to the 23d of February last, two.

facts,

facts, and so publicly authenticated, as will not, I trust, leave the slightest doubt in your mind, or that of any intelligent reader. They clearly prove, beyond all controversy, what are the beneficial effects of the practical regulations deduced from the principles explained in this Letter. The wonderful success of these proceedings, may afford some degree of hope that infectious Fevers might be completely exterminated from a town or district where all the purposes of such an institution are punctually executed. But upon this head, there are some difficulties and doubts.

Regulations to exterminate infectious Fevers.

It may be proper to inquire, are Typhous Fevers, like the Small-Pox, always produced by a specifick Contagion? Or, on the contrary, are they also generated by close, dirty, crowded rooms, or by certain seasons, and other causes? I have attempted to obtain answers to these questions:

tions: but the evidence which I have collected, not being completely satisfactory, it would be premature to enter into particular details on this subject.

However, an attempt entirely to destroy the Contagion is highly laudable. The more accurately the regulations are observed, the greater will be your success in preserving the poor people from these dreadful calamities. In the House of Recovery, you have judiciously adopted some regulations, which on my recommendation, had been successfully employed by the Small-Pox Society of Chester, to check the progress of that Distemper. 1. *By one of them you require and reward a thorough cleansing of the poor dwellings which had contained infectious Fevers, by washing and airing all the clothes, floors, utensils, &c.; and by offering a double reward in cases of extraordinary danger, and when the attentions have been adequate and successful.*

2. *You*

2. *You have very properly added a provision for the expence of white-washing the walls, which is a cheap and cleanly mode of purification, and also for the charge of purchasing new bed-clothes and apparel, in lieu of such as it may be deemed necessary to destroy.* In a strict medical view, the destruction of clothes, &c. which cannot be purified from Contagion by washing and airing, may seldom be indispensibly required. But dirty rags ought to be burned, because they are not worth the trouble of cleansing, and a supply of good clothes to a poor family can never be more seasonable than after the visitation of an infectious Fever.

3. *You have very wisely adopted another regulation of the Small-Pox Society of Chester, by offering rewards for early intelligence on the first appearance of Fever in any poor habitation.* If this measure be fully executed, the rest of the family may be

be generally preserved from Infection, especially if the methods of purification by cleanliness and ventilation be thoroughly and immediately accomplished.

4. *You very properly require, as was our practice at Chester, that Fever patients should be conveyed to the House of Recovery in a sedan chair, to be employed solely for this purpose, with a moveable lining, which should be of linen, and always exposed to the air after it has been used, and frequently washed. It would be an easy and useful improvement to have a sedan constructed in such a manner that it might occasionally lean backwards in various degrees, so that the patients may lie in a recumbent or half recumbent posture as may best suit their situation.* In the state of extreme debility to which patients in nervous and putrid Fevers are frequently reduced, this improvement in the sedan which carries them, would be of the high-

est importance, not only for the comfort, but even for the life of the patient. To you I need not observe, that in such Fevers, an erect posture frequently occasions fainting fits and other very dangerous symptoms.

5. Upon this head, it will not be improper to take notice, that cleanliness, in every respect, will be very conducive to prevent the generation of Fevers. *For this purpose, as well as other advantages, the streets of a town ought to be frequently and thoroughly cleansed from all dirt. It is always in a putrid or putrescent state.*

Regulations to prevent Fevers ought to be generally adopted.

To you I need not remark, that the advantages of the regulations for the prevention of Fevers is not limited to such towns as Manchester and Chester. They may be employed, at a very moderate expence, in any village. We both of us have seen numerous examples where febrile Contagion has spread misery and destruction

destruction through small towns and detached houses in the country. As before intimated in this Letter, I suspect that an infectious Fever had been spreading through some villages of Wirrall in Cheshire for eighteen years. Such calamities may easily, and I trust now will frequently, be prevented.

My friend and fellow-student at Cambridge and at Edinburgh, the Rev. JOSEPH TOWNSEND, rector of Pewsey in Wiltshire, whose superior mind has enlarged human knowledge on various, particularly on medical subjects, gave me the following instructive intelligence. 'When I had my 'putrid Fever I took it from my gardener, 'and he received it from a poor cottage. 'My room was well ventilated, and no 'one caught the Infection from me. Mr. 'STEPHENS took the Infection from a 'poor patient, but no one received it 'from him. RICHARD HOOPER, the

'principal

'principal farmer, had the same Fever;
'but no one took it from him. Both
'houses were well ventilated.—In the
'year 1787, out of two hundred poor fa-
'milies sixty-three poor people died of
'Typhus, but no other farmer or princi-
'pal tradesman had this Fever. When
'one family died off, another succeeded
'to their cottage, and the new comers
'caught the Fever.'

Many years ago, my dear Friend, by your benevolent disposition and pathetick pen, the publick attention was first excited to commiserate and relieve the poor manufacturers in and near Manchester, suffering under the various calamities of infectious Fever.* Sir WILLIAM CLERKE, and Dr. FERRIAR, have amply confirmed your observations, and employed their best endeavours to check its fatal ravages.

* See PERCIVAL's Medical Essays, vol. i. p. 296, and other papers, which he had previously published.

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The benefit of such institutions may be extended even to the metropolis, with still greater certainty of success. Contagious Fevers appear to be the chief cause why there is a much greater proportional mortality in large than in small towns, and houses dispersed in country situations. Lanes, entries, and courts, communicate Infection to each other. Whole families sink down together oppressed with putrid Fevers, in penury and wretchedness, without a single hand to afford them help or comfort.* Such calamities, however

* As few except medical visitors of these gloomy mansions are acquainted with the dreadful misery suffered by poor people ill of infectious Fevers, I will insert a short petition which I addressed to some of my fellow-citizens at a coffee-house in Chester, who (as they always did) immediately supplied the desired relief.

"A DISTRESSED FAMILY.

"WILLIAM WAIN, in Nun's-Lane, blacksmith, whose settlement is sixty miles off, has four small children, of whom two lately lost their sight by the Small-Pox. The father and three of the children are now ill of a putrid Fever; and one of them has at present a mortification

dreadful, might be easily and effectually prevented, and at a very moderate expence, if compared with the inestimable blessings which might thus be attained.

If six or eight Hospitals, situated in different parts of London, would open a spacious ward for each sex, in some part of the building or closely adjoining to it, the most salutary consequences would soon be manifest. Except in checking the ravages of the casual Small-Pox, no human exertion could be employed with so much success to prevent the misery and destruction of the poor as the accommodations here proposed. I have already made what feeble efforts are in my power

mortification in his throat. There is not a sheet in the house. The father and children have only one ragged shirt a piece. Old linen sent to the house, and money collected by the waiter of the coffee-house, are requested, to relieve their extreme wretchedness.—Oct. 29, 1774."

There is in my possession, the original paper, on which are written the names of thirty-four charitable benefactors.

to

to promote such beneficent establishments. On this subject, I have had an opportunity in conversation to address some exhortations to two most respectable medical friends. One of them, Dr. SAUNDERS, physician of Guy's Hospital, fully assented to the reasonableness of my arguments, and in a future conversation on this subject informed me, that two wards in Guy's Hospital are to be appropriated to the reception of infectious Fevers. The other, Dr. W. HEBERDEN, physician of St. George's Hospital, informed me, that this charity would soon receive a large accession to its funds. And being, as you know, well disposed to entertain hopes that what I ardently wish may be accomplished, already I have formed sanguine expectations that a part of this money may be appropriated to the erection and maintenance of Fever Wards. When Physicians so eminently

nently distinguished for medical knowledge promote such measures, the example, we may reasonably hope, will be adopted in the other Hospitals in the metropolis. Whenever this is accomplished, it will, I hope, be accompanied with the other preventive measures above recommended, of cleansing and whitewashing the infectious house whence the patients are taken as directed p. 109, &c.

