

A treatise on the cow-pox; containing an enumeration of the principal facts in the history of that disease, the method of communicating the infection by inoculation; and the means of distinguishing between the genuine and spurious cow-pox ... / by George Bell.

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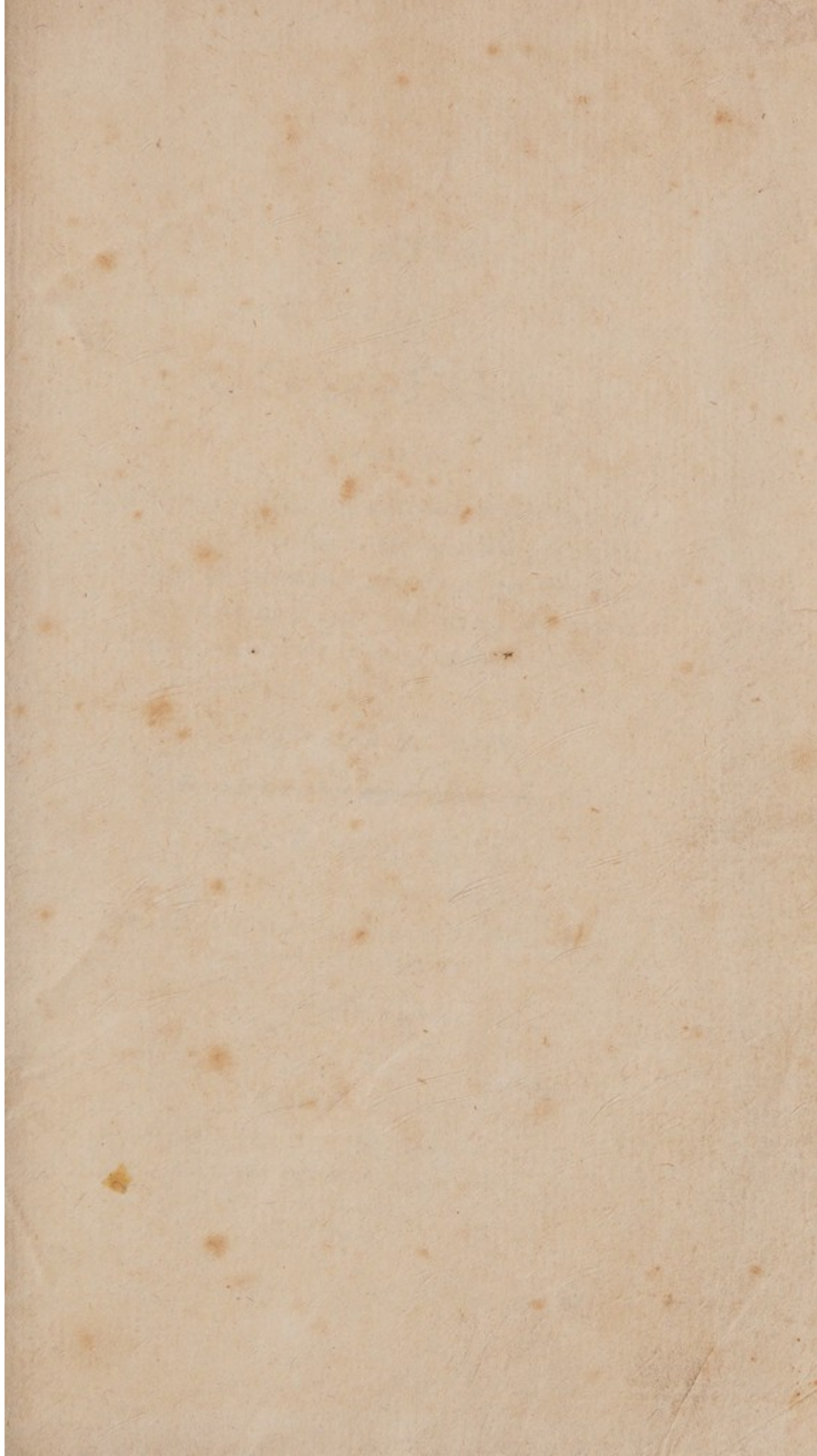
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A
TREATISE
ON THE
COW-POX;

CONTAINING

AN ENUMERATION OF THE PRINCIPAL FACTS IN
THE HISTORY OF THAT DISEASE; THE ME-
THOD OF COMMUNICATING THE INFECTION BY
INOCULATION; AND THE MEANS OF DISTIN-
GUISHING BETWEEN THE GENUINE AND SPU-
RIOUS COW-POX.

ILLUSTRATED BY PLATES.

BY GEORGE BELL,
SURGEON, EDINBURGH,
MEMBER OF THE ROYAL COLLEGE OF SURGEONS OF
LONDON AND EDINBURGH.

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AND LONGMAN AND REES, LONDON.

1802.

17185



Edinburgh,
Printed by A. NEILL & Co.

TO THE
CLERGY OF SCOTLAND,
THIS
TREATISE ON THE COW-POX
IS
RESPECTFULLY INSCRIBED
BY
THE AUTHOR.

EDINBURGH, }
Nov. 30. 1802. }

TO THE

CLERGY OF SCOTLAND

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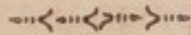
RECOMMENDED

BY

THE AUTHOR

Edinburgh
1802

P R E F A C E.



THE Small-pox, one of the most severe and dangerous diseases to which mankind is subject, ever since its introduction into Europe, more than a thousand years ago, has descended with undiminished violence from generation to generation; and every effort hitherto made to extirpate it has failed.

In the course of every year, many thousands fall victims to this disease; and even when the Small-pox does not prove fatal, it often produces most distressful immediate effects, and in ma-

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ny instances, painful and lingering complaints.

It is often peculiarly injurious to beauty, by the permanent pits and scars which it leaves on the face : It often destroys the sight, by the inflammation and scales which it induces on the eyes ; and sometimes it terminates in swellings and ulcers, by which the strongest constitutions are gradually undermined, and ultimately ruined.

The Small-pox, indeed, is rendered much less fatal by inoculation ; but even then, it is frequently attended with fever, and other alarming symptoms. Chiefly perhaps from these circumstances, inoculation for the Small-pox has never become general among the lower classes of
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the people ; and there is reason to think, that the partial practice of inoculation, though certainly beneficial to almost all the individuals inoculated, has on the whole been injurious to mankind, by spreading the contagion to numbers who otherwise might have escaped it altogether.

Mankind are, therefore, infinitely indebted to Dr JENNER for introducing to public notice an easy, safe and effectual method of preventing the Small-pox, by the substitution of another disease. This disease is known by the name of Cow-pox, and is now universally acknowledged to possess the singular property of producing a change in the human constitution, which enables it to resist the variolous contagion.

The

The facts that Dr JENNER has stated on the subject, have been investigated; his experiments have been repeated times without number; and the concurring testimonies of hundreds of medical practitioners have shewn that his inferences are just.

The Author of the following pages will not presume to say, that he has much new information to communicate; but having had extensive experience in the Vaccine Inoculation, and wishing to do every thing in his power to render the practice of it general, he conceives, that a short account of the principal facts in the history of the Cow-pox, addressed to the Clergy of Scotland, who deservedly have great influence over the minds of the people, and are much disposed to promote every

every proposal that tends to the public good, will more effectually introduce the Vaccine Inoculation in this country, than any other measure that could be adopted.

With this view, he has stated every thing of importance that is generally known on this interesting subject. No circumstance is mentioned as a fact which is not confirmed by his own experience; and at the same time he has carefully referred, in the most material points, to the original and best authorities, in order that they, into whose hands these pages shall fall, may have an opportunity to obtain the most complete information on a subject so interesting and important to mankind.

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TREATISE
ON THE
COW-POX.

CHAPTER I.

OF THE CASUAL COW-POX.

SECTION I.

Of the Discovery of the Cow-pox.

IN the month of June 1798, Dr JENNER, Physician at Berkeley in Gloucestershire, published an interesting account of experiments which he had made, for the purpose of investigating the nature of a disease known in that country by the name of the Cow-pox. He had com-

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menced his inquiries nearly twenty-two years before, but had not an opportunity of making any experiments on the subject, till the month of May 1796.

In the course of his inquiries, he found, that, in the spring and autumn months, particularly if the weather is rainy, a pustulous eruption appears on the teats and udders of cows, in the extensive dairies of the western counties of England ; and that this eruption is communicated to the milkers, by the matter contained in the pustules being rubbed on the hands and fingers when the skin is abraded.

Dr JENNER also found, that the common people of Gloucestershire had been long acquainted with this circumstance,
that

that they who were thus infected with the Cow-pox, remained ever afterwards unsusceptible of the contagion of Small-pox.

