

An inquiry into the laws of epidemics : with remarks on the plans lately proposed for exterminating the small-pox / by Joseph Adams.

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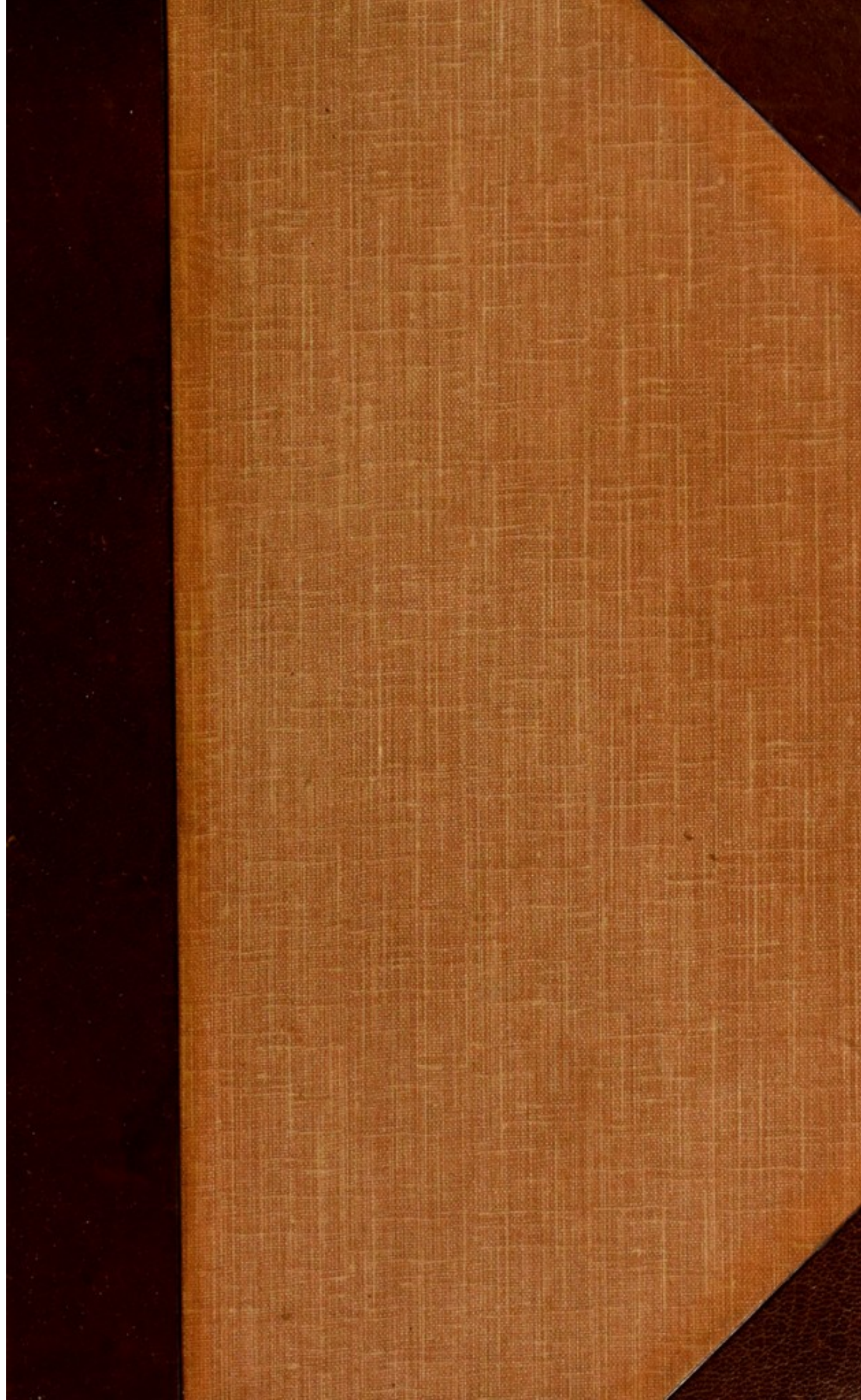
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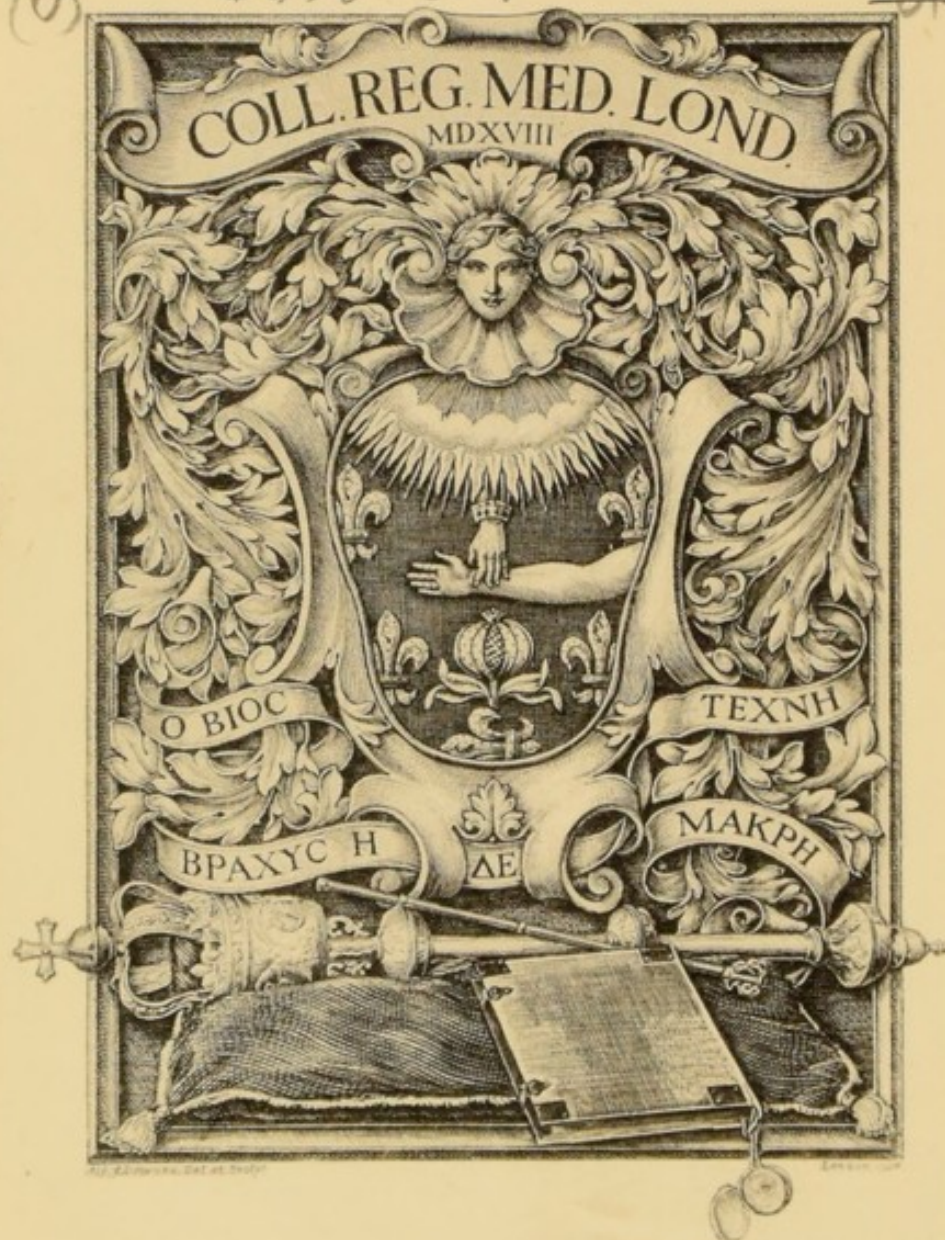
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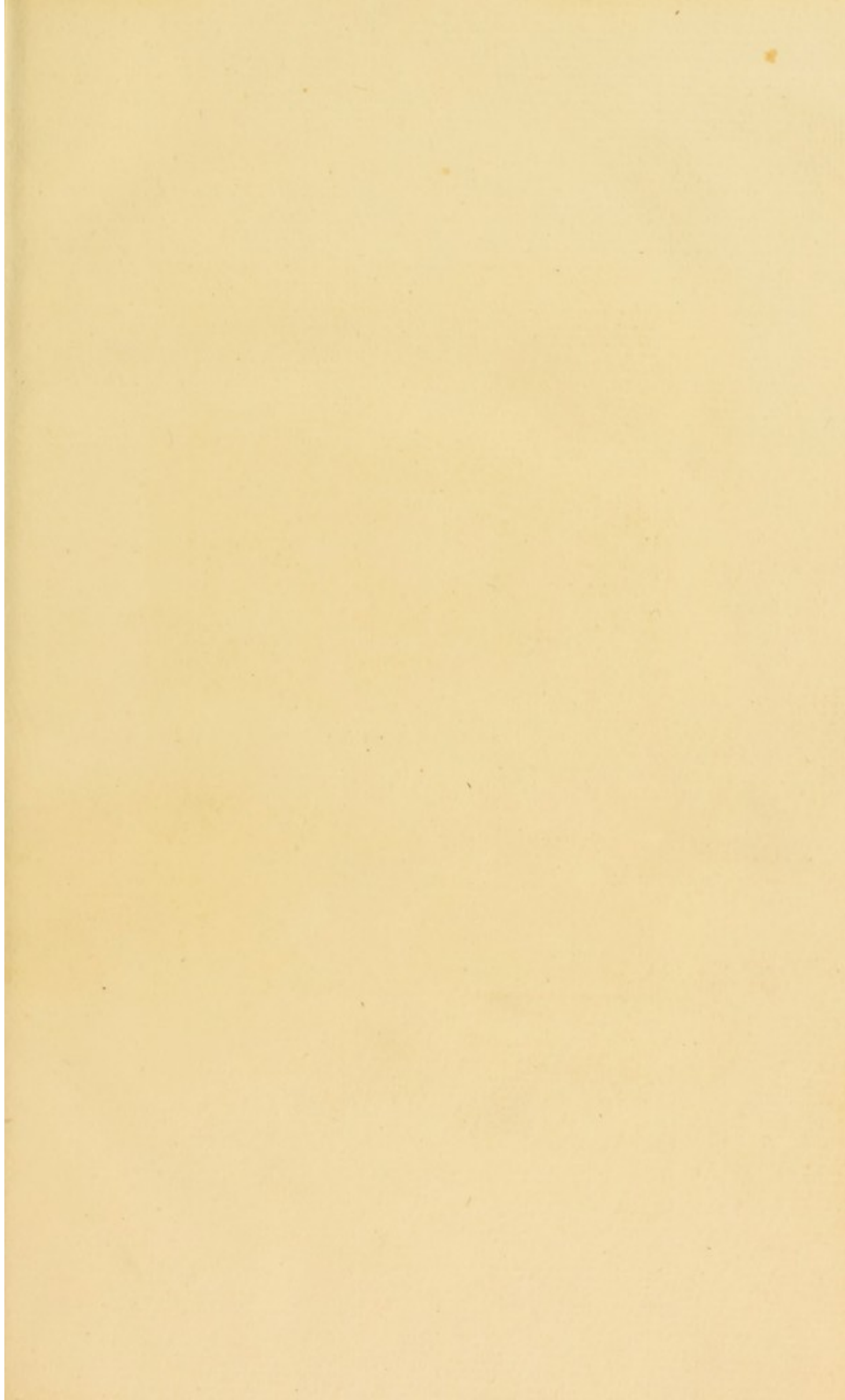
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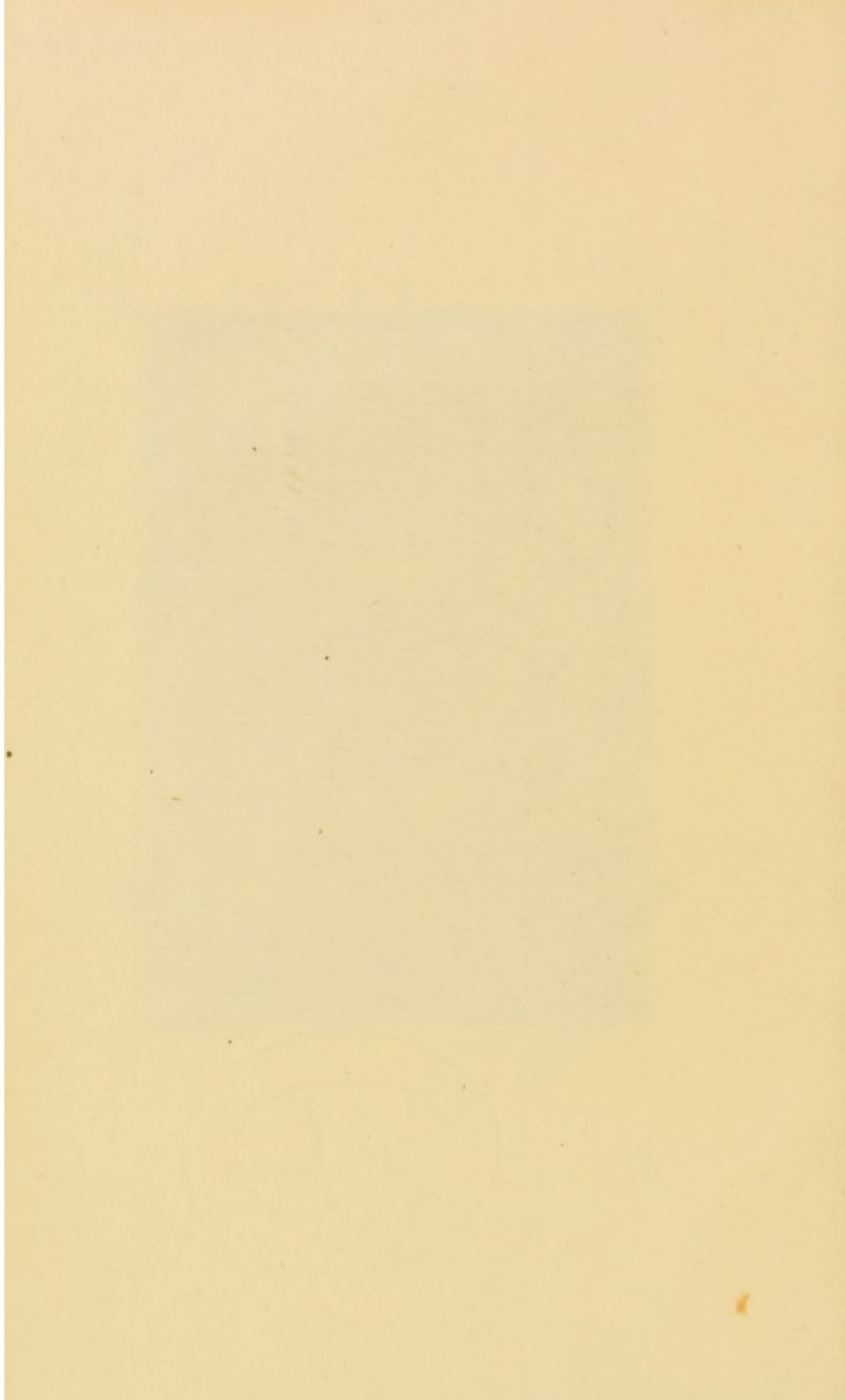
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AN
INQUIRY

INTO THE
LAWS OF EPIDEMICS;

WITH
REMARKS ON THE PLANS
LATELY PROPOSED FOR
EXTERMINATING THE SMALL-POX.

By JOSEPH ADAMS, M.D. F.L.S.
PHYSICIAN TO THE SMALL-POX AND INOCULATION HOSPITALS AND
TO THE NEW FINSBURY OR CENTRAL DISPENSARY.

Εἰ μὲν περὶ καινοῦ τινος πραγματος προτιθεται ὡ ἀνδρες Ἀθηναῖοι
λεγειν, ἐπισχων ἀν εἰς οἱ πλείστοι τῶν ἐσθωτῶν γνώμην ἀπεφηναντο·
εἰ μὲν ἤρεσκε τί μοι τῶν ἀπο τοῦτων ραθεντῶν, ἡσυχίαν ἀν ἦγον· εἰ δὲ
μὴ, τότε ἀν αὐτὸς ἐπειρωμένῃ γιγνώσκω λεγειν. ἐπειδὴ δὲ περὶ ὧν
πολλακίς εἰρηκασιν οὗτοι πρότερον, οὐν βαίνει καὶ νυνὶ σκοπεῖν, ἡγου-
μαι καὶ πρὸς ἀνάστασιν, εἰκότως ἀν συγγνώμης τυγχάνειν·

Demosth.

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TO
WILLIAM SMITH, Esq. M. P.

F. R. S.

AND GOVERNOR of the SMALL-POX HOSPITAL,

AS a Member of that legislative body in which only these important Questions can be duly discussed, as a Governor of that Institution which has furnished some of the practical Remarks contained in these sheets, but, most of all, in grateful recollection of the liberality and politeness experienced on so many occasions, this Work is inscribed by

His faithful

And obliged

Humble Servant,

THE AUTHOR.

TO

WILLIAM SMITH, Esq. M. P.

L. R. S.

Act Governor of the State of New York

AS a Member of that legislative body
in which only those important Questions
can be fully discussed, as a Governor of
that Institution which has furnished some
of the most valuable Remarks contained in this
work, but most of all in general terms
Section of the Liberty and Politics ex-
hibited on so many occasions, this Work
is presented by

The Author

And obliged

Thomas Stewart

THE AUTHOR

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CORRIGENDA.

Page 4, Line 6, after *to* add *the*.

28, 13, read *Plenus Cereris et Liberi*.

106, 23, for *Benton* read *Burton*.

123, 8, for *Gilders* read *Guelders*.

INTRODUCTION.

IT always carries a suspicious air when a writer addresses the public on a subject connected with his own profession. If he can catch their feelings by the relation of tales which seem to shock humanity, any weakness in argument, or even doubtfulness of facts, is too easily overlooked. The reverse of wrong, it is supposed, must be right; and nothing is talked of but getting rid of an evil, without reflecting whether we are producing a greater.

There is in England a very large order of the community, whose paternal or acquired wealth gives them leisure, whose minds are formed to a love of order, whose reading is extensive and well chosen, and who, by education or constitution, having resisted the temptations of ambition and power, are anxious only to promote the happiness of the world.

Professional writers, who address this class of readers, are careful to render their style easy, their arguments plausible; to keep every difficulty in the back ground, and bring forward some striking figures, the impression of which may be sufficiently powerful to remain, and be produced as often as the subject occurs.

It is easy to see where the advantage must be, when a man, of however moderate abilities, undertakes to explain any of the principles of his art to those whose pursuits have been different. If he is read, his success must be certain; for his readers will not be among the profession, who know all, and more than he has written, and who, if applied to for explanation, must either enter too largely on the subject for common conversation, or dismiss it with an answer too short to satisfy the inquirer. Hence it happens, that those who address the public on professional subjects, are always viewed with some suspicion by their brethren.

This, it is hoped, will be admitted as an apology, for having so long delayed to offer in print my opinion on a subject so immediately connected with my own engagements, and on which the public has a right to demand the result of my inquiries.

Another reason, was the difficulty of finding any thing to oppose. To defend small-pox inoculation, is only to repeat all that was said fifty years ago, and has been repeated ever since, till the last ten years. To admit that vaccination is a most important improvement, is equally superfluous. To say that this second improvement ought not by force to supersede the first, would only lead to those arguments by which small-pox inoculation was first defended; and to answer clamour and invective, requires a mind organized like those who use them.

During

During this uncertainty, it was with particular satisfaction that I perused a pamphlet* written with the best intentions, and with no less perspicuity and order. The value of the work was much heightened by the general view which it contains of contagion and the quarantine laws. It has often occurred to me, that whilst the public mind is so much engaged on the subject of small-pox, it might be possible to lead them to some rational and well directed inquiries concerning epidemics in general; a subject which has either been wholly overlooked, or treated without order and without discrimination. The learned author has conducted his inquiry, I doubt not, with perfect correctness, as far as it is connected with his own professional pursuits. On the medical part he has touched with such caution, as evidently shows his wish that the Faculty should enter upon it more minutely.

The work commences with a doubt, whether it would be consistent with British liberty, to restrain small-pox inoculation. To me these doubts have always appeared a matter of surprise. Had the question been concerning the possibility of enforcing a law to restrain inoculation, it might admit of a doubt, whether, like many others, it would not operate against the conscientious, without restraining the unprincipled or unfeeling; admitting, however, not only the power of the legislature to make, but also
to

* Letter to the Right Honourable Spencer Percival. — Hatchard, 1807.

to enforce such a law, should we not reflect before we condemn the conduct of the last half century? Instead of attending to this, for which we have authentic records without number, we are referred to examples, the nature or effects of which we cannot now ascertain, and are even in doubts as to diseases, for which the laws were enacted.

When we are told that the leprosy and plague are exterminated from among us, it becomes, at least, to inquire what these diseases are? Whether they are exterminated? And, if so, by what means? When these are ascertained, let us examine carefully why those prudent ancestors, who were so successful in exterminating these diseases, never attempted to apply the same means to the small-pox; or, if that is thought unnecessary, let us at least examine whether the laws of the diseases exterminated, appear to have been similar to those which are still suffered to remain.

The learned author shows us how necessary it is to be well informed on these subjects, by the errors into which he has inadvertently fallen. Leprosy, he tells us, is the elephantiasis of Ceylon; and the sweating sickness is the same as the plague. If he is right in these conjectures, there could be no difficulty in exterminating both. Elephantiasis is unknown in any climate north of Rome, and does not appear contagious even in those countries which give it birth. Sweating sickness is pronounced by every writer who can be depended on, not to have been contagious.

The

The worthy baronet expresses his surprise, that before the year 1604, no legislative means had been used to prevent the introduction of the plague. This will appear less remarkable, when we reflect, that from the dreadful plague 1349 to 1603, there had been no very severe visitation in London. The plagues of the intermediate years are ill defined, their fatality inconsiderable, and probably confined to the poor. The statute of James was made immediately after a plague which had destroyed more than 30,000 persons in and about London; the subsequent statutes were formed under different alarms. When the last visitation came upon the town in the year 1665, all the restrictions required by modern writers were called forth, and there is no reason to suppose they were not attended to. If it is too much to say that all these means increased the evil, it must at least be admitted that the number of deaths increased from the time that the orders were enforced.

In the month of July was issued the tremendous ordinance, that a red cross should be affixed to every infected house, with the inscription, "THE LORD HAVE MERCY UPON US." Notwithstanding this, "and though the people deserted the town, as if, to use the language of Dr. Hodges, London had gone out of itself;" yet, "in the month of August and September, (he adds) the contagion changed its slow progress. "Though in the month of September, (says Maitland) death rode triumphant, and part of October proved equally fatal; yet during

during the two succeeding months, the town was re-peopled with as much rapidity as it had been deserted ; “ and many (says Hodges) went into beds where persons had died, even before they were cold or cleaned from the stench of the disease.” Admitting that this picture may be highly charged, it cannot be disputed that the mortality increased in proportion as the restrictions were enforced, and subsided without any human contrivance. This is enough to show how little we are indebted to the interference of the legislature for the cessation of that dreadful malady.

“ A period, (continues the learned judge) of 132 years has now elapsed since the actual appearance of the plague in this nation ; but the continual intercourse with those countries whence it originated, and where it still exercises all its powers of devastation, has compelled the legislature of Britain to watch with ceaseless vigilance over the health of the people, and by all practicable means to prevent the introduction of an enemy, of which even the memory is so formidable.

“ No fewer than eight several acts of parliament have, from time to time, been framed to enforce and regulate the practice of quarantine.”

It would be absurd to question for a moment the intentions of the legislature, in framing their quarantine laws. But let those who are best acquainted with commercial concerns, decide whether we owe our exemption to any of these laws, or to the consolidating act of his present Majesty,

Nothing,

Nothing, however, can be more reasonable than for a lawyer to inquire, by what means leprosy seems gradually to have disappeared, or to have lost its terrors amongst us; nor why we should still submit to the horrors of small-pox. The motive is laudable, and large allowances should be made for the habit of judging by precedent, which is too readily transferred from one course of studies to another. And this is a further argument, if any were necessary, that medical men should on such occasions, endeavour to explain themselves to the public; or at least, show the manner in which such inquiries should be conducted.

One of the earliest divisions of disease, is into chronic and acute. Even this has been unattended to in the present inquiry, if it can be called such. Another, which brings us nearer to our purpose, is into endemic and epidemic. By the first, we understand diseases which are known only in certain places, often only in certain latitudes, where they are found in every season. By the second, those which occur only at certain seasons, or other changes in the atmosphere, of the nature of which we are unacquainted, or from contagion. The first order, for the most part, are chronic; the second, acute diseases.

Among the former may be reckoned almost all the tribe of diseases, which were once included under the general term of leprosy. At present, a truly accurate writer confines it to the *lepra græcorum*, a disease common in most climates; but if we may

may trust to Dr. Cullen, unknown in high northern latitudes. The elephantiasis of Aretæus, too common in all the southern regions, is happily now, and I believe always was, unknown in the north. Celsus speaks of even as far south as Italy, as *morbus pene ignotus*; and it was evidently unknown to the Salernian school. The Barbadoes leg, which from its resemblance to an elephant's foot, has been confounded with elephantiasis, is scarcely known but in tropical regions, and in them only in particular places. Scrofula, and the most common kind of cancer described in Great Britain, are almost confined to colder and more uncertain climates. The swelled throat is found in many, but chiefly mountainous countries. In these, however, its range is circumscribed; and solitary instances are to be met with in most other parts.