It is not improbable that in some of the London Hospitals (as at Chester) the attick stories may be empty, and may be appropriated to the reception of infectious Fevers. Upon this subject I have had an interesting conversation with the three* earliest and most zealous proposers of the *Society for promoting the comforts and bettering the condition of the Poor*. And you, I know, will agree with

* William Morton Pitt, esq; M. P. William Wilberforce, esq; M.P. and Thomas Bernard, esq.

me

me that regulations to prevent contagious Fevers will answer these purposes in a more eminent degree than any other benefit which it is in the power of the rich to bestow.

The prevalence of infectious Fevers in London has lately claimed the particular attention of several very intelligent physicians, particularly Dr. WILLAN. Both in the Monthly Magazine, and the Physical Journal, many interesting facts to illustrate this subject, have been published, so as to excite attention and sympathy. Some time ago, Dr. LETTSOM,* with his usual humanity, had not only given a pathetick description, but a mournful picture of a poor family, suffering under the manifold miseries of an infectious Fever. The *Pestis* of LIVY, which he so often mentions in his History, as fatal to the citizens of Rome; and the *Plague*, which

* See his Hints, p. 93.

always

always constituted an article in the London bills of mortality, till the extensive destruction of the latter city by fire, in 1666, were probably no other than Typhous Fevers. Dr. FALCONER, in a paper which he read, some months ago, to the *Literary and Philosophical Society of Bath*, has proved in the most satisfactory manner, that the true *Plague* was never described by any ancient author; not even by THUCYDIDES nor LUCRETIUS, earlier than 535. In this year, PROCOPIUS published an account of the *Plague*, and was the first author who characterised this fatal Distemper by an accurate description of its buboes, carbuncles, and other pathognomonick symptoms. Our learned Friend has employed his wonderful faculty of collecting all the scattered rays of antiquity, in order to illuminate this as he has already done other dark and doubtful points of science, to the comprehension

hension of the dullest, and the conviction of the most sceptical reader.

There have been various attempts, you know, at Liverpool, to adopt the measures so successfully practised at Chester, to prevent infectious Fevers. With great satisfaction I received your information, a few months ago, that a permanent Institution is soon to be established for the general reception of the poor affected with the typhous Contagion. From the interesting facts published by our most intelligent friend Dr. JAMES CURRIE, it manifestly appears, that such an institution in this populous town would have the most salutary consequences, in preserving the lives of many among the lower, and some among the higher, ranks of society. Fever Wards were established in 1787 at Liverpool, in imitation of ours at Chester; but groundless fears soon excluded them from the Infirmary, as he has

has fully explained.* This circumstance sufficiently proves how important it is to investigate the laws by which the typhous Fever is communicated.

A patient of mine has lately informed me, that at Norwich, on the most respectable medical recommendation, Fever Wards are to be prepared for the reception of the poor inhabitants of that large city.

You will undoubtedly agree with me, that at Bath it is peculiarly our duty to form an establishment to prevent infectious Fevers. As persons of all ranks, afflicted with various maladies, resort hither in great numbers, for remedies which exist in no other place, our special care ought to be employed to preserve not only our fellow-citizens, but strangers, particularly all sick strangers, from such additional Distempers as it is in our power to prevent.

* See CURRIE's Medical Reports, p. 219.

The

The apartments in the attick story of the Bath City Infirmary, as was the case at Chester, are at present empty and unemployed, so that no additional building will be required for the purpose. The maintenance of two Fever Wards would undoubtedly require a considerable expence; but in so opulent and charitable a place as Bath, much difficulty of this kind cannot be supposed to exist. When this measure is accomplished, I have no doubt that what in a former Letter I said of Chester may be applied a few years hence at Bath. "I am confident that our two Fever Wards do ten times more real good in the prevention of misery and the preservation of life, than all the other parts of the Infirmary."

These speculations lead to an enlarged prospect of general beneficence. In most of the principal towns in Britain, there exists an Infirmary supported by voluntary

tary contributions. In many of them will probably be found two vacant wards in the attick story, which might be appropriated to the reception of Fevers, without abridging the conveniences of the other patients. At any rate, an additional building, to consist of two wards, a laundry, and a bedroom for a nurse, might be constructed at a very moderate expence. You will not think these expectations too sanguine when we consider the active beneficence of our medical brethren, and the zeal with which they offer their gratuitous services to the poor. The rich bounteously subscribe for the relief of the distressed part of the community when afflicted with diseases which cannot personally be injurious to themselves. The motive of self preservation will be added to that of general humanity, to support measures for the extermination of an infectious Fever, which

by

by many unavoidable accidents might bring this malignant poison into their own families.*

In contemplating this pleasing prospect, you will, I know, excuse me for expressing peculiar satisfaction, that the whole plan, which promises such extensive benefit to mankind, originated at Chester, where so prosperously and happily I have spent the best portion of my life. When the institution to prevent the casual Small-Pox, and the regulation to receive patients ill of Fevers into separate wards of the Infirmary, and various similar plans were first proposed, I ever found them ready with heart and hand to adopt, promote, and support such beneficent establishments. To all my medical brethren, and particularly to my intelligent

* The greatest danger of receiving Contagion into a house, arises from linen washed in a poor family, ill of an infectious Fever.

and

and steady colleagues, to Dr. WILLIAM CURRIE, physician, and to Messrs. ORRED, MORRALL, ROWLANDS, and FREEMAN, surgeons, of the Infirmary, I owe every grateful acknowledgment for their uniform encouragement and assistance in the execution of these measures. To them all, every plan was previously and privately communicated, with a request freely to suggest objections and improvements. In this stage of the business, if the slightest breath of opposition had arisen, these charitable innovations would have never existed, and very probably the plans themselves might never have been recorded, but have remained for ever in oblivion. Such candour and confidence merit great praise. Having never entertained the remotest suspicion that my proposals were brought forward with any false pretences or selfish views, they cordially promoted their execution.

On

On my change of situation, you will think me uncommonly fortunate in being placed at Bath so eminently distinguished for the liberality, charity, and superior knowledge of its inhabitants.

VIth PRACTICAL CONCLUSION.

In like manner infectious Fevers may be prevented in the Army and Navy.

Dr. JAMES FELLOWES, physician to the army, has had very great opportunities to make observations on Fevers, in Flanders, Holland, and the West-Indies. Having a good understanding and education, he was well qualified to deduce useful conclusions from the events which he saw. He thinks that Fevers are frequently generated in a camp by foul air. Ten or twelve soldiers sleep in a small bell tent without any ventilation. He has Army.

observed Fevers produced by this noxious air, as might be reasonably apprehended. In a conversation with me on this subject he expressed an anxious wish, that some safe method could be devised to discharge the foul air from these tents. To accomplish this purpose, I suggested to him a contrivance by grooves in the head of the centre pole of the tent, to permit the foul air to escape, and yet to keep out rain. He approved the design. It was shewn, with a drawing, to a most respectable friend of mine, the Right Hon. THOMAS PELHAM, who honoured this Letter with a perusal. The same idea had previously occurred to him, and he had executed it in a different manner, as he expressed by a drawing, and the following description: "Three holes were cut in the upper part "of the tent, and a triangular piece of "canvas was placed over them, and sown "on two sides, so as to let the foul air

escape

" escape from the cavity left by the third " side not being sown down. Such tents " were used with great success by the " Sussex and West-York Militia at War- " ley camp in 1796. The soldiers could " bear to have the lower part shut with- " out any inconvenience. Before this " improvement they always suffered from " too great heat or too much cold. When " the experiment was made at Warley " camp, for ventilating the tents by cut- " ting holes in the tops, I questioned " several of the men about it, and asked " them whether they suffered from cold " and rain coming in at the holes, or " from heat, by having the tent door " shut. The universal answer was, that " they suffered no inconvenience; and " the observation of many was, that " *it* " *was a power sweeter in the morning.*"

It will be unnecessary to insert either Mr. PELHAM's drawing or my own, or

to

to give any farther description of them, as there can be no difficulty in contriving various methods by openings on the summit of the tent, to permit foul air to escape, and yet entirely to exclude rain.