Having ascertained the truth of this circumstance, he attempted to render the observation generally useful, by communicating the disease received accidentally by the milkers, to children who had never been infected with the small-pox. This he successfully accomplished ; and the happy result of these experiments has facilitated the introduction of the inoculated Cow-pox into almost every corner of the world. To the rapid dissemination of this practice, Dr JENNER'S judicious conduct contributed not a little. He did not publish his discoveries, till he had it in his power to announce them

confirmed by ample experience; thus precluding all doubt or dispute about them, however new and extraordinary they might appear.

SECTION II.

*Of the Origin and Appearance of the Casual
Cow-pox.*

THE udders of cows, during the time they are suckling their young, are subject to pustulous sores of different kinds, which are occasioned by the stinging of flies, by external injuries, or by allowing the milk to collect in too great quantity.

By

By handling these pustules, sores are sometimes communicated to the hands of the milkers, which excite a good deal of uneasiness in the parts affected, but are never accompanied with fever. They often leave ulcers, that do not heal readily, both in the cow and in the human subject ; but none of these sores preserve the person from the contagion of the small-pox.

There is another kind of pustule, however, to which the teats of cows are liable, which assumes a very different appearance, and is produced by a different cause from any of those that I have mentioned ; the fluid of this pustule, when introduced into the human constitution, occasions a disease, that renders the person ever afterwards safe from

an attack of small-pox. This pustule has been denominated the Cow-pox, and it seems to be produced in the following manner.

In the spring, after a severe winter, horses often become affected with a disease in the heels, which farriers call the GREASE.

It appears at the roots of the hairs, in the form of small vesicles, containing an acrid fluid, which bursts out when the pustules are compressed in rubbing down the horse's legs.

At this time the horse is evidently hot and feverish, and if any of the matter is applied to an excoriated part of the fingers or hands of the grooms, sores
are

are produced, which in their turn render them feverish also. These sores do not heal readily, and often remain open for several weeks.

If a person who is thus affected, or who has any of the infectious matter on his fingers, milks the cows, as in extensive dairies is frequently done, pustules of a particular appearance are soon observed on their teats.

These pustules are at first of a pale blue or livid colour, with a depression in their centre, and surrounded with an erysipelatous inflammation. They contain a transparent watery fluid, and the parts in their immediate vicinity become hard and inflamed. If care is not taken to prevent them from being rubbed, they
burst

burst, and give rise to a foul deep-eating ulcer, which is long of healing. Sometimes the cow appears to be sick, and gives less milk than usual; but this is not a frequent occurrence.

If at this time any of the matter of the pustule or sore touches the milkers, when the skin has been previously scratched or rubbed off, pustules similar to those on the teat of the cow are produced in the course of a few days.

At first, small inflamed spots appear on the wrists, hands, and joints of the fingers. These soon become pustules, which fill with a transparent watery fluid, and continue to increase for several days. On the fifth or sixth day from the commencement of the pustules, they are
found

found to contain a quantity of a bluish fluid ; are of a circular form ; depressed in their centre, and elevated at their edges. Soon afterwards, their bases are surrounded with an inflamed ring or areola, which, in the space of a day or two, is sometimes two inches in diameter.

On the seventh or eighth day, symptoms of absorption take place ; tumours appear in the glands of the arm-pit ; the pulse becomes quick ; the patient complains of sickness, anxiety, oppression, and frequent changes from heat to cold ; sometimes, although rarely, he is even delirious.

These symptoms are not always equally violent, but they continue in a certain degree for one, two, or three days ;
and

and when they recede, are followed by ulcerated sores on the parts, very similar to those on the cow from which the infection was received.

It must be observed, however, that no pustulous eruption on the skin has ever been known in Cow-pox to follow the feverish symptoms, as in the Small-pox, if it be not on the spot at which the infection is communicated. This accounts for pustules appearing occasionally on the nose, lips, eye-lids, and other parts where the skin is extremely thin. They arise from the patient carelessly rubbing them with the infected fingers*.

“ Thus,

* See JENNER'S Inquiry into the Causes and Effects of the Variolæ Vaccinæ, p. 5.

“ Thus, the disease makes its progress from the horse to the nipple of the cow, and from the cow to the dairy-maid*.”

When a person has gone through this disease, he is ever afterwards secure from the infection of the Small-pox.

In support of the opinion, that the matter of grease in horses produces the Cow-pox, when applied to the teat of the cow, Dr JENNER has mentioned a circumstance which is still more remarkable, That the matter of grease itself occasions a disease, when the human body is inoculated with it, which prevents the
person

* See JENNER'S Inquiry, &c. p. 6.

person from being afterwards susceptible of the Small-pox contagion*.

Dr JENNER, indeed, relates the history of two cases, which seem to invalidate his own theory; but the difference of the event in these cases can be accounted for, on the supposition, that the matter of greafe, with which the persons were first infected, was sufficiently acrid to produce an eruption, but had lost its specific anti-variolous quality, as in various circumstances happens even with the vaccine matter itself.

Since the publication of these important facts, many experiments have been
made

* See JENNER, Case of Thomas Pearce, p. 27.
and of John Baker, p. 36.

made, both in Great Britain and on the Continent, for the purpose of ascertaining, whether the Cow-pox was really produced by the matter of grease applied to the udders of cows, as asserted by Dr JENNER. Experiments on this subject have been made by Dr WOODVILLE, Mr SIMMONS, and Mr COLEMAN*, all of which seem to refute Dr JENNER'S opinion; but, in the month of October 1801, Dr LOY of Whitby in Yorkshire, published a set of experiments, which, as they appear to have been carefully conducted, and to be accurately and faithfully described, must, in the opinion of every unprejudiced inquirer,

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* See Reports of a Series of Inoculations for the Variolæ Vaccinæ, by W. WOODVILLE, p. 7. See also Mr SIMMONS' Experiments, and Dr PEARSON'S Inquiry, p. 83.

rer, not only prove, that Dr JENNER was right in his conjectures, but would even go farther, and shew, that a person who has been infected with the matter of greafe, is equally incapable of receiving the Small-pox contagion, as if he had had the genuine Cow-pox. Indeed, from the description which Dr LOY gives of the pustule produced by inoculating with the matter of greafe, one is induced to consider it as the same in every circumstance with the genuine Cow-pox*.

Dr LOY has also pointed out a probable reason for the result of his experiments being different from the account
given

* See LOY, Account of some Experiments on the Origin of the Cow-pox, p. 20.—26.

given of fimilar trials by Dr WOODVILLE, Mr COLEMAN, and Mr SIMMONS, namely, that he employed the matter of greafe taken from a horfe on the feventh day from the appearance of the eruption, and at the very time when the animal laboured under a confiderable degree of fever.

1. Dr LOY obferved, That the matter of greafe taken at this time, produced a difeafe on the teats of cows, fimilar in every refpect to the Cow-pox.

2. That matter taken from the cows infected in this manner, and introduced into the human fubject, produced a difeafe which preferved the patient from the contagion of Small-pox.

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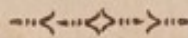
3. That

3. That a person inoculated with matter produced in cows in this manner, received the genuine Cow-pox from it, and passed regularly through the disease.

The confirmation of these facts would be a matter of much importance in the history of the Cow-pox, as it would point out a method of procuring genuine active matter, should that which is now in use fail, in those countries where the casual Cow-pox, as affecting cows, is unknown.

It must, however, be acknowledged, that the experiments hitherto made on this curious and interesting point, are not so numerous as might be wished, from the difficulty of procuring the genuine

nuine matter of greafe ; as it is fuppo-
fed, that the constitutional affection in
the human fubject is produced by that
matter only which is taken from the
horfe during the eruptive fever when he
firft becomes affected with the greafe,
which is faid to endure only for a very
fhort period. But there are ftrong grounds
for thinking that Dr JENNER'S opinion
will ultimately appear to be well found-
ed..

CHAPTER II.**OF THE INOCULATED COW-POX.****SECTION I.**

Of the Method of Procuring the Virus of Cow-Pox, and of preserving it for Use.

IN propagating the Cow-pox by inoculation, the matter must be taken at a certain stage of the pustule, otherwise a spurious disease may be produced, that does not preserve the constitution from Small-pox, and yet may readily be mistaken for the genuine Cow-pox, by those who are not accurately acquainted with the appearances of this disease.

To

To guard practitioners, and the public, therefore, against accidents of this kind, I shall mention the manner of obtaining and preserving the proper vaccine virus; and, in a subsequent section, shall point out the sources of that matter from which the spurious disease originates.