These diseases are mentioned, because though they seem all to depend on local circumstances, or to be truly endemic, yet some of them are considered as contagious. There is reason to believe none of them are; and it is certain that none of them are communicated with that readiness, which is universally attributed to small-pox. Their progress is also slow, which enables us to deliberate when they appear. Epidemics, on the contrary, are acute diseases, and run through their stages with such rapidity, that it is absolutely necessary we should be prepared to relieve the distressed; and if possible, to preserve the rest of the community. This can only be done by previous and accurate inquiries

inquiries concerning all that is known of the laws by which they are governed in their invasion, in the manner in which they spread, and the causes from which they cease.

CHAP. I.

ON EPIDEMICS, THE CONTAGIOUS PROPERTY OF
WHICH IS NOT ASCERTAINED.

CONTAGION is a term so frequently brought into use, and discussed with so much ease, that one might think its laws were to be ascertained with the same certainty as the solution of a mathematical problem. But in this, as in most other questions, those who are the best informed are sometimes the most in doubt. It will surprize many of my readers, to hear that Sydenham considered small-pox as a disease arising from certain unknown properties in the atmosphere, *unconnected with contagion*; and Cleghorn, who is considered among our standard authors, assures us, that the ague is not less contagious than the small-pox; for, continues he, those who are most among the sick, are soonest affected. Nor are these difficulties confined to our forefathers. Among the ablest practitioners of the present day it is disputed, whether the yellow fever of the West Indies and America, the influenza, and even the plague, are contagious.

Before we attempt to account for this contrariety in the opinions of honest and enlightened men, on a subject of all others the most interesting in this world, it is absolutely necessary that we should attend to the sources and laws of that vitiated atmosphere,

mosphere, which is known by its effects in producing the camp, the jail, the hospital, or ship fever.

Wherever men are congregated in numbers, if none of them are diseased, the only consequence appears to be a temporary inconvenience arising to each, from not having that supply of common air, which is as necessary for the lungs as food for the stomach. But if any illness exists, or as soon as illness is produced by their unnatural situation, a new kind of air is generated, which produces a fever called usually by the name of the place where the event has occurred, whether a camp, a ship, or poor house, jail, or hospital. Though this kind of air affects all who breathe it, yet such as are suddenly exposed, are influenced by it in a manner different from those by whom it has been gradually vitiated. To the latter it often proves a kind provision, to relieve them from a severer or more protracted misery. Under the name of fever an universal torpor is produced, a disinclination for food, an indifference to all external objects; and if no change takes place, the patient sinks peaceable into the arms of death.

But this is the case only with those children of poverty, who in times of distress cling closer to each other, to preserve and partake of their mutual warmth, the hearth no longer blazing, and each returning meal becoming more scanty or precarious!

When the air becomes more suddenly vitiated,
or

or when men in high health are suddenly exposed to this infectious atmosphere, the effects are proportionably violent. Such is often the case in an army, when the difficulties of a campaign, or the numbers wounded after an engagement, require a sudden and indiscriminate accumulation of the sick and wounded. Affalani informs us, that the Pyrenæan army, in the second year of the Republic, lost in the space of four months, ten thousand men, comprehending in the number, almost all the medical and other officers employed about the hospitals. The effects of exposure to such air, seems proportioned to the quantity of infectious matter contained, and the suddenness with which it is inhaled.

The following is part of Dr. Jackson's description of those who were suddenly exposed to this effluvia by washing the foul linen of the sick. "The persons (says he) employed in washing the shirts and blankets, notwithstanding every precaution was taken, were every one attacked with fever." "In those instances of recent disease, the attack was sudden; stupor, like intoxication or apoplexy, gave the first notice of approach." "Under these appearances death took place in thirty-six hours or less." The black affizes, as they are called, give the most striking instances of this stronger susceptibility, in proportion as the subject is suddenly exposed to the concentrated effluvia. On the 11th of May, 1750, the prisoners at the Old Bailey, were sufficiently in health to attend their trial;
yet

yet from the effluvia they brought with them, on the 13th died one magistrate, on the 14th the under sheriff, on the 17th one judge, and on the 19th and 20th each, nine different persons of the court.

By this difference between the effect produced on the prisoners, and on the court, it is evident that the character of the fever varies: and it seems hardly doubtful from this, and other events, that this variety depends on the suddenness with which a subject is first exposed to such an atmosphere. There is another circumstance, to which I must particularly call the attention of the reader. The prisoners, we have seen, were well enough to attend their trial. The gentlemen of the court died of the fever; we might therefore suppose, by what we know of certain contagions, that if the prisoners in their state were infectious, the gentlemen of the court must have been much more so, as it is well known that a person who dies of small-pox, has more contagion about him than one who has the disease more mildly. But there is every reason to believe, that those who died of the jail fever, though attended at their different houses by their families, proved infectious to none. This appears probable, not only because no mention is made of the disease spreading any further, but because we are expressly informed, that when three hundred persons who were in court at a black assizes in Oxford, suffered from a similar cause, "the disease went no further."

These facts are so striking, that probably the contagious

tagious property of fever from such an atmosphere would never have been suspected, if all infected by it had been circumstanced during their illness, like the individuals who composed the court. But if an inhabitant of a crowded tenement should be affected in this manner, the probability is, that all the atmosphere around him will become infectious; not entirely from the nature of his fever, but because, as we have before seen, sickness of any kind, where numbers are accumulated without proper ventilation, will generate that atmosphere which excites hospital, camp, prison, or poor-house fever. For this reason, I shall avoid as much as possible, confounding the fever with the cause that excites it, which last I shall distinguish by the term of infectious atmosphere.

CHAP. II.

OF THE MANNER IN WHICH DIFFERENT EPIDEMICS
SUPERSEDE EACH OTHER.

WHAT has been said, is sufficient to explain the general effect of that infectious atmosphere, which furrounds an accumulated number of sick. I must now call the reader's attention to a well known law, particularly enforced by those who have paid the most attention to epidemics, namely, that in proportion to the force of their invasion respectively, they supersede each other, and all other diseases. Thucydides remarks of the plague at Athens, that at the time of its invasion, the city was generally healthy, and that the few existing diseases were soon converted into the reigning epidemic. The following is Dr. Hodges's account of the beginning and cessation of the last plague in London. "The pestilence, says he, did not however stop for want of subjects to act upon, (as was then commonly rumoured); but from the nature of the distemper, its decrease was like its beginning, moderate; nor is it less to be wondered at, that as at its rise, all other distempers went into that, so now, at its declension, *that* degenerated into others."

Sydenham's writings abound with similar instances of the changes produced in diseases, according to the constitution of the atmosphere. They were
probably

probably more striking in his days, when the town was ill-built, ill-drained, ill-supplied with water, and the neighbouring country to the very suburbs so badly cleared, as to subject the inhabitants to regular returns of agues in spring and autumn. In this respect, it resembled a camp pitched in an uncleared spot, which was the seat of Dr. Cleghorn's practice. Thus circumstanced, epidemics would succeed with such rapidity, and so often supersede each other, that even Sydenham might confound the invasion and progress of small-pox with that of ague: and Cleghorn might easily suppose ague contagious, because those who attended the sick would be seized with hospital fever, which would almost instantly be superseded by ague, as the reigning epidemic.

The same error may arise from a different cause. If a hospital or building of any kind is situated near the source of ague, many of the inhabitants will be seized with the disease; but from various causes some may fall ill earlier than others. Hence those who are last seized, may seem to be infected by the first; and this uncertainty can only be removed by the migration of some individuals to a place free from the miasma of ague. If these go with the disease upon them, or if the disease appears upon them after their removal thither, and in this state they infect none of the resident inhabitants, we cannot call the disease contagious, but must ascribe its spreading in the place of its origin to the local cause which affects so many in the same way.

All

All this has satisfied the inhabitants of most parts of the world, that ague is not contagious; the same opinion is gradually gaining ground, concerning the yellow fever of America. That disease is known only at certain seasons, and its occurrence with any violence, even in those seasons, is uncertain. This is so well understood, that such as maintained its contagious property, and that it was introduced from the West Indies, never required quarantine in any but the summer or autumnal months; and it is universally admitted, that emigrants to healthy towns, who carry the disease with them, or are seized with it in such towns, or die of it after their arrival never become contagious to the inhabitants.

The same law is not less maintained in the plague. Though that disease is among us considered contagious, yet in those places where it is best known, the terror of contagion scarcely exists. During its prevalence, those who have fled from the source of the evil, so late as to carry with them the disposition to the disease, and have been afterwards seized with it in healthy districts, are found not to have been contagious to the inhabitants among whom they have sojourned.

All this is enough to show, that there is a degree of uncertainty attending the contagious property of yellow fever and plague. If both have excited reasonable suspicions of contagion among the best informed men, we have seen the same suspicion has been attached to ague; and the contagi-

ous property of influenza is with some, a question still undecided. Yet it is admitted by all that yellow fever and plague are only known in certain climates, and at certain seasons; that ague is only known at certain seasons, and in certain districts, and influenza affects so many at the same time on its first invasion, and disappears so suddenly as to convince us it may be taken from the atmosphere, and ceases as that changes.

Whatever may be the result of future investigations, at present we must impute the origin and spreading of these diseases to something besides a communication between the sick and the healthy, which is the only determined character of contagion. If numbers are seized in the same district, it may be because all are exposed to the same atmosphere; and if those who attend on the sick are sooner affected than others, they are probably first affected with hospital fever, which soon assumes the character of the reigning epidemic. It must then at least be admitted, that yellow fever, plague, ague and influenza, whether contagious or not, are all governed in their manner of spreading by certain properties of, and cease as a change is induced in, the *external* atmosphere.

Hospital or camp fever it is true is the offspring of an *artificial* atmosphere, and may be excited at any season, and in any climate. This atmosphere may also be conveyed by wool, cotton, or any substance capable of confining air; in which case it will retain its infectious property. In this last instance, it approaches

proaches nearer to the contagions ; but nothing can be called a contagion, unless the person affected by it can induce a similar disease in others, without regard to season, climate, or any local circumstances. Now we know by the black affizes, and many other instances, that a person infected by this atmosphere does not, unless he remains in a confined atmosphere, induce a similar disease in others, consequently, this fever has not all the properties of a true contagion.

CHAP. III.

OF CONTAGIONS.

FROM what has been said, it follows, that tho' most epidemic diseases are usually considered as contagious, yet we are not justified in calling a disease contagious, unless a person under it, translated among healthy people, induces a similar disease in some of them, and they again in others.

Now we have seen, and it will be hereafter further illustrated, that this is not ascertained in ague, yellow fever, or plague; and though hospital or jail fever may appear to be contagious, because those who are exposed to the atmosphere of such places are affected, yet unless they remain in such an atmosphere, or are in crowded and ill-ventilated rooms during their fever, they are not found contagious to others.

Another circumstance seems necessary to ascertain a contagion, namely, that it can only be excited by a cause exactly similar to its effect. Agues we know are excited by exhalations from the earth at particular seasons. The yellow fever is thought by some to be excited by similar causes; and it is admitted by all, that it only occurs at certain seasons and in certain climates. The same has been said of plague. Influenza is known to depend on a particular constitution of the atmosphere. Hospital fever

ver is excited by the accumulation of sick, whatever the nature of their complaints may be.

In all these respects, they differ from certain diseases universally admitted to be contagious. The most remarkable of these are small-pox, measles, and scarlet fever. These can only be excited by a cause similar to the effect. They may not only be conveyed at any season, climate, or temperature, but under all these circumstances, every person affected with either is contagious. It is highly important to mark this difference, because in those epidemics which depend on season, climate, or constitution of the atmosphere, we may look with certainty to their termination, and even hospital fever may be exterminated by free ventilation.

But none of these prevents the spreading of a true contagion. In all climates and seasons, a man under small-pox, measles, or scarlet fever, may infect another with the same disease; and though the influence of such a power may be arrested for a time by the prevalence of other epidemics, yet this effect is neither general nor sufficiently uniform to be reduced to any laws. In one word, there is no climate, no season, no temperature, in which these diseases have not been epidemic; and that very purity of the air which instantly puts a stop to hospital fever, will, perhaps, be found the fittest to convey contagions.

All the contagions above mentioned, may be conveyed by the air passing from a diseased to a sound person, or passing from a substance imbued with air from a diseased subject; nor have we as yet ascertained

ascertained how much this effluvium may be diffused in common air, without losing its contagious property. Hitherto we know of only one boundary to contagions when they become epidemic; namely, that no one is subject to their effect more than once during life.

It has been said that the ancients were unacquainted with contagions, and it is certain that the physicians before the Arabians, make no mention of epidemics, excepting such as arise from places, seasons, or constitutions of the air. It is, however, easy to detect the hospital or poor-house fever from their philosophers,* the camp fever from their historians,† and if not the yellow fever, at least the fever of new settlements from their poets.‡ But that the true contagions were unknown, is certain, because no mention is any where made by any writer, of a disease which would occur only once during life. When it was found during the celebrated pestilence of Athens, that no one was seriously attacked a second time, the citizens were so much astonished, that many of the convalescents promised themselves a perpetual security from all future disease.

It is not now to be ascertained what was the origin of any of these contagions; but the exemption of those countries which are separated by distant seas from frequent or ready communication with others, is sufficient to prove, that no means of exciting them are known but by the disease itself.

Whatever

* Plinii Secundi Epist. Lib. viii. Epist. xvi.

† Livy, Lib. xxv. ‡ Virgilii Lib. iii. Ovid Lib. vii.

Whatever may have been the origin of contagions, it is certain that from the time since diseases have been registered with any accuracy, wherever the mortality has lessened from the other epidemics, it has increased from the contagions. The plague has been for a century and a half unknown among us. Agues, which Sydenham considered among the epidemics of London, are no longer an object of dread; and we shall see that the hospital and poor-house fever is considerably less prevalent or fatal.

The following average is taken from the researches of Dr. Heberden, on the bills of mortality in London, during the last century.

	Beginning.	Middle.	End.
Colic, flux, and gripes	1100	135	20
Fever	3000	3000	2000
Small-pox	1600	1600	2000

The first article is the disease of unsheltered accumulation or distress, and the numbers have lessened from 1100 to 20. The second we have seen is always epidemic under circumstances of poverty and distress. It appears to have lessened only a third; but the diminution will be much greater if we reflect that, in our Bills of Mortality, *scarlet fever* is always included in this article. All the cases of scarlet fever should therefore be deducted from fever and added to the contagions.

Mean while the increase of small-pox is in the proportion of one in five. Dr. Heberden estimates the increase of measles between the first and last

last fifty years of the last century, as from 31.4 in the thousand to 51.3, or about 2 in 5. During the present century, the numbers have increased prodigiously. In the year 1808 they exceeded the combined numbers of the five last years of the preceding century.

Scarlet fever, sometimes called the ulcerated throat of Dr. Fothergill, is too little discriminated in our bills of mortality to enable us to form any certain average by them. If, however, we attend to the more accurate accounts of physicians, we shall see sufficient proofs of increased mortality from that contagion. Morton, who first mentions it in England, confounds it with measles. The more accurate Sydenham, though he avoids this error, never speaks of scarlet fever as formidable in London, nor seems to think it necessary to mark any of its varieties. Dr. Fothergill first called the attention of the Londoners to this disease, under the name of the "fore throat attended with ulcers." It was then more commonly known as the putrid fore throat, and spread an universal alarm over the town. It is now only less formidable, because it is more universal, and most of us pass through it in infancy or youth. The perpetual alarm concerning scarlet fever in our different seminaries is equally notorious, as it is of comparatively recent date.

The cause of this increased mortality from contagions, is an inquiry which shall be reserved till we come to consider the means of lessening their effects, and the probability of exterminating them.

CHAP. IV.

OF THE MEANS OF EXTERMINATING FEVER FROM
INFECTIOUS ATMOSPHERE, OR, AS IT IS USUALLY
CALLED, TYPHUS FEVER.*

HAVING stated with as much brevity as the subject will permit, the laws by which different epidemics are governed, we are better prepared to inquire into the means by which their ravages may be checked, or their causes removed. And, first, of the hospital, camp, prison, or poor-house fever.

In considering the laws of infectious atmosphere, we are to keep in view the difference produced by it according to its degree of concentration, the suddenness with which a person is exposed to it, the state of health he is in, and the purity of the air he has been accustomed to breathe. These considerations are not matters of mere philosophical curiosity. If at the Oxford assizes 300 individuals were destroyed by an atmosphere proceeding from the prisoners, it follows that each of the prisoners acquitted, and suffered immediately to depart in the same dress, must have carried with him a portion

* I have kept from the use of this term, not so much from a wish to avoid technical expression, for *typhus* is now almost vernacularized, but because it is sometimes used to express a low fever of any kind, and sometimes only fever from infectious atmosphere, be its character what it may.

of this infectious atmosphere. To his own immediate family, who, perhaps, visited him during his confinement, or even resided with him, he might prove no way injurious; but in his progress to a new residence, every one he met or passed in such a direction, that an effluvium might proceed immediately from one to the other, would be in danger. The consequence might be a fever, which would neither manifest itself by any certain characters, nor would the patient, if the inhabitant of a well aired house, prove contagious to others. Thus the source of the disease would, perhaps, never be even suspected. By this last mentioned circumstance only, can we explain the reason why for so many years we thought only of protecting the court before whom the prisoners are to appear. "It were well, says that illustrious statesman and philosopher, Verulam, that the jail were aired before they [the prisoners] are brought forth." Happily we have now advanced several steps further, and a general anxiety has been excited to prevent the causes which produce this atmosphere, or the necessity of this temporary "airing." We have endeavoured to render the situation of the prisoners as comfortable as confinement will permit.

But are prisoners to be the only objects of our regard? In asking this question, my wish is, that ten thousand good men, whose intentions are I am sure as pure as human infirmities will allow, should be always fearful of fostering that love of patronage

age which so often lessens the value of their most liberal donations, and even of their most diligent attentions.

It is very true, that order is more easily introduced into a prison than into an extensive neighbourhood of poverty, and many thanks are due to those who engage in these benevolent offices.

Waving, therefore, these considerations for the present, let us return to our late prisoner. We left him in the street, infecting some one struck with his squalid appearance, or whom his own watchful eye has selected, perhaps expecting something from a benevolent countenance, or invited by a sympathetic look as their eyes have met each other. The event passes like any other occurrence in a large town; and if in a few days an indisposition follows, the cause is never suspected. The anxiety of a family increases hourly for one whose numerous acts of kindness force themselves on the memory, and this anxiety soon reaches to a circle much more extensive than was expected. Charities before concealed are brought to light, a thousand kind attentions are recollected, and though the adage is in every mouth, that the best are taken first,—yet the cause is never suspected.

In this family the scene closes with the individual. But we have not yet conducted our prisoner home with his infectious clothes, and, perhaps, with the miserable materials which formed his infectious bed. His friends visit him, some with impunity, as they are unaccustomed to a much better
air;

air; others, whose habits or means are a little superior, are infected. If these return to a close, crowded or ill ventilated apartment, the disease will not cease as in the former case, with the individual who introduces it, but a new source of infection is generated. The immediate inhabitants may feel little more than a reduced state of health from the slow progress by which they are habituated to a vitiated atmosphere. But the distresses of the family requiring every resource, perhaps a new female face may attract the notice of a town debauchee, or a *Chremes*,* on his first arrival at the metropolis, plenus cereris et liberi, may find himself inadvertently in company from which he is glad to escape with the loss of his money and watch. As he comes to his senses, nothing is further from his wish than to proclaim at once his follies and his losses. But it is well if the mischief ends here. His health is endangered from more than one cause, though only one may expose the source from which it is derived.

Let us not promise ourselves security by stifling those sentiments which we ought to cherish, nor even by the most guarded prudence. There are certain neighbourhoods well known to practitioners, who reside near them, which are never free from infectious atmosphere. They become the resort of the most abject poverty. Numbers who never saw each other before, who have nothing to lose,
and

* Terrencij Eunuchus.

and are indifferent to life itself, are lodged in the same room or cellar, on terms which mendicity may always procure. I have heard it said that such places are necessary, but as many of them are destroyed, it can only be said that the progress towards a further melioration must be gradual. That it may be accelerated is beyond a doubt. Mean while, if it were necessary to urge its importance, we need scarcely remark, that the wretch who last night procured shelter in a pestilential atmosphere, to day presents himself at your carriage for relief. Should any of the younger branches of your family, just arrived from the salubrious air of the country, inhale effluvia of which his organs may not be sensible, a fever may be the consequence, the cause of which will never be suspected.

Some may, perhaps, fancy (but these are few) that by the diligence of the officers, all mendicity may be prevented. What, let me ask, are the penalties? Are they worse than starving? And though this alternative may rarely happen at present, yet when it does, it is likely to be attended with the danger above described. But these are not the only dangers. There is not an article of dress but may become a source of infection. Of this there is most danger in such as are prepared for either sex in the chambers of the sempstress. Dr. Willan remarks, that second hand clothes and day schools have proved the means of spreading scarlet fever. Is ready-made linen from the chambers of poverty,
less

less likely to do the same? or is it to be supposed that infectious atmosphere is not as easily conveyed as the contagion of scarlet fever. If the alarm is not so often excited, it is easily accounted for by the facility with which scarlet fever is detected and by the danger of its spreading, whilst the fever from infectious atmosphere is uncertain in its character, and however fatal to the patient, never renders him contagious. Can there be a more probable cause assigned for the fatality of some fevers after child birth, under circumstances at first no way unfavourable? How often have these events occurred among the wealthy? and how rarely in well regulated hospitals, appropriated for the reception of females so circumstanced?

During the winter of scarcity in 1799 and 1800, fever from infectious atmosphere was so general, as to excite us to imitate the example of those manufacturing towns, which are never free from the disease; and a fever house was established in London. The scarcity, which at that time prevailed, compelled us also to do what we are for the most part too backward of doing, that is, to increase the money price of the artizan's labour. And this advance has continued, though the price of provisions has since lessened. Hence the condition of that class of society has been meliorated, and fever from vitiated atmosphere has almost ceased among them. But the price of *common* labour in London, is still much too low. A labourer in health cannot ensure himself more than
from

from 16 to 18 shillings per week. The slightest indisposition therefore threatens him with those calamities, which it is unnecessary to dwell on; but which, if they do occur, may render not only the air of his apartment infectious, but every thing it contains. Even parts of the naked building imbued with this atmosphere, are likely to vitiate the whole, if the condition of the succeeding tenant is similar to the former.

This description is, however, only the remains of what was once more general in the metropolis, and is perpetually occurring in those manufacturing towns, the demand for whose labour is precarious. As therefore we owe so much of our security to the meliorated condition of the laborious class, let us not be too fastidious in attending to those failings, from which no rank is entirely free. I refer to the common language of some, that to increase the price of labour, is only to encourage idleness; as those who can support themselves by the labour of three days, will drink, or be idle the other four. But this is by no means a fair statement of so important a question. It is true, there are men who possess a facility and accuracy in completing their work, which enables them to gain considerably more than others; this is the effect of some superiority of intellect, and often even of a degree of taste, which renders their common employment irksome. Their company is sought after, and they gradually become profligate. Such are the characters held up to view, by those who are always teaching us the danger

danger of advancing wages. But another charge, namely, of a wish to imitate their superiors, is often only the first step towards becoming more cleanly and more rational.

From what has been said, it follows, that to exterminate infectious atmosphere, or the source of typhus fever as it is called the only means are, the cultivation of that spirit, which is the object of all religion and good government. If we wish to meliorate the condition of the poor, we must give them a taste for something more than the gratification of sensual appetites. This can only be done by enabling them to acquire something more by their industry than is sufficient for their immediate wants. The proper application of this superfluity gradually suggests itself, and one of its first effects is to induce economy by a just knowledge of the value of money. Habits of order succeed, and an attention to all those duties, without which they find it impossible to maintain their rank in the new society into which they are gradually introduced. Often times the influence of a popular religion has proved the first means of exciting the cultivation of better manners. On such occasions, it is said to diffuse a general gloom over the character, inconsistent with the true spirit of Christianity ; but this is by no means a necessary or a constant consequence. The imputation, like many others, arises from a too partial view of the subject. It is to be wished, that where the motives cannot be selfish, we should all give each other credit

credit for good intentions. There are various modes of happiness, and various means which lead to the attainment of the same object, but no means ever remain popular, unless they secure the end, and this can only be secured by the cultivation of those habits which morality enforces, and for which religion offers its rewards.

CHAP. V.

ON THE MEANS OF LESSENING THE EFFECTS OF
EPIDEMICS, ARISING FROM OR INCREASED BY
THE CONSTITUTION OF THE ATMOSPHERE.

THESE epidemics are of two kinds. The first depends on constitutions of the atmosphere, occurring at uncertain periods, but always increased by locality or the state of society. Of these, the most remarkable and best known in this country is the influenza.

The second arises from a soil, the exhalations from which are injurious at certain seasons; but either these exhalations are more powerful at some of these seasons, or their effect is increased by a certain constitution of the atmosphere. Of these, the most remarkable are the ague and the yellow fever.

Influenza usually takes place in the spring; its violence is very uncertain, but its effect appears to be uniform in the following particulars. Its range is more general than any other epidemic, sometimes extending over almost the whole globe; it rarely remains in the same place more than a month. Though it arises from the atmosphere, yet those who are most congregated, or most subject to a confined air, are soonest affected by it. The last volume of the Medical Transactions, gives a more correct account than is any
where

where else to be met with of the influenza in 1782. By this it appears, that the disease was peculiarly prevalent on board ships; that it appeared earlier in towns than in villages; and earlier in villages than in detached houses in their neighbourhood. Seventeen persons in health arrived at the Adelphi Hotel, and the following morning all were seized with influenza. It is added, of the disease in general very few died, and of those few the greater part were old, or asthmatic, or debilitated by previous indisposition*. It appears, however, from the bills of mortality, that the increase of deaths by fever was from 28 per week to 121. These were probably confined to the poor, as the experience of the College, and even the reports they received, would not lead to such a conclusion.