These regulations to prevent the generation of Fevers, will require to be executed with much greater exactness, to prevent their propagation. Hospital tents ought to be spacious and numerous. They should be constructed in such a manner as to admit free ventilation. By plentiful dilution with fresh air, and rigid attention to cleanliness, it appears very manifest that soldiers, in a healthy situation, might be effectually preserved from infectious Fevers, Dysentery, &c. The whole army, with a few accidental exceptions, would be constantly fit for duty. Every camp ought to be plentifully supplied with such accommodations, which are most essentially important, not only

to

to their safety, but their military force. Thousands of men and millions of money might be saved by a sufficient supply and judicious employment of cords and canvass, which are neither expensive nor cumbersome provisions for an army. The tent poles any country will supply.

Deserters.

The jails in which deserters from the army are confined, for obvious causes, are peculiarly exposed to infectious Fevers. The military prisoners, who pass in great numbers to and from Ireland, are lodged in the castle at Chester, and have, for a long series of years, to my knowledge, been frequently afflicted with this Fever. In 1772 I attended an apothecary who caught this Infection, and died of it. In the year 1793, there were 17 out of 18 deserters in this prison, ill of this Fever at the same time. The county magistrates, affected with the melancholy situation of these prisoners, and alarmed at the danger

ger of their communicating the Contagion to the inhabitants of the city, desired the Physicians of Chester to give their advice and assistance in what manner the mischief might be prevented. We addressed a memorial to Government, recommending the adoption of regulations similar to what had been long practised at our Infirmary. These measures were approved, and executed with complete success. And there is reason to hope that they will be widely extended for the general benefit of the British army. For in a few months after our correspondence with the Right Hon. Mr. WINDHAM, secretary at war, a medical Inspector, sent from the War-office to visit all the military Jails and Hospitals, brought to us again our own rules, injoining a strict observance of them, which I had the satisfaction to learn was the order of Government.

If

If we take into consideration how long Infection remains in the body in a latent state, that, in this period of time, deserters are sometimes removed to their regiments or ships, at a great distance, we shall clearly understand in what manner infectious Fevers may be introduced into our army and navy.

According to the judicious recommendation of our friend the Rev. Dr. PEPLOE WARD, of Chester, to Administration, a numerous body of deserters from the army were permitted to enter themselves into the navy. But before their removal to the ships, I prevailed upon him to allow a proper time for the performance of quarantine, in a clean jail. During this period, some of the deserters fell ill of the Fever, from the Infection which they had previously received. This caution deserves general attention, particularly in the navy. Sailors taken out of an infectious jail

should

should never be mixed with the crew of a ship, till a sufficient time had elapsed to discover whether any latent poison had infected them. Such considerations are of great national importance.

Navy. The whole doctrine of febrile Contagion explained in this Letter is in every respect applicable to the preservation of sailors and soldiers on board ships of war, and even transports. In regard to cleanliness and ventilation, and the separation of patients ill of infectious Fevers into the sick birth, or an hospital ship, I understand that excellent regulations are already established in the British navy. And it is not the purpose of this Letter to repeat what is already known, and what has been fully explained by others.

One remark may be new and important, deducible from the facts above stated. From the ignorance which has hitherto prevailed, to what extent, through the medium

medium of air, Fevers are infectious, I apprehend that there must have arisen many difficulties and embarrassments greatly to the disadvantage of the patients, so as generally to confine them in a pestilential atmosphere within their sick births. You will have no doubt in agreeing with me that persons ill of infectious Fevers may be brought upon deck, and placed indiscriminately among the healthy soldiers and sailors of the vessel, without any hazard of communicating the Contagion; provided that they are dressed in clean clothes. On these occasions, the sick births should be perfectly cleansed. The bedding, chests, bundles, &c. ought to be brought upon deck, and exposed to the fresh air. It will be superfluous to remark, that all the Rules of Prevention, recommended for Fever Wards, p. 105, ought to be observed in sick births.

Among

Among other causes of the wonderful atchievements of the British fleets, it is not the least that the sailors, during the whole war, have enjoyed a high degree of health. You will agree with me, that this happy circumstance is chiefly to be ascribed to the wisdom of medical regulations and improvements. And you will not be displeased that I thus claim some and no inconsiderable share of honour to our profession from the late glorious victories of the British navy.

In this probationary state of existence, for good but inscrutable purposes, there is, in all human affairs, an admixture of pain and pleasure, fear and hope, disappointment and enjoyment. On looking at the world around me I have reason, much reason, to be gratefully thankful to the wise Disposer of all things, that hitherto my lot has been comparatively fortunate, prosperous, and happy, with a

mind

mind well disposed to relish such felicity. But to one who has passed through such a busy and varied scene of life; who has had such intimate intercourse, and for so long a period of time, with the different ranks of society, some painful anxieties have undoubtedly been my portion. Upon these and many other occasions, the contemplation of plans for the prevention of Distempers, and others, for the improvement of the children of the poor in habits of industry, morality, and religion, has ever had the happiest influence in restoring a placid serenity of mind, and in administering heartfelt consolation in scenes of the deepest melancholy. What sublunary object can be esteemed of higher value? Pursuits of this kind may justly be said to bring with them their own reward.

To you this Letter is addressed, as a witness of several transactions which it records,

records, and as a Physician, whose private and professional character has long merited the sincerest regard and esteem of your faithful Friend,

JOHN HAYGARTH.

BATH, APRIL 9, 1801.

POSTSCRIPT.

THE Regulations recommended, in this Letter to Dr. PERCIVAL, to prevent infectious Fevers, are equally applicable to all other Contagions propagated through the air, even the PLAGUE. If such a calamity should ever visit this country, an establishment exactly similar to Fever Wards would be excellently adapted to check its progress.

In my Letters to the late Mr. HOWARD, published in his Posthumous Works, I have recommended some improvements in the regulations of quarantine to prevent the importation of the PLAGUE. I have since endeavoured to prevail upon the wise and vigorous Government of this country to establish prompt and efficacious measures,

measures, instead of the tedious, inadequate, and useless delays, so injurious to commerce, which are at present practised in the Lazarettos of the Mediterranean. At some more auspicious season, these humble but earnest representations may merit attention.

AN ADDRESS

To the College of Physicians at Philadelphia, on the prevention of the AMERICAN PESTILENCE

GENTLEMEN,

AS the subject of this Disquisition is of very high concernment to mankind, and particularly to America, you will not think that the liberty taken by a stranger can need any apology. Besides our common origin and language, we are guided by the same principles in the investigation of philosophy and physick. I might, indeed, as an individual, plead a more intimate connection with your country by the honours I have received from the University of Cambridge in New-England, and the American Academy of Arts and Sciences.

My

My mind being employed, as the preceding Letter explains, in collecting evidence to discover in what manner infectious Fevers are propagated, and in devising the best regulations for their prevention, you will readily believe that my attention was particularly excited on both these points, by the Pestilence which has occasioned such dreadful devastation in America. Dr. LINING,* of Charleston, South-Carolina, in 1753, had clearly and distinctly discovered and recorded, that in 1732, 1739, 1745, and 1748, the Pestilence then denominated the yellow Fever, had been imported from the West-Indies into America.†

I have very deliberately and impartially considered the "Facts and Observations "relative to the nature and origin of the "Pestilential Fever which prevailed in "the city of Philadelphia, in 1793-7 and

* See Edinb. Physical Essays, II. † Appendix I.