It ought to be held as an invariable rule, that Cow-pox matter should be taken from a pustule on one of the days between the fifth and ninth inclusive from the inoculation; for we commonly fail in producing the genuine disease, if the matter be not thin and limpid; but after the ninth day it usually becomes thick and purulent, and it cannot often be procured sooner than the fifth.

The

The genuine vaccine disease has, no doubt, been produced by matter taken on the twelfth or even the fourteenth day from under the scab, but more frequently a spurious pustule is induced when the matter is taken in this manner, by which the practice is brought into discredit. There is, however, no necessity for using matter in this state; so that, although some have ventured to advise this measure, few who have had full opportunities of observing its effects will be inclined to make the attempt. I mention this with more confidence, as I know that Dr JENNER is decidedly of the same opinion; for he says, that the matter should be taken between the fifth and ninth days after inoculation, and at all events, never after the scab has begun
to

to form. This Dr JENNER inculcated to Dr TIERNEY, who has lately published an inaugural dissertation on the subject of Cow-pox*.

A Cow-pox pustule seems to be composed of a numerous assemblage of minute cells, which do not communicate with one another, each of them containing a small quantity of virus, so that a puncture made in one part of the pustule does not give vent to all the matter that it contains.

The quantity of matter in a pustule, appears, therefore, at first, to be small; but, if we make a number of punctures
in

* See TIERNEY, *Disputatio Medica de Variola Vaccina*, p. 29. Glasgow.

in it, more matter will ooze out in the space of half a minute, or a minute, than we could suppose it to contain*. It appears, however, that the virus first taken is strong, but when a large quantity is discharged, it becomes proportionally weaker.

If the inoculation is to be performed in the course of a few days, or if the matter is to be sent to a short distance only, it may be taken on a lancet, by making one or two punctures in the pustule, from which a sufficient quantity may be procured, and the pustule will not be
deprived

* This account of the structure of a Cow-pox pustule was, so far as I know, first given in a letter published by Dr CAPPE of York, in the York Herald about two years ago, and it seems to be accurate.

deprived of virus for after inoculations. A piece of tinfoil, gold-beaters leaf, or moistened bladder, should then be wrapped round the lancet, to prevent the matter from being injured by exposure to the air.

But when we wish to send the virus to a distance, or to preserve it in an active state for a longer period, various means may be employed for the purpose. Two or three punctures being made in the most turgid part of the pustule, a good deal of the fluid which it contains will ooze out. This being collected on two thin plates of glass, each about an inch square, the two pieces should be laid close together when the matter is yet fluid, by which, when the ferous part of it has evaporated, the plates
of

of glafs will be agglutinated to each other.

On the pieces of glafs being laid together, they ſhould be covered with tin-foil or moiſtened bladder, to keep them more firmly in contact, and that they may be more conveniently carried in the pocket, or tranſmitted in a letter.

This I conſider as the eaſieſt and beſt method of excluding the air, and conſequently of preſerving the virus in its moſt active ſtate.

The virus may alſo be collected by ſoaking a piece of cotton-thread in it, and placing this between two plates of glafs, which ſhould be covered with moiſtened bladder or tin-foil; or the
thread

thread may be inclosed in a small phial well corked, or in a glass-tube, which should afterwards be sealed with wax.

Other methods have been advised for preserving Cow-pox virus in its active state ; one of these consists in having a small phial with a stopper, which reaches nearly to the bottom. The virus is spread on the stopper, and inclosed in the phial when fluid. This has been done, in the expectation that it will remain fluid for several weeks.

But, were this even to happen, it would evidently frustrate the purpose for which it is recommended ; as there is reason to think, that, if the virus continues fluid even for a few days, it will be decomposed by putrefaction, and thus its specific anti-variolous quality be destroyed.

In this, however, as in every other thing, the most simple methods are the best, as they answer every purpose we can wish for ; and I think it right to observe, that, if the matter be properly preserved in a dry place, and the inoculation performed with due care, it will seldom fail ; not more frequently than the matter of Small-pox, were it kept for the same time, and in the same manner.

When, therefore, the vaccine inoculation fails, it must proceed from the matter not being taken at a proper period ; or, if Dr WOODVILLE's opinion is well-founded, from some individuals not being susceptible of the Cow-pox contagion, which, he thinks, is the case with about one person in sixty.

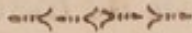
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But, for confirming this opinion, much observation is necessary. I rather think, that every child may be made to take the Cow-pox ; and therefore, that some fallacy has occurred in Dr WOODVILLE'S practice ; at least, I have never yet failed in communicating the disease, although in some instances it has been necessary to repeat the inoculation several times. In one case, it was not produced till the fifth insertion of the virus ; but the patient was only three weeks old when first inoculated, and in this circumstance Cow-pox bears much resemblance to Small-pox ; for it has been long known, that infants two or three weeks old do not receive the variolous contagion by inoculation so readily as those that are farther advanced.

I have even produced the disease with matter kept for two months; and Dr DE CARRO mentions, that he succeeded with virus six months after he received it from Dr PEARSON; although the virus was sent on a piece of cotton-thread, inclosed only in a letter, from London to Vienna.

But the best method of preserving Cow-pox matter, and of propagating the disease, is to inoculate a few patients only at one time, and afterwards from these to inoculate others, thus keeping up a constant succession and supply of matter. Were this generally done, less risk would be incurred of producing the spurious disease, in consequence of the matter being taken at improper stages of the pustules: and thus, patients would
very

very rarely be attacked with the Small-pox, in consequence of the Cow-pox having failed.



SECTION II.

Manner of performing the Inoculation.

THE manner of performing the inoculation is a matter of considerable importance ; as, on the one hand, we are apt to fail by making the puncture too superficial ; and, on the other, by making it too deep we may excite an unnecessary degree of inflammation. Indeed, the size of the pustule, and extent of the subsequent inflammation, depend, in a great measure, on the depth of the puncture,

or length of the incision in performing the operation.

The puncture at which the matter is to be inserted, should be made in the hollow that is perceptible in each arm, at the insertion of the deltoid muscle, nearly half way between the shoulder and the elbow.

A puncture in each arm, is better than inoculating only in one place, not merely from its rendering the success of the operation more certain, and thus preventing disappointment, but also from this consideration, that when matter is taken frequently from the same Cowpox pustule, at an early period of the disease, which must in most cases be done, such a degree of inflammation is

is often induced, as makes the pustule run on to suppuration suddenly, before the symptoms of a constitutional affection have appeared. An open sore is thus produced; the virus is discharged the moment it is formed, instead of being absorbed and taken into the system, as it ought to be; and the patient suffers all the uneasiness attending the operation, without obtaining any benefit from it. At least one pustule should, therefore, be left untouched; and the matter may be taken from the other to propagate the disease.

The pustule may also inflame, from the child rubbing it, if he is restless, and tearing off the crust, when it becomes itchy on the fifth or sixth day. From the risk of this taking place, there
appears

appears to be a necessity in many cases for tying up the hands of children, to prevent the pustule from being injured.

In performing the operation, the point of a clean lancet should be inserted beneath the scarf-skin, and carried so deep as to scratch and irritate the true skin.

If the virus is fluid, it requires no preparation; but if it is dry, the piece of glass or cotton on which it is preserved should be held in the steam of warm water for a few seconds, till the matter becomes of the consistence of paste. Of this a small portion should be taken on the point of the lancet, which is to be again inserted into the puncture, and
gently

gently rubbed upon the cutis, till it excites a flight appearance of blood.

In this part of the operation, the lancet should be held in such a direction, that the matter, if it is fluid, may run down towards the point.

Instead of inserting the matter by means of a puncture, some have recommended a scratch with the edge or shoulder of a lancet. In this case, the scratch should not exceed the eighth part of an inch in length, and it should not be carried to a greater depth than I have advised for the puncture, that is, to such a depth as will merely produce the appearance of blood from the vessels of the true skin. But I am rather inclined to think this method is liable to objection, from

from the irritation of a scratch being greater than that of a puncture ; so that suppuration sometimes takes place in the course of a few days, by which the virus is thrown out when the pustule breaks, and thus fails to produce the desired effect.

When the virus is preserved on thread, or on a piece of cloth, it is generally inserted by making a scratch or longitudinal cut, into which a portion of the thread or cloth is gently pressed, and kept in its place with adhesive plaster ; but as both the plaster and the scratch are apt to induce too much inflammation, and even suppuration, it answers better to hold that part of the cotton-thread that is to be used over the steam of warm water for half a minute or so, when, if it
is

is fully impregnated with virus, a sufficient quantity may be pressed out with the point of a lancet, and introduced in the manner I have advised.

SECTION III.

Of the Symptoms of the Inoculated Cow-pox.

ON the third day from the insertion of the virus, if the infection has taken place, a small inflamed circular spot will be observed, with the puncture in its centre. Even at this time, a slight swelling may be felt, and even seen on looking sideways at the part.