The increased effect of influenza from the accumulation of numbers, is confirmed by other writers. Sir John Pringle says, "The influenza which passed throughout all Europe, was sensibly felt at Brussels, though but little in the cantonments, otherwise than by relapses of those who had recovered from agues." As the subject will occur again, I shall conclude at present with two other instances, which were remarked with more attention, because the opinion had been previously started. In Madeira, the first and most violent symptoms of epidemic catarrh were among the lazars, who are crowded together. Dr. Veitch has

* Medical Transactions, Vol. iii.

has done me the honour, in a private letter from the Ophthalmia Dépôt at Selsea, to inform me that the last epidemic catarrh was violent in proportion as the barracks were filled.

There are many instances of the severest influenzas, in which those who were much exposed to the air, escaped altogether. Such was the case with the school at Ackworth, which being governed by the society of Friends, we may conclude is well regulated, as to cleanliness and free circulation of air. The same was remarked of a ladies boarding school, consisting of sixty scholars, who are pretty constantly in the open air, but have no intercourse with the village.* On the whole therefore we may conclude, that though the influenza arises from causes which we can neither detect nor entirely controul; yet the proper means of lessening its effects are by free ventilation, and avoiding every accumulation of individuals in confined spots.

Respecting ague, we have already seen that such an accumulation of diseased subjects as is likely to produce hospital fever, must increase the number of sufferers, and the severity of the disease. The causes of ague are universally admitted; the seasons also are well known. Nor is it necessary more than to remark, that the effect of these causes, viz. of ill-drained countries during spring or autumn, is much increased in some years from a constitution of the atmosphere; of the nature of which

* See Memoirs of Medical Society, Vol. vi. p. 352.

which we are entirely ignorant. All we know is, that where the level of the land is such that it may be permanently drained, ague ceases, or occurs only at certain periods, when the inhabitants of the marshes are peculiarly affected; and the range of the disease extends in a few instances to the towns themselves.

Another law is equally well known, that new comers are attacked with much more certainty, earlier in the season, and with greater violence, than natives or long residents. The uncertainty of the period of attack after exposure to the cause, is not less universally admitted. In a regiment, half of whom may suffer, the period of attack will vary from a few to any number of days. Some, who appear to escape altogether, will be seized after the season has passed; and even after the encampment is removed to a healthy spot. In many of these instances, though not in the progress of the disease, when formed, the ague of northern climates resembles yellow fever of the tropical islands.

Yellow fever is, I am afraid, much too general a term. All violent fevers, if epidemic, in the West Indies, or during the hot season of the American continent, seem to fall indiscriminately under this name; yet all cannot arise from the same cause. As the mode of treatment in most acute diseases must be regulated in some measure by the individual symptoms, this general appellation may seem of less consequence. But when we look to the

the means of prevention, by far the most important in such destructive complaints, the question is truly serious. In many of the islands it cannot be questioned that at certain seasons the mere circumstance of soil is sufficient to produce the most sudden and deleterious effect. That this is unconnected with any human effluvia is evident, from the frequent dreadful effects which attend wooding and watering in places in which there are no human habitations. Far different from such a cause are the suddenly raised and ill drained towns of America. In these, during the summer heats, a particular constitution of the air produces a fever. Neither of these causes act beyond the place in which they exist. The woodmen or waterers return to their crews, and after a period, uncertain according to the degree of cause, are seized with fever and die. It is melancholy to say, others succeed them and submit to the same fate ; meanwhile their comrades remain in health, unless the vessel has approached the deleterious shore, or the ship fever is generated by the number of sick. The citizens of America sometimes fly from their pestilential towns too late, are seized with fever in their new residence, in which, whether they die or recover, they never prove contagious to those about them. Yet still there are those who consider the disease contagious.

But as my business is confined to our metropolis, it is enough to remark, that those few who consider yellow fever as contagious, admit " It is never known excepting in tropical climates, or where
the

the atmospheric heat has for some time been equal to the tropical; that is, at or above 80." Those Americans, who assert that the disease is brought from the West India islands, do not, we have seen, inquire after the health of those islands in regulating their quarantine, but determine it by the season of the year in their own towns: and though England has required quarantine of vessels bound from an American town under yellow fever, yet from the West Indies, the supposed source of the disease, quarantine has rarely been required, excepting under great mortality in our armies or fleets. In these cases, the ship or camp fever may have been generated, and some attention may be necessary on the first landing of such a crew. But against contagion from a disease produced by the nature of a place, a quarantine must be unnecessary.

As yellow fever has never appeared among us, our governors have confined their attention to its prevention, leaving the police, should the contagion arise, to be governed, it may be presumed, by that general consolidating act of 40 Geo. III. Before we touch on these subjects, it may be right to take as accurate a view as possible of all that has been said concerning the contagion of plague.

CHAP. VI.

OF THE PLAGUE.

THE many laws which yellow fever and plague have in common, might induce us to suppose that in their manner of spreading they resemble each other. There is, however, one most important difference, namely, that the plague may exist under our summer and autumnal temperature, which it is universally admitted yellow fever can not. Nor do I recollect any instance that can be depended on, in which the true plague has appeared between the tropics. Tropical heat, which is said to be necessary for the production of yellow fever, is found always to arrest the plague. What then are the laws by which plague is governed in its appearance, in its spreading, and in its cessation?

It is well ascertained, that it only appears at certain seasons, and under certain temperatures. That when it does appear, it only spreads in particular towns, and sometimes only in particular precincts of those towns, and that persons removed from those towns in a diseased or dying state, do not prove contagious to others in healthy towns. It is not less certain, that the plague is constantly existing in some places during certain seasons, tho' in most of them unknown at others. To prevent, therefore, the introduction of such a contagion, it
would

would scarcely be sufficient to make a perpetual interdiction of all intercourse with Egypt and the Levant, and with all those countries which hold intercourse with them. Yet as our commerce with that part of the world has increased, our freedom from plague has been more secured. To what then are we to attribute the plague? Is it to a particular mixture in the atmosphere, which, like that which causes ague, is only injurious at certain seasons and in certain places? or is it to a constitution resembling that which causes influenza, and which sometimes extends over a considerable part of the habitable globe? To which ever of these we impute it, we shall find the same means are to be pursued for our protection.

If its origin is similar to ague, it is not exactly the same. The plague originates in towns, ague in marshes. Yet there is reason to believe both are in part attributable to properties in the soil, though each of its own kind. Agues are more frequent in proportion as a country is ill drained and ill cultivated. Plague is frequent in proportion as a town is ill drained or ill paved, that is, as the excrements of living and corrupted parts of dead animals are suffered to remain on the surface, and to be gradually absorbed by the earth. That such was the case with London before the great fire is readily proved by the pains which were afterwards taken to preserve a proper level in constructing the new town. This, with the advantage of paving, which

was only gradually accomplished, was for a long time the principal benefit derived from the fire.

Though a marshy country may be necessary to produce ague, and an ill drained town to produce plague, both require another cause, or, in other words, these are only efficient under certain circumstances of temperature or season.

No one is ignorant of the seasons of agues, nor of their uncertain extent and prevalence during those seasons. In Egypt, the seasons for the plague are particularly regular, though its extent is uncertain. It is disregarded after the summer solstice, and the apprehensions of its severity are regulated by its early appearance in the winter or spring.

When ague is particularly prevalent, its extent is proportionally great: districts are visited, which from long exemption, fancied themselves secure, and solitary instances are met with in parts remote from its source. The same is remarked of plague.

To avoid ague, lands are drained, and where this is not prevented by an absolute incapacity from the level of the soil, the remedy is permanent. Towns, and even parts of towns, are relieved from plague in proportion as they are drained and paved. If the ague extends further beyond its source than the plague, may it not be accounted for by the general and continued calm with which plague has usually been attended in more northern districts, and which in these places seem necessary for its existence?

All that has hitherto been said is reduceable to proof.

proof. But still the question remains, whether a pestilential subject is contagious? I shall at present only remark, that those who urge the contagious property of the plague, differ exceedingly in fixing the laws of such contagion.

Dr. Russel, to whom we never can be sufficiently thankful for so great a number of well ascertained facts, conceives that contagion is conveyed in the usual manner by contact or effluvia. Dr. M'Gregor assures us that the plague is only contagious by contact; and Dr. Blackburn produces a host of evidences that it is not communicable by contact. Yet from Dr. Russel we have an account of twelve families, in easy circumstances, among whom the disease did not extend, though the sick were nursed with the utmost care and without the least precaution. In eight other families, all of inferior rank, the disease extended, but at such uncertain periods, that it is impossible to ascertain whether the sick were affected from each other, or from one common cause in the atmosphere of the house or neighbourhood. Dr. M'Gregor also details several cases, in which the disease spread without any certainty; in some without any probability of contact, and many others, of contact without subsequent injury.

It is to be wished, that we should less despise the opinions of the natives, who are so much better acquainted with the progress of the disease. From them we learn the periods at which the plague disappears, and from them we should be led

to

to suppose that it was not contagious. We are told that their want of caution arises from their notions of predestination.

But this apparent want of caution is not confined to the Mahomedans. The Jews, though always alarmed at the approach of the disease, never desert their sick, and the doctors are principally Greeks. We should recollect too, that from this quarter we derive inoculation, and that the same people who are so ready to expose themselves to pestilential subjects, have shown a readiness to avail themselves of cow-pox. How shall we account for this difference? Is it not obvious? Few, excepting the poor, suffer by the plague; and the wealthy have discovered, that when an individual among them is affected, the disease does not spread in their families. If any thing can be wanting to prove the absurdity of supposing that men are governed by such prejudices in matters which relate to health and life, we have the positive authority of their law to show that though they are not allowed to desert their sick, they are counselled not to frequent *a contagious habitation*, where they have no lawful affair to invite them.* In perfect conformity with this, we find that when the plague "broke out in an Arab camp, many of the Arabs abandoned their tents." "At the distance of less than a hundred paces, was encamped a tribe of Chinganas, who, when they observed the disease to increase so fast among

* See Thornton's View of Turkey, p. 269.

among the Arabs, had the prudence to transport their tents to a neighbouring village."* A lady, with three other women, carefully nursed one of her sons in a small but clean chamber with a low ceiling. All the females escaped; but another son, who is not mentioned among those that entered the chamber, was seized about a fortnight after, and died on the 4th day. After this the family *abandoned the house*.† Dr. M'Gregor informs us,‡ that though the Greek barbers were very ready in examining the sick in the first instance, under Mr. Blackall, though they visited the inhabitants, and narrowly examined every body before interment, yet whilst the plague was at its height, no bribe, however considerable, could induce them to enter the pest-house. As the disease declined, many of them offered their volunteer services. From all this it is evident, that if the inhabitants of plague countries are careless of contagion from a diseased subject, they are not ignorant that certain places are pestilential at certain periods.

Dr. White is often produced as an instance of the danger of trusting to the non-contagious property of the plague. This gentleman derived his opinion from what he saw on board the transports, and from the security with which he visited pestilential subjects at a distance from the source of the disease. No sooner had he entered the pest-house, than he was attacked with the disease, whether from
inoculation

* Russel, on the Plague, p. 25. † Id. page 4, Appendix.

‡ Medical Sketches.

inoculation or not cannot be ascertained, as so many others were seized without undergoing that experiment.

In the return of the Indian army from Egypt to Asia, solitary instances of plague occurred. These subjects had most probably contracted the disposition to the disease during their residence at its source. Much pains were taken to prevent its spreading, and we are told that these means succeeded. But it is well known, that under exactly similar circumstances, excepting that no caution was used, the plague has not spread, though the mortality has been greater, and the scene has been laid in a country subject to returns of the disease.*

Enough has been said, to show that we are not to calculate by the laws of those contagions with which we are acquainted, if we wish to devise means for avoiding or preventing the extension of the plague. How then should we proceed? First, as to preventing its introduction.

As I hope many of my readers will be mercantile men, I shall say but little of the security to be derived from quarantine. Few of them are ignorant how little it can be depended upon in a coast so extensive

* "In the mean time, says Dr. Russel, so far is certain, that although infected persons came from the mountains to the three towns just mentioned, and some of them died in the families where they lodged, yet the distemper by such means was not propagated; as if divested of that contagious property in the plains which it seemed to retain undiminished in the mountains,"—Russel, on the Plague, p. 26.

extensive as ours. Dr. Ruffel has taken considerable pains to enforce the necessity of a better regulation in this respect. That necessity would appear infinitely more imperious if we had suffered by our inattention. Let me only relate from Dr. Ruffel the manner in which the plague was said to be introduced into Messina.

“ This declaration, on oath, together with the exhibition of a clean bill of health, induced the magistrates of the health office (who were then ignorant of the other circumstances of his having been first at the other infected parts of the Morea, or that one or two of the sailors had died on board, of the plague) to admit the vessel to quarantine at the Lazaretto, wherein, with the usual formalities, they began to deposit the wool and the corn; nor, according to human appearance, would the infection have ever been introduced into the city, had it not been for a fisherman, who afterwards, on his death-bed, disclosed the fatal secret of his having found means, soon after the padrone's arrival, to receive from him in the night some bales of tobacco, covered with infected canvas, and some pieces of linens, which he carried by stealth to his own house, in a part of the city called Pizzillari, where the distemper in effect first appeared; so that the running ashore of those infected goods was the cause of all the fatal consequences that ensued; which I mention in justification of the magistrates, who took all the most vigorous and prudent measures at the Lazaretto for the public preservation;
and

and in discharge of their office afterwards courageously sacrificed their lives, devoting themselves, in a manner, to certain death : but they were betrayed by their subaltern guards in whom they confided." * Stories related on such authority have always something suspicious about them. But admitting the truth of the above, can we suppose that any quarantine is unattended with similar occurrences ?

On the subject of quarantines, it is not my intention to dilate by showing the injury suffered by commerce in consequence of them. This consideration, when compared with the preservation of a town from such a calamity, is unworthy of notice. But quarantines are not innocent things in themselves. After the arrival of a ship's crew, under circumstances of despondency from scurvy, or any other disease, the disappointment of all their hopes of relief by consigning them to imprisonment, is to abandon many of them to certain death.

When this imprisonment is on board their own vessel, gloomy as it must be, they are at least exposed to no new dangers, and the hopes of a certain termination of the period of confinement may afford some solace. But if they are to be forced into a Lazaretto, it is of much importance to inquire into the possibility of error, concerning the causes of their consequent mortality. It is well known that most of the old ports are crowded with inhabitants,

* Russel, p. 227.

inhabitants, in consequence of the value of land in such places. Many of them also are in situations which cannot be drained, some of the streets consisting of embankments from the river or sea. The inhabitants of such spots, like the inhabitants of ague countries, may be in a certain degree familiarized to the air even in bad seasons; but to those who arrive fresh, the effect will be sudden, as the cause is new and more powerful.

The following is Dr. Ruffel's account of the first introduction of the plague at Marseilles.

“ Two days after the arrival of this ship, one of the sailors died; on the *12th of June*, an officer of quarantine, who had been put on board, died also; and this was followed by the death of a cabin boy on the 23d. About the same time, some porters employed in opening the merchandise in the Lazaretto, were taken ill and died; in *the first week of July*, three others fell sick in like manner, but in these, buboes were discovered in the axilla and groins. The surgeon of the Lazaretto, who had hitherto ascribed the alarming mortality to ordinary fevers, now, for the first time, expressed his suspicion, and a consultation being held with two other surgeons, they, after visiting the sick, gave their opinion in the most express terms to the council of health, that the three patients had the plague. This was on the 8th, and all three died next day. The priest who had administered to the sick, and the surgeon of the Lazaretto with part of his family, were infected also and died.”

Here it appears that the first sufferers were the new comers, and next those who resorted from other parts of the town to the pestilential districts. The first appearance of yellow fever in the West Indies has usually been among the fresh arrived.

"The plague," says Dr. M'Gregor," made its first appearance in the army from India, in the middle of September, 1801. From its early appearance, the natives were very much alarmed, and prophesied a dreadful season of plague. They have observed, that, when it breaks out before December, they have always a generally-prevailing and a very destructive disease.

"Soon after the British army effected their landing at Aboukir, they were attacked with the plague, though the disease was at that time on the decline." *

The same author afterwards observes, that tho' the disease is seldom, he believes, out of the country, yet the natives denominate from November or December to the following June, the plague months. Thus it appears that the disease was anticipated two months by the new comers. But it will not be said, because they were the first sufferers, that they introduced the plague.

By these remarks, my only wish is to show, that if a ship's crew, immediately on its arrival, should be the first to show the plague or any other fever, the probability is, that the cause is to be looked for

* Medical Sketches, p. 104 and 105.

for in their greater susceptibility, and not in their bringing a contagion with them. If the disease should spread, not only over such a town, but wherever else the diseased may fly, the question may be involved in some obscurity. But should it be confined to the town, and even if those who escape with the disease never infect the neighbouring towns or villages, it seems unreasonable to accuse the newly arrived crew of bringing a disease which they cannot convey further.

The prejudice in favour of quarantines does not end here. Associated with it is the drawing cordons of troops round the city, a part of whose police is, to confine every inhabitant of a pestilential house or district to his particular habitation. Now if it is really true, as experience proves, that those affected with yellow fever or plague may be removed to healthy situations and recover or die, without injury to others, nothing can be more wantonly barbarous than such a policy. Even if we admit the utmost that the advocates for contagion require, namely, that the disease is contagious under certain circumstances, still it is unquestionable that those circumstances, after a time, cease of themselves. Ought we not then to find some provision for the devoted inhabitants of the pestilential district, rather than consign the whole, whether diseased or not, to prospects so desponding and wretched?

Leaving therefore the question of quarantine to be disposed of by those general means which
shall

shall be hereafter proposed, let us consider how we should conduct ourselves in case of the actual appearance of the plague. If our long exemption should induce us to promise ourselves a perpetual security, let us bear in mind that there are parts of our town as obnoxious to this calamity as at any former period; and that if we have escaped for a great number of years, the same has been the happiness of many other towns, whose condition has declined instead of being improved. As well may we promise ourselves a perpetual exemption from a long continued frost, because in the memory of the present generation, a fair has not taken place on the Thames.

We have no accurate meteorological table, to teach us the state of the atmosphere during former plagues; by the imperfect account left us of the last, we are informed, that for several days the winds were so steady, or their force so trifling, that all the vanes remained without changing their aspect. Another such period may arrive, when it will be easy to prove the introduction of some pestilential packet, and to show that a certain number of individuals in a confined neighbourhood, have been seized with the disease in succession. Under such an alarm, it will be in vain to urge that the same goods have been disseminated throughout other parts of the town, in which the disease is still unknown; or that individuals, whose business have taken them to this pestilential neighbourhood, have shown the disease in their own families, without

without injury to any of them. All will be dismay, and in the too great eagerness to preserve ourselves, too little regard will be paid to those whose situation claims our first attention, and whom we might comfort, or even preserve, without injury to ourselves. Instead of confining the diseased and their friends to pestilential corners, let them be advised to quit them ; and let a mark be placed on such empty houses, or deserted districts.

In this climate such a calamity has usually happened at a season, when many of the wealthy have left the town. Such as have remained will be anxious to abandon a city, the pestilential parts of which they will multiply according to their fears. Many of the wisest owners of large mansions, which they have deserted, will leave the principal floors under the direction of discreet or perhaps authorised managers, who will remove the more delicate furniture, and secure it under seal in the upper stories. But before such a boon is accepted, every untenanted house will be occupied as a receptacle for those who are prevailed upon to quit a pestilential district. In a few days all the terror, and with it all the barbarities which have disgraced former visitations may cease, or perhaps they will never exist. None will be forced into pest houses, where they and their attendants must contend with hospital fever as well as plague. A change of atmosphere will be anxiously looked for ; daily reports will be made ; and as soon as it can be done with safety, the houses in healthy

thy districts, occupied by fugitives from pestilential quarters, will be cleared, if necessary, by magisterial authority; proper indemnities made; and each will return to his habitation, sooner or later, as he may be satisfied that it can be accomplished with safety.

This return, however, of the wealthy should not be too early. The season immediately after a plague season is usually abundant in other diseases; nor is it certain that enough of the pestilential atmosphere may not remain to affect those who have been breathing a purer air. If the town houses of the wealthy were to be deserted for the whole of the succeeding summer, and during that period were to undergo painting and white-washing, the inconvenience would be trifling, compared with the benefit afforded. The expence should be defrayed by the public, if the owners require it.

If it should be asked, Where are the officers to be found for these purposes? The answer is ready. As soon as the business becomes in a train of organization, all difficulties would cease. The first beginning must be with the medical men, who will each remain at his post, and whose presence will give courage to the magistracy. None will encounter new dangers. Each will report the state of his own district; and those who are fixed in parts which prove to be pestilential by the numbers seized, will only remain until the other inhabitants

bitants are advised to, and have the means of, removing also.

Such appears to be the proper mode of meeting this dreadful calamity, should it ever occur. In the mean time, let us consider the magnitude of the question, and learn all that can be taught by the misfortunes of others. Let proper means be instituted of ascertaining where it can be best known, the progress of the disease, to what we are to impute the indifference of those who seem most exposed to it, and above all, to what we are to impute their escape.

Before I take my leave of plague, it is necessary to answer one question, which for the sake of order, has hitherto been unnoticed. How, it may be said, are the villages infected, if not by the reception of pestilential subjects? This is not so easily answered in England, because we cannot so easily ascertain what was the condition of our villages a century and half ago. From the general improvement of the country, we may conceive them to have been very different from what we now see. As to the villages in pestilential countries, we have proof enough, that they are the proper nidus of pestilence. Dr. Russel informs us, that in Syria and Cyprus the villages are "like the Kaifarias within the city, which are inhabited by the lower class of people, in which the contagion spreads with great fury."

During the last visitation, every town within
twenty

twenty miles of London was more or less infected; and most of the principal towns in England, besides some parts of Ireland.* Yet Oxford, which was previously drained and cleansed, escaped, though the court removed thither; and no precautions that I can find, were used to prevent the introduction of contagion from London.†

Thus, in all the diseases which depend on the atmosphere, whether at particular seasons or otherwise, it is certain that their frequency and violence depend on the manner in which the human race is congregated. In most of them, free ventilation and cleanliness, if not a certain, is at least a considerable preservative. In all, an improved diet, cloathing, sufficient fuel, the absence of dejection, and the prospect of an improved condition, are the means of prevention, or of cure. It is highly satisfactory, that all these are progressively increasing among us; and we may, without indulging any romantic opinions, look forward, if not to the entire extinction of the diseases enumerated, at least to the continuance of their gradual diminution. What is still more agreeable is, that this diminution has been hitherto brought about, and must be increased, by our improvement in all those social virtues which the philosophy of the ancients inculcated,

* Heberden, p. 80.

† At this time the first gazettes were published, and it is remarkable, that during the greatest violence of the disease, no notice of it occurs.

culcated, and without which, every religious profession would not merely be suspected, but be held in abhorrence.

Another short remark. It has been observed before, that those who attempt to meliorate the condition of the poor, are said to be sometimes so inquisitive into their habits, as not only to lessen the value of their charities, but to deteriorate the moral characters of those whom they wish to assist. Without inquiring into a subject foreign to our present business, the reader will perceive that those who are accustomed to a pure air, may find the inconvenience of too close an intercourse with others, who have long remained under distress, yet show no particular symptoms of disease. Nor is there any reason why those whose situation is such as to afford all the blessings of life, should wantonly endanger their health, where no particular office or profession requires it. They may find almoners who are more accustomed to breathe a tainted atmosphere, and the little they know of the habits of such as they wish to relieve, renders them often incompetent to do more than to furnish the means. Nothing that has been said, should render us inattentive to the great object of all good men, the melioration of the human race. This is not only the wish, but the labour of a much greater number of individuals, than those believe, who see only the exterior state of society.

CHAP. VII.

ON THE MEANS OF EXTERMINATING CONTAGIONS.

IN the last Chapter we have seen that to improve the moral character, to cultivate all the social duties, to render our fellow creatures as well as ourselves happier and better, are the means of lessening the effects of some epidemics, and of exterminating others. What is still more consolatory, we have been able to estimate the progress of improvement in the state of society by the diminished effects of such epidemics.

At the same time, we have witnessed a melancholy increase of mortality from the contagions. This is enough to show, that the means pursued for the extermination of one class, are at least insufficient, though they may not be inapplicable in the others.

Of the contagions, I have selected small-pox, measles, and scarlet fever. These are universally admitted to be contagious, and these we shall see have greatly increased in mortality. This will surprise us the less, when we reflect on what was remarked, whilst considering the impossibility of always guarding ourselves against the effect of that infectious atmosphere, which induces hospital fever. This fever, we saw, might be excited by the vitiated air of a hospital or prison, inhaled on the spot, or conveyed in the clothes or other substances

stances imbued with it. The same is well ascertained of the contagions. But the fever from the infectious air of hospitals or prisons, does not render the patient infectious; consequently, by cleanliness and ventilation, even the nurses are secured from any danger. On the contrary, in the contagions, the patient is himself contagious; and there is reason to believe, that this contagious property is diffused further, or retains its influence to a greater distance, in proportion as the atmosphere is more free from other impurities. We have seen that during the last plague, when not only London, but all the great towns and many of the villages were infected, Oxford remained so free that the court, the parliament, and sessions were removed thither. Dr. Plott, author of the history of Oxfordshire, very reasonably imputes this exemption to the draining and greater cleanliness of that city. But it is evident, that Oxford was considered as more troubled with small-pox in proportion to its security from other epidemics. The learned author concludes his answer to this accusation against his favorite spot in these words. "But admit the objection be truly made, and that Oxford is more subject to small-pox than any of the neighbouring cities, yet if by so much the less we feel the rage of the plague, I think the edge of the charge is sufficiently rebutted."