"8,"

" 8," published by the College of Physicians. The clear, consistent, and complete evidence* which you have adduced, has produced in my mind the fullest conviction, that the Contagion was introduced into America from the West-Indies. I have deliberately considered all the subsequent publications on this interesting subject which I have been able to obtain, without the slightest change of opinion.

This being the case, the opposers of this doctrine, though numerous and respectable, allege causes and produce arguments, which to me appear to be entirely groundless. Most unfortunately, this medical schism has excited pernicious doubts in the minds of extraprofessional men, even of enlightened understandings. In these circumstances,

* As this *Address* may be perused by readers who have never seen this publication, it may be useful to insert a few extracts in the Appendix II.

the legislative and executive governments cannot act with firmness, decision, and effect. In situations of danger, unanimity of opinion is of the utmost consequence for the safety of the people.

On these considerations, I think it may be of great importance to the welfare of America to review the opinions which have produced these most pernicious effects, by discouraging every judicious measure for the prevention of this Pestilence.

When you had made so plain and useful a discovery that the calamitous destruction of the inhabitants of Philadelphia proceeded from a foreign and imported Pestilence, regulations would have been instituted, with one mind, to exterminate the poison, and to guard against the return of a similar calamity. But a Physician of eminent abilities, in an evil hour, most unfortunately ascribed the generation of this Pestilence with which

America

America was afflicted in 1793, to "*putrid coffee*," without any proof, or the slightest degree of probability.

To sanction this doctrine, a number of cases have been produced, and supported by strong and respectable testimony of many physicians, at first as individuals, and afterwards as "*The Academy of Medicine of Philadelphia*," in a publication, intitled, "*Proofs of the Origin of the Yellow Fever in Philadelphia.*" But however strong the testimony, and respectable the witnesses, it appears to me that the Academy have alleged the most frivolous, inadequate, and groundless causes of this calamitous Distemper.

They chiefly ascribe this Pestilence to the noxious air emitted from the snow Navigation, (p. 6) which arrived at Philadelphia with a *healthy* crew from Marseilles, on the 25th of July 1797. 'There was in the hold of this

'vessel

'vessel a quantity of vegetable matters, 'such as prunes, almonds, olives, capers, '&c. *some* of which were in a state of 'putrefaction. A most offensive smell 'was emitted from this vessel *after* she 'had discharged her cargo, which was 'perceived by persons several hundred 'feet from the wharf where she was 'moored.' Prunes, almonds, olives, and capers, could only exist in small quantity, and are very little liable to run into putrefaction. To add, if possible, to the improbability of this account, it is stated, that the offensive smell was emitted 'after' she had discharged her cargo. It is too obvious to escape notice that the stench arising from the hold of a ship proceeds from the putrefaction of substances which belong to all the three kingdoms of nature, vegetable, animal, and mineral; and which are found in *every* vessel when she has discharged her cargo.

In

In the same spirit, the Academy adduce facts to prove that a Fever was produced in one ship 'by the noxious air 'generated from a few bushels of potatoes, (p. 7;') in another, 'by the wine 'which had putrefied in the hold of a 'ship;' in a third instance, they say, 'the Yellow Fever was generated by the 'noxious air of some rotted bags of pepper, 'on board of a French Indiaman carried 'into the port of Bridge-town. All the 'white men, and most of the negroes, 'employed in removing this pepper, perished with the Yellow Fever, and the 'foul air affected the town, where it 'proved fatal to many of the inhabitants.' But the 4th example next alleged manifestly *betrays* the whole purpose of this publication. The Academy say, 'The 'Fever which prevailed along the shore 'of the Delaware in Kensington, we believe originated from the noxious air

'emitted

'emitted from the hold of the ship Hul-
'dach. The air was generated by the
'putrefaction of *coffee*, which had re-
'mained there during her voyage from
'Philadelphia to Hamburgh, and back
'again.' These bold assertions, sanction-
ed by respectable names, are well adapted
to frighten the ignorant, but have a very
different effect upon the mind of the in-
telligent reader. They are in a high
degree improbable. Previous to the ac-
cusation of putrid coffee as the cause of
the Pestilence in 1793, no medical au-
thor, as far as I recollect, has ever ascribed
to vegetables in such a situation, a
power to generate an infectious Fever, or
any Fever, or indeed any other disorder
whatsoever. In similar circumstances,
thousands of people have breathed the air
near putrid vegetables in an incomparably
higher degree, both by sea and land, with-
out receiving the slightest injury.

It

It is not a little curious, and, indeed, highly instructive to observe, that Dr. CALDWELL signed this opinion, that the Yellow Fever of America was generated from putrid vegetables, as an individual, in answer to Governor MIFFLIN's Letter, dated 6th November 1797, and assented to it as an academician, on the 20th day of March 1798. Yet, in an Oration spoken on the 17th of December 1798, with great declamatory parade, bold* assertions, and flowery diction, he takes no notice whatsoever of this doctrine, but ascribes the whole mischief to a peculiar constitution of the atmosphere, as proved by the multitude of grasshoppers, flies, and muskitos. The dirt of Philadelphia he also blames, but does not allege that it existed in any unusual degree. No clearer proof need be required of self-contradiction and condemnation. It is wonderful, that the Phy-

* See Appendix III.

sicians,

sicians, Philosophers, and Statesmen, of America, have not been struck with this circumstance so as to open their eyes against the pernicious delusion, which has so marvelously and dangerously prevailed concerning the origin of this Pestilence.

Upon a question of such great importance to America, and probably to Europe, it is proper to take notice of another dangerous error. In the newspapers, in conversation, and in letters from America, it is asserted with great positiveness so as to obtain general belief, that the Pestilence appears in the sea-port towns, not because imported thither from the West-Indies, but generated there in the docks, common sewers, &c. which are described as peculiarly filthy, and in an offensive state of putrefaction. But the Academy take no notice of such a cause. Whence we may conclude, that it cannot bear the remotest semblance of truth to persons on the

the spot, who have an opportunity to compare facts relative to the commencement of the Contagion with the situation of the docks, common sewers, &c. When the Academy were at a loss to substitute any causes, and did substitute such improbable causes, of this Pestilence, contrary to the clear and convincing evidence which you have published, to explain in what manner it was imported from the West-Indies, they certainly would not have neglected to produce so obvious and plausible an origin of the Distemper.

By such vague and ill-founded notions, the measures of Government have been obstructed in all the sea-ports of America. An Act of quarantine has been passed for the port of Boston in New-England, of which a medical Friend transmitted to me a copy. On perusing this Act, I was not a little astonished to find that all its principal provisions were directed to destroy domestick

domestick dirt, and scarce a single regulation was ordered to destroy the *Pestilential Poison** that might be imported from the West-Indies, Philadelphia, New-York, Salem, Newbury-Port, Portsmouth, &c. where the Pestilence then existed. When speculative errors lead to such bad consequences, they highly merit refutation.