On

On the fourth day, the inflammation seems to have spread, and the swelling and hardness are evidently increased: the puncture, which hitherto appeared like a particle of hardened blood, begins to assume a yellowish brown colour, and forms into a crust.

On the fifth day, these appearances are somewhat increased; and on touching the tumour, a slight depression is discovered in its centre, owing to its edges being elevated by a small quantity of a transparent blue-coloured fluid that is secreted into it, and the inflammation which surrounded the base of the pustule has now, in a great measure, given place to the new-formed vesicle.

In most instances, as I have mentioned already, the virus may be taken at this time for the purpose of inoculation, and it is now in its most active state ; but, in some cases, it cannot be collected in sufficient quantity till the sixth or seventh day.

About this period, the swelling gradually increases, and the pustule contains a larger quantity of matter.

On the eighth day, although it sometimes happens on the sixth or seventh, a slight degree of inflammation appears near the base of the pustule, of a dark red colour, which lessens in brightness till it reaches the extremity of the swelling, where it is lost as it were in the surrounding skin. Within the circumference

ference of this circular inflammation or areola, the skin is hard and irritable, so that the least degree of pressure excites pain; and the glands in the arm-pits in some instances are stiff, swelled, and painful, but seldom in any considerable degree*. The patient becomes sick and restless; has sudden changes from heat to cold; his pulse is quick; he complains of thirst, and is apt to start on falling asleep.

But although these symptoms appear occasionally in a slight degree, they are commonly not so severe as to require
any

* Sometimes the pain and swelling in the axilla appear on the sixth day from the inoculation. See JENNER'S Inquiry, &c. p. 38.

any medical treatment, and seldom continue longer than twenty-four hours.

As soon as this feverish attack takes place, the pustule, which had been advancing slowly and regularly to maturity, increases more rapidly; the inflamed ring or areola with which it was surrounded, spreads in the course of a few hours to nearly double its former extent, and on the tenth day, or sometimes sooner, is an inch and a half, often two inches, in diameter. This inflammation or efflorescence, which seems to be of the erysipelatous kind, when it takes place to a sufficient extent, may be considered as a pretty certain test of the matter having been genuine, and of its having produced the real vaccine disease.

Some time between the eighth and tenth days, an eruption of small pimples, or rather a rash, now and then appears on different parts of the body, bearing a strong resemblance to that which is frequently observed before the eruption of the inoculated Small-pox.

This is most probably induced by the febrile irritation excited by the Cow-pox : it is of no farther consequence than that of affording an additional proof of the disease having entered the constitution ; and it requires no particular medical treatment.

On the eleventh day, the pustule has attained its full maturity ; and about this time, the virus contained in it is very similar to purulent matter ; it becomes
less

less fluid than it was before, and also loses much of its activity, as is found to be the case on its being used.

On the twelfth day, the inflammation is much diminished, leaving a slight degree of redness at the base of the pustule, and an inflamed ring round the circumference of the areola, while the intermediate space is nearly of the same colour with the sound skin.

This double ring, as it may be termed, is a distinctive mark of the real Cow-pox, provided it takes place after the symptoms that I have already enumerated; although, as it is not perceptible in every case, especially where the inflammation has been more severe than usual, the want of it does not

imply that the disease is of a spurious kind. The fluid in the pustule now begins to dry up, and the crust, which before was brown, becomes more extensive, and acquires a darker hue.

On the twelfth or thirteenth day, the external margin of the areola completely disappears; and on the fifteenth, scarcely a vestige of inflammation is perceived.

From the time of the matter becoming dry, the crust is perceived to be thicker and more elevated, and of a darker colour; and on the eighteenth or nineteenth day, it separates and falls off, when it is found to be semi-transparent, and leaves either a pit, somewhat larger than that of Small-pox, or a slightly ulcerated surface.

Lastly,

Lastly, it must be remembered, as I have observed already, that in the genuine Cow-pox, the inflammation does not commonly take place in any considerable degree till the third day ; from which time, till the eleventh day, it continues gradually to increase. Yet this is not the case universally : I have known inflammation follow the insertion of the virus immediately, and the pustule pass afterwards through all its stages in the most regular manner.

The time at which the puncture becomes inflamed is various, and seems to depend on one or other of the following circumstances.

1. On the age and habit of the patient.—In weakly infants, the inflammation

mation is not so rapid in its progress, and does not proceed to such a height as in adults, or in robust children. The sickness and febrile symptoms are commonly more severe in adults than in early infancy. In young children, indeed, they are often scarcely to be observed, if it be not by their making them more fretful for a few hours.

2. On the kind of matter that is used in the inoculation.—If the matter has been taken at a late period of the disease, when it approaches to purulency, it loses much of its specific activity, and often has no farther effect than that of exciting an immediate and slight inflammation, similar to what any irritating substance inserted beneath the cuticle might be supposed to induce;

duce; but this dies away on the third or fourth day from the inoculation. At other times the matter lies in a manner torpid till the fourth or fifth day, when the part inflames suddenly, and the disease runs its course regularly from that period in the usual manner.

3. On the season of the year.—In general, the Cow-pox, like the Small-pox, proceeds with greatest rapidity in warm weather; so that, in winter, the progress of the pustule is not so rapid as in summer.

It is necessary, therefore, that practitioners should be aware of these circumstances, that they may not be surpris'd at their occurrence; that they may guard

guard against them as much as possible, and not permit the errors they have committed to be ascribed to the failure of the Cow-pox.

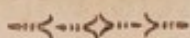
From all that has been said, it appears, that the indisposition arising from the inoculated Cow-pox is so slight, as scarcely to deserve the name of a disease; but, were much fever to take place from the concurrence of several unfavourable circumstances, such as the inoculation being performed during very hot weather, on a very robust patient, or during a fit of teething, there is much reason to believe, that it would readily yield to an antiphlogistic regimen and warm bathing. As it is, however, a point of much importance to know, that the virus has entered the constitution; and

and as the febrile symptoms which appear about the eighth day, form one of the strongest proofs that this has taken place ; we should not, in any instance, attempt to prevent their accession. When the irritation arising from the pustule is considerable, and excites much inflammation, a gentle laxative or two, of calomel, fenna, or jalap, seldom fails to remove it ; and dusting the inflamed parts with flour or hair-powder, is the best local application that can be made.

From scratching or other causes, the pustule is sometimes rubbed off, and a sore is formed, which, if it is not checked in its progress, will, in bad habits of body, occasionally spread in different directions, as frequently happens in Small-pox. Whenever the pustule inflames too
much

much, and afterwards ulcerates, if it does not, in the course of a few days, yield to the mildest dressings, such as simple ointment, the fore should be sprinkled every second day with calcined alum in fine powder, by which it is commonly cured.

But this is seldom necessary. Excepting in a few instances, I have not found any but the most simple dressings wanted.



SECTION IV.

*Means of distinguishing the Genuine from the
Spurious Cow-pox.*

AS the spurious Cow-pox is in many circumstances similar to that which I have termed the genuine disease, it is an object of the greatest importance to be able to distinguish the one from the other; else practitioners, as well as patients, may frequently be deceived and disappointed, by which means the practice of inoculating the Cow-pox will fall into discredit.

The genuine Cow-pox is, in some circumstances, indeed, so different from
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the spurious, that no one who has examined its progress with attention from the period of inoculation, till its termination in a brownish scab, can afterwards mistake the one for the other. But those who are not aware of the relation which the different stages of the Cow-pox bear to one another, and who have even inoculated with matter which they believed to be genuine, are very apt to be deceived: Being led to expect that the genuine Cow-pox must take place, and not attending to the progress of the symptoms with sufficient care, they are thus induced to persevere in propagating a spurious disease.

There is reason to think that this has sometimes happened; but even the possibility of such a misfortune points out the necessity of visiting the patient frequently

quently from the time of the inoculation, especially from the third to the twelfth day.

For we ought to consider not only the danger of individuals taking the Small-pox who have been inoculated with a spurious disease, but also that the matter taken from a case of this kind, may be spread extensively, and thus do infinite harm.

Hence, it becomes a matter of much moment to have clear and established rules for distinguishing the genuine from the spurious Cow-pox.

As the spurious Cow-pox appears under various forms, I shall mention all of them that in my opinion can be mistaken for the genuine disease.

1. When the matter for inoculation has been taken from the spurious Cowpox, or from a genuine pustule, at a late period of the disease when it has acquired the consistence of pus, the inflammation arising from the puncture, is apt to take place early, even in the course of a few hours, and next day the pimple is as far advanced as the genuine Cowpox would be on the fourth day from the inoculation.