When we come to consider the means of exterminating small-pox, we shall find many other instances in which this opinion is strengthened. But
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the contagion of small-pox is now a complicated subject, comprehending a variety of questions. We shall, therefore, commence our inquiry with scarlet fever, a disease which has never been inoculated, and the ravages of which, in England at least, appear of modern date.

OF THE MEANS OF LESSENING THE MORTALITY FROM
SCARLET FEVER.

We have before remarked, that scarlet fever is in the bills of mortality included under the general term of fever, and also of how little account it was made by Morton.

In the Edinburgh Medical Essays, we have an account of scarlet fever, when epidemic in New England. "It seized, says Dr. Douglas, half the inhabitants, and killed one in 35. In some places one-sixth, one-fourth, or one-third died of the sick. There is no certainty how the disease arrived there, but Dr. Willan conjectures with much probability, that it was conveyed from ships cleared out at Plymouth, Falmouth, or some other of our southern ports. Mr. Colden remarks, that the disease first appeared at Kingslande, an inland town. It gradually spread from thence westward over all the colonies of North America; was two years in Hudson's river, and some time before it passed that river, its first appearance being in places to which the New England traders resorted, or through which they travelled.

Dr. Huxham describes its ravages in the West of England in 1734. Dr. Fothergill's account is
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well known to most, and many of my readers will recollect when, after the death of the Pelhams and another family, that every one with a sore throat was alarmed for himself, and regarded with some suspicion by others. But the ravages were most considerable in the country. Dr. Cotton of St. Alban's, says, "Many parishes have felt its cruelty, and whole families of children (whence its contagious nature is too evident) have by its successive attacks been swept off. Few, very few escaped."

Our settlements in N. A. says Dr. Willan, suffered dreadfully by it between 1746 and 1760. "Like most new diseases, says Mr. Kearsley of Philadelphia, till their constitution is understood, it swept away all before it: it baffled every attempt to stop its progress, and seemed by its dire effects to be more like the drawn sword of vengeance, to stop the growth of the colonies, than the natural progress of the disease; whole villages were depopulated, and parents were left to bewail the loss of their innocent offspring."

Dr. Withering, though he does not ascertain the proportion of fatal cases, gives a description sufficiently tragical to show the horrors of this epidemic during an unfavourable season. Dr. Johnson's account is very similar. Dr. Clarke of Newcastle, states the number of malignant cases as one in twenty at the lowest.

This is enough to show the ravages of a contagion of no great antiquity, when it becomes epidemic under a formidable type. If its fatality has of
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late years been less, its universality has certainly not lessened.

But it is time to consider how we are to protect ourselves from these dreadful calamities, which are not to be avoided by the general means that are efficacious in the other epidemics.

The only means that remain, are the preventing the introduction of diseased subjects, or of substances imbued with contagion. We have seen the difficulty of this, because there are no means by which we can ascertain the presence of such a contagion; and when it occurs in London, it is seldom that we can trace the source. The next step, therefore, must be to prevent the spreading of contagion, whenever the disease appears. This can only be done by the separation of the sick from the rest of the community. The difficulty of this in a large city is obvious, because it is impossible to ascertain the numbers who may be affected before the event is publicly known, and still less the numbers, who having been exposed, may show the disease after a certain time. No attempts, therefore, have hitherto been made in London towards the separation of those affected by any of the above mentioned contagions. But it does not follow that the attempt is impracticable.

“The late Tishoo Lama, we are told, when the small-pox broke out among the inhabitants of the immense monastery in which his palace is contained, removed his court; and the capital Teshoo Loombo remained three years without inhabitants, that

that it might be no longer contagious." * By all these cautions, the Lama remained free from the small-pox till the age of 46. At that time he made a visit to China, whose emperor, anxious to pay him divine honours, made a grand entertainment for him in the Garden of Gardens. Soon after this, the Lama was seized with small-pox and died. †

From this and many other well known events, it is evident, that though it is impossible always to prevent the introduction of a contagion, and the consequent death of a certain number of individuals, before the officers of health are alarmed, yet that the greater part of a community may be preserved from such diseases as long as they submit to remain in the place of their nativity, or quit it only when directed by the magistracy. But continual alarm is to most minds more painful than temporary suffering, or even than passing through a certain danger for future security. In order, therefore, to estimate the whole question, we must consider the state of the person before and after he has acquired such a security. This cannot be done without considering the quantum of danger with which he is threatened, the chances of escape from the effect of the means by which he gains his future security, and the advantages he derives from it. In doing this, I shall first confine myself to scarlet fever for the reasons before mentioned, and because the sub-
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* Turner's Thibet, p. 219, &c.

† Macartney's Embassy, Appendix.

ject has been so recently canvassed by very able hands.

“ Influenced by a consideration of these circumstances,” (the contagious nature of scarlet fever) says the same ingenious writer, to whom I am so much indebted in this inquiry, “ ought we not to employ all the means in our power, and especially such as have been found successful against other contagions, to eradicate from our country this insidious, most virulent, and destructive disease? It does not seem to have been known among us more than 150 years, for Sydenham and Morton are the first English writers who mention it. Sir Robert Sibbald, physician to King Charles the Second for Scotland, says, in the year 1680, this disease had appeared so lately at Edinburgh, and was so little understood, that he could not venture to give any observations on the theory of it, nor on the method of treatment. ‘ *Inter multos morbos, qui huic sæculo originem debent, nuperrimè Febris observata est quæ Scarlatina dicitur a coccineo colore, quo cutis ferè universa tingitur. Hujus morbi non ita frequentes observationes sunt, ut indè accurata ejus theoria tradi, et curandi methodus extrui poterit.—Paucissimi verò ex hac febre mortui sunt.*’ “ Before the middle of the last century, it had made its appearance in every populous town of North Britain, as well as England, and had extended throughout the greater part of Ireland. There are, however, in different quarters of the united kingdom, some districts remote from any considerable

considerable town, and several small islands, which have not been visited by the disease, if we can trust to the memories or traditions of their inhabitants. The above circumstance affords a proof that the Scarlet Fever does not arise spontaneously in our climate (see page 284,) and that when produced, it is not communicable to any great extent through the medium of the atmosphere, as was formerly supposed. Our endeavours to suppress it will be facilitated by the knowledge we at present possess of the manner in which it is diffused. Not only the perspiration and breath of persons affected with the fever communicate it to their attendants and visitors, but the clothes, bedding, and furniture in the apartments of the sick, are for some weeks capable of infecting those who handle or use them. Infection is likewise retained in carriages employed to convey the sick and convalescents, their nurses, or relatives. Since there is not on this head any restraint by law, and but little from private feeling, some hundreds are annually infected by hackney-coaches, stages, sedans, and hired carriages. Dr. Fothergill (page 28) remarks, that the ulcerated Sore-throat, in 1746, began at 'Bow, Greenwich, and adjacent places, seeming to spread from the river side westward over the whole city.' As the disease took the same course, when it was epidemical in 1786 (see above, p. 262,) some physicians have thought that the Scarlatina was, on both occasions, introduced by means of infected goods brought from abroad. The disease may have been

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sometimes thus imported; but when it appears in the eastern part of the metropolis, it will be more frequently found to have originated from the large repositories of old clothes near the Tower, East Smithfield, and Ratcliffe Highway." *

In answer to this, we must first inquire, which of the contagions have we succeeded in eradicating from this country? and how we are to ascertain the extent to which a contagion is communicable, when we are in doubt concerning its source, as often as it becomes epidemic, and when we find it spread in the manner described in the above extract? But it may be asked, supposing we have not eradicated any contagion, is that any reason why we should never attempt it? It is admitted that the disease is only kept up by its own contagion, conveyed in some form. What then are the means of prevention? Are those sufficient which have been hitherto proposed? The same author gives us the account of one attempt.

"At Ackworth, in the seminary founded and supported by the Society of Friends, the scarlatina in 1803 affected 171 persons, and continued there upwards of four months, although the greatest exertions were made to arrest its progress by keeping the infected separate from the rest, and also by strict attention to ventilation, and to cleanliness throughout the house. Dr. Binns's account of the introduction of this virulent complaint among the scholars,

* Willan, on the Skin, p. 389, et seq.

scholars, and of the difficulty of eradicating it, cannot fail to be acceptable both to medical readers, and to those who are interested in the prosperity of academies."

This account is certainly interesting, inasmuch as it teaches us not how the disease is to be avoided, but how difficult, if not impossible, it is to avoid it. The contagion was introduced by means which never were discovered, and the conjectures concerning which, are unsatisfactory to Dr. Binns who offers them. The children who remained in the seminary amounted to 216; of these, 184 were affected. This is a larger proportion than is usually found susceptible of scarlet fever in a given place where some whole families suffer. The mortality was 7, which is not a small proportion, as the disease has lately appeared. Every means of separation and fumigation were used: means which in other places have been found successful.

"If, says Dr. Willan, infected clothing remain for some weeks in a full close room, or locked up in chests, and fold during an unhealthy season, not only the wearers, but all who have intercourse with them, are presently infected, and contribute to spread the disease."—"During the last year of my attendance at the Public Dispensary, continues the same accurate writer, *I had reason to think* that a family in Wild Street, Lincoln's Inn Fields, was infected with scarlatina maligna, by clothes bought in Monmouth Street. More than 50 persons in the adjoining houses were soon affected with the disease,

disease, which afterwards traversed Drury Lane, and spread by Long Acre, and the streets connected with it, through several parishes in Westminster. Infection is principally conveyed at day schools, which we observe in almost every street. They are much crowded, ill ventilated, and open to children without restriction, and without inquiry into the health of families from which they come. Some effective restrictions are, however, necessary with respect to these and other sources of disease above mentioned, which, although they benefit individuals, endanger the lives of thousands." *

This extract, joined to the account of the history of scarlatina at Ackworth, is enough to show the difficulty of preventing the introduction of that disease, of ascertaining the source from which it is introduced, and of arresting its progress afterwards. The enforcing of restrictions on the sale of clothes, and on the government of day schools, though certainly not inconsistent with civil liberty, when their object is the preservation of lives, must at least be considered as difficult undertakings. Till these and much more are accomplished, every parent, husband, or wife, must feel uneasy for such of their connections as have not passed through a disease which, to use the language of the same ingenious author, has so long been the bane of "schools and academies, which has blasted the hopes of many noble houses, and which in thousands of families, by

* Cutaneous Diseases, p. 391 et seq.

by suddenly destroying a numerous progeny, has consigned the destitute parents to anguish and despair."

When we hear of scarlet fever in a family, or in a neighbourhood, a temporary removal is sometimes proposed, and often with success. It is rarely considered, that the parties thus removed, still continue liable to the disease for the remainder of their lives, or till they have passed through it. Nor is it thought worth inquiring, whether the season at which they fly from the contagion, is not the most desirable in which they can expose themselves to it; or, if females, whether their present security may not render the most interesting period of their future lives, the most melancholy to their surviving friends.

All this may sound threatening language; but after an anxious inquiry, such, and stronger, if I could use it, appears necessary, to rouse the attention of the public to a just consideration of the laws of contagions.

We have seen by the extracts I have produced, chiefly from Dr. Willan, how fatal scarlatina has proved, when epidemic under an unfavourable form. This is enough to show that those who are attacked, or who are even liable to be attacked at such periods, have every thing to apprehend. Nor have we any means of ascertaining with certainty when to expect such periods, nor of avoiding their effects.

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If we impute the present mild form of scarlet fever entirely to an improved mode of treatment, we shall, I fear, be greatly deceived. When the disease was so new in Edinburgh, that Dr. Sibbald acknowledged the difficulty of forming a Theory concerning its nature or mode of treatment, very few, he tells us, died; and every honest practitioner will acknowledge the cases he has seen, even in these days, which were marked with fatality from their outset. By the same writer, to whom I have been so much indebted,* by every other authority, from events with which few families are entirely unacquainted, we learn not only that the disease has frequently attacked lying-in ladies, particularly those of the higher and middling class, but that when it does occur under such circumstances, the chance of escape is very low indeed both to mother and child! This impression has by many events been so strong on my mind, that I rarely hear of the nuptials of a young friend, without an anxiety to know whether she has passed through the scarlet fever! It is not necessary to mark the various sources by which this contagion may be introduced at such a time; but when the event has occurred at a remote mansion in the country, it is impossible not to suspect the paraphernalia for these occasions, prepared, perhaps, in the habitations of poverty, and first aired in the lying-in chamber. Whatever the

* Dr. Willan, on Diseases of London and Description of Cutaneous Diseases.

the cause may be, the effect at such a period is too well known.

By this time, I trust, the reader is convinced of the difficulty of escaping scarlet fever, and the danger with which it is sometimes attended ; we may therefore proceed to the question of prevention.

Without interfering with the province of the legislature, we may at least remark, that all regulations which are not universal, and enforced with indiscriminate severity, are not only inconsistent with the liberty of one part of the community, but dangerous to the whole. Whatever flatters us with security, without enabling us to judge how we are to estimate the degree of such security, only leaves us more obnoxious to the evil, and less prepared for it when it arrives. Should the subject be taken up by the legislature, it is not likely that any laws will be enforced, without a patient inquiry into all the evidence which can be produced. Till this evidence is produced, and probably till measures are pursued in consequence, we can only judge from the facts before us. From these I am not hardy enough, to propose to those whose habits are such as generally prevail in this country, any other security than passing through the disease. It may be said that many escape through life. Many certainly do ; but much fewer than are generally believed, because many pass through it with symptoms so slight as not to be suspected. However this may be, it does not alter the question of security ; since no one can ascertain his own want of susceptibility

tibility but by trial. The question with me therefore would be, how we shall pass through the disease with the best prospect of safety, and thus relieve ourselves from danger, and our friends from anxiety?

There is one general remark, for which we are indebted to Dr. Willan, namely, that "scarlet fever exhibits during the summer months, a mild train of symptoms, soon terminates favourably, without producing any material affection of the throat. For some years past, it has generally been most virulent in the months of October and November."* —As the autumn of the same year (1796) advanced, he observes, "scarlatina, which is now extensively diffused, has since the beginning of September assumed its more malignant and dangerous form." — "In this form the disease usually proves fatal to infants on the 7th or 8th day."† — Again, in his Report for November, 1799, scarlet fever has increased since the last report, both in extent and the violence of its symptoms.‡ And in the following month, scarlatina has been attended with violent symptoms, and in two cases [out of eight] proved fatal. Without offering any other authority, it may be taken as a law, that scarlet fever, though frequently very general, is mildest during the summer months. As the winter approaches it is more severe; a sharp frost prevents its extension, but renders the disease in subjects

* Diseases of London, p. 32. † Id. 41. ‡ Id. 229.

jects previously affected much more dangerous, producing gangrene, and all the other symptoms usually termed putrid.

In this, however, as in every thing connected with pathology, there is always some uncertainty. It can be considered only as a general law, and on a subject so important it is necessary to leave as little as possible to doubt or conjecture. Would it not be desirable that the managers of every public seminary should publish weekly reports of the progress of the disease from the time it invades their establishments, regularly signed by the attending physician? Of the weekly bills I shall hereafter have more to say. It is a truly lamentable consideration, that on a subject of so much importance, we should derive no information whatever from a source which, if not authentic, is now the only established authority we can produce. It is true those registers might be improved, but this can only be done by legislative authority. Many valuable improvements have been often suggested by men, who have spent the best part of their lives on these important inquiries. Their labours remain hitherto almost unnoticed, but ready to furnish the ground-work of our future plans.

On the subject of extermination, nothing can with safety be urged, till we have some facts to guide us. No attempts that I know of, have been made towards the extermination of any contagion, excepting small-pox. The inquiry shall therefore be reserved, till we come to the consideration of that disease.

CHAP. VIII.

OF THE MEANS OF LESSENING THE EFFECTS OF
MEASLES, AND OF THE POSSIBILITY OF
EXTERMINATING THE DISEASE.

MEASLES are generally considered more dangerous in their sequel, than during their progress. If this is really the case, the mortality from the disease during the last year must have been much more alarming than it appears. The number of deaths assigned to measles for that period, within the bills of mortality, amounts to no less than 1386. How many were lost in the sequel by injury done to the constitution cannot be ascertained. To estimate the numbers who passed through the disease by the proportion of deaths, we shall take the greatest mortality that has ever been assigned in the metropolis. From one to three in a hundred is considered a large proportion. This is more than will appear by the practice of that branch of the profession, who see the most of the disease in common life. However, dispensary practice shows a greater mortality from measles among the poor, than is generally known or suspected. If we take the highest average of three in a hundred, on the whole, it will follow, that no less than 46,200 persons caught the measles during the year 1808, in a population, the average number of deaths in which is not quite 20,000.

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This mortality from measles has not been confined to London. Accounts from many parts of the country are similar; our intercourse with the continent is not sufficient to teach us the result of registers in Europe, but it is well known that the disease has committed great ravages in St. Helena and the Cape of Good Hope, whither it is supposed to have been conveyed with the packet.

The mortality from the measles in Madeira has exceeded any thing that was ever heard of from that cause in the same period. In Funchall alone, it is ascertained that 700 people died of it in four months. The population of that city was estimated with some certainty at 10,000 before the flood, which destroyed more than 200 persons, and nearly a fourth part of the houses. It is probable, that the number of inhabitants has much increased since that event, though the re-building of the town must proceed slowly, in a country where all the materials, excepting stone, are procured from abroad. Even before the flood, houses were scarce; the emigrations from Lisbon, the arrival of the English troops, the resort of invalids, and the increased traffic, must have confined such of the inhabitants as have not the means of paying extravagant rents. The fatality of the disease in Funchall, therefore, may be very much attributed to the accumulation of sick, by the sudden invasion of a contagion, to which the inhabitants had been strangers for at least 25 years. That
this

this has been a considerable cause, is further confirmed by the mortality being so great among the inferior orders, though the contagion has spread through every class. It has never been exactly ascertained how the measles were first conveyed to Madeira, yet there can be little doubt that it was owing to the baggage of the soldiery or their wives. From the time of its first appearance, it spread with the rapidity before mentioned over the town, and from thence over the whole island. It is said no where to have ceased as long as an individual remained liable to it. Whether this is strictly true or not, cannot be easily ascertained: but if the number of deaths is correctly stated, and the inhabitants of Funchall are not greatly increased, supposing the whole to have gone through the disease, the mortality will be found in the proportion of 1 in 13!

Admitting some slight inaccuracy in the accounts, such a visitation is enough to keep any town on its guard, against the invasion of such a contagion, at a season when they are least prepared to meet it. As my inquiries are confined to London, I shall not pretend to say how the measles can be prevented in the metropolis. This subject must therefore be concluded like the last. Parents should reflect seriously, whether it would not be safer to expose their children to the measles after a due preparation in a mild season, than let them run the hazard of being seized, when least fit to encounter so uncertain a complaint. It should

should be added, however, that measles do not prove so dangerous to pregnant or lying-in women, as scarlet fever or small-pox.

OF THE EXTERMINATION OF SMALL-POX.

Of all the contagions with which we are acquainted, small-pox is the most marked. It is communicable by contact of the fluid formed in the diseased parts, and applied to a sound person. The property of this fluid is such, that when diluted with water to a degree not yet ascertained, the smallest known quantity of that water applied to the broken skin of a healthy person may excite the disease, and the air which has touched a diseased person, or touched the matter from a diseased person, diffused to a degree and conveyed to a distance not yet ascertained, may excite the disease in a healthy subject who breathes it. Nor is there any climate, season, or state of the atmosphere, in which small-pox may not be communicated. Like the other contagions, its progress may be arrested by the prevalence of a different epidemic, but this, in many instances, renders it more fatal to those who suffer from it at such times; and if the power of the contagion should exceed that of the previous epidemic, the *mortality is truly horrible*.

It may be necessary to explain this last position more at large.

We have seen by Dr. Willan's remark, that though the setting-in of frost will check the extension

tension of scarlet fever, yet, that it renders it much more fatal to those few who are then seized. Sydenham considered what he called the continued fever, as the epidemic of winter, by which it is evident, he meant the fever from infectious atmosphere among the poor. The same author remarked, that "in those years in which small-pox is epidemic and mild, it usually begins about the vernal equinox; but when it is epidemic, and of a dangerous kind, it usually begins in the month of January, *seizing whole families, and sparing none of what age or sex soever they be, unless they have already had it.*"* It is not difficult to see the cause of this difference. We well know that those who continually breathe the atmosphere of accumulated sickness, are in reduced health, though they may not show immediate marks of fever. Others may be convalescent from fever excited by a more sudden exposure to the same air. Under either of these conditions the constitution must be very unfit to encounter so formidable a distemper as small-pox. The same improvement therefore, which we have already remarked in the state of society in London, whilst it has rendered the contagions more universal, has lessened their fatality, compared with the numbers who pass through the disease. This difference did not escape Dr. Plott, who assures us, that however general the small-pox may be in Oxford,

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* Swan's Sydenham, p. 96.

since the city has been rendered more healthy, yet the disease was for the most part mild.

It must however, be admitted, that this mildness is only comparative. If we rarely meet with purple spots or universal confluence over the body, which in Sydenham's time were not uncommon, we meet with high inflammation, during the progress, or in consequence of which the patient dies. But still if we estimate the increased prevalence of this disease merely by the increased number of its victims, we should greatly under-rate it.

Some of my readers may probably have already expressed their surprise, that whilst so many attempts have been made at preventing the introduction of diseases, whose contagion is at least doubtful, small-pox, and other well ascertained contagions, have not only been allowed their full range, but the worst of all of them has been even invited in its approaches. I have already given it as my opinion, that these *supposed* contagions have either never assailed us, or have ceased of themselves. In both cases we gave the credit of escape to our precautions; our familiarity with small-pox inducing us to consider the invasion and spreading of that disease, as the type of these *supposed* contagions.

Still it may be asked, if the conjectures of our predecessors were well founded relative to the contagious property of small-pox, and if they were sensible, from its severity and universality, that it was the most destructive of all diseases, is it not
strange

strange that no attempts should have been made at its extermination? Before we accuse our ancestors of inattention, would it not be right to expect posterity to inquire how *we* have so long submitted to measles and scarlet fever? The first we have seen, has, during the last year, destroyed many more than small-pox, and the latter is a continual source of uneasiness. Which of us does not recollect often to have heard a wish expressed that measles could be inoculated like small-pox? Have not some of our ablest physicians, nay, a celebrated school of medicine, made attempts at this mode of anticipating that disease in the same happy manner as small-pox was anticipated? Yet it is certain that measles is not considered equally universal as the small-pox, and to make a comparison between the fatality of the two would be absurd.

The only mode of accounting for this apparent inattention to exterminating small-pox, is by supposing either that those who had the most influence felt themselves secure, and were indifferent about the rising generation, or else that they conceived the disease unavoidable. The latter is not only the most candid opinion, but was certainly encouraged by the faculty, who attempted by the universality of the disease to account for its contagious property, and its invasion only once during life.

There cannot be a more remarkable instance than the above, how much men reason from the chain of events immediately under their own eye. The principal medical authors are usually the inhabitants

bitants of very large towns; the same may be said of the more active and wealthy part of the community, whose influence over the public opinion is the most extensive. Both these reasoned justly, as far as related to the scenes of their activity or residence; but never reflected that many, perhaps the greater part, of the inhabitants of villages or of considerable towns not supported by commerce or manufactures, passed their lives without suffering the disease. It was, indeed, a constant source of terror in those places, and some provision was made, not I believe enforced by law, against its extension. "In remote small towns, says Dr. Haysgarth,* a pest-house has been successfully used, where the disease rarely occurs, and where it infects but few, and those principally grown persons. But in large towns, where the disease is *constantly present*, almost all the poor natives are infected whilst children. If an infant be attacked and sent to the pest-house, the feelings of the mother would not suffer it to go alone in the most arbitrary government. If she has other small children, they would perish at home without her assistance; they must therefore go to the pest-house: unsurmountable embarrassments would arise if we suppose only ten such families to be admitted at the same time." That the greater part of the inhabitants of the metropolis had the disease when young, may be fairly presumed from the very few instances we have on

* Inquiry, p. 83.

record of persons dying of the disease in advanced age. Their principal anxiety was, therefore, for the rising generation; and the reflection of their danger, as it appeared to them unavoidable, must have affected them in proportion as they valued the lives of their offspring, whether from affection or the prospect of future aggrandisement.

OF THE EFFECTS PRODUCED ON THE PUBLIC MIND,
AT DIFFERENT PERIODS, BY SMALL-POX
INOCULATION.

It is universally known, that this practice was first introduced by a lady of fashion. As an inhabitant of the metropolis, and one of that class of society to whom the preservation of their offspring is of the highest importance, she could not be insensible to the advantages of inoculation. So little impressed was she with any danger of spreading the disease, that her only apprehension of opposition was from the Faculty, who, she conceived, might be jealous of losing a lucrative branch of their profession. When the art was yet imperfectly understood, the royal family, who are the first to quit the metropolis on the appearance of the plague, were among the first to show the world that they knew of no security against small-pox, as long as the constitution was susceptible of its influence. But even after this high sanction, the absurd manner in which the practice was conducted for some time, retarded its general reception in London; and a provincial practitioner had the credit of first improving, so as
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to render it popular. The Suttons very soon established houses for the reception of their patients; but this seems to have been more for their own convenience and advantage, than for the protection of the public. For either the number of applicants, or their want of means, was soon sufficient to preclude all caution; or else a kind of general consent rendered it, in many places, unnecessary.