When the publick opinion is unsettled, and bewildered by variety of conjectures, the wildest and most improbable hypotheses will be proposed, and will gain some proselytes. Mr. WEBSTER, of Connecticut, who I have been well informed is a man of sense and erudition, and editor of one of the best papers in the United States, has published two large volumes on Epidemical and Pestilential Diseases. He ascribes their generation to comets, earthquakes, volcanos, tornados, hailstones,

* The regulations of quarantine explained in my Letters to Mr. HOWARD, to prevent the *Plague*, are exactly applicable to the prevention of this *Pestilence*.

ventured

flights of wild pigeons, large flies, dead haddocks on the coast of Norway, abundance of shads on the American coast, black worms, &c. &c. It must be owing to this strange uncertainty of opinion that an author of so respectable a character has ventured to publish such whimsical and irrational opinions. The question of cause and effect is in many instances of disease difficult to ascertain. In most cases we have nothing to direct our judgment except the close connection of place and time. But in Mr. WEBSTER's History these essential circumstances are wholly neglected. He ascribes Plagues, Pestilence, Small-Pox, Scarlet Fever, Influenza, &c. in one quarter of the globe, to earthquakes, storms, &c. &c. in another, and at a different time, allowing an interval of months or years. In some instances he does not allow the cause to precede the effect. His imagination darts

from

from earth to heaven in a kind of phrenzy, very unlike a philosopher, and with an inconsistent wildness that would disgrace a poet. Thus he ascribes a high tide in June 1788 to a comet which appeared in the following October, and which could only be seen by a telescope.

For the cause of the Pestilence which so sorely afflicted America in 1793, he goes back as far as 1788, to collect an account of all the earthquakes, (in Iceland and in Tuscany) comets, tornados, high tides, hail-stones, meteors, sickly fish on the Banks of Newfoundland; a halo; a famine in India and China; dead haddocks on the coast of Norway, &c. &c.

To these causes, which happened in distant parts of the world, during a period of five years, he ascribes the American Pestilence: though such phœnomena of nature have not been, perhaps, more frequent during this time, than at any other

other period since the creation of the world. An author of this kind would require no notice, if the positive and plausible style of his book did not occasion apprehensions that it might mislead the unwary reader.

This Address to the *College of Physicians at Philadelphia* accompanies my Letter to Dr. PERCIVAL, on the Prevention of Fevers, because I have the fullest confidence that the measures which it recommends, from my own experience at Chester, would effectually suppress the Pestilence of America.

Between one infectious Distemper and another, there exists a very close analogy in regard to the nature of the poison, and the laws by which it is communicated. The Plague, the casual Small-Pox, Measles, Scarlet Fever, Chin-Cough, Mumps, Influenza and other infectious Catarrhs, are all Fevers. They are all of them propagated

propagated by a poison soluble in air, and invisible, in the form of miasms. None of them renders the atmosphere infectious farther than a few feet from the patient or the poison. This position I have proved in the clearest manner in regard to the Small-Pox, the Scarlet and Typhous Fever;* and there is no proof, nor even a probability, that the infectious quality of any other Distemper contaminates a larger portion of air. In all of them there is a latent period, between the time of receiving the Infection and the commencement of Fever, but of different durations in each.

These reasons evince, to a high degree of probability, that regulations, founded upon the principles which have been proved by extensive experience to be perfectly adequate to the prevention of the casual Small-Pox at Chester, and of the

* See Inquiry § viii. Sketch p. 549. Letter p. 35-40, 80.

Typhous

Typhous Fever at Chester and Manchester, might be applied with similar success to exterminate the American Pestilence.

But when positive and direct proofs can be obtained, physicians should never reason by analogy. For this reason, in December 1798, and again in January 1799, I addressed some questions* upon this interesting subject to my very intelligent correspondent Dr. WATERHOUSE, professor of physick at Cambridge in New-England. In the Boston Gazette of May 23d, 1799, my Letter was published. It contained inquiries to which Dr. W. could not give satisfactory answers on account of the contradictory opinions and warm contentions of medical parties in America.

Failing in this application to my Friend, I now address you, Gentlemen, as a learned society, constituted by Government, whose peculiar duty it is to discover the nature

* See Appendix IV.

of

of this Contagion, and the laws by which it is propagated, and to devise regulations for its prevention. For this purpose I solicit the favour of you to appoint one or more of your Fellows as a committee to institute inquiries similar to those described in my Letter to Dr. PERCIVAL, and particularly to write me full and explicit answers to the questions which I have proposed. None but active and zealous members, eager in the pursuit of improvement, ought to accept this office.

Both the College and the Academy, especially the former, prove by numerous facts that this Pestilence spreads by Infection. But there is one common error, and of great importance, which I am confident more minute and accurate observations will correct.

The College intimate, that the Infection may be caught through the medium of air, at the distance of one hundred or

one

three hundred yards from the pestilential poison. The Academy allege, that it may be caught at the distance of a mile or a mile and a half.

The Small-Pox probably contaminates the atmosphere to as great a distance as any infectious Distemper whatsoever. One of the most respectable Physicians in England thought that from observation he had known it to extend for thirty miles.* Whereas, in another work, I have proved by facts, that the sphere of Variolous Infection, in moderate cases, does not extend in the open air to the distance of half a yard, and in the worst but to a few yards from the poison.† What I have said of the Small-Pox is strictly applicable to the American Pestilence.‡ If the infectious

* See this Letter p. 87.

† See INQUIRY how to prevent the Small-Pox, § viii.

‡ See CAREY's Account of the Plague or Malignant Fever of Philadelphia in 1793, p. 68.

"The jail of Philadelphia is under such excellent regulation, that the disorder made its appearance there

influence extend to the distance of thirty yards, no human power could prevent its infecting the inhabitants of the whole house, the whole street, and the whole

only in two or three instances, although such abodes of misery are the places where contagious disorders are most commonly generated. When the Yellow Fever raged most violently in the city, there were in the jail one hundred and six French soldiers and sailors, confined by order of the French Consul, besides eighty convicts, vagrants, and persons for trial; all of whom, except two or three, remained perfectly free from the complaint. Several circumstances have conspired to produce this salutary effect. The people confined are frequently cleansed and purified by the use of the cold bath—they are kept constantly employed—vegetables form a considerable part of their diet—in the yard, vegetation flourishes—and many of them being employed in stone-cutting, the water, constantly running, keeps the atmosphere in a moist state, while the people of Philadelphia have been uninterruptedly parched up by unceasing heat. ELIJAH WEED, the late jailor, caught the disorder in the city, in the performance of the paternal duties towards his daughter, and died in the jail, without communicating it to any of the people confined."

This fact, which is casually mentioned for another purpose, fully refutes any idea of a *Pestilential Constitution* of the atmosphere. It farther disproves the opinion that the pestilential miasms are capable of contaminating the air to the distance of one hundred, or even of ten yards.

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town, where ever it may come. If one patient could infect all persons capable of receiving the Pestilence within thirty yards, these in like manner would infect others to the same distance. On these principles, its progress through the largest city would be swift and certain.

This view of the subject demonstrates the great importance of the investigation pointed out by the questions proposed to Professor WATERHOUSE. In order fairly to reason upon this subject, the first point is to ascertain what proportion of mankind is liable to receive the Pestilence, when fully exposed to it in a small, close, and dirty room, for days and nights.* Whence we may conclude,

* See CAREY's Account, p. 60.—"It has been dreadfully destructive among the poor. It is very probable, that at least seven-eighths of the number of the dead were of that class. The inhabitants of dirty houses have severely expiated their neglect of cleanliness and decency, by the numbers of them that have fallen sacrifices. Whole families in such houses have sunk into one silent, undistinguishing grave."

"The

when many persons in the adjoining or in the same house have escaped the Distemper, that they had not been exposed to an infectious dose of the poison.

When these principles are clearly and fully established so as to become the public creed, measures may be taken effectually to prevent its progress, exactly upon the same principles as I have explained in my publications on the Small-Pox, and in this Letter to Dr. PERCIVAL, supported by extensive experience at Chester and Manchester. Your fellow-citizens will then have no occasion to incur the mischievous confusion of deserting their own habita-

" The mortality in confined streets, small allies, and close houses, debarred of a free circulation of air, has exceeded, in a great proportion, that in the large streets and well-aired houses. In some of the allies, a third or fourth of the whole of the inhabitants are no more."