The inflammation continues to increase rapidly ; and, on the fourth day, it has an irregular inflamed base ; the pustule is of a conical shape, with no depression in its centre, and in general it is filled with purulent matter, which is discharged on this or the following day, when

when it heals like a common pimple or small phlegmon.

2. When the virus of the genuine Cow-pox is long kept without proper care, and, in some cases, where the inoculation is performed with a solution of the scab or crust of a Cow-pox vesicle in warm water, a spurious pustule is sometimes produced.

In this variety of the spurious as well as in the genuine Cow-pox, the inflammation is scarcely perceptible till the third day. Even then it increases but very slowly; and on the seventh or eighth, it is not farther advanced than the genuine disease would have been on the fourth; when, instead of proceeding farther, either to suppuration or the formation of

proper virus, it gradually dies away; and on the ninth or tenth day, scarce a vestige of it is perceived.

3. Another variety of the spurious Cow-pox, is produced by inoculating with genuine matter preserved on a rusty lancet; in which case, the puncture becomes much inflamed in the course of the second day; the inflammation increases rapidly till the fifth or sixth, when the pustule contains a fluid of the consistence of pus, and thicker than genuine vaccine matter.

A double areola begins to form on the sixth or seventh day; but it is not so regular in its shape as that of the genuine Cow-pox, and the pustule has none of
the

the characteristic marks that distinguish the genuine from the spurious disease.

The fluid contained in it, instead of being thin, is viscid, yellow, and opaque; the pustule, instead of being depressed in the centre, or round, or oval, or well defined, is elevated in its centre, irregular in its shape, and ragged in its edges.

If matter is taken from this pustule, some of those that are inoculated with it may pass through the real disease; but the greater number will either not be infected, or will take the spurious Cow-pox, from the predominance of purulent matter in the virus with which they were inoculated.

This

This variety of the spurious Cow-pox, is also exemplified in the pustules of those who have at some former period passed through the Small-pox, or the genuine Cow-pox. The double areola in this case appears on the sixth or seventh day, instead of the eleventh or twelfth, as happens in the genuine Cow-pox. As this is a point of much practical importance, a plate is annexed, to shew the appearance of this variety of the spurious Cow-pox, and to contrast it with the genuine disease*.

4. I have observed another variety of spurious Cow-pox, which is very similar to the real disease, but does not secure the constitution from the Small-pox. It is produced

* See Plate II.

produced by the scab or head of a genuine Cow-pox pustule being rubbed off, as I have mentioned already, on the fifth or sixth day from the inoculation; when the vaccine virus escapes as soon as it is formed, and the patient or attendants not being apprized of the necessity of preserving the pustule entire, if the parts are itchy or uneasy, the scab is rubbed off again and again, by which such a degree of inflammation is induced, as completely defeats the intention of the inoculator.

An areola is no doubt formed, but it is very different from the areola in the genuine disease: Its edges are irregular and jagged, and terminate abruptly, instead of shading gradually into the appearance of the surrounding skin.

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The pustule frequently breaks, discharges purulent matter, and fills again; and lastly, the scab which forms on it is thin, and of a dirty-yellowish colour; while that which follows the real Cow-pox, is of a dark brown colour, somewhat transparent, and of considerable thickness.

All who have had sufficient experience in inoculating for the Cow-pox know, that there is no one certain criterion, applicable to every case, by which it can be ascertained, that the disease has pervaded the constitution; and it is also known, that the surest way of judging of this, is by minute attention to the progress of the pustule from its commencement, and being satisfied, that all the principal marks of the genuine Cow-pox have appeared.

There

There is also reason to think, that the matter should be allowed to remain in the pustule, that it may be absorbed and taken into the constitution; as I am of opinion, from the result of all the experience that I have had, that the febrile paroxysm alone which is generally perceptible about the seventh or eighth day, is not a sufficient test that the disease has taken place, unless it is followed by a distinct and well-formed areola. Symptoms of fever may arise from teething and other causes; and, as I have mentioned already, that when a Cow-pox pustule is frequently robbed of the matter which it contains previous to the eighth day from the inoculation, although the inflammation round the pustule increases to a considerable extent, the areola in these cases is sometimes irregular, and not accurately defined. Whenever there

is

is reason to suspect, from this or from any other cause, that the Cow-pox has not taken place, another inoculation should be advised, and repeated from time to time till the genuine vaccine disease is produced, by which alone the patient can be made safe.

Some varieties even of the genuine Cow-pox may be mistaken for a spurious disease.

Thus I have, in a few instances, observed, when matter was used that had been kept for a considerable time, no inflammation appeared at the puncture till the seventh or eighth day, when the parts became red, and the disease ran its ordinary course, as if the inoculation had been performed on one of these

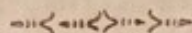
these days. Mr RING also mentions two cases of this kind, in one of which, the pustule did not form till the fifteenth, in another, not till the sixteenth day from the inoculation ; and yet in both the genuine disease was produced *. I have also met with an instance of the same kind.

In other instances, from causes with which we are not acquainted, the puncture does not inflame, and concluding that the inoculation has failed, we repeat it, when, in the course of a day or two, the first puncture begins to inflame, and on the ninth or tenth day from the first insertion of the matter, is as far advanced as it ought to be.

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* A Treatise on the Cow-pox, by JOHN RING.



SECTION V.

*Means of ascertaining, whether a Patient has
passed through the Genuine Cow-pox.]*

IN judging from my own experience, as well as from conversation and correspondence with others, and the perusal of the best books on the subject, my opinion is, that when the Cow-pox runs regularly through the stages that I have stated, it never fails to preserve the patient from the contagion of Small-pox. But it must be confessed, that some patients have been seized with the natural Small-pox, or have received

ceived the infection by inoculation, who, in the opinion of their medical attendants, had undergone the genuine vaccine disease.

This failure cannot fairly be charged to the Cow-pox, but to inattention on the part of the inoculator. The Cow-pox is comparatively so much milder than the Small-pox, that many practitioners think they have done enough if they inoculate their patient, and visit him once or twice during the progress of the disease.

Every patient should, if possible, be seen at least once in two days, otherwise mistakes will occur, the practice will fall into disgrace, and many be

thereby deprived of the advantages that would result from it.

It has sometimes also happened, even where causes of doubt have taken place, that practitioners, from inadvertence, or false delicacy, or pride, very injurious to all concerned, have not declared their suspicions as they ought to have done, but have rather concealed their doubts, till some of their patients, in this state of uncertainty, have been seized with the natural Small-pox, by which an outcry has been raised against the Cow-pox.

In every case of this kind, in which there is reason to suspect, that the Cow-pox has not taken place, the inoculation should be repeated immediately with fluid matter ; and if the appearances that
have

have been already described are not produced, we may conclude, with much probability, that the patient has previously gone through the genuine Cow-pox.

Or, if the patient will not submit to a second inoculation, he and his friends should be warned of the danger, and that he should not trust to the first as a preservative from the Small-pox.

I have already had occasion to state, that there is no one certain test of a patient having passed through the genuine Cow-pox; and that it is only by the most minute attention to every circumstance and stage of the disease, that this can be known to have taken place.

For the removal of this difficulty in

ascertaining whether a patient has undergone the genuine Cow-pox or not, some have proposed what has been called the double inoculation. It has long been known in Small-pox, that if the same individual is inoculated with variolous matter at different times, until the fever arising from the first puncture takes place, all the punctures arrive at the same state of maturity nearly at the same time ; with this difference only, that the pustules produced by the subsequent punctures are smaller than the first, and proportionally smaller than one another, according to the lateness of the period at which the inoculation is performed.

This experiment has been frequently repeated by different practitioners with the matter of Cow-pox, and the result
has

has been uniformly the same *. By inoculating on the fifth day from the first operation, the areola on both is observed to be nearly in the same state on the ninth day, varying only in this, that the areola of the second puncture is not just so large as that of the first.

When we meet with this it may be reckoned a pretty certain test of the virus having entered the constitution ; but as fever, indicating a constitutional affection, also takes place in the spurious Cow-pox, little advantage is gained from this test. On the other hand, the failure of the second or third puncture is

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* See WOODVILLE'S Reports of a Series of Inoculations, p. 144., and BRYCE'S Practical Observations on the Inoculation of Cow-pox, p. 173.

no proof that the patient has not received the genuine vaccine disease by the first, as those punctures will at least as frequently fail to produce pustules, as if the patient had not been inoculated before. Besides, many patients would probably object to a second operation; and in the course of much business, it would be extremely inconvenient to the practitioner. It happens fortunately, therefore, that this kind of test is not necessary with those who are in the practice of the vaccine inoculation; none of whom, if they duly attend to the different stages of the disease, can ever hesitate to say whether or not the infection has taken place.