In others there cannot be a doubt that much mischief must have been done. But the practice was popular with those who had the most influence: nor were these confined entirely to the wealthy; all the enterprising young peasantry of both sexes felt themselves relieved from a certain degree of captivity, by having passed through the small-pox, without which no one at that time could find employment in the metropolis, nor probably in any of the larger towns. In the midst of all this, complaints concerning the spreading of the disease must have been numerous. Few of them, however, appear in print, and those few are only among such as opposed the practice on every other ground.

At length Baron Dimfdale, who, till his journey to St. Petersburg, had been a provincial practitioner, proposed a plan for a general inoculation under certain restrictions. At that time some eminent physicians in London were engaged in a dispensary for inoculating the poor in the metropolis. This of course produced a controversy, during which, one of the dispensary physicians did not scruple to accuse the Baron of a wish to engross
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the whole of inoculation by his proposed restrictions. The truth seems, that in this, as in most other controversies, both parties were right. The Baron reasoned from what he saw in a country town, where the small-pox appeared only occasionally, and the physician, from the metropolis, which is never free from the disease, so that no one is safe for a moment whilst he remains liable to it.

Whether this controversy was attended to by the British public I am hardly competent to judge; but on the continent, the volume published by the Royal Medical Society of Paris for the year 1780, contains a paper on the subject from Professor Rose of Modena. In this, after the Professor inveighs violently against small-pox inoculation, asserting by authorities, somewhat indeed doubtful, that the disease had destroyed more at Modena since the introduction of the new practice than before, and concluding with the same expressions as used by the learned author mentioned at the beginning of this work. *Dix-huit mille hospiteaux ont détruit la lepre en Europe. Cette partie du monde n'a quarantée de la peste que par pratique sévère des moyens capables d'arrêter la communication, & on ne prend aucune précaution contre la contagion de la petite vérole* M. R. S. P. ann. 1777, 78, p. 88. This paper passed unnoticed, as far as can be collected from the memoirs, and the faculty of Paris continued to encourage inoculation as much as before.

CHAP. IX.

OF THE FIRST PROPOSALS MADE FOR EXTERMINATING THE SMALL-POX.

AS no attempts were ever published for the extermination of small-pox before the introduction of inoculation, we may presume that what every one endeavoured to avoid, but found no security from, was by common consent submitted to, like other things, for which there appears no remedy. In other words, as we submit at this time to scarlet fever and measles.

In the year 1784, Dr. Haygarth, at Chester, published his first "Inquiry how to prevent the small-pox, and the proceedings of a society for promoting general inoculation among the poor at certain periods, and *preventing the natural small-pox in CHESTER.*" His proposals were not only benevolent but rational, and his success induced him in the year 1793, to publish "A plan for the extermination of the CASUAL small-pox from Great Britain." It is difficult to say whether we should most admire his candour, diligence, the goodness of his intentions, or the little effect he produced on the public mind. The mass of correspondence he has collected will for ever remain a monument of each, and prove a valuable accumulation of facts as often as the subject is agitated. His first object was,

was, to ascertain the laws of the small-pox contagion; sensible, that if it could remain active for a period not yet determined; be conveyed to a distance not yet ascertained, and by substances, the circulation of which could not be restrained; it would be too bold an undertaking to leave an individual, much less a nation, liable to the invasion of so horrible a malady. To gain as much information as possible, he submitted his MS. to the perusal of others before he published, and instituted correspondences not only throughout England, but over the continents of Europe and America. Instead of having the popular voice in his favour, he had to contend with prejudices, which might have daunted such perseverance as his own in a less benevolent cause. "A physician at Plymouth asserts, that small-pox has been brought from London in a periwig. A medical friend at Chester, that the effluvia might be infectious for thirty miles." In a correspondence with Dr. Waterhouse, we hear of two cases of infection from periwigs. In one of them, a physician, who changed all the rest of his apparel, rode six miles, and afterwards gave the disease to a person in a room through which he only passed. In the other, the contagion floated across a river 1500 feet broad, and affected ten out of twelve carpenters at work on the other side. A maid servant was infected by washing a floor two years after any patient with small-pox had been in it. Dr. Haygarth finds no difficulty in showing that much credulity is required in believing

believing these events, which may be more readily explained in a variety of ways. But his candour could not overlook, that if these people were not affected by the supposed means, it must have been by means of which they could not be aware, and consequently, against which they could not guard themselves. This is enough to show the difficulty of avoiding casual small-pox.

Dr. Haygarth expresses some surprise, that his opinions were so differently received by two continental translators. Dr. de la Roche of Paris, expects little from any attempt at exterminating small-pox, but encourages inoculation. Dr. Cappel of Berlin, looks forward to this desirable event; and to effect it, discourages inoculation altogether. Every one knows how closely the inhabitants of Paris are collected; and the number of large houses, even of palaces, in Berlin, compared with the inhabitants, is almost proverbial. It appears, indeed, that the physicians of large or closely inhabited towns, could only express their wishes, but felt unable to offer any decided opinion. Dr. Fothergill wished the project well, mentioned it to every one, and would be ready to promote an institution, which had for its object the banishment of so great a plague. Dr. Aikin says, "all the rich inoculate, and who cares for the poor." A physician of the greatest eminence, both for rank and erudition, gives the following reason for his silence on the subject. "In London we have very few opportunities of seeing the small-pox.

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For the last 25 years the number of variolous patients who have fallen under my care, is very inconsiderable." Another distinguished physician and author, in a large city says, "I have not seen six private patients in the small-pox these 18 years; and about 7 or 8 in the hospital, where it crept in, nobody knows by what means.

The correspondence of Dr. Haygarth with Dr. Waterhouse is particularly interesting, as it shows in a lively manner the susceptibility of the human constitution to small-pox contagion, in proportion as it is less accustomed to it; and accounts for the difference of his conclusions, in proportion as commerce and population had increased in the new world. "After all, (says he, with a candour which does him infinite credit) may we not both be right? May not the small-pox operate differently in the two countries?" "Have we not found that small-pox rages with more violence in some countries than others? It has certainly almost exterminated the Aborigines in and near the sea coast, though they have the advantage from their mode of life, and fresh air, and no doctors.

I have introduced this very inconsiderable part of Dr. Haygarth's labours, partly to do justice to that meritorious author, and partly to show some of my readers, that the wish to exterminate small-pox is not new. It cannot be questioned that we have a better prospect of that desirable event, by the introduction of vaccination. Whenever that practice

practice becomes universal, there will be no subjects left for small-pox; and at this time, such as are satisfied with it, may secure themselves and their children. But this is not enough, they must render even this operation unnecessary to future ages, though in the mean time the offspring of a few obstinate individuals should be consigned to all the miseries of casual small-pox.

CHAP. X.

OF THE RECENT PLANS FOR EXTERMINATING
SMALL-POX.

IT is not a little surprising, that in proportion as our means of protection from small-pox are facilitated, our anxiety concerning its existence should increase. It must be allowed, all this is disinterested; but let us be careful how we deceive ourselves. If our forefathers never attempted any thing of the kind, might it not be because they were apprehensive that they or their friends might be made the subjects of the experiments? If at this time, a considerable part of the community has agitated the question with the best intentions, they should at least recollect, that those who are the most interested in it, that is, those who are not yet satisfied with vaccination, are the only opposers of any restrictions on inoculation.

Why, it is asked by many, *who till now* never thought on the subject, may not small-pox be exterminated altogether? Such was the question put to me by a practitioner so much older than myself, that I could not help asking him, Why he did not attempt to exterminate measles and scarlet fever, which were so much more to be dreaded, inasmuch as no improvement in our art has taught us how to lessen their violence, or to secure the constitution from their invasion? His answer was,

was, that he would be glad to exterminate both if he knew how. Does not then the same difficulty remain in the way of small-pox? If it is said the disease is only kept up by inoculation; what then keeps up the other two? What kept up small-pox before inoculation was known? Or, why does it so often occur where we can trace no communication with a person under the disease? "Not only, says a zealous advocate * for the prohibition of inoculation, is small-pox universal in its depredations, but its approach so insidious as to render it almost impossible to be avoided. It has been asserted, that the small-pox has been imported more than a hundred times in seven years into the channel, and twenty times in about six months, in the year 1800, by the channel fleet alone. If this were really true, would it not show the absolute impossibility of preventing the importation of such a disease by any quarantine law. The error evidently arises from our seeing fresh men who come on shore, and catch the disease in the lodging houses at the different ports, all the furniture of which is contagious to such as come from a purer air. Scarcely an East India fleet arrives, but we receive a number of Lascars into the Small-Pox Hospital. The number of American sailors was formerly very considerable; at this time we have three in the hospital. Will it be said

* See an anonymous Pamphlet, on exterminating small-pox, presented by Dr. Jenner.

said that these men brought the disease with them to England? "

The same writer adds, " The grave itself destroys not the contagious principles of the small-pox, of which many well authenticated proofs can be given."

Is there then a burying ground in London which may not at any time revive the disease, supposing the whole of the present generation to be vaccinated? Is there a lodging house or an old clothes shop, or a pawnbroker's, that is less dangerous? But it may be said, the shutting up of burying grounds, the purification or even destruction of lodging houses, the burning second hand clothes, and all the articles of a pawnbroker, or any other shop-keeper, would be a trifling sacrifice for so great a benefit; and by restraining inoculation, we at least prevent one source of contagion.

Is there then any one hardy enough to propose that an experiment for purposes, however laudable, should begin on the human subject instead of furniture, burying grounds, and other inanimate matter? First, remove those sources of contagion, which, before the introduction of inoculation, rarely left any person six years free from the disease; and then, before you enforce your restrictions, reflect that you are only reduced to the state of those countries which had been for ever, or for a long series of years, exempt from this calamity. Such are the nations who had never seen Europeans, or had seen them only after long voyages. Let us see whether

whether the security of such is sufficient to leave the inhabitants of the world's emporium at their ease, whilst they or their friends remain susceptible of small-pox infection? The aborigines of the N. American coast, we have seen, have been almost exterminated by it. The inhabitants of New Spain lost half their numbers when the disease was first introduced among them. In Quito alone, 100,000 were destroyed. Greenland was almost depopulated in 1733. In the Isle of France, 5400 died in six weeks. It is well known that the settlements of the Jesuits in Paraguay were principally restrained in their population by the small-pox before the introduction of inoculation among them. All these, it may be said, are places which Europeans had never before or rarely visited, or only after long voyages. It may therefore be thought, that they were too inattentive to an evil with which they were unacquainted, or of which they had only an imperfect knowledge. But fortunately we have the example of a city, whose situation somewhat resembled what London might be, should every source of contagion be taken away. The first stone of St. Petersburg was laid only in the year 1721. Its plan is not yet completed. Not only are the houses spacious and airy, but the climate affords the greatest advantages for preventing contagion from abroad, or for arresting it if imported. For five months in the year, all commercial intercourse from abroad is prevented by the freezing of the Dnieper; for more than two months
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the twenty-four hours afford a constant day, and the climate is then so warm as to invite every means of ventilation. The despotism of the government precluded every difficulty of enforcing measures which we shall find were not unattended to. The following are the four first pages of Baron Dimisdale's account of his Journey to Russia.

“ It will easily be supposed that Russia, in common with other countries, has experienced the mortality of the small-pox in a very great degree. The City of St. Petersburg in particular,* though the greatest precautions are taken, is scarcely ever free from it, the infection being constantly renewed by

* “ The following precautions were observed when I arrived in Russia, with a view to prevent this distemper from spreading. Where the small-pox appeared, the families were enjoined to give immediate notice to the president of the College of Medicine, who is always a nobleman of distinction: if it happened to a person of rank, no restriction was laid on their choice of a physician, but all the family, as well as the physician who attended them, were strictly ordered not to appear at court, until a proper time was elapsed sufficient to secure them from the danger of conveying the infection.

“ If the disease broke out in the family of a poor person, all that belonged to the house were confined at home; a plate was placed on the door to inform passengers that the small-pox was there; a provision was made by the crown for their support; surgeons were also retained and paid by government to attend on them, and give every necessary assistance; and they were themselves directed not to intermix with others, in a manner that might endanger the extending of the contagion.”

by the intercourse which subsists with various parts of the world.

“ The fatality of the disease, in an instance of a most affecting nature, seems more immediately to have given rise to the great event which makes the subject of this treatise.

“ A young lady, daughter to a nobleman of distinguished quality and fortune, extremely beautiful in her person, and not less amiable for the accomplishments of her mind, was contracted to a nobleman of the highest rank and station in the Russian court. A few days before the time appointed for the nuptials, she was unfortunately seized with the small-pox, which proving of a malignant kind, soon terminated in a loss that was universally lamented.

“ It was neither possible, nor was it material, to ascertain how the infection penetrated the recesses of the court; but it was obvious from this fatal incident, that neither rank nor fortune afforded any security against the ravages of this dreadful disease; and the whole court, sensible of the danger to which the Empress and the Grand Duke were exposed, were filled with extreme solicitude for those lives upon which the safety and happiness of the empire so essentially depended.

“ The danger to which these illustrious characters were exposed, as well as the Empress's well known zeal for the welfare of all her subjects, gave birth to a proposal for introducing the practice of inoculation,

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“ The first personages in the empire determined to set the example, by submitting to the operation ; and a resolution was accordingly taken by the Empress, to invite a physician from England, where inoculation had been most practised, and was generally allowed to have received some modern, and very considerable, improvements.”

Such was the state of St. Petersburg in less than fifty years after it was built, with every precaution against small-pox contagion, and before inoculation was known in that city.

No further arguments, I trust, will be necessary to show that the sudden interference with the practice of half a century is not an unimportant consideration. Nor ought the reader to suppose that those who are silent upon, or feel it their duty to differ from, the present popular voice, are less anxious for the extermination of small-pox. The subject, it has been shown, is not new, though the former opponents of inoculation never applied to parliament for prohibitory or restrictive laws. Yet their case was, according to the present language, oppressive beyond any thing inflicted by Herodian cruelty. For if the disease was only kept up by inoculation, those who refused to submit to it were exposed to all the terrors of the casual disease. If any defence was then thought necessary, for what all were censured if they omitted, probably it might have been urged that the same means were open to all, and that the prudent should not suffer for the inattentive ; that even those
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who complained, could only lament the anticipation of a disease to which they would have been always obnoxious, and which, as long as they escaped, would have been a perpetual source of anxiety.

The discovery of vaccination is certainly a most invaluable acquisition, and those who are satisfied with it, do right to recommend it to the world. Happy for themselves and others, if they had been contented to recommend it by their example, and by the facility which the practice itself offers. If they go further than this, there is only one step more they can conscientiously take, that is, the forcing vaccination on *all* under certain penalties. I know there are many men whose intentions are perfect purity and benevolence, and who would start at such an imputation; but what else are we doing in prohibiting inoculation of small-pox, or even in refusing it to those who are unable to make a pecuniary return, or temporary seclusion? If they do not submit to vaccination, are they not without the chance of escaping six years, at most, many of them less than a month in the metropolis? Of escaping what? a disease which is said to destroy one-sixth of the sufferers, besides maiming, blinding, and disfiguring many more. Do we know of any penalty heavier than an almost double decimation and these additional torments?

No! it is urged by some; the only intention is to put small-pox inoculation under some restrictions. Nothing can be more reasonable; it is not

indeed easy to excuse the omission of so important a duty, from the period that the practice was rendered popular by the Suttonian improvements. But now that you have left it so long unrestrained to the terror of the villagers, at least stop to attend to the probable consequences which may follow any hasty decision in the metropolis. Reflect, that the older your town is, the more numerous must be the sources of contagion from the causes before enumerated, and at least make some provision against these sources, before you interdict a practice, which, till lately, you probably recommended by your advice and example.

But, it is said, that by preventing inoculation, we lessen one source of contagion. It is my misfortune not clearly to comprehend the meaning of this position. The question is, do we afford any certainty for half an hour? Can we say to one newly arrived in the metropolis: You need not fear the small-pox now, for there is no inoculation permitted but under certain restrictions? Recollect the fate of Miss Joanna Cumberland, almost as soon as she arrived in London. Recollect the fate of the Russian Princess, in a newly built city, before inoculation was known, and where every endeavour was used to prevent the introduction of the disease. Recollect the fate of Queen Mary, consort to William III. married at the age of 15, and probably from that time, resident chiefly at the Hague; she escaped the small pox till her arrival in
England

England at the age of 27. Five years afterwards she was seized with the disease, and died.

In a word, is there the mortal who would live in such perpetual fear? Is there an animal of any description whom you would torture with such perpetual anxiety? Can you assure the youth, full of health, and at an age when strong exercise is commendable, and occasional intemperance with difficulty restrained, that in such a moment he will not be seized with a disease, which, under the most favourable circumstances, often proves fatal? Can you assure the virgin, that her return from the dance may not prove the introduction to this dreadful calamity, after her escape from which, perhaps, she would readily resign her existence? No, you say, but either of them may be vaccinated. Is this questioned? But does not the inference follow? Such are the penalties if you do not vaccinate!

It is far from my intention to consider any thing here offered as decisive of the question. My only wish is, that it should not be decided like one, every part of which is clearly understood almost without inquiry; that we should be alive to its importance, or at least, that I may not be accused of withholding whatever information the bent of my studies, and the office with which I am honoured, may enable me to offer.

NOTE TO THE INTRODUCTION.

IT would be a very curious inquiry for any medical man of leisure to trace the great variety of diseases which have at different times been included under the name of leprosy. Among the Jews it is evident that the term was very general in its application, though at different times it might be appropriated to certain well ascertained appearances. The leprosy described in the Levitical law, was not only a curable disease, but probably curable by the unassisted powers of the constitution. The patient was required to retire from society till he was pronounced by the priest to be clean; after which, and the necessary ablutions, he was re-admitted into the congregation. In another place* I have confirmed the conjectures of an ingenious writer, that this disease was probably the same as the yaws in the West Indies and in Africa. Whether in the present days it ever extends as far North as Egypt, I pretend not to say, but it is highly probable that it can never make any considerable ravages where slavery is unknown; that is, where men are tolerably covered, and their skin not much exposed, or much broken. It rarely appears among the Whites in the West Indies, excepting by accidental inoculation,

* * Morbid Poisons."

tion, and it is not with certainty ascertained, whether it is ever conveyed, excepting by actual contact, or the communication by the medium of insects.

There is every reason to believe that the leprosy described in Leviticus, was exterminated from the Israelites before their settlement in Palæstine. The only leprosy we hear of in the subsequent parts of Holy Writ was evidently incurable, and considered as such. When King Uzziah was discovered to be a leper, he was confined for the rest of his life in a lone house, and a successor appointed. Naamin, the Assyrian Captain, was recommended by the King his master to the King of Israel, that he might be cured by the miraculous agency of Elishah.

The curing of a leper appeared something more than he could expect, even from a prophet so highly favoured; and the King expressed his uneasiness lest the only intention of the Assyrian might be a pretext for war. It is enough to say that Naamin was cured by miraculous agency, to show that no other means were known.

It is, however, worthy of remark, that the Assyrians were under no apprehension of contagion from the disease, as Naamin constantly attended the King, even in his devotions. But Elishah seemed to entertain a different opinion, and refused the least communication with a leper. He sent his directions without seeing the patient, and when the latter returned cured, but without having undergone the necessary ablutions, he was dismissed with a short reply to his expressions of gratitude, and even to his inquiries concerning a scruple of conscience.—“Go in peace.”

The lepers, in the New Testament, were evidently considered incurable, and it appears that they were not permitted to be seen in the towns, but associated together

together without the walls. Four of these applied to our Lord afar off, with a loud voice; they were cured by miraculous agency, and ordered to present themselves to the priest.

It appears by these circumstances, that after the extermination of one kind of leprosy, the same customs were preserved in a certain degree with regard to another which still remained. The only difference was, that as the patients were never found to recover from this last, which was probably the true elephantiasis, their seclusion was for life.

Elephantiasis is known in all warm climates, and in many considered as contagious. Yet the lepers, or lazars, as they are in some places called, are often suffered to wander without any restraint. Such is the case in the island of Madeira, where these unhappy sufferers are among the common beggars, and often the most hideous are selected to excite charity from new comers. They have indeed a hospital, and a small allowance from the government.

It has been said, that after the expedition of the Crusaders, lepers were so common throughout Christendom, that no less than 15,000 Lazarettos were erected for their reception. By this great caution it is supposed that the disease was exterminated. To suppose that elephantiasis ever was general in Europe, would be to suppose a change in the human constitution subversive of all physical laws. We know from Celsus, and also from Galen, that the disease, if not unknown altogether in the latitude of Rome, was at least so rare, that those authors were unwilling to describe it.

Aretæus, who is supposed to have flourished in Capadocia, is the first writer that entered into any detail in describing elephantiasis; he considered it, however,

ever, contagious, which probably prevented so close an intercourse as was necessary to render his description accurate. When the syphilitic poison first appeared, much inquiry was made in the Italian schools to determine whether that disease could be discovered in the writings of the ancients. This produced a more minute examination of all their descriptions of leprosy, and it was now discovered that the leprosy of the Greeks was different from the leprosy of the Arabians. The latter they perceived was the elephantiasis of the Greeks, an incurable disease, and almost, if not entirely, unknown among themselves.

Elephantiasis has never been described by any author as a disease that he had seen in England. Thro' the politeness of Dr. Baillie, I have been consulted for two cases which he met with in his practice, both from the East Indies. One of these remains at this time in a society to which she is no way injurious, and which contributes to soften the misery of her unhappy fate.

The author of the letter to Mr. Perceval, informs us, that he had been eye witness of the ravages of this disease in Ceylon, yet he remains uninfected. May I add, that in the receptacle for lazars, in the neighbourhood of Funchall, I passed the best part of several days, examining without any injury to myself, the disease in all its stages.

All this is, I trust, enough to show that the disease for which 15,000 Lazarettos are supposed to have been erected in Europe, was not elephantiasis; *Lepra græcorum* would be too trifling to attract general notice.

At one time, I conceived these receptacles must have been for small-pox, and that they had gradually fallen into disuse, as it was found that the disease affected the same person only once during life. But as
some

some of the lepers were obliged to enter with all their goods, moveable and immoveable, it seems to follow that they were to remain for life.

In order to comprehend the nature of these establishments, we must be better acquainted with the history of the order of St. Lazarus, from its first erection. There is some dispute among the writers on this subject, whether this order was the same as that of St. John of Jerusalem. I pretend not to form any decision on a question, which nothing would have induced me to examine but the present Inquiry. It however appears by the author of "*Histoire des ordres religieux*,"—who maintains a contrary opinion, that the origin of each was similar, that is, a factory of Italian merchants had erected, at a very early period, a chapel, and afterwards a hospital, in Jerusalem. The last, principally for the relief of pilgrims and poor sick, who came to visit the holy sepulchre. When the crusading expedition commenced, this hospital was soon found necessary for the wounded soldiers. By degrees an order of knighthood arose, which was divided into soldiers, ecclesiastics, and sick. The lepers were to be attended by lepers, and, what is very remarkable, the master of the order was to be a leper. This might lead us to suppose, that small-pox was included among the descriptions of leprosy, and that it was found necessary, that those who attended the sick, as well as the master of the order, who was to govern the whole, should not be liable to the disease. These conjectures may appear bold; but let those who think so reflect, that we have no records whatever, to afford us any information concerning the first introduction of small-pox. This reflection, if it does not authorise, at least may be said to invite conjecture.

The Knights rendered great services to the Christian cause, not only in Palæstine but in Europe, after their expulsion from the East. In the year 1253 they petitioned the pope to permit them to chuse a sound master, as all the leprous Knights had been destroyed in Syria. The pope not only permitted this, but gave them many other privileges. Clement IV. ordered, under pain of excommunication, that whenever the Knights of St. Lazar should require it, every prelate should lend his hand to force a leper, with his goods, moveable and immoveable, to be under the care of the order. This may be one way of accounting for their immense riches. Besides this, they received great immunities from the different princes.

In 1490 the pope incorporated this order with the Knights of St. John of Jerusalem : but they remained distinct in France, in which country it appears that the order existed till the revolution, under a vow of taking the charge of wounded and sick soldiers.

What the nature of our establishments in England was it is difficult to say, but almost all the bequests which are preserved in favour of the Burton Lazars, mention *fratribus sanis et leprosis*, and some of them *militibus*. It seems probable, that none were admitted into the community but those who took the vows. Stow has a chapter of *leprose persons and lazar houses*. In this he first refers to the Levitical law, next to a decree in the ecclesiastical court, passed in the year 1200, the second of King John, by which, according to the Lateran council, when so many leprous persons were assembled as might be able to build a church, with a church yard, to themselves, they might erect such a church, provided it should not be injurious to the old churches, and also that they should

should be excused paying tythes of their gardens, or increase of cattle.

“I have moreover heard, continues he, that there is a writte in our law de *leproso amovendo*, and I have read that King Edward the Third, in the twentieth year of his raigne, (about 1337 or 8) gave commandment to the mayor and sheriffes of London, to make proclamation in every ward of the city and suburbs, that all leprose persons inhabiting there, should avoid within fifteen days next, and that no man suffer any such leprose person to abide within his house under paine to forfeit his said house, and to incur the king's further displeasure. And that they should cause the said lepers to be removed into some out places of the fields, from the haunt or company of sound people, whereupon certain lazar houses as may be supposed, were then builded without the city, some good distance; to wit, the Lock without Southwarke in Kent Street; one other betwixt the Miles-End and Stratforde, Bow; one other at Kingsland, betwixt Shoreditch and Stoke Newington; and another at Knightsbridge, west of Charing Cross. These four I have noted to be erected for the receipt of leprose people sent out of the city at that time.”