By comparing this extract from CAREY's *Account* with the former in the preceding note, it appears to be highly probable that the poison does not render the air of a whole house, nor even of a whole chamber, infectious, if large, airy, and clean.

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tions. If commodious houses, with large airy chambers, be provided for the reception of patients ill of this Pestilential Fever; and if effectual care be taken to destroy this poison by separation, cleanliness and ventilation, all danger will soon cease, and all apprehensions of danger will gradually abate.

J. H.

APPENDIX.

I.

Extract of a Letter from Dr. Lining, Physician at Charleston in South-Carolina, to Professor Whytt, of Edinburgh, December 14, 1753.

"THAT Fever, which continues two or three days, and termnates without any critical discharge by sweat, urine, stool, &c. leaving the patient excessively weak, with a small pulse, easily depressible by very little motion, or by an erect posture; and which is soon succeeded with an icteritious colour in the white of the eyes and the skin, vomiting, hæmorrhages, &c. and these, without being accompanied with any degree of a febrile pulse and heat, is called in America, the *Yellow Fever*.

" This Fever does not seem to take its origin from any particular constitution of the weather, independent of *infectious miasmata*, as Dr. WARREN has formerly well observed.

" For within these twenty-five years, it has only been four times epidemical in this town, namely, in the

the autumns of the years 1732, 39, 45, and 48, though none of these years (excepting that of 1739, whose summer and autumn were remarkably rainy) were either warmer or more rainy (and some of them less so) than the summers and autumns were in several other years, in which we had not one instance of any one being seized with this Fever; which is contrary to what would probably have happened, if particular constitutions of the weather were productive of it, without infectious *miasmata*. But that this is really an infectious disease, seems plain, not only from this, that almost all the nurses catched it and died of it; but likewise, as soon as it appeared in town, it soon invaded new-comers, those who never had the disease before, and country people when they came to town; while those who remained in the country escaped it, as likewise did those who had formerly felt its *dire* effects, though they walked about the town, visited the sick in all the different *stadia* of the disease, and attended the funeral of those who died of it. And lastly, whenever the disease appeared here, it was easily traced to some person who had lately arrived from some of the West-Indian Islands, where it was epidemical."*

* See the Physical Essays of Edinburgh, vol. ii. p. 372.

II. *Extract*

II.

Extracts from the "FACTS *and* OBSERVATIONS *relative to the Nature and Origin of the* PESTILENTIAL FEVER, *which prevailed in the city of* PHILADELPHIA. *By the College of Physicians of Philadelphia.*

1. PESTILENCE OF 1793.

"About the latter end of July, and beginning of August, 1793, a Fever of a new and very alarming nature prevailed in this city. It first appeared in Water-street, between Mulberry and Sassafras streets; and all the cases of this Fever were, for two or three weeks, evidently traced to this particular spot. A considerable part of the city, Northern Liberties, and district of Southwark, became gradually infected, and it was not until the coming of the frost, that the disease subsided, after having proved fatal to nearly five thousand persons.

"The peculiarity of the symptoms, the remarkable inefficacy of remedies generally used for diseases which commonly occur in the same season of the year, with somewhat similar symptoms, its great mortality and contagious nature, sufficiently evinced, that a very unusual disease existed among us; which was soon discovered to be what is called the Siam, in the French, and the Yellow Fever in the British, West-Indies." See Facts, &c. p. 3, 4.

2. PESTILENCE OF 1797.

"No instance has ever occurred of the disease called the Yellow Fever being generated in this city, or in any other part of this state, as far as we know; but there have been frequent instances of its having been imported, not only into this, but into other parts of North-America, and prevailing there for a certain period of time; and from the rise, progress, and nature, of the malignant Fever, which began to prevail here about the beginning of last August, and extended itself gradually over a great part of the city, we are of opinion, that this disease was imported into Philadelphia by some of the vessels which arrived in the port after the middle of July. This opinion we are further confirmed in by the various accounts we have received from the best authorities we could procure on the subject."*

3. PESTILENCE OF 1798.

"In the months of June and July last, twenty-seven vessels arrived in this port from Cape Nichola Mole, Jeremie, and Port-au-Prince, in the Island of Hispaniola or St. Domingo, places which had long been garrisoned by the British forces, and of conse-

* See farther proofs in the "Narrative of Facts," published by the College and quoted by the Academy, in order to criticise it.

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quence more peculiarly adapted to the generation of Pestilential Diseases.

"It is a well known fact, that these places were evacuated in great haste, and that a considerable number of American vessels which lay there, were employed to transport the British garrison."

"We have further proof that the Yellow Fever prevailed in those ports while the above-mentioned vessels lay there.*

"On the fifth day of July last, six or eight of these vessels, having a large number of passengers on board, of course a quantity of cloathing, bedding, &c. brought off in the greatest haste, themselves exposed to all those circumstances which are generally allowed to produce contagious Fevers; in this situation they arrived at the fort, where they were detained on board for twenty days, an occurrence well adapted to heighten the violence of the Contagion. On their arrival at the city, after this detention, they generally lay at the wharfs between Wal-

* *Letter from Dr.* STEVENS *to Dr.* GRIFFITTS, *December* 29, 1798.

"During my residence in Santo Domingo and the Cape, I received frequent information that the Yellow Fever prevailed in almost all the sea-port towns in the French part of Hispaniola, particularly at Cape Nichola Mole. It raged so violently at this latter place, and the mortality was so great, that it obliged the British to abandon the post sooner than they intended."

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nut and Spruce-streets. And it is well known, that at this part of the city the Fever first appeared, about the latter end of July and beginning of August, and spread from thence to almost every other quarter. These are facts too recent and too generally admitted, to require further proof.

" On the evening of the eighth of July, the armed ship Deborah, Captain Edward Yard, arrived at the fort from Jeremie. She buried *eight* persons during her stay there and return, and sent *six* sick to the Marine Hospital. She was one of those employed to transport troops in the West-Indies. After a detention of ten days this vessel came up to the city. We have been assured that some of her crew were brought up before her arrival.

" On the twenty-eighth of July, the Deborah was moved to Kensington, where she was hove down. We can clearly trace the rise and progress of the disease at that place to this vessel, and also the first appearance of it in some other parts of the city to persons who had been on board her."

III.

Extract from Dr. CALDWELL'S *Oration.*

" Pestilence can become epidemick only, when aided by a concurrent constitution of atmosphere. This position is founded on the collective experience of

of ages. Where such a constitution does not prevail, sporadic cases of pestilence may indeed occur, but they will again disappear, and leave surrounding individuals unhurt. The nature of that peculiar state of atmosphere, favourable to the propagation of pestilential diseases, has hitherto eluded the researches of philosophers. The reality of its existence, however, is sufficiently established from the obvious effects to which it gives rise. Though ridiculed, of late, by some physicians, under the denomination of an *occult* quality, reason and observation still declare it to be a quality resting, for the certainty of its existence, on evidence as substantial, as that which supports the great Newtonian principle, the gravitation of all terrestrial bodies."

"The gravitation of terrestrial bodies" is no discovery of NEWTON'S; but a fact well known to every inhabitant of the earth ever since the creation. The visionary Hypothesis, here quoted, was never supported by any proof whatsoever. It would not deserve any notice, if the opinion did not generally prevail among physicians, so as to be productive of great mischief among mankind, by permitting the Plague, Small-Pox, American Pestilence, &c. to spread, without any attempts to check their fatal progress. On this consideration, a refutation of it,

by

by numerous well-authenticated facts, with reference to many others, is inserted in the following

Extract from HAYGARTH'S INQUIRY *how to prevent the Small-Pox*, § viii.