When, either from inadvertence on the part of the practitioner, or from any
other

other cause, it is not with certainty known whether the genuine vaccine disease has been produced, the operation should either be repeated, or the patient should be inoculated with the matter of Small-pox, by which alone complete certainty can be obtained; and as the patient, if he has passed through the genuine Cow-pox, will not be susceptible of the Small-pox, no injury will be done by this inoculation.

As it is sometimes of importance to know with certainty, that the patient has passed through the genuine Cow-pox, by subjecting him to the most certain test, that of inoculating him with the Small-pox, I think it right to state the appearances of the Small-pox puncture, when the constitution is armed
against

against the infection, by having previously passed through the vaccine disease.

They may be distinctly perceived in three varieties.

1. In the first of these, a few hours after the variolous matter is inserted, the puncture inflames, and continues nearly in the same state for eight, nine, or ten days, the redness never varying much, or extending over a greater space than about the eighth part of an inch in diameter.

2. In the second, the puncture inflames soon after the variolous matter is inserted, and very early produces a pustule containing matter, which pustule recedes suddenly about the sixth or seventh day; and

and in this case may be reckoned a certain test of the patient having been previously affected with Cow-pox.

3. The last and most important variety, is that in which the pustule is inflamed on the day after inoculation, and continues to increase regularly till the tenth or eleventh day, when it is at its height, and when from the foreness of the part the patient becomes sick, and is sometimes affected with startings similar to those that precede convulsions. In this case, the inflammation is commonly of the size of a half-crown piece, but is of a darker colour than in Small-pox, and has not so much erysipelatous redness as the Cow-pox. The pustule is of a livid colour; on being punctured, it rarely gives out any matter; and where
it

it contains a fluid, this does not readily produce any marked disease on being used in inoculation.

The inflammation begins to recede about the eleventh day; and on the fourteenth or fifteenth, is scarcely perceptible, leaving, in the place of the pustule, a brownish scab, similar to that which remains where the inoculated Small-pox has failed.

This variety, which is not uncommon, is more like the genuine Small-pox than any of the others; but it differs essentially from Small-pox in the following circumstances. It is never accompanied with any eruption in other parts of the body; the pustule does not follow the same regular progress with that of the
Small-

Small-pox ; and matter taken from it does not so readily propagate the Small-pox, as the virus does which is taken from a patient who is labouring under the ordinary form of the disease.

It appears, therefore, in all cases of doubt, to be a safe precaution, either to repeat the vaccine inoculation, or to inoculate the patient for the Small-pox.

SECTION VI.

Cases in which the Vaccine Inoculation should be deferred.

THE inoculated Cow-pox is so mild, that it has been communicated with safety to a woman within a few
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days of delivery, and to children in the earliest stages of infancy. Some indeed have asserted, that the vaccine inoculation may be performed with safety a few hours after birth, but it is undoubtedly better to defer it till the sixth, seventh, or eighth week.

While children are suffering severely in teething, particularly when they are liable to fits, it might bring the vaccine inoculation into discredit were it to be advised, as many might refer the symptoms produced by teething to the effects of the Cow-pox ; but the symptoms of this disease are so mild, that in all other circumstances of teething the inoculation may with safety be performed.

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There are some states of the body, which there is reason to suspect do not readily receive the vaccine disease, as is said to be the case with patients infected with itch, as well as with those who have been recently using much mercury or sulphur. A remarkable proof of the influence of sulphur in enabling the constitution to resist the infection of Cow-pox, is given in an inaugural dissertation lately published by Dr TIERNEY, which shews, that in such circumstances the vaccine inoculation should not be advised.

Dr JENNER was ordered by the Commander in Chief to inoculate such men of a regiment, at a considerable distance from London, as had not previously had the Small-pox. On his arrival at headquarters, he found most of the men were

ill with an inveterate itch, so that he declined inoculating them till they were cured of that disease. He therefore put them under a course of sulphur, and returned when he supposed they would be well. Thirty were inoculated with the vaccine virus, but not one of them took the disease. Dr JENNER concluded, I think with reason, that the failure arose from the constitutions of these men being charged with sulphur, because, when they were inoculated two or three weeks thereafter, they all took the genuine Cow-pox*.

Some practitioners have been averse to this inoculation in patients with scrofulous tumours or sores; but in this I think

* See TIERNEY Dissertat. &c. p. 46.

think they are wrong. Even in the worst stages of scrofula, no bad consequences ensue from the vaccine inoculation.

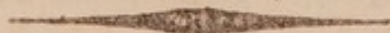
Others again have alleged, that diseases are rendered less violent during the progress of the Cow-pox, and that this is particularly the case with chincough. I cannot, however, give my support to this opinion from the result of my own experience; for although I have inoculated several with Cow-pox, who were at the time labouring under chincough, I never observed that it became less violent.

Those who oppose the vaccine inoculation say, that when a person has been exposed to the contagion of Small-pox previous to his being inoculated with

Cow-pox, and the two diseases meet, the Small-pox will be rendered more severe; but this is not supported by the experience of the most accurate observers. I have repeatedly seen the Small-pox eruption take place on the fifth and sixth day after the introduction of the vaccine virus; both diseases passed through their different stages; and, so far as I could judge, the Small-pox in such cases was as mild as usual.

I think it only necessary to observe farther on this part of the subject, that the vaccine inoculation may be advised at all ages, in every season of the year, and in whatever habit of body the patient is, excepting in the first six or eight weeks of infancy; in severe fits of teething; during the continuance of measles, scarlatina,

scarlatina, itch, and other eruptive diseases; in febrile and other hazardous complaints; or when the patient is using much sulphur or mercury.



SECTION VII.

Of the Advantages of the Cow-pox over the Small-pox.

BEFORE I quit this interesting subject, it may be proper to state more fully the reasons for preferring the vaccine to the Small-pox inoculation.

1. The inoculated Cow-pox has not hitherto proved fatal; whereas it is well known, that many die annually of the
inoculated,

inoculated Small-pox. It has been said indeed, that the Cow-pox has proved fatal in various instances ; but, on investigating all the circumstances of the cases that were advanced in proof of this assertion, they were uniformly found to originate in mistakes.

2. The Cow-pox has neither done harm to the constitution, nor has it been followed by any secondary disease. The few cases in which a superficial sore has remained on the arm, from the scab or crust being removed too soon by the restlessness of the patient, cannot be regarded as such. On the contrary, some, as I mentioned formerly, have asserted, that by inoculating with Cow-pox, the violence of different febrile symptoms, such as those which accompany measles, chin-cough

cough and teething, appears to be mitigated.

On the other hand, even when the Small-pox does not prove fatal, it often lays the foundation of other diseases that continue for life, and render the person miserable : it frequently induces inflammations, specks, and films on the eyes, rouses into action the latent scrofulous predisposition that otherwise might never have appeared ; and it often induces such debility, that the patient never recovers from it.

From these circumstances, many still entertain great prejudices against the variolous inoculation ; and as the contagion is continually kept up and propagated by those who inoculate, often at unfavourable

unfavourable seasons of the year, it has been supposed, that in Great Britain alone, not less than forty thousand are annually cut off by the Small-pox: So that it is at least doubtful, whether the introduction of inoculation has, on the whole, contributed to lessen the mortality of that disease.

3. The inoculated Cow-pox gives so little uneasiness, that even when we are watching for the expected attack of fever, it cannot always be distinguished, so that on this account parents may lay aside anxiety. But the degree of fever that may accompany Small-pox can never be foreseen; and the inoculation of a child on the breast, has often bad effects on the mother,
from

from her fears and anxiety for the consequences of the disease.

4. The Cow-pox can be propagated by inoculation only, and not like the Small-pox, through the medium of the atmosphere; so that a child on the breast, after being inoculated, may sleep with its nurse during the whole course of the disease, even though the latter never had the Small-pox. Nor will the nurse run any risk of contracting the Cow-pox, provided the matter of the pustule be not allowed to touch any part of her body where the skin is broken.

The contagion of the inoculated Small-pox, as far as we know, is equally powerful with that of the natural Small-pox; so that, on being communi-
cated

cated to any one person of a family, every individual in the same house, and ultimately in the neighbourhood, who has not had the Small-pox, must be inoculated, to escape the risk of taking it in the natural way; and this may frequently happen at an unfavourable season of the year, or at a time very inconvenient for the patient.

5. The Cow-pox may be communicated with safety at all seasons, in every climate, without changing the patient's diet, or in any way altering his manner of living.

The inoculated Small-pox, although comparatively much milder than the natural, cannot be propagated with safety at every season. In summer it is unsafe,

safe, as the heat of the season renders the disease more dangerous, and in winter the patient is apt to suffer from being exposed with that freedom to the open air, which is so essential to the success of the practice.