The only one of these houses now remaining is the Lock near Hyde-Park. Those of Kent Street, and of Kingsland, have been consolidated into St. Bartholomew's Hospital, which has a ward under the name of *Lazarus* for the reception of the same objects as the Lock is now confined to. Of the fourth, at Mile End, I can learn no particulars. I have heard Mr. Pott speak of the time, when the worst kind of head-cases, as he said they used to be called, were sent to Kingsland. That building still remains

mains adjoining the turnpike, and is converted into a manufactory, the chapel only being preserved for its original purposes. By all this it would appear, that leprosy was a term used for any severe cutaneous disease, or foul obstinate ulcers, which the ignorance or indolence of medical practitioners might chuse to confound under one common name, and which afterwards, for many years, acquired a different appellation. This is confirmed by a passage in Archibald Pitcairn who expressly tells us, *Lepra autem ante famam morbi Neapolitani hydrargyro cesset; NOMENQUE NUNC AMISIT.*

But these establishments were quite distinct from those which were under the direction of the religious orders, and accordingly, most of the latter were seized by Henry as church lands, whilst the former exist in some form to this day, as charitable institutions.

I have taken much pains to discover the passage in Mathew Paris, in which he mentions that 18000 establishments for lepers were erected in different parts of Christendom. But all my diligence in research as well as enquiries of others have been insufficient. The only thing I have discovered that bears on the question is, that the Templars had 9000 manors, and the Hospitaliers 19000 in Christendom, besides other emoluments; yet, with all this, in the year 1244, they petitioned for assistance by circular letters among the Christians, to enable them to build a fort for the protection of the Holy Land against the Saracens. The Christians, however, calculated that each manor might at least send a single soldier completely equipped to Palæstine. This and the recollection of the perpetual quarrels between the two orders, and their ill behaviour in other respects, determined

mined Christians not to pay any regard to their application for assistance.

Whether these *manerii* were any thing more than freehold property, however inconsiderable, I leave to be determined by the lawyers; but by a reference to the various bequests and endowments to be found in Mr. Nichols's "Appendix to the Burton Lazars," it will appear, that many of their possessions in land were inconsiderable.

The nature of the disease which constituted a leper, appears to have varied according to the country in which the term was used; Lorry has some good remarks on this subject. After observing how little was known of the true Elephantiasis or Syrian leprosy, he adds, "Auctores qui in regionibus borealibus scripserunt lepræ nomen multis etiam dederunt morbis cutaneis." The number of lepers he tells us, on the authority of Raimond, was so much increased after the holy war, that 1040 establishments were raised for their reception in France, of which only the names are left, the places being empty. *Imo equestris ordo apud Gallos iis inserviendis natus, ad alios usus postea ob inutilitatem detortus est.*

I leave it to others to unravel all this obscurity. But so much is certain, that elephantiasis never could have been common, if at all known, in England; that in the countries where it is most common, its contagious is much less certain than its hereditary property. That the term leprosy was given to most cutaneous diseases not otherwise designated, and that all nations are more infested with such diseases in proportion as they are poorer, or have less inducements to cleanliness.

The only instance I have met with of any description of the disease, in a legal sense, is in a passage of

of Rymer's *Fœdera*, referred to by the learned judge, In this it appears that Joanna Nightengale, of Brentford, was accused by some of her *good natured* neighbours of being a leper. A writ was issued, by which the king's physicians were to examine her. In this case there was only one mode of proceeding, namely, to search for authorities; and by these they found, that Joanna did not come within the description of such as had been proscribed in other countries. If any authority could be produced of a person coming under the description required by this decision, it must then be allowed that elephantiasis has been known in England.

It is hardly credible, how little Lexicographers are aware of the importance of words. It cannot be necessary to observe that the term *Lazaretto* is Italian. In another place* I have remarked, that the *Della Crusca* Society has set many of the philosophers in Europe at variance, by their arbitrary explanation of the word *pellicello*. A similar inattention seems to have had its effect in the word *Lazaretto*. Antonini, who professes to follow that learned society, translates the word as it is now used in England and France, that is, a deposit for men or goods suspected of conveying the plague. He gives the Latin word *Læmocomium*; whether coined at the same mint I pretend not to determine, but in an Italian and English Dictionary, published in London in the year 1611, the word *Lazaretto* is translated an *Hospital for sick folks*. Of this kind, it is most probable, were many of the Lazar houses on the continent, or rather the houses under the religious order of St. Lazarus; and the union of that order with the Hospitaliers, is a further

* In a Paper on the *Acarus Scabili*, read before the Royal Society, and published in "Morbid Poisons."

further confirmation of the same. If these remarks appear bold, the reader will make some allowance for the trouble it costs to reconcile authorities, by which we expect only to be instructed. In a few years an old dictionary may be worth its weight in gold.

NOTE TO PAGE 4.

"The Sweating Sickness."

Caius, the only English physician who gives any account of the *Sudor Anglicus*, confounds, like many modern writers, the term epidemic with contagion. His definition of the latter gives us no idea of a disease conveyed from one person to another. "*Omnis enim incidens contagio aut est ratione temporis præter naturam constituti aut natura loci male affecti aut iis que loco accidunt.*"

Van Swieten, after complimenting the English physician for his *optima descriptio*, adds, *celeri contagio per integras nationes dispergebatur*. Yet Caius says the disease was confined to the English, who when seized with the complaint in other countries, did not communicate it to the inhabitants, and that foreigners in England were not affected. In these opinions, however, he was partly governed by his own theory of the causes, which in his opinion predisposed the constitution to the disease. Professor Gruner has, with immense industry, collected all the writers on *Sudor Anglicus*, and calls it *Ephemera Catarrho epidemico persimilis*. He has added what he calls *Itinerarium Sudoris Anglici*, in which he traces it through most of the northern regions; and concludes the whole with the following remark, *Sic Sudor Anglicus CONTAGII EXPERS varie in variis locis grassatus.*

It

It is not less remarkable of this disease, that, contrary to the true plague, it affected the wealthy as well as the poorer class. But this was probably in crowded districts. Salop, the seat of Caius's practice; still retains all the marks of a crowded walled town. In London the mayor perished; but I do not recollect that it affected any of the nobility; Caius, indeed, says, it affected the peasantry: but this might have been from their resorting to the towns, or from their confined mode of living. Lord Bacon informs us, that it began on the 21st of September, and had so entirely ceased before the end of October, as to be no impediment to the coronation which took place on the last day of that month. This is about the period of an Influenza.

NOTES TO CHAP. I.

“Page 7, *Endemic and Epidemic.*”

In order to render the work as little complicated as possible for the general reader, I have made these two the generic terms, which is supported by the more accurate Lexicographers; *nam, Το ενδημιον est, quod in populo, επιδημιον vero quod vagatur per populum, grassatur et populatur. Ενδημος enim νοσος potest esse, citra aeris vitium. Επιδημια non potest.* Van Swieten remarks on this passage from Scaliger, *Si ergo loci natura et situ morbi oriantur, illorum causa perennis manet semper que adsunt et dicuntur ENDEMII si autem quodam tempore tantum regionem pervadunt VOCANTUR EPIDEMICI.* Here it is evident that this industrious writer, as soon as he leaves his copy, becomes confused. Agues may be said to arise *loci natura*, yet they are not always present. The true endemic diseases,

eases, if not the effect of climate, are I suspect, for the most part, the consequences of some hereditary predisposition, strengthened by repeated intermarriages in confined circles. Those which arise from soil, are strictly speaking *επιχθονίαι*. I trust, however, the terms I have used in the progress of the work, will be sufficient to mark every necessary distinction.

NOTE TO PAGE 12.

“ It is probable, that this fever would never have been thought contagious.”

It is wonderful how men are misled by the first appearance of events in matters the most important. An ingenious young physician expressed his surprise at my opinion, that typhus fever was not infectious; and to prove my mistake, urged, that when that disease had invaded one of the wards of the Edinburgh Infirmary, many of the students were infected in spite of the most careful ventilation. It is well known that at that University, the students are not confined to the colleges, but live among the inhabitants of the town. It was therefore easy to ascertain the question, by learning whether the families with whom the sick students boarded were infected. This it appears was not the case in a single instance.

A similar strongly marked and well authenticated history, is preserved by Van Swieten.

Longe mirabilis est, quod apud *Heisterum* legitur, qui & fide dignissimus est, & vivos rei hujus testes citat. Anno hujus saeculi undecimo *Altdorfii* incepit grassari febris acuta continua, quae, licet non
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haberet

haberet pessimam & malignam indolem, tamen ne mitis vocari poterat. Morbus solos cives Academicos invadebat, caeterum neminem, licet cives Academici per urbem dispersi habitarent, & eodem victu ac aëre cum reliquis urbis incolis uterentur. Unde vocabatur *Febris universitatis*. Imo universitatis Typographus, qui remote a Collegio habitabat, una cum suis famulis, sive operariis, affectus morbo fuit, dum alter Typographus, aedes collegio propinquiores multum inhabitans, cum tota familia manebat immunis a morbo. Cum autem de hoc morbo Academico rumor increbresceret, quidam ex Norimbergensibus filios suos domum redire jusserunt; qui tamen eadem febre apud suos decubuerunt, & aliqui ex hoc morbo mortui sunt. Mirum praeterea hoc erat, quod, dum Professores morbo corripiebantur, proles illorum, & reliqua familia, eodem malo afficiebantur pariter, studiosi vero aegrotantes eodem morbo non inficiebant cives, apud quos habitabant.

Dum haec perpenduntur, optimum videtur, cum Sydenhamo fateri, quod hi morbi *a secreta atque inexplicabili aëris alteratione hominum corpora inficientis gignantur, neque a peculiari sanguinis & humorum crassi omnino dependeant, nisi quatenus occulta aëris influenza dictis corporibus eandem impresserit. Hi, durante arcana illa aëris constitutione, nec ultra, pergunt lacescere. Epidemici dicti sunt.*

Had Van Swieten been aware of this law of infectious atmosphere, he would not have introduced this history with such expressions of wonder, nor have added his remarks at the end, on the inexplicable areana of epidemics.

NOTE TO CHAP. IV.

"P. 28, *There are certain neighbourhoods.*"

I have been told, but I know not on what authority, that those receptacles of the wretched in the old streets of St. Giles's, are kept up because they procure a large rental to some noble families. More probably, they are on long unexpired leases. In either case, it may be fairly urged, that the poorest must find some shelter. But may not a commission of respectable house-holders be appointed, assisted by a medical gentleman accustomed to visit such retreats? May not a small fine to the parish be required, as a licence for keeping houses, in the rooms of which more than a certain number of persons are admitted promiscuously to lodge? Before all things, let an inquiry be instituted concerning the mortality in these places, and even in individual houses, or rooms. Where there is reason to suspect a concentrated degree of infection, proper means should be used for the purification of such a house, before the commissioners are permitted to enter it; and the room or house may be barricaded, if the owners refuse to white-lime the whole, and wash every part of the furniture. A receptacle is already open for those who are affected with fever from such a cause, and proper caution is taken, that such patients as recover, shall not return into the world with their infectious apparel.

"Page 29, *Ready-made linen.*"

It may be thought by some, that to encourage this apprehension concerning ready-made linen, may prove injurious to an industrious class of females. Many are very anxious that female labour should be well paid. The intention is laudable, and sometimes well directed;

directed; but it should always be recollected that a female manufacturer is rarely a good wife or a good mother. Nothing fits a female so much for those offices, which Nature teaches her to look to, as that habitual attention to cleanliness and order, which is required of servants in well regulated families. I doubt not that it was formerly the custom in England, as it is now in most other countries, for the wealthy to have many more female servants than are necessary. The time not employed in domestic business, was probably engaged in spinning; hence the general term spinster for every single woman. Our machinery perhaps would render this employment unprofitable; but I never knew a family that did not find the advantage of a young supernumerary female, under illness and many other occurrences, during which the presence of a stranger is often particularly irksome. I am not now speaking of that class of dress-makers, whose occupation requires, and ought to furnish, the means of a comfortable existence. But it were to be wished, that ladies who resort to ready-made warehouses, and often fancy they are giving employment to the industrious poor, would reflect, whether they would not serve the interests of that class better, by protecting a young female, whose habits might be formed to order and propriety as well as industry. I am aware that many well intentioned ladies feel a dread of such responsibility; but this arises from expecting too much; from converting protection into something bordering on adoption; an error often painful to one party, and injurious to the other.

NOTE TO CHAP. IV.

"We owe our security to the meliorated condition of the labouring class."

When we reflect on the labouring class of society, on account of their expensive clothes or furniture, we are little aware how much we are mistaken. What Adam Smith learned with so much study, and taught with so much accuracy, namely, the difference between money expended in productive or unproductive articles, is practically understood by them.

When a new gown is purchased, the gratification of appearing in it is not the only consideration. A rainy day is held in contemplation, when this may, with the pawnbroker, furnish a temporary supply. It is far from my intention, to encourage a habit which enriches an individual at the expence of a poor neighbourhood; but this must be considered as a state somewhat above that profligate inattention, which consumes or wastes every thing as it is acquired. It is an evil that soon remedies itself; and after a time, nothing less than the imperious necessity of contributing to the box,* is considered to be a sufficient excuse for borrowing on terms so disadvantageous. It is soon discovered too, that with a better education, less expensive resources with a more elevated degree of amusement might be acquired, and even opportunities might have been seized, of rendering industry more productive. This wish is transferred to the offspring, and a new cause of economy arises. All this is well understood by those who have attended to it, and to others the subject must have been tedious before now; I shall therefore dismiss it with a few short remarks.

As we cannot expect perfection, and as most improvements

* Benefit Club.

provements are slow, it becomes us rather to be flattered than dissatisfied, when we see those whose situation is inferior to our own, endeavour to imitate us. Let us reflect, that we feel a similar inclination to imitate those above us, and that our constant advice to our juniors, is to court the company, and study the manners of their superiors. Above all, let us reflect that this ambition can only lead to greater diligence, in order to accomplish the object in view, and that the person who never looks forward to the improvement of his condition, loses every motive to diligence beyond the support of his existence, or the immediate gratification of his appetite.

This leads me to consider another mistake of which some of the best people are often accused, I mean the habit of looking too closely after those whom they assist. Those visits to cottages, which are so much applauded by some, will be often misinterpreted, and are rarely productive of good. I am not speaking of that benevolent notice with which it becomes all to treat their inferiors; but, under circumstances of distress or illness, it would be adviseable that such offices should be confined at first to the Clergy and the Faculty, who are more habituated to such places, whose immediate duty calls them to it, and who are the proper almoners of others. At the same time it is not only unnatural but dangerous for the inmates to desert their sick. Instances have occurred in which those who have been long accustomed to an impure air, when too suddenly removed into a pure atmosphere, have been seized with the disease they have fled from, whilst others who remained have escaped.

But enough has been said to show, that in proportion

tion as poverty and its attendant calamities are lessened, this source of epidemics will be lessened. Whenever it is ascertained to exist, the first business should be the immediate desertion of the house or apartment. Happily the sick are so far from being injured by removal at any period of fever, that nothing tends so much to recovery. Even a change of every covering, and a complete ablution in warm or cold water, are productive of further advantages. All this should be done, if possible, by those who have already taken charge of the sick. The apparel of these attendants should be changed, and themselves washed also. When all this is carefully accomplished, there will be no danger of contagion from the diseased subject. The furniture and apartment must be treated as before mentioned.

If I have said nothing on this occasion about fumigations, it is because I should be unwilling to trust to any, unless they were used to such a degree as would be inconsistent with the safety of any person who remained in the apartment. If every person is removed, a short but ample ventilation will render the place safe for any one to enter long enough to construct charcoal fires, and to lime-white every part, whether wood or wall. Till all this is done, and the apartment is afterwards dry, it will not be safe for many to remain in it for a length of time, nor for an individual to sleep in it.

Hitherto, all we have said, refers to the conduct and management of individuals, for it cannot be questioned, that when governments interfere in matters of this kind, there is always danger of their doing harm. The true spirit of inquiry, is in a certain degree interrupted, for the strong arm of power, and even its influence, if ill directed, must be injurious. But if governments

vernments should be careful how they interfere, even when their whole attentions are directed to the public protection, much more should they be careful how they enact laws, the effect of which must prove directly contrary to such intentions. The increased duty on window lights, in small houses, is a serious injury, inasmuch as the exclusion of light is the exclusion of air.

It is also impossible our Rulers can be aware how much they increase the sources of infectious atmosphere, by the heavy duty imposed on coals in the metropolis. All heavy duties operate to the disadvantage of the consumer, much beyond the mere sum imposed. They enable wealthy capitalists to engross the market, and thus lessen that competition which is always serviceable to the public. There is not a poor person, during a severe winter, who would not prefer the luxury of fuel to that of food, even when he feels the necessity of both. Besides that, there is no means of preserving the air of their apartments at all comparable to the constant renovation which a fire produces; it is certain that warmth contributes greatly to prevent the generation of this infectious atmosphere. This is well ascertained by the frequency with which such diseases occur in cold climates compared with warm. Add to this, the greater facility with which clothes are washed and dried; and above all, the greater inducement the husband has to return home, instead of repairing to a haunt in which he is sure of a good fire.

NOTE TO CHAP. IV.

"Page 29, Numbers who never saw each other before, are lodged in the same room or cellar."

A gentleman in considerable practice in Bloomsbury, assured me some years ago, that there rarely was

was a jail delivery without the introduction of typhus fever into the work-house. The acquitted prisoners often begged sufficient to procure themselves a lodging in some street in St. Giles's. From hence, on account of illness, the parish found it necessary to remove them to the work-house. All these inconveniencies are doubtless in some degree lessened; but the source of them should be removed.

Within the district of the New Finsbury or Central Dispensary in West Street, formerly Chick Lane, are several alleys between the North-west angle of Smithfield and Fleet Ditch, which is at that place an open stream, fairly entitled to its name of the River Fleet.

This part of the town having escaped the great conflagration, has, from its obscurity, met with no subsequent improvement. It is the only place in which I have met with typhus fever. Several ignorant Irish, on their first arrival in London, have been seized in succession. It is to be regretted, that the parish officers, who are by no means inattentive to the welfare of the poor, have not sufficient power to correct so serious an evil.

NOTE TO CHAP. VI.

"Page 45, If they are careless of contagion from a diseased subject, they are not ignorant that certain places are pestilential at certain periods."

In confirmation of this, I shall transcribe from Dr. Russel the following conclusion to the case of an Arab.

"His wife, (says that truly candid and accurate writer) acquainted me that she suspected he had contracted his illness in a Keisaria in the neighbourhood which he used to frequent, and where several persons

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still

still lay sick of the same distemper. This information confirming what I had before heard, I sat out for the Keisaria, which was situated *under the castle*, at a little distance from the horse market. It was inhabited chiefly by Arabs, who constantly resided there with their families, and got their livelihood as daily labourers, under the masons, terrace makers, and white-washers."

By this passage, it is evident that the woman was thoroughly aware of the pestilential property of certain places, and probably, that she had no suspicion of any contagion attached to persons. It was not any individual that she conceived had affected her husband, nor does she appear to have had any apprehension of being infected by him.

When Dr. Russel visited the Keisarias, he found that of more than forty people who had been seized with the disease, after the 19th of March, only one remained alive.

It will perhaps be asked, why these people do not leave their habitations on the appearance of the disease? We have seen before that they are expressly enjoined not to desert their sick. But it is not peculiar to the Muslemans. Dr. Russel mentions instances of Jews and Christians who remained with their sick relatives in pestilential situations; and it seems doubtful whether it is safer, after a certain time, to continue in such an atmosphere or to be removed. Dr. Russel, with his usual minuteness, gives us the history of a christian family who remained at home, and five were successively attacked with the plague, (Appendix, p. xciv); the disease proved fatal only to the first. We have seen before, that flight, after a certain time, is no security; and there is much reason to believe that to those who are seized at a distance from home, the disease is more generally fatal than

to such as remain. It will at least be admitted, there are few instances of so large a proportion of fugitives attacked with the plague, and recovering, as four in five. Diemerbroeck has, from different authorities, preserved several cases of fugitives who were seized a considerable time after their arrival at healthy districts. Two children sent from Nimeguen to Gilders, both died of the plague two months afterwards, without affecting any one in the latter city. About the same time the father, mother, and another son were seized at Nimeugen, the seat of their residence and of the plague. The mother recovered.

Bacon, with his usual sagacity, had ascertained all these facts relative to the progress of the plague; and had he directed his whole attention to such pursuits, there cannot be a doubt that he would have assigned a more rational cause for them; or, to speak more according to his own rules of induction, that he would have "traced the simple actions with such accuracy, as to detect the law." For want of this he imputes our escape from the plague rather to *good fortune* than to a proper attention to our quarantine laws; and in another place, "the plague, says he, is noted to go in a blood, rather than from stranger to stranger." Nothing is more probable than that a number of relations, living in different parts of a town, should meet at the same place; and if this should be a pestilential district nothing is more reasonable than to expect that they should be afterwards seized with the plague about the same time.

It is evident by Diemerbroeck's previous language, that these accidents after removal, happened principally in the advanced period of the epidemic. "In principio morbi a contagio plurimi inficiebantur; *postea vero tunc* æque inficiebantur qui contagiosa & infecta

infecta loca fugiebant, atque alii qui indiscriminatum ægros & sanos adibant." It is not difficult to see why those who are seized with the plague in a purer air, are less likely to recover from the disease; higher health, which may be the consequence of removal, is unfavourable for all acute diseases. Those who remain in the seat of the plague are, probably, in reduced health from the air they are breathing; every removal should therefore be early, and not to so great a distance as to produce a sudden change in the constitution. The removal of the sick with their inmates, may even prove advantageous to both. It is much to be regretted, as I before remarked, that we have not sufficient facts from sources, which are always existing, to authorise a certain solution of so important an inquiry.

NOTE TO PAGE 49.

"Plague at Marseilles."

Few subjects have been more contested, than the means by which the last plague was introduced into Marseilles. From an accurate examination, the most probable account seems as follows. A vessel arrived from Sydon with a clean bill, and there is every reason to believe the place was free from plague at the time of her departure. She stopped at Tripoly, where there is no account that the disease existed. Here the captain took on board some Turks as passengers. Two of these died in the course of a few days, and several sailors afterwards, as well as the surgeon. Three other sailors being sick, the captain applied for a surgeon at Leghorn, where the sick sailors died.

The captain brought a certificate from the surgeon
and

and physician of that city, that these sailors died of a malignant pestilential fever.* If the ship fever was on board, nothing was more probable, than that the strangers would be first affected. The ship was, however, ordered to quarantine on its arrival at Marseilles. The mortality continued on board, and the quarantine officer died. This was about the 12th of June. The vessel had arrived on the 25th of May.

About the same time arrived three other vessels from the Levant, with suspicious bills of health, but without any mortality on board. In the infirmary where the goods of Chataud's vessel were lodged, several porters died; but there was no proof of the plague till the 5th of July, when two porters were seized with sufficient tokens to ascertain the disease.

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* On this circumstance of Chataud's stopping at Leghorn, a considerable, and in my opinion, useless controversy has arisen. Dr. Pye says, if Chataud carried the plague to Marseilles, how should Leghorn escape, where there appears to have been no precaution nor suspicion? In answer to this, Dr. Russel says, "the ship had landed no goods there, nor had any intercourse with the shore, for the physician who visits the sick on board, remains at a distance from the ship in a boat, and the dead bodies are sunk in the sea." That this is the usual mode under any suspicion, there cannot be a doubt, but whether Chicoyneau's language implies as much, must be determined by those who are most intimately acquainted with the vernacular idiom of his country. Il ne sortit de sa retraite [dans la poupe] que pour relacher à Livourne. La nécessité d'avoir un Chirurgien l'obligea à s'arreter dans cette ville. Trois de ses gens y tomberent malades, ils moururent de même que les autres. Le medecin & le Chirurgien des Infirmeries visiterent les cadavres, ils attribuerent la mort à des fièvres malignes pestilentielle; dans leur certificats ils n'accusent d'autres causes que ces fièvres.—Traite de la Peste, 4to. Paris, 1744, p. 5.

Yet after all, this question is of little importance, unless it could be made appear, that instances of men dying of plague without injury to others were *not common*. Dr. Russel, with his usual candour, we have seen, gives several.

In the town the same suspicious cases existed from the 20th of June, but no marked tokens before the 9th of July. These were in a family at a distance from any supposed source of contagion; the only cause that could be surmised, was the possibility, that the sister, who was a taylor, might have been at work upon some infected Indian goods; and though her brother was seized first, yet this is accounted for by his being younger and more susceptible of contagion. The female taylor and her brother died, were buried at the infirmary, to which all the family was removed; and where they all perished. The house was closed.

On the following day a sailor from one of the other Levant ships was seized with the plague. A guard was placed on the house; he died the same evening; was buried in the infirmary, where the porters who conveyed him, and all the inhabitants of the house, were shut up. Those who had visited the deceased, were enjoined a certain quarantine at their own houses.

From this time the disease seemed to be conquered. The officers congratulated themselves on their prudence, and others denied that the plague had ever existed in the city. It was soon however discovered that the malady was extending itself slowly, and on the 18th, notice was given to the magistrates. On the 23d it was found that 14 persons had died. By the beginning of August, the disease had become so general, as to spread universal dismay.

In accounting for all these effects from contagion, where something more than the customary precautions were attended to, various causes were assigned. Among the rest, smuggled goods were suspected; and as smugglers usually live in the worst parts of the town, there is no wonder if they were the earliest sufferers.

sufferers. Such is a very short abstract of the account in the *Relation Historique*, published 1721, a year after the event.