" The Small-Pox was epidemical in Chester from May 1777 till January 1778, that is, for nine months, particularly for the last six; during which time I attentively marked its progress. 1. At the beginning two or three families were seized, not immediate neighbours, but in the same quarter of the town. 2. Then the children of a neighbourhood, comprehending an entry, had the Distemper, but it did not spread from them as a centre. 3. In no part of the town it has spread uniformly from a centre, farther than through an entry or a narrow lane, where all the children of a neighbourhood play together. 4. Afterwards the poor children in several parts of the town were attacked, at a considerable distance, in some places half a mile, off each other. 5. Yet, many portions of all the large streets were not infected in November, but so late as December and January, the Distemper returned to attack many who had escaped, when it was in their neighbourhood some months before. 6. In Handbridge, a part of Chester, only separated from the rest of the town by the river Dee, not more than

about

about seven had been infected during the epidemick, though great numbers of children, in this quarter, are liable to the Distemper. 7. In the middle of the city, in one street, (King's-street) of twenty-four who had never passed through the Distemper, only *two*, both in the same house, were attacked. 8. During the summer and autumn of 1777, while this epidemick was general in Chester, many of the surrounding villages, (as, Christleton, Barrow, Tarvin, &c.) and some larger towns, (as Nantwich, Neston, &c.) were visited by the Small-Pox in one or more families, yet the Distemper did not spread generally through any of these towns. As both the state of the air, and the Variolous Poison, were the same in these places as in Chester, why did it not equally *infect* their *air* as well as ours? 9. At Frodsham the Small-Pox began in May, and gradually became more frequent, so as to be remarkably epidemical on one side of the street for several months, yet nearly one half of the town, on the opposite side of the street, still remained quite uninfected on November 18th, 1777."

"The epidemical Small-Pox, which has been attributed to a peculiar constitution of the atmosphere, by the sagacious SYDENHAM, and by most other physicians who have since written on this subject,

ject, may be supposed incompatible with this conclusion, but I think it can be explained in a satisfactory manner, on the principles of this INQUIRY.

"As particular facts convey more certain conviction than general observations, I request the reader to consider the following Table. The first and second columns are quoted on the authority of my very ingenious friends Dr. PERCIVAL and Dr. AIKIN.

"Deaths by the Small-Pox, in 1781.

	Manchester.	Warrington.	Chester.
January	3	7	1
February	5	8	0
March	10	5	0
April	17	5	1
May	31	5	0
June	44	6	0
July	55	3	0
August	46	4	1
September	53	3	0
October	36	0	2
November	31	2	1
December	13	2	1
	344	50	7

"In January, 1781, the Small-Pox was brought from Dublin to Parkgate, where it was not propagated to a second family. In the same January, it

it was brought from Liverpool to Neston, where it continued to spread for several months. Yet Parkgate and Neston are two towns, or rather two parts of the same town, not a single mile distant from each other. I relate this fact on the best authority, Mr. WOLSTENHOLME'S, surgeon, of Neston.

"Hence we see, on surveying several large neighbouring towns, as Manchester, Warrington, and Chester, that the Distemper is very seldom absent from any of them, but that it becomes generally epidemical at uncertain periods in each, and at times which hold no correspondence with one another. In like manner, on comparing several neighbouring villages, we observe, some entirely free from the Distemper, others have a few only infected, others suffer a general seizure.—The observation is generally true in regard to this part of Great-Britain; but it will be thought sufficient to have produced a few instances.

"Whoever considers the numerous facts here faithfully related, will perhaps be convinced, that the Distemper becomes epidemical, neither through any peculiar state of the air, nor of the human constitution. No such difference can reasonably be supposed to exist in large towns within twenty miles of each other, much less in neighbouring villages,

and least of all in different parts of the same town or village. If what is above advanced be true, the seeming mystery may be explained in a few words. *The Small-Pox continues spreading as long as persons liable to the Infection approach patients in the Distemper or infectious matter, either in the same chamber, or very nearly in the open air, and then ceases.* When it has attacked none, or but a few in any place for some years, a large number of the young generation becomes liable to infection; if, therefore, it be introduced in these circumstances, many of them nearly approach the infectious, become themselves infectious, and propagate it to others, so that the Distemper seizes all capable of having it, except a few who are kept from a free intercourse with the rest; this is called the epidemical Small-Pox. In other places, the Distemper does not spread from a Small-Pox patient, none liable to Infection approaching within the infectious distance, either because it has lately been epidemical, so that nearly all have had it, or because the patient is kept separate from the rest, through his own prudence or their fears. When only one or two families are infected by the Small-Pox in any town or village, no one will dispute it is possible, that no person liable to the Distemper may come within the infectious

distance

distance of the poison, before it be destroyed by washing or other methods of cleanliness. If this be done by accident or design, I maintain that the Distemper will spread no farther. On the contrary, no one acquainted with the present habits of carelessness in regard to this poison, and how generally it is dispersed in clothes, furniture, and food, will doubt that some of it, while fresh, may come within the infectious distance of some persons liable to the Distemper, and, in consequence, that these will be attacked. The more patients are infected the more poison will be generated, and, if many in the place are susceptible of Infection, the more quickly and generally it will spread. May not this view of the matter entirely explain the difference between the sporadick and epidemick Small-Pox, so often mentioned by medical authors?"

This doctrine is fully confirmed by many other facts recorded in the INQUIRY*, and in the SKETCH, of a Plan to exterminate the casual Small-Pox, by my very respectable medical correspondents, as well as my own future observations.†

It is highly probable, that a similar statement of facts would lead to the same conclusion in regard to the American Pestilence.

* See INQUIRY, § viii.

† See SKETCH, p. 222, 226, 237,—241, 335, 338, 441, 443, 452, 549, 557.

IV.

From the Boston Gazette, May 23, 1799.

Extract of a Letter from JOHN HAYGARTH, *M.D. F.R.S. &c. &c. to* BENJAMIN WATERHOUSE, *Professor of the Theory and Practice of Physick at the University of Cambridge, New-England, respecting the means of preventing the* YELLOW FEVER, *(so called.)*

Bath, Jan. 25th, 1799.

"Four years ago I sent you some observations of mine on the best method of performing quarantine for the Plague, printed with the posthumous works of the late Mr. HOWARD, and a Letter, containing inquiries to illustrate the nature of the Contagion which has spread the fatal Pestilence through Philadelphia and some other cities. You are intimately acquainted with the mode of preventing the Small-Pox, proposed in my "INQUIRY, SKETCH, and CORRESPONDENCE." No subsequent fact has occurred, or been communicated to me, which can in the slightest degree invalidate the principles attempted to be established in those publications. In like manner I have discovered that mankind may be preserved from the Contagion which produces the Typhous Fever with still greater ease and certainty. I find, 1st. that this poison infects

22 out of 23 persons exposed to it for nights and days in a close, dirty, small room; 2d. That, in a clean, airy, and spacious chamber, few or none are infected. These facts prove incontestibly to what a narrow sphere the Typhous Contagion is limited; And 3d. That the poison remains generally from ten days to six weeks, or longer, from the time of exposure till the commencement of the Fever, in a *latent* state. Upon these principles I proposed to receive all the poor citizens of Chester ill of infectious Fevers into separate wards of that Infirmary. The proposal was approved, and has been executed for fifteen years. During this period the "*Rules of Prevention*," which you will find in HOWARD on Lazarettos, p. 208, have effectually answered their intention, so that not a single patient in other parts of the house was ever *suspected* to be infected by the Fever.