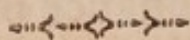
6. No preparation is necessary for the Cow-pox, if the patient be not habitually costive; in which case, an opening medicine, such as a dose of calomel or jalap, may be given two days before the inoculation, and repeated once or twice during the progress of the disease. Whereas, in the Small-pox, if the patient is of a full habit, he must be reduced by low diet and purgatives before the inoculation can with propriety be advised.

7. In the inoculated Cow-pox, no medicines need be given to obviate the symptoms peculiar to that disease, as they are so mild as scarcely to require attention. Whereas, in the inoculated Small-pox, epileptic fits, and other alarming symptoms very frequently take place.

8. The finest face is often injured by the Small-pox. Even when it is communicated by inoculation, pits are often produced over the whole surface, so as to disfigure the most beautiful features: Such pits are never produced by the Cow-pox.

9. The Cow-pox, as I have observed already, may be communicated with safety even in the earliest period of infancy,
and

and almost in every situation, if it be not during the continuance of a contagious or some other dangerous disease. Whereas, it is unsafe to inoculate a child with Small-pox till the fourth or fifth month ; so that, previous to this age, children are daily exposed to the danger of suffering by the natural Small-pox. This danger is obviated by the introduction of the Cow-pox, which, from this circumstance, as well as from many others, has acquired a decided preference to the inoculation of the Small-pox.



WERE it necessary for me to quote particular facts, from the experience of individuals, to corroborate what has been said in this Treatise; numerous proofs might be brought from many sources, particularly from the great body of evidence collected by Dr PEARSON in his Inquiry; from Mr RING's Treatise on the Cow-pox; from the London Medical Review, and from the Physical Journal; in all of which, much curious and useful information is contained on the subject of Cow-pox.

But in the present advanced state of our knowledge of all that relates to the
vaccine

vaccine disease, it will not be expected that many additional proofs should be given of its anti-variolous influence.

The following facts, however, are so important, and the authorities on which they rest, are so unquestionable, that I think it would be improper to withhold them.

1. About a year and half ago, the natural Small-pox appeared in a large village in Scotland, accompanied with symptoms of the most alarming kind. The surgeon of the place, considering this as a good opportunity to give a fair trial to the vaccine inoculation, and having prevailed on many to agree to it, the practice was immediately begun at the end of the village opposite to that in

which the Small-pox first made its appearance.

With great satisfaction he found, that none of his patients suffered any inconvenience from the Cow-pox. None of them took the Small-pox ; while scarcely any escaped the infection who had not previously had the disease, and a great proportion of those who were seized with it died.

2. The second fact to which I allude, is communicated in a letter from a clergyman in Yorkshire, who, with his own hand, had inoculated about 1500 in the course of one year. All of them did well. The Small-pox was in the country at the time. Those who had had the Cow-pox were mingled with
those

those in the Small-pox, and numbers of the former became nurfes to the latter, and yet none of them were infected with the Small-pox.

3. It is not eafy to conceive, that any better evidence than that which thofe inftances affords, can be given of the influence of the Cow-pox in making the human body unufceptible of the variolous contagion: But I am much pleafed to have it in my power to add another interefting fact, of the fame kind. I mention it on the authority of my father, Mr BENJAMIN BELL, furgeon in this city, who, in feveral journeys through England within thefe laft three years, and particularly when in Gloucefterfhire, made it his bufinefs to inquire minutely into the degree of credit given by practitioners
and

and the people of the country, to the anti-variolous power of the Cow-pox. He found them uniformly of opinion; that a person who has had the genuine Cow-pox, is ever afterwards unsusceptible of the contagion of Small-pox. He found also, that the facts on which this opinion rested, had been known for many years to the common people of Gloucestershire; nay, that the observation had been handed down from father to son even for three generations. In short, the result of his inquiries clearly proved, what some even now doubt, that the vaccine inoculation not only gives present security against the Small-pox, but that none in whom it has taken place can ever be affected with that disease: which, in the strongest manner, corroborates

roborates what Dr JENNER had said on the subject.

It is proper, also, to add, that at first my father was one of those who rather declined recommending the vaccine inoculation, till more extended practice, and farther knowledge of the anti-various powers of the disease, should warrant him to do so. From this circumstance, his opinion appears to me to have the greater weight.

Numerous instances of a similar kind, that have come under my own observation, might be mentioned; but I conceive it is unnecessary to dwell longer on this part of the subject, as every unprejudiced person, who attentively considers

fidens all that has been said of it, must be convinced, that those who have had the genuine Cow-pox, can never afterwards be infected with the Small-pox.

EX-

EXPLANATION

OF THE

P L A T E S.

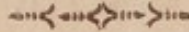


PLATE I.

I THINK it necessary to remark, that the figures represented in this plate were not all copied from the pustule of one individual, in the successive stages of the disease ; but such examples were selected from a number of patients whom I inoculated myself, as I conceived would exhibit each stage of the pustule in its most perfect state. I have taken care to
have

have those appearances most strongly marked, which take place in the greatest number of cases. This will account for the tints in the different figures not corresponding perfectly with each other, which would have been the case, had the pustule of one individual been taken as a specimen of every stage of the disease.

Fig. 1. Exhibits the appearance of the inoculated spot at the commencement of the third day, or forty-eight hours after the inoculation. See p. 47.

Fig. 2. Shews the Cow-pox pustule or vesicle on its first appearance, with the fluid contained in it, on the fifth day after the inoculation. See p. 48.

Fig.

Fig. 3. Exhibits the pustule on the eighth day, about which time the inflammation round its base begins to spread rapidly, the glands in the axilla begin to enlarge and harden, and symptoms of a constitutional affection to appear. See p. 49.

Fig. 4. Shews the pustule at its height on the tenth day, the inflammation and hardness of the neighbouring parts being now at their greatest extent. See p. 51.

Fig. 5. Exhibits the appearances on the eleventh day, the inflammation and hardness in the axilla, and of the neighbouring parts, beginning somewhat to recede. See p. 52.

Fig. 6. Exhibits the parts on the twelfth day from the inoculation, with the double areola in its most perfect state. See p. 53.

Fig. 7. In this figure, the scab or crust of the Cow-pox is represented on the fifteenth day, just before it begins to loosen and separate, which generally happens on the eighteenth or nineteenth day. See p. 54.

Fig. 8. Represents the appearance of the Cow-pox pustules, when the matter is introduced at three different times in the same person, in the immediate vicinity of each other. *a.* Shews the primary inoculation; *b.* the pustule produced by inoculating six days afterwards;

wards ; and *c.* that of the third inoculation on the eighth day. See an account of this, p. 78.

It may be proper to mention in this place, that, in a few instances, the Cow-pox pustule, like that of the Small-pox, varies a little in its progress ; for although, in a great proportion of cases, it proceeds in the manner I have stated ; yet in some it advances more slowly, in others with greater rapidity, so that in these instances the appearances delineated in this plate, must be somewhat different from what they commonly are on the days that have been mentioned. These occurrences, however, are so rare, that I did not think it necessary to state them in the description of the symptoms of the inoculated Cow-pox.

PLATE II.

IN this Plate are represented the appearances of the pustule produced by inoculating a person with vaccine matter who has already had the Cow-pox or Small-pox. I have repeatedly met with the same appearances in young children, who, to the best of my knowledge and belief, had not had either of these diseases; and I considered it as a species of the spurious Cow-pox, both because they afterwards had the genuine disease in its regular form, and also for the reasons which are stated in page 66.

Fig. 1.

Fig. 1. Represents the inflamed puncture at the beginning of the third day from the inoculation. A small quantity of fluid is seen at this time in the pustule, the inflammation is much more extensive and irregular, and the tint brighter than in the genuine Cow-pox. In short, the pustule in this figure is farther advanced than it is in the genuine Cow-pox on the eighth day. See Plate I. fig. 3.

Fig. 2. Represents the pustule on the fourth day, which corresponds to the vesicle of the genuine Cow-pox on the ninth day.

Fig. 3. Represents the appearance of this spurious pustule on the fifth day, when the fluid contained in it is of
the

the consistence and colour of purulent matter, and the pustule is covered with a yellowish crust or scab. The genuine Cow-pox pustule is not farther advanced on the tenth day. See Plate I. fig. 4.

Fig. 4. Represents the spurious pustule about the end of the sixth day. The inflammation is nearly at its height, and a double areola has begun to form.

Fig. 5. Shews the double areola more distinctly formed than in fig. 4., as seen in the spurious Cow-pox on the seventh day after inoculation; but in general it is less extensive, more irregular in its shape, and of a brighter red colour, than that of the genuine, in which the double areola rarely appears before the twelfth day. See Plate I. fig. 6.