Mr. Chicoyneau, who had every means of information, and published more than 20 years after, adds another cause. "The just severity of the council, says he, was superior to the representations of gain and ambition, the hull of the vessel was burnt with its whole cargo. Thus the source, or the suspicion of the evil was destroyed, but the town was full of fragments of the vessel."

"Page 3, After a time those circumstances cease."

It should always be remembered, that whatever may have been the source of this dreadful calamity at Marseilles, it commenced at the usual plague season in that country, without any greater inattention than is usual at other times; that it began to abate on the 7th of October, and ceased about the end of November. Towards the end of October, surgeons and apothecaries, who had deserted the city during the pestilence, and for whose assistance 2000 livres per month had been offered, returned voluntarily, and the magistrates found it necessary to give notice that the reward was discontinued. That methods were used to *disinfect* the town is certain; but when we consider the magnitude and universality of the disease, can we attribute the sudden change to any other cause, than that change in the temperature, which is universally found successful under similar events?

"Page 57, Who see only the exterior state of society."

It is a general, and too just remark, that all the evil which is going on in society, is not only brought before the public, but for the most part magnified. This does not entirely arise from any malicious wish
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for detraction, but a sort of consciousness of our own deficiencies seems to make us better contented with ourselves, as we contemplate the failings of others, just as the unhappy are sometimes taught to reflect, that their condition might be worse. For the same reason, the relation of magnificent actions, particularly where the scene is among our own rank, may be apt, whilst we cannot but admire them, to induce sentiments as if we felt ourselves lessened by them. Something of this kind must be the reason why the following history appears new in almost every company, in which I have heard it related.

Francis and Joseph, whose families were of the same county, contracted an early friendship for each other. Joseph, with whom only I am acquainted, was born in London, where for many years he carried on a small commercial concern. Francis was engaged on a much larger scale, and his success was proportionate to the magnitude of his undertakings, and the proverbial integrity with which they were conducted. In short, whilst Joseph was proceeding with a steady Pace, Francis seemed bearing down every difficulty that opposed him.

As they both retained their usefulness and prudence beyond the usual period of life; both might have been rich. Joseph, though always more intent on minuteness of accuracy than calculations of interest, might at least have retained, if he added nothing to his paternal property; but the perpetual calls on his benevolence effectually prevented either; and in the decline of life, he found it necessary to part with a reversion. His first application, we may suppose, was to his more successful friend; and with only the customary calculations concerning survivorships, 7000*l.* was settled between them as a fair consideration.

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The friends both survived the life on which the contingency depended, and Francis felt no other sentiment but disappointment. It occurred to him, that his now aged friend, might have been in a situation to conduct himself with the same liberality as in his early years. It is true, the reversion being his own, might be disposed of as he pleased; but he feared it would not be an easy task to transfer it to Joseph. Yet he conceived there might be one means of forcing his friend to accept what he had parted with, and determined, at least, to make a trial. "Joseph, said he, the old lady is dead."—"Then I wish you joy of the reversion."—No, replied Francis, I have already more than I can manage. *You* have always been a faithful steward to the poor, and now it is your only occupation.—"You do not seriously expect, replied Joseph, that I should take back that, for which you paid me a fair consideration." "I do indeed said his friend, and if you judge as you ought, you cannot refuse it; and for the reason I have before suggested. *My* time is occupied with my business and my family; you have remained single and renounced business. It is not to you I offer the estate, but to your stewardship, sensible of your fidelity." To be short, in the end, Francis was made happy in the success of his negociation, thus to part with his estate, and Joseph was at his ease to pursue his only pleasures.

I cannot conclude this account, without repeating the description I heard of Joseph in the county in which he was well known. That man, said one, is so constitutionally benevolent, that should he see a piece of orange peel on one side of the way in Cheapside, he would cross to pick it up, lest any one should slip by stepping upon it.

NOTE TO CHAP. VII.

“ At Ackworth, p. 66.”

The following is Dr. Binns's account of the progress of scarlet fever at the Ackworth School, extracted from Dr. Willan, p. 380.

“ This disease attacked the family when it did not exist in the neighbourhood of Ackworth, and yet, six months before, it came to our very doors without affecting any one in the house. It began in a boy from Sheffield, who had been with us a considerable time. Though not able to ascertain the point, I was led to suspect that he might have received from his friends some present imbued with contagion, having reason to believe the disorder was once introduced into a school, sixty miles from Liverpool, by a hamper of oranges sent from that town, when the disease was very prevalent there. It might probably come in another way from a distance, namely, by goods purchased, as flocks used for the childrens' bolsters, or curled hair for their mattresses; but I have no sufficient ground for any of these suppositions: being, therefore, baffled in my attempts to trace it to any other place, I have been almost ready to conclude that it may have originated here, as it must have an origin somewhere;—but if so, I am entirely at a loss to say how it could be produced. Circumstances indeed seemed, at first sight, to warrant the conclusion, as two boys applied to me on account of this complaint, on the same day: I found, however, on inquiry, that the Sheffield boy was taken ill two days before the other, that he slept in the next bed, and that he had vomited very offensive matter between
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the beds: in this way, perhaps, infection was communicated to the second boy, for, on former occasions, I remember several cases in which the disease began two days after exposure to contagion. The above patients applied on the second of the fourth month, but no other till the twelfth of the same month, when two boys and one girl were attacked: these, I suppose, were infected by communication with persons who visited the sick, for some of the family could not be prevented from paying unnecessary, and, I think, very blameable visits.

“ Our number of boys when the disease broke out was 179, of whom 104 were attacked in the course of four months; after that time only one was affected. Of the 105, five died. Many children having been sent home soon after the appearance of the disease, there remained in the school, at the end of the seventh month, only 126 boys. The number of girls, at the beginning of the fourth month, was 119. Between the twelfth of this, and the end of the fifth month, 48 girls were attacked, and but one afterward; so that the disease prevailed among the girls scarcely half the time it did among the boys. Of the 48 affected, two died; and since many of the girls also returned home soon after the complaint appeared, their number was, at the end of the eighth month, diminished to 90. I mention this reduction of our list, lest otherwise it might appear that we were more successful than we really were, in defending a great number from the contagion. Besides the children, who were in general between eight and fourteen years of age, a few others of the family were affected with the disease.—The following is a statement of the whole.

“ Boys

	Affected with the disease	Died.
Boys	105	Of whom 5
Girls	49	2
Masters, apprentices, and servant-men	8	0
Mistresses, servant-women, and apprenticed girls	9	0
	<hr/> 171	<hr/> 7 nearly 1 in 24.

“ About thirty other children were affected, but too slightly to be included in the sick list: however, it may be observed, that in the list of 171, there was almost every gradation of the disease; I could not therefore draw the line of distinction with much exactness.

“ In regard to prevention, I think that an improvement of the diet in such as live low, moderate exercise in the open air, cold bathing, in short every mode of strengthening the constitution, with great attention to cleanliness and ventilation, must have a tendency both to ward off the disease, and to support through it those on whom the contagion has fastened.—They who are in attendance ought as much as possible to avoid taking the breath of the sick, since it is clear that the Scarlatina, and very probable that some other diseases are so received. When children in a school are affected with symptoms of fever, they should be immediately separated from the rest, till the nature of the fever be fully ascertained: this precaution having been taken, I believe several children at Ackworth, though really attacked by the scarlatina, were, through the early application of suitable means, presently restored to health. But when these attempts

attempts did not succeed, the patients were sent to a fever-house at the bottom of the garden, more than two hundred yards from the grounds frequented by the children. This house consisted of a chamber for the sick girls, and another for the boys, with answerable convalescent rooms on the ground-floor, and a bed-room for the nurses, besides a few other small apartments, all, by a little contrivance, sufficiently ventilated. Those whose complaints did not require them to be strictly confined, might walk behind the house, where there is a grass plot: but when the fever and sloughs in the throat were wholly removed, the patients stayed a few days in the convalescent rooms, and had an opportunity of walking in the garden, at the front of the house, to clear themselves from infection by repeated exposure to the open air. After this they went across the garden to a wash-house, about equally distant from the fever-house and the school, where they were entirely stripped, and washed with soft soap, particular attention being paid to cleansing their hair. They then put on fresh cloathing and went up to the rooms in the school, being, however, kept apart for some time longer. Their bed and body linen was frequently changed on their return, as it before had been in the sick-rooms. When they had continued thus about a week, and appeared to have recovered their strength, the general ablution was repeated; and after rambling in the fields for some hours, they were permitted to mix with the other children.

“As soon as the weather would permit, cold-bathing was entered on by the boys who were in health: they began with it sooner than the girls, and used it more frequently, yet it appears by the proportion of boys affected, that they were more susceptible of the disease.”

ease than the girls, which seems to militate against the opinion before given; however, the influence of other causes should be taken into account.

“Fumigations were used, with an unsparing hand, both in the sick and the convalescent’s houses, also in the lodging-rooms of the children who were well, every evening after they retired to rest. Our usual mode of fumigation was by pouring vitriolic acid on marine salt, to which manganese was added on the recommendation of Dr. Walker, who, at my request, came over several times from Leeds to visit the sick, and to whose assistance I attribute a considerable share of the success in our management of this dreadful disease. This plan of fumigation, after a long trial, appearing insufficient to destroy the contagion, the manganese was omitted, as it tends to oxygenate the muriatic acid, by which effect, in the opinion of Chaptal, it’s acid virtues become weaker, since it’s affinities with alcalies diminish, and it is so far from reddening blue vegetable colours that it destroys them. *Elem. of Chem. Vol. I. p. 246.* We afterwards used only the salt and acid, as recommended by Dr. Johnstone, but with no more apparent advantage than before. The vapour raised by Dr. C. Smyth’s mode of fumigation, proved so unpleasant to my lungs, that I was soon obliged to lay it aside.

“Vinegar was employed very freely in sprinkling the floors, and even the bed-clothes: the patients likewise were very frequently washed, during the hot stages of the disease, with cold vinegar, or vinegar and water, or vinegar and brandy, by means of sponges, or linen cloths, not only on their faces and extremities, but occasionally over the whole body; and they, in general, experienced much relief from it.

“Though

“ Though the season was usually very cool, a system of ventilation was carried on, night and day, much beyond what can be done in almost any private family. The rooms were also frequently washed, sometimes even while the sick were in them; nor do I know of any case in which this practice was attended with the smallest injury.

“ Gargling night and morning, as recommended to us by Dr. Lettsom, was not used by those who were well till the disease appeared on the decline: it must no doubt be serviceable as a preventive, but, notwithstanding it was long regularly practised by the children, it did not prevent returns of the Sore-throat with feverish symptoms.

“ Not finding that the means above-mentioned are to be wholly depended upon, I would recommend, in large schools, that the communication be cut off between the sick, their attendants, or visitors, and the rest of the family. This I found could not be carried into effect, though the house for the sick was 250 yards from the school, while provisions, &c. were sent from it to the sick; I therefore proposed, when the disease broke out, to send away those at the time uninfected, as far as practicable; but this was not done till a very late period, some persons, who were consulted, thinking the first precaution would be sufficient.”

The same physician, (Dr. Binns) remarks, that the influenza did not attack a single individual of the family.—*Mem. Med. Society*, Vol. v. p. 351.

It is very true, as Dr. Willan observes, that at the school of which Dr. Blackburne gives an account, the contagion was more easily arrested, yet the probability is, that the means made use of, as well as the habitual ventilation, were much greater at Ackworth.

Indeed,

Indeed, Dr. Binns remarks, "there are few similar institutions in the island, in which the air is more freely admitted than in this." It would be a desirable thing to learn how the school mentioned by Dr. Blackburne, fared during the influenza, which we have seen, spreads in proportion as ventilation is less attended to.

However, the following history of the progress of typhus fever, scarlet fever, and influenza, in the same establishment, afford a sufficient illustration of the doctrines already maintained.

At a highly respectable academy, consisting of 100 young gentlemen, typhus fever made its appearance in Sept. 1793. At that time, it was common in many parts of England, particularly in schools. About half the number of scholars were infected, but none of the family, either in the school-house, the lodging-houses in the town, or at a distance from the town whither many of the patients were removed.

The scarlet fever appeared in the same seminary in 1802. As the patients were removed to the sick-house, only eight had it. Those who remained in the school were free from it; "but, says the gentleman who favours me with the relation, almost all, I think I may say all who went home, about 15 in number, had it, and in some instances communicated it."

The above gentleman imputes the security of such of his scholars as remained, to the careful fumigations with nitrous acid. But we have seen how insufficient this and every other precaution were at Ackworth.

My informer adds, that influenza, when it occurred, spread without any respect to age, but usually so slight, "that we have not always removed the patient to the sick-house."

That this gentleman considered his academy as crowded is evident, for in consequence of the occurrences

rences above mentioned, he lessened the number of his scholars one half.

Here we have most fortunately a history from a scientific character, unshackled by medical theories, of three epidemics under his immediate observation. In each the laws were preserved, which I have endeavoured to trace. Typhus, as it is called, spread only in its original source, but was not transplanted. Influenza was general, and in a few instances severe. Scarlet fever, like the other contagions, was easily arrested in circumstances under which typhus fever and influenza spread. Patients conveyed to a distance, communicated scarlet fever, but not typhus fever.—Lastly, those who remained in the air to which they were accustomed, escaped the effects of the contagion; whilst those who were removed to a purer air, were seized with the disease from which they had fled.

There is something so remarkable in this coincidence of events with the laws I have endeavoured to establish, that I cannot help adding, if any reader wishes to be informed of the seminary in which they occurred, I am permitted to inform him.

It is worth remarking in this place, that the ague has been particularly prevalent during the last autumn in some of the fenny counties: in others, continued fever of a very unfavourable type, particularly to strangers. Some of the latter have been seized with ague several months after leaving the seat of it. At this time ague is more common in London than usual. In many of these cases, I suspect the disposition to the disease has been contracted during an autumnal residence in the country.

NOTE TO CHAP. VIII.

"Page 80. *They were encouraged by the faculty in supposing the small-pox unavoidable.*"

The opinion that the small-pox would necessarily occur to every one once during life, is as old as the Arabian physicians. Those who wish to learn the theories of the earliest writers, may find them collected by Diemerbroeck from Avicenna to Willis. I shall content myself with citing the last.

It is evident that Sydenham, who seems to have fallen into the same error, had been warped by these writers in his theories of fermentation and dispumation.

Willis's words are "*—convenit enim homini, omni, soli, et semel variolis, aut morbillis, affici: si forte quispiam in tota vita immunis degerit, aut alius in hos affectus sæpius inciderit, sunt hæc rara et inusitata naturæ eventa, quæ communi observationi minime derogant: quin omnino rarum sit, quod nimirum cuncti et soli homines sint variolis et morbillis obnoxii, atque unica plaga iis absolvi soleant.*"

He afterwards assigns as the cause of this universal prædisposition to the disease, certain impurities of the blood, *inter prima fætus rudimenta in utero concepta*; quæ [particulæ] diu delitescunt; postea a *causa evidenti* commotæ, cum sanguine fermentescunt; ipsique *ebullitionem* ac deinde *coagulationem* inducunt; è quibus plurima hujus morbi symptomata oriuntur."

"*Causa evidens*, quæ hæc semina fermentativa commovet, et sæpissime in actum deducit, triplex assignatur; scilicet *contagium* aliunde susceptum, *dispositio aëris*, ac immodica *sanguinis et humorum perturbatio.*"

Gentilis and Mercurialis differed from this opinion

of the cause of impurities, but still consider small-pox as morbum hæreditarium atque hinc nullum fere hominem ab iis immunem esse potest quid omnes nascuntur ex parentibus hoc vitio contaminatis.

Fernelius derives the disease à causa quadam cœlesti et occulta cui cum infantes et pueri minus resistant quam adulti, hinc fieri quod illi frequentiores variolis laborent quam hi.

Sennertus differs from these last writers without assigning any better cause than the humidity of spring and autumn with vitiated particles of the blood.

Diemerbroeck shows the folly of this notion of impurities, by inquiring how any person could escape from such an effect, when all must be subjected to the cause. He instances a great number of his relations who had lived to a very advanced age, without suffering the disease; and, lastly, himself, who, on the verge of 70, after attending thousands without any caution, had escaped. But this would rather make in favour of Willis's Theory, who expressly says, that if perchance an individual should escape during life, or another should fall into the disease more than once, such uncommon events do not invalidate a general law of Nature. Now it is plain that Diemerbroeck did not ascribe his security to a want of exposure, it could therefore only be accounted for by that peculiarity of constitution which Willis has remarked, as not inconsistent with his theory. This want of susceptibility of small-pox is, I am persuaded, much more rare than is generally suspected. Among the infants inoculated at the hospital, the number is too small to ascribe to any other cause than some temporary affection, which occupies the constitution at the time. Among adults the number is greater, and here we generally find that the subject has remained with his brothers

brothers and sisters or playmates, whilst under small-pox. Under these circumstances, it is probable, an accidental inoculation has taken place, and the disease has passed off so mildly, that the attention to the greater sufferers has absorbed the whole anxiety of the family. But I seem to have forgotten that my only intention was to show how much the opinion of the necessary universality of the disease was encouraged by the profession. Diemerbroeck, we may see, though he discourages the opinion, does not consider exposure to the contagion, as necessary to induce the disease. It however does him credit that he professes himself unable to assign any cause whatever. "Quis enim, he concludes, tantæ rei se veram et perceptibilem rationem daturum promittet? Hæc quippe sunt ex illis arcanis quorum causas nos exacte scire noluit altissimus conditor."—Diemerbroeck de Variolis, p. 275. I do not recollect any writer, before the introduction of inoculation, who proposes any means of escape, which human prudence can advise in a populous town.

NOTE TO CHAP. IX.

"Page 88. *Dr. Haygarth's correspondence.*"

The syndic and council of Geneva give a description of their city, and of the small-pox inoculation, quite conformable to each other. "The city is of small extent compared with its population, yet it is difficult to enlarge it, on account of the fortifications. It consists of 1200 houses, containing nearly twenty-one persons to a house. That the small-pox is usually epidemic every five years, and that in that interval they have frequently no natural small-pox in the city or its vicinity, though inoculation is constantly going on; that they sometimes had occasion to send to a distance

distance for small-pox matter, when none was to be had in the city; yet the children inoculated resorted in every stage of the disease to the street and public walks, without ever being observed to spread the contagion." A town fortified, walled, and so closely inhabited, even when free from any epidemic disease, must be surrounded by an atmosphere impregnated with exhalations, which may greatly impede the spreading of a contagion. This, in the old state of London, we have already remarked, led Sydenham into an error in confounding small-pox with those epidemics which arise from the constitution of the atmosphere, unconnected with contagion.

In this place, I cannot help noticing a controversy between Baron Dimsdale and Dr. Watkinson, in which each seems to contradict the other; yet, considering the laws of epidemics, and the scene of practice with each, there is no reason to doubt the veracity of either. Dr. Watkinson says, he inoculated some young subjects *among the poor*, and that the contagion did not spread in the neighbourhood, though there were many still liable to the disease. Baron Dimsdale informs us, that from one of Dr. Watkinson's patients, he inoculated the child of *a gentleman*, and that the disease was communicated *to the footman*. This is in perfect conformity with the general law that the contagion, when not generally epidemic, should be more active in proportion as the atmosphere is more pure. But to return to Dr. Haygarth.

His correspondence with America, shows in a striking manner the greater susceptibility of the human constitution to this contagion, in proportion as it has been little accustomed to its impression. It is also well known, that the new continent is only by slow degrees opposing the causes of those epidemics
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which occur at the different seasons with great severity in countries not sufficiently cleared, and in towns so suddenly constructed as to be ill drained or ill supplied with water. If small-pox was introduced during the prevalence of any other epidemic, the influence of the latter on the human constitution may be sufficient to prevent the extension of the former. But if the town, and even the neighbouring country should be free from any other epidemic, and the human constitution for a long time free from small-pox contagion, a very slight impression would be sufficient to introduce and spread it.

It appears difficult, if not impossible, to account for some facts related by Dr. Waterhouse, but by the gradual increase of Boston and its neighbourhood in population and commerce, and its consequent lessened susceptibility of the small-pox impression, by being more accustomed to it. Thus at some period before the revolution, a Governor arrived in Boston, one of whose servants died of small-pox during the voyage. The Governor submitted in common with every other passenger to a requisite quarantine, and all the bedding of the deceased was burned, yet the disease spread as was supposed by the smoke from the combustion. At another time the burning of papers which enfolded lemons brought in an infected vessel, spread the disease in the same way. So little were the inhabitants in some parts of America accustomed to small-pox, that when it broke out in their army during the revolutionary war, 29 practitioners of medicine were inoculated in a few weeks, by Dr. Rand alone. At these times the small-pox might be kept off for a considerable time, and their quarantines and other restrictions might be useful; but as commerce and population have increased, their only rule before the discovery

covery of vaccination, was to encourage inoculation as often as the disease appeared among them. Dr. Waterhouse, who formerly thought burning insufficient, now conceives that burying any substance in the earth, is an effectual means of destroying its contagion, and that 48 hours is sufficient: yet we have unquestionable authority that the remains of a corpse after ten years interment, proved contagious at Berkeley.

I cannot help again noticing the candour of Dr. Waterhouse; May we not, says he, both be right? May not the small-pox operate differently in the two countries? "Have we not found that small-pox rages with more violence among some nations than others? It has certainly almost exterminated the aborigines near the sea coast, though they have the advantage from their mode of life, and fresh air, and *no doctors*." [Consequently no inoculators.]

APPENDIX.

No. 1.

THE only plausible argument that remains against permitting small-pox inoculation in the metropolis, is, that the number of deaths by that disease has increased since the practice was introduced. Even if this were true, we have shown that the increase has been much more considerable in the other contagions; and Dr. Heberden remarks, that the number of sudden deaths have doubled during the last century. It will easily be seen, that if more children are reared, which the same authority admits; and if fewer die of the diseases of poverty, more must be exposed to those causes of fatality from which no improvement in life can secure us, or which, like apoplexy, are more common in the advanced stages of life. From this we might expect that the number of victims to small-pox would have been in a ratio equal to its greater fatality above the measles; and such would probably have been the case had not inoculation been introduced. Those who estimate the probable number of deaths from small-pox, by the probable number who may be exposed to the disease, must be erroneous as far as relates to the metropolis, where all are exposed, and, if we may believe Sydenham, all are infected during an epidemic. The only calculation we can make, is by estimating the number residing in the metropolis, that are susceptible of the disease. In this manner we find Dr. Willan accounting for the progress of the disease in the years 1796, 1797, and 1798. During the first of these years, happened the severest epidemic

mic small-pox recorded since 1757. During the second, the number was reduced to 522, which is fewer than at any period since, and for several years before; during the third, the numbers were again high. On this occasion, that accurate writer remarks, "The new subjects for this increased mortality must have been produced by the births within the two years, and by the influx of adult persons from the country, who never had the small-pox, to the amount of several hundreds every year."

This last circumstance would be sufficient to account for the increase of deaths by small-pox since inoculation, had such really taken place; because since the rich have lost their terrors by inoculation, they have been too inattentive in receiving domestics who have not passed through the disease. There appears also an inaccuracy. The estimate has usually been made by *the proportion of deaths from all diseases*, without sufficiently reflecting that the numbers who formerly died in early infancy, swelled the totals of burials, without adding to the real population. Dr. Heberden, willing to view the question in every light, has given what he calls a coarse statement from an average of about ten years, at the beginning, middle, and end of the 18th century, selecting such years in which the whole number of deaths was nearly the same, viz. about 21,000. By this mode of calculating, he finds the increased mortality by small-pox, to be from 1600 in the beginning to 2,000 in the middle and end of the century. This mode is objectionable, because certain years of particular epidemics may produce extraordinary mortality, and may supersede small-pox as an epidemic. Hence, in the succeeding years, a greater number will remain susceptible of small-pox, yet the general mortality may

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be less. Thus the decad from 41 to 50 inclusive, was the most fatal in fever, yet the number of deaths by small-pox was particularly low. It appears, therefore, that to make a fair statement where we cannot suppose the population lessened, we ought to take the whole numbers as they are, without regarding the greater or less mortality of particular years, excepting what are called the plague years, none of which happily have occurred during the last century. In distributing the century into three parts, I shall for convenience, select the last 90 years, being more easily divided into three thirties. The first decad is omitted, not only on account of the order which it enables us to maintain, but because the mortality by fevers as well as small-pox and measles was so low, for that early period, as can only be accounted for by a less population.

According to the proposed division, then, we shall find that there died of small pox in the thirty years,

From 1711 to 1740 inclusive	-	65383
From 1741 to 1770 ditto	-	63308
From 1771 to 1800 ditto	-	57268 ;

making the number of deaths by small-pox greater in the first thirty years by 2075, than in the second thirty years, during which inoculation had acquired some stability, and greater by 8115 than in the last thirty years, during which inoculation was the established practice of most prudent families.

At the same time, the mortality by measles has taken a quite different course, the number of deaths in the second period of the same ninety years being greater than in the first by 1781, and the number in the last thirty years exceeding the first by 2018.

By taking the estimate of these two diseases, we save the necessity of any estimate concerning an increased population, which is very uncertain. For
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how much soever the population of the town may have increased, we are not able to ascertain how much of this increase is confined to Mary-le-bone and Pancras, which are not included in the bills, nor whether the depopulation by the improvement of London, within the walls, may not equal the increase of the other parishes included within the bills.