"A fatal and infectious Fever had long prevailed at Manchester and its neighbourhood. In 1796, the Chester plan of taking poor people ill of infectious Fevers out of their own houses, and receiving them into separate wards adjoining to the Infirmary, was adopted. The success of this measure has been most wonderful; the number of Fever patients, in a certain district of the town, for two years and eight months,

months, which preceded this establishment, was one thousand two hundred and fifty-six; something more than the average of four hundred a year. The Fevers in the same district, from July 1796 (a period commencing two months after the establishment of *the House of Recovery*) to July 1797, (being twelve months) were only twenty-six; of these, in the last four months, (from March to July 1797) there was only one Fever patient. In the year 1796, there was a decrease of near four hundred in the bills of mortality at Manchester, comparing the two years which preceded and succeeded this Institution. The charge of the overseers for coffins was diminished nearly one-third in the latter period.

"I cannot entertain a single doubt that exactly the same measures would speedily and effectually exterminate the Pestilence which has so dreadfully afflicted America: as far as we may trust to the analogy of the Variolous and Typhous Contagions. But *you ought not to depend upon analogy*, when you have such an opportunity as the late melancholy progress of this mortal Distemper must have presented, to obtain the actual observation of facts. By means of your medical pupils dispersed in various parts of America, you may collect the most interesting intelligence, in like manner as was accomplished by

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the late celebrated Dr. ALEXANDER MONRO, in Scotland, relative to inoculation of the Small-Pox. You are so intimately acquainted with the mode of investigating the nature of the Variolous Contagion, successfully employed in the "INQUIRY and SKETCH," that you will immediately discern the importance of the following questions, which I request the favour of you to disseminate through America; and to solicit explicit answers to each of them.

1st. *What proportion of persons fully exposed to the Pestilence are infected?* Cases to determine this question ought to be circumstantially related. *Do mothers, wives, nurses, sisters, or daughters, who have most intimately attended their relations, sometimes, and how often, escape Infection?*

2d. *To what distance from the poison* is air *rendered infectious?* Upon this point will obviously depend the practicability of preventing and exterminating the Distemper. Collect all the well-authenticated facts in your power, where one or a few in a family were attacked, and the remainder preserved. *What numbers walk through the streets, where infection exists, but remain unaffected by it? How many persons in the houses adjoining, or opposite to those which contain the Pestilence, escape infection?* To remove all doubts, let it be noted,

noted, from some meteorological register, in what direction the wind has blown during the epidemick. Let names and dates be accurately stated. A minute detail of circumstances affords most satisfactory conclusions.

3d. *How long does the poison remain latent in the body;* that is, *what period elapses between exposure to Contagion, and the commencement of the Fever?* On the determination of this point, the rules of quarantine ought to be formed.

4th. *Can it be ascertained at what time and in what manner the poison was brought to Philadelphia, New-York, &c. and the small towns in the neighbourhood of these cities?* This intelligence would be of the greatest advantage to prevent future calamities, but which will be very difficult to obtain; as the authors of such dreadful mischief will be sedulous to conceal the transactions which have produced it.

"Lest my Letter of the 8th of December 1794 may have miscarried, I will send a copy of the queries it contained.

"1stly. When and where did the Fever begin at Philadelphia, &c. what were the names and local circumstances of the ten first patients attacked, and at what distance of time from each other?"*

* "Since this question was proposed to Professor WATERHOUSE, it has been answered in a satisfactory manner in regard

" 2dly. Did the Distemper spread from the first and other patients who were attacked at the beginning of the epidemick, to the leeward, or windward?

" 3dly. Or, on the contrary, did it principally spread in those families who had intercourse with the infected?

" 4thly. What ships arrived at the ports of Philadelphia, &c. previous to the commencement of

regard to Philadelphia, as above explained, by the College of Physicians. In TYTLER's Treatise on the Plague or Yellow Fever, (p. 144 and 506) there is a clear account of the means by which the Pestilence was imported from the West-Indies into New-Haven, Connecticut, in 1794, into Chatham on Connecticut River, into Providence in Rhode Island, into Portsmouth, &c.

The evidence concerning its importation into New-York in 1795 is strangely contradictory.

Dr. WARREN, Professor of Anatomy, declares, as to the Pestilence of Boston, which began in July 1798, " *that its* " *origin is domestic, I have not a single doubt.*"* But Professor WATERHOUSE, in the copy of TYTLER's Treatise which he sent to me, with his usual sagacity and discernment, writes this note: " *I must dissent from my worthy colleague.*" It is manifest, however, that the former opinion had become the prevailing creed, because the Act of the State of Massachusetts, which passed on the 18th of June 1799, to choose a *Board of Health*, makes provisions to destroy domestick, not imported, Contagion.

In the discussion of this question there is one remark, which is highly important and instructive. " This Pestilence has " never visited any other town in America than the sea-ports, " which have constant intercourse with the West-Indies."

* See TYTLER's Treatise, p. 505.

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the epidemick? Whence came they? Was the Fever at that place?

" 5thly. At the height of the epidemick, and in the part of the city where it principally raged, were any and what number of families totally free from the Distemper, at certain periods of its progress?

" What publications among you give the most instructive account of this Pestilence, which appears to be falsely denominated the *Yellow Fever*. Do any of them contain the intelligence I solicit in regard to the communication of the poison? Can you send me a full abstract of such intelligence? Is this Distemper some species of the Plague? CHISHOLM appears to me to give the most intelligent account of the fatal Pestilence in the West-Indies. Does it correspond with your observations in North-America? Your Letters respecting the Small-Pox, printed in my late publications, contain matters so

This fact is universally admitted, I believe, by all the contending parties, and it has been particularly confirmed to me, on the best authority, by his Excellency the Honourable Mr. ELLSWORTH. This circumstance alone will have great weight with every judicious reader, and will produce an high degree of conviction that the American Pestilence *always* originates from foreign Contagion.

The manner in which the Plague and the Small-Pox are introduced into a place, frequently eludes the most diligent researches; and yet no person in this country doubts, that these Distempers *always* originate from some communication of the Pestilential and Variolous Poisons.

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much to the purpose, that I entertain very sanguine expectations of useful information from your observations on this destructive Distemper."

POSTSCRIPT.

THESE inquiries were originally sent to Professor WATERHOUSE, in 1794 and 1799. They are now addressed to the College of Physicians at Philadelphia. I am solicitous farther to address them to the respectable and intelligent Physicians of New-York, Boston, and of many other towns in America, whither this Pestilence has been imported during the last eight years. If explicit answers to each of the questions here proposed were communicated to the publick, by medical witnesses in various situations, a body of evidence would be obtained, of great importance to their country and to mankind.

Dr. WATERHOUSE, in a Letter to me, says, "I cannot gratify you by giving answers to your interesting queries. Our Physicians are still divided in their opinions respecting this Malignant Fever, and such contradictions have been advanced that the impartial searcher after truth is soon discouraged."

When Physicians of the best abilities are thus bewildered by the violent medical factions which have most unfortunately prevailed in America, it is hoped that

that the candid reader will *excuse* the interference of an impartial stranger, on an occasion which he judges to be highly interesting to the cause of truth and of humanity.

Addition to the Note, p. 120.

After " T. BERNARD, esq;" read,

Just after this sheet was printed, I received, from the *Society for bettering the Condition of the Poor*, a copy of Dr. MURRAY's benevolent proposal to institute Houses of Recovery for patients ill of infectious Fevers in London, published by the desire and at the expence of the Society. This circumstance fully confirms two observations which are advanced in the preceding pages; that such establishments would be cordially promoted, with their usual liberality and beneficent spirit, both by Physicians, and by this Society.

On this occasion, it will not be irrelevant briefly to consider the question, whether Fever Wards should be annexed to Infirmaries as at Chester and Manchester, or should form separate institutions. The former arrangement is undoubtedly to be preferred where ever there is an opportunity, as most economical, as most beneficial to the poor objects of such a charity, and, beyond all comparison, as best adapted to preserve all Hospitals themselves free from infectious Fevers. No recapitulation of arguments will be required to establish these obvious conclusions.