Fig.

Fig. 6. Shews the appearance of the spurious pustule on the eighth day from the inoculation. The scab is of a darker colour than it ever is in the other; this figure may be considered as corresponding with the fourteenth or fifteenth day of the genuine Cow-pox. See Pl. I, fig. 7.

THE END.

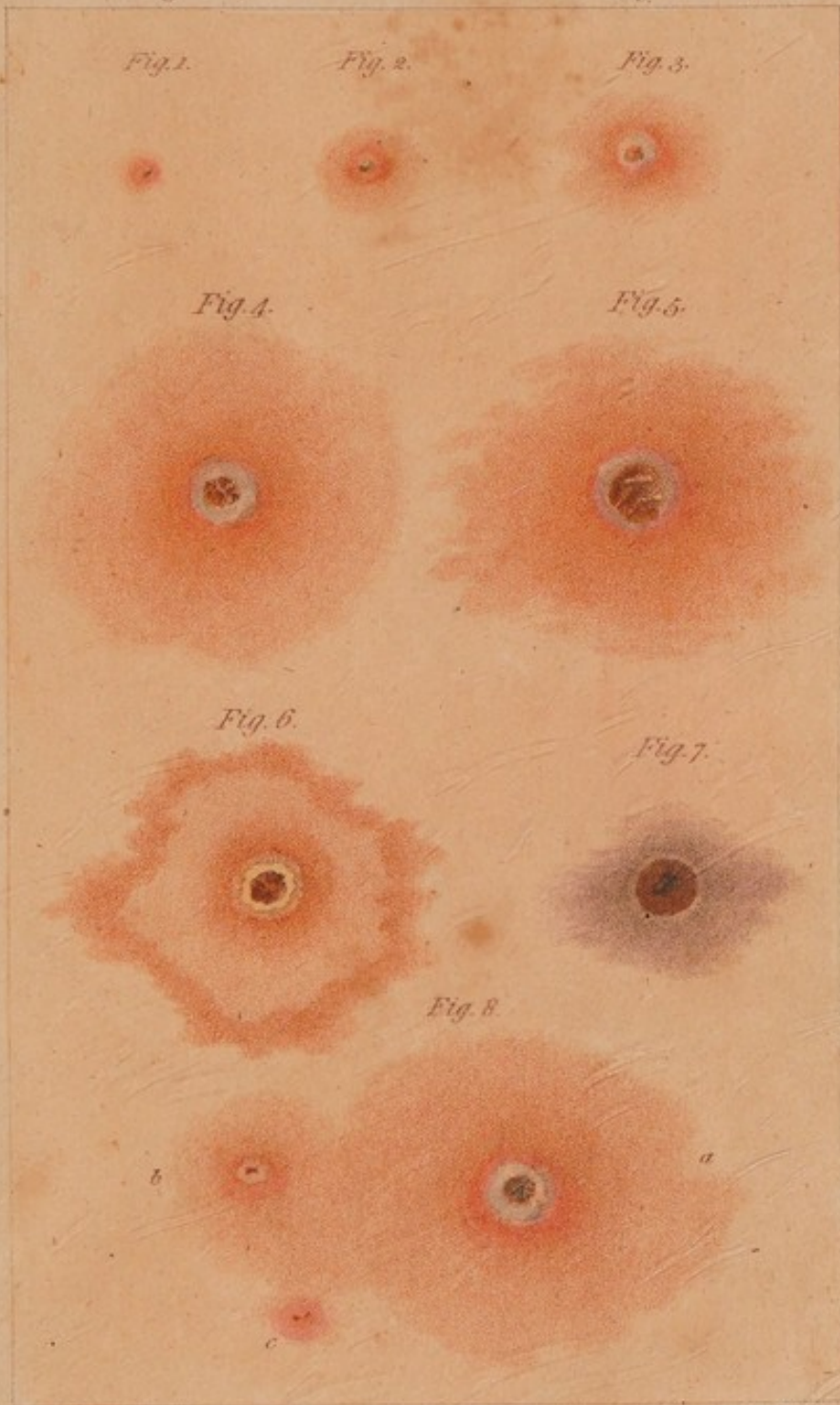
Fig. 6. Shows the appearance of the
 spurious ... on the eighth day from
 the inoculation. The ... is of a dark-
 er colour than it ever is in the other;
 this ... may be considered as corre-
 sponding with the fourth or fifth
 day of the genuine Cow-pox. See Pl. I.

fig. 7.

THE END.

PLATE I.

Progress of the genuine COW POX in their successive stages.



Drawn by G. Sander.

Engraved by J. Alcock.

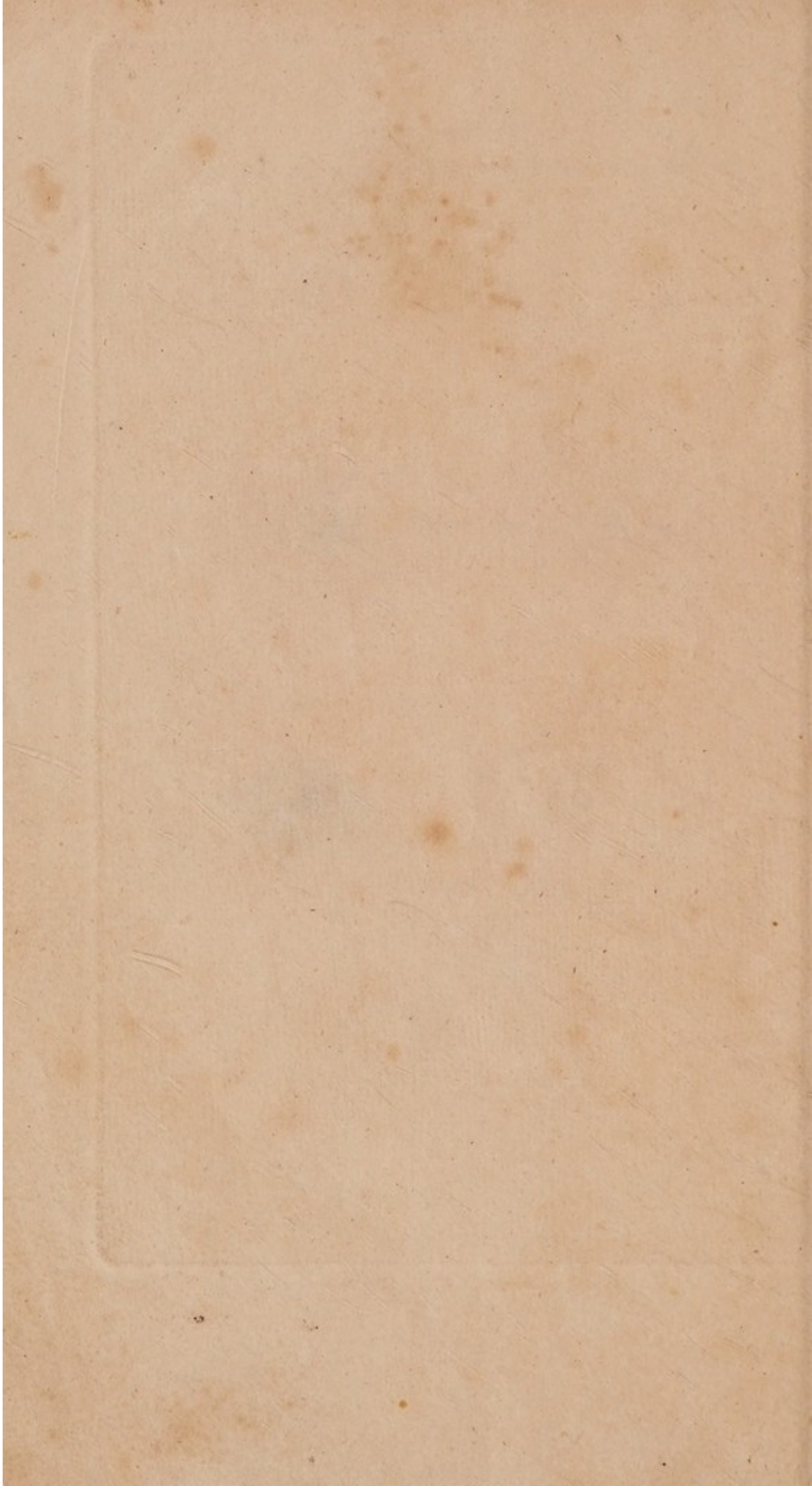


PLATE II.

Pustules of the furious COW POX.

Fig. 1.



Fig. 2.



Fig. 3.



Fig. 4.



Fig. 5.



Fig. 6.



Drawn by G. Sanders.

Eng^d by J. Stewart.