Imperfect as these bills are, whilst we have no other records, it is justifiable to refer to them, and, as Dr. Heberden remarks, taken on a large scale, they are not likely to deceive us much. But it is truly painful to see men, whose intentions are honest, led astray by the artful quotation of single years. In 1804, we are told that vaccination had so far reduced the number of deaths by small-pox, that they amounted to only 622. It might easily be answered, that in 1797, they amounted to only 522. What was the cause of each? That there were fewer inhabitants in London susceptible of the disease in 97, in consequence of a previous epidemic; and in 1804, in consequence of the zeal for vaccination. All this is highly in favour of vaccination, but makes nothing towards the extermination of small-pox, which can only be kept under by inoculation or vaccination.

In the year 1805, it is added by these honest zealots, the number of deaths by small-pox increased from 622 to 1685, in consequence of the difficulties thrown in the way of vaccination. But it is notorious that those difficulties increased during the years 1806, 7, and 8, yet the average number of deaths in those three years has been only 1280, which is less than in any three successive years that can be produced within the last ninety years of the preceding century, or than any single year, not preceded or followed by an epidemic small-pox. During the two first and part of

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the last of these years, small-pox inoculation increased to such a degree, as to alarm many well intentioned people. Yet part of the previous exemption might be imputed to inoculation, as the deaths by small-pox have increased since that practice was discontinued at the hospital. At the same time, I conceive vaccination has had a very great share in decreasing the deaths by small-pox; not so much by what has been done in London, but because during the early zeal in the country, so many were vaccinated who, by this time, have resorted to the metropolis, and if they had not been prevailed on to vaccinate, would probably have arrived susceptible of small-pox.

Though the bills of mortality, especially for so short a period, cannot be considered sufficient evidence, yet as they have often been referred to on the subject, it may be right to show, that hitherto there is at least no reason to suppose the casual disease was increased by the inoculation of out-patients.

The order for discontinuing that practice was made towards the end of April, and enforced in the beginning of May. From that time the number of deaths by small-pox, according to the bills of mortality, has gradually increased each succeeding month, so that the average for April and May was $42\frac{1}{2}$ each, for October and November $141\frac{1}{2}$ each.

The following is the report of the Small-pox Hospital, delivered in December last.

INN OUT
PATIENTS. PATIENTS.

	Small-Pox	Inoculated	Vaccinated	Vaccinated	Inoculated	Death by the Small-pox as reported by the Bills of Mortality.
January.	7	21		32	67	174
February.	9	19		40	96	102
March.	9	29		101	190	89
April.	4	36		113	484	46
May.	4	25		214	196*	39
June.	15	16	1	117		51
July.	14	10	2	53		62
August.	3	10		105		78
September.	6	20		156		103
October.	10	23	3	159		96
November	24	29		114		167

No. 2.

Correspondence between Dr. HERVEY, Register of the Royal College of Physicians; and Dr. ADAMS, Physician to the Small-pox and Inoculation Hospitals.

Copy of a printed Letter from Dr. Hervey to Dr. Adams, Physician to the Small-pox Hospital.

SIR,

HIS Majesty has been graciously pleased, in compliance with an address from the Honourable House of Commons, to direct his Royal College of Physicians of London to inquire into the present state of vaccination in the united kingdoms, to report their observations and opinions upon that practice

* To the 5th day of this month.

tice, upon the evidence adduced in its support, and upon the causes which have hitherto retarded its general adoption.

The College are now engaged in the investigation of these several propositions, and request you to communicate to them the result of your experience and inquiries on the subject, that they may be thereby assisted in making their report as perfect as possible.

I am, Sir,
Your most obedient Servant,
JAMES HERVEY,
Register.

By order of the Royal College }
of Physicians, Oct. 23, 1806. }

Copy of a Letter from Dr. ADAMS to Dr. HERVEY.

Berners-street, 17th of November, 1806.

SIR,

I have been honoured with your circular, expressing the wish of the Royal College of Physicians to comply with his Majesty's gracious command, relative to cow-pox.

The College are pleased to expect a communication on the three following points :

1st, My own experience in vaccination.

2dly, The result of my inquiries.

3dly, My opinion of the causes which have hitherto prevented its general adoption.

1st, My own experience fully confirms all that *Dr. Jenner* promised in his Inquiry into the Causes and Effects of Cow-pox.

2dly, I have made no digest of my inquiries, excepting

cepting as they lead to experiment, which are consequently included in the former answer.

3dly, Besides the prudent backwardness of most in admitting novelties into practice without ample proof of their utility, the causes which have prevented the general adoption of vaccination appear to me to have been principally the mistaken zeal of its friends. It could not be expected that men who value themselves on their talents at investigation, and feel conscious of their scrupulous adherence to truth, could patiently submit to be uncandidly treated for a scepticism induced by events however accidental. When their accuracy was questioned, whilst they disregarded the assertions of their accusers, they became diligent in collecting collateral evidence, and when their reasoning was ridiculed, instead of expressing only their doubts, they became parties in their own defence.

Another inconvenience has arisen from a too great forwardness at answering objections before they were sufficiently matured; hence when variola appeared after vaccination, the event was either denied, or explained by so many minute causes as were sufficient to frighten the ignorant, disgust the candid, and induce the prudent to avoid an experiment, the result of which was not sufficiently understood.

A practice at one time represented as so simple that the clergy and females were invited to undertake it, became at once so mysterious, that only a chosen few were said to *understand* Vaccination; every untoward event was imputed to ignorance between the true and spurious pustule, to taking matter at too late a period, and to other causes still less satisfactory.

Had these uncertainties really existed, they would have been sufficient objections against a practice, the object of which is to secure the subject from a formidable

able disease, and from which he might be secured by another, certainly less desirable, but well-ascertained operation. But the truth is, that Vaccination is as simple as it was at first announced; that the true character of its vesicle is more certain than the local effect of any other morbid poison; that it is impossible to confound it with a pustule of any kind; and that every difficulty might have been avoided by requiring a correct register of the progress from the period of insertion to cicatrization, or for the most part of perfect scabbing.

I am, Sir,

Your obedient

Humble Servant,

JOSEPH ADAMS.

To Dr. James Hervey, &c. &c.

To Dr. ADAMS.

SIR,

THE committee of the Royal College, appointed to inquire into vaccination, request you to favour them with the evidence which the registers of the Small-Pox Hospital afford upon that subject, and that you will address your communication to me at the College.

I am, Sir,

Your most obedient

Humble Servant,

JAMES HERVEY.

In answer to the above, it was stated that from the 21st of January, 1799, to the 1st of January, 1807, 20,323 had been vaccinated, 17 of whom had since taken small-pox, of which one died. That neither

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sore arms nor subsequent eruptions had occurred sufficiently important to give uneasiness, or to interrupt the practice. Since the above account was delivered, 20 more cases of small-pox have occurred in those vaccinated at the hospital, one of whom died. Twelve have applied for relief under small-pox, having been vaccinated at different places; eight of these proved distinct and mild cases, four were confluent, but none proved fatal. In one, the progress of vaccination, and the appearance of the cicatrix were doubtful, but the patient had been often exposed to small-pox after vaccination, and escaped for about five years.

No. 3.

HAVING, in common with every other writer who has consulted the bills of mortality, frequently regretted their inaccuracy, it may be expected that some mode of improving them should be suggested.

First, relative to the christenings:—Many classes of Christians do not baptize at all, others not till riper years. Most of these are in that rank of life, which renders a register of their childrens' birth of some importance, and on that account, a register has been established at the Library in Red-cross Street. The Quakers, I believe, register at their meetings; and the Jews at their synagogues. If these are sufficiently accurate, it may be unnecessary to interfere with them; but for the sake of uniformity, it may be better to make an universal register for the metropolis, on one general plan.

No other occurs to me at present, but a registration of midwives of both sexes, who shall receive an annual stipend from their respective parishes, and be

bound under a heavy penalty, if they omit to register every child, at whose birth they are present. This register shall be kept by the minister of the parish, or such persons as shall be appointed by him, whose residence shall be contrived for the convenience of the parish, if extensive.

This must be considered only a general outline, to be filled up by others, better acquainted with the subject.

The diseases and deaths come more immediately within the inquiry of the physician. These, I think, might be registered by licencing undertakers, who should be bound in a heavy penalty, not to interr a corpse without a certificate from a medical man, of the disease, age, and former residence of the deceased. Where no medical man is consulted, a certificate should be produced, signed by some individual in the neighbourhood, who shall be appointed to make inquiries after receiving the information from the undertaker. A fee or salary may be annexed to this office. On a certain day in every week, these certificates should be brought by the undertaker, or his accredited servant, to the minister of the parish; and on the third day of every month, the whole should be printed in the present form, excepting that the epidemics should have a division by themselves, as was the practice for the plague, when the town was accustomed to its returns.

The five following should be constantly marked, fever, scarlet fever, small-pox, measles, and hooping-cough: dysentery and ague should be added, whenever there are found more than a certain number in any one district: and if the mortality from either of the other five epidemics is considerable, notice should be given every week of its progress. A fatal case from small-pox inoculation, or vaccination, should be distinguished.

As every new plan is subject to many inconveniences, which can only be discovered by trial, it may be recommended, that the first experiment should be made in those two extensive parishes which are not included within the present bills, Mary-le-bone and Pancras, particularly the first, which has been long celebrated for its correct parochial administration. In these no old customs would be interfered with, as, at present, they publish no weekly bills. The order with which every thing has for a series of years been conducted in Mary-le-bone, would render the execution of some such plan more easy, and also its improvement till it should be brought to such facility, as may enable the other parishes to fall into it without difficulty or confusion.

No. 4.

AFTER the frequent notice how much the extermination of infectious atmosphere depends on the meliorated condition of the labouring class, I cannot conclude without offering the following hints to the better judgment of others.

The present-benefit clubs among the labouring class, seem to have arisen from a conscious incapacity in the character of our countrymen to take the charge of their own money. Hence the necessity of forming a fund which they can only touch under sickness. The same feeling cannot but extend to the period of old age, or even to the uncertainty of employment. This spirit, which ought most of all to be fostered, has been the most abused. Flattering schemes of improving their little capitals beyond what can be fairly accomplished, are perpetually held out to them, and sometimes end in the loss of the whole.

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The only plan that can be permanently useful must be completely within their comprehension, liable to no uncertainties, and by always keeping within their view the true value of money, induce economy in the management and diligence in the acquisition of it.

May not a Bank be established, ready to receive the smallest weekly contributions of such individuals, recommended by others, who shall be presently described. Every half year the balance should be struck, and interest for six months added to the creditor's side for the lowest balance which has ever appeared in the account during that period. That is, if a person has paid at first five pounds, and afterwards various sums, but has never drawn out more than those last sums, his lowest balance will be five pounds, and for that he shall have an interest of two shillings and six-pence added at the end of the six months, and a fair balance shall be struck, to show the full sum remaining in his name. If this sum is not diminished in the course of the succeeding six months, an interest of $2\frac{1}{2}$ per cent per six months shall be added to the balance, whatever it may have been at the beginning of that half year. The same to be continued every succeeding six months.

Each individual must have a banker's book, to which must be attached some check or indenture, understood by the clerk and himself, and another understood by the clerk only. He should see the balance struck every six months, and sign it if he is capable.

In order to secure this compound interest, the balance in the office (reserving only a certain sum for contingencies) should be paid every morning into the Bank of England, who should appropriate an office

fice for that purpose. As they would always have a balance, they should allow every week an interest on the lowest balance from the beginning of that week, which should be added to the balance of the current week, and thus the compound interest be calculated from week to week. As a further means of supporting such an establishment, 100 gentlemen of property, principally proprietors of large manufactories, should be invited to deposit one thousand pounds each; half of which they shall be at liberty to draw in any sums they may think proper, but never to leave a smaller balance than five hundred pounds. If they wish to withdraw the whole, they will be expected, but not required, to furnish the Bank with another *customer* on the same terms.

That the *smaller customers* may be sensible of the advantage they derive from the establishment, without at the same time seeming to forfeit their independence, they shall be required to produce an introduction from one of the *larger customers*, before they are permitted to lodge their smaller sums weekly.

It is presumed that the weekly compound interest paid on these joint sums by the Bank of England, will be sufficient to defray the expences of this new Bank, as well as the half yearly compound interest to the smaller customers.

The Bank of England it is true, will derive little or no profit, and a certain expence. But besides the gratification the governors and proprietors will derive from the services they are rendering the labouring class of society, in my opinion, that grand establishment will derive ample advantage from the general interest all the Londoners will feel in supporting, or at least in submitting to their charter. It is not probable the Bank should ever feel any other danger than
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this jealousy; but should such a moment occur, no better security can be desired than the interest which would be felt by so numerous a body as the class of citizens, which compose their new customers. The loss, however, cannot be considerable to a company who are making *hourly* a compound interest.

The bankers books kept by the *smaller customers*, should have prefixed to them a few aphorisms like the following, "The benefit arising from compound interest, on sums however small, is greater than can be calculated beyond a certain number of years. The late learned Dr. Price discovered that a penny put out to compound interest at the birth of our Saviour, would at this time produce a sum equal to the worth of several globes of gold of the dimensions of the world we inhabit.

"The calculation of money at simple interest is, that it doubles itself in 20 years; at compound interest, in 14 years and $\frac{1}{2}$, that is, when the interest is only added to the capital once a year. If added every half year, the period of doubling must be still earlier.

"When money doubles itself, the interest must equal the principal: therefore five pounds paid regularly every year, and receiving compound interest, will at the end of 14 years and $\frac{1}{2}$, produce one hundred pounds. If the compound interest is added every half year, it will produce that sum earlier. Now five pounds a year is only two shillings a week, allowing two weeks deduction for Christmas.

"Threepence a week from the birth of a child to its years of apprenticeship, will produce more than thirteen pounds, which if it is not an apprentice fee, may at least serve to clothe a son, so as to make him appear respectable among his fellow apprentices or workmen; a shilling a week will in 14 years and $\frac{1}{2}$,
produce

produce fifty-two pounds, which if not employed in the mean while in the purchase of good tools or materials, may be reserved for a proper opportunity, and in a few years more assist a prudent son in law in beginning life.

“Many work people are employed only one half of the year; whatever they save during that period, may be *working for them* by producing interest. Whatever they are able to leave at the end of the dull half year, will be a certain productive stock gaining interest, whilst more is added during the busy season”.

These are only the outlines of a plan, which is not to be considered as entirely crude in the author's mind; but the subject cannot be matured without the assistance of others, accustomed to calculations and commercial transactions.

THE END.

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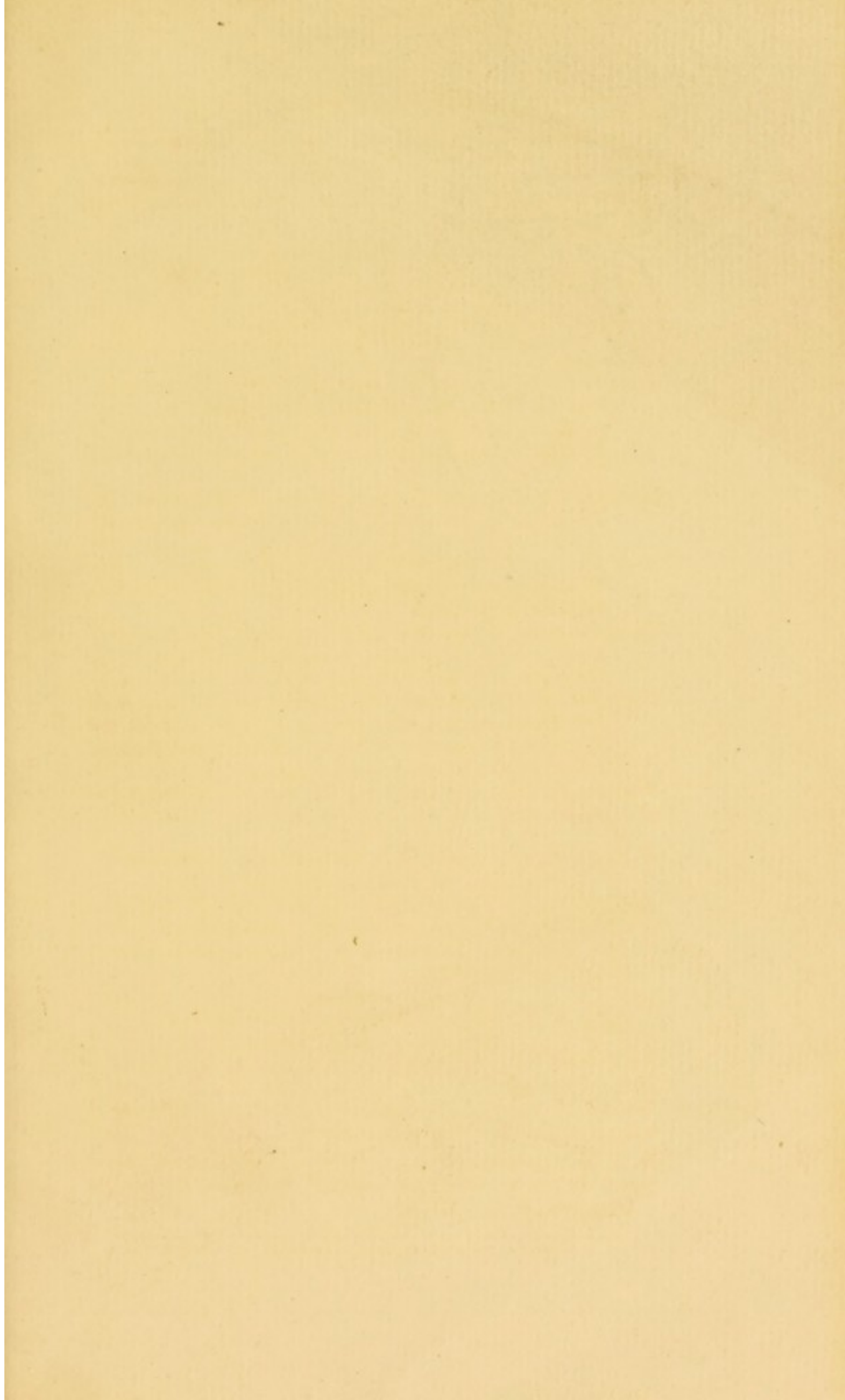
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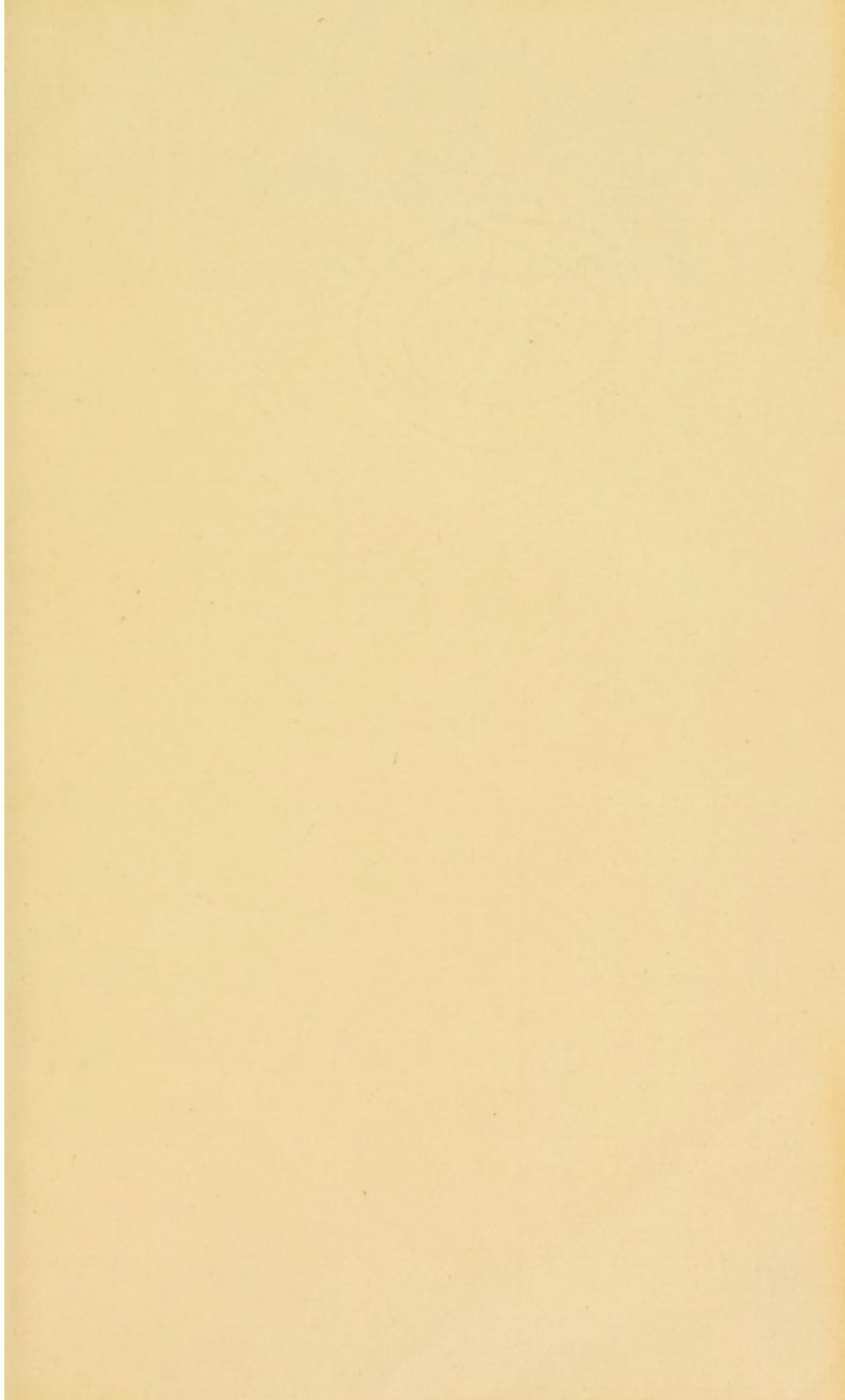
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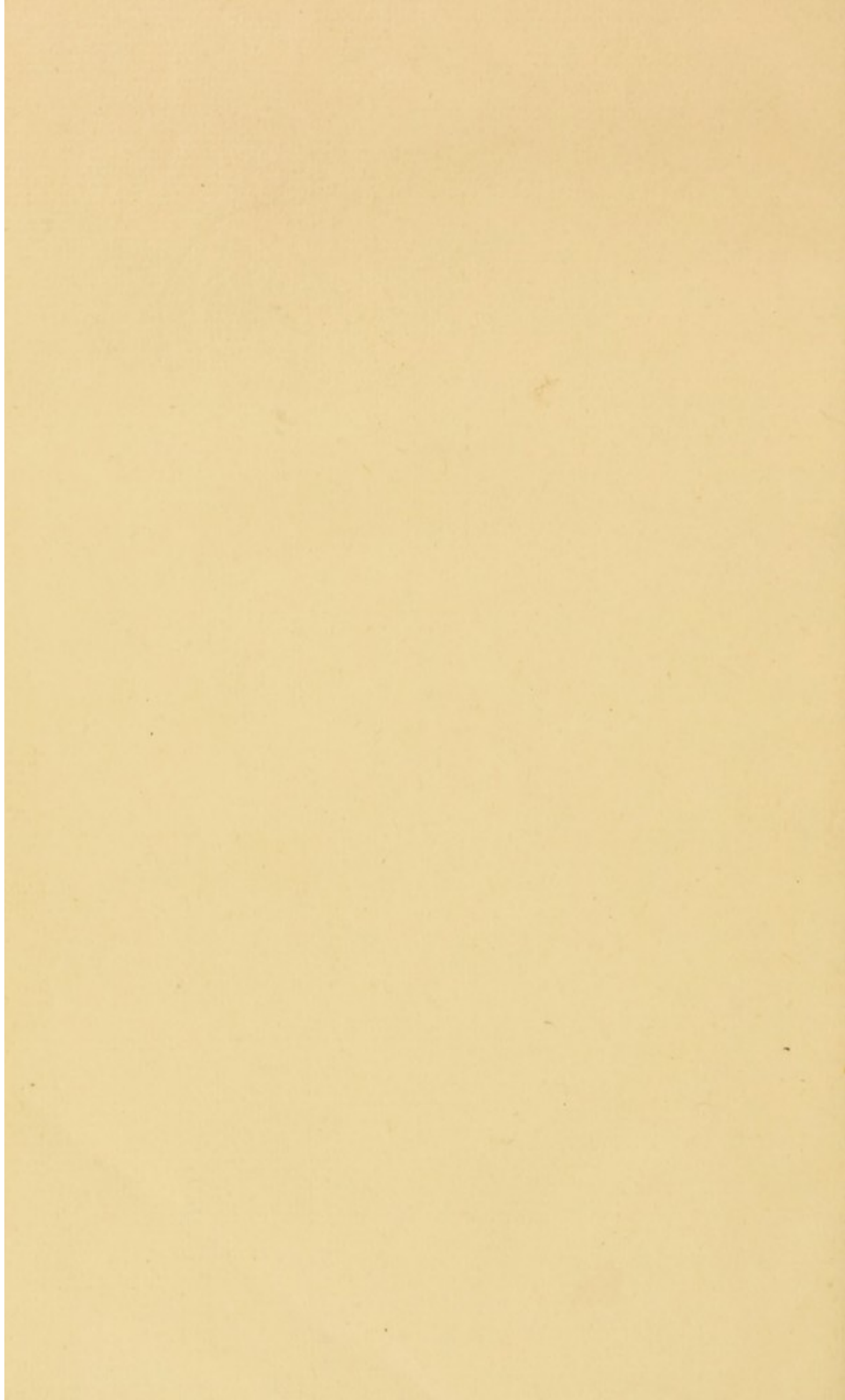
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