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AN

INTRODUCTORY LECTURE

TO THE

COURSE OF 1849—50,

IN THE

MEDICAL INSTITUTION

OF

YALE COLLEGE.

BY

J. KNIGHT, M.D.,
Professor of Surgery.

On the Propagation of Communicable Diseases.

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1849.

Yale College, Oct. 9th, 1849.

PROF. J. KNIGHT,

Dear Sir,—At a meeting of the Medical Students, held this afternoon, it was unanimously voted,

That a copy of your excellent Introductory Lecture on the Communicability of diseases, be solicited for publication.

The undersigned take great pleasure in communicating the wishes of the Class, and hope that their earnest request may be granted.

Respectfully yours,

H. A. COLLINS,
A. C. BLAKESLEE,
A. B. CLARKE,
H. W. E. MATTHEWS,
W. P. BEACH,
L. R. HURLBUTT,
WM. E. HOLBROOK,
} *Committee.*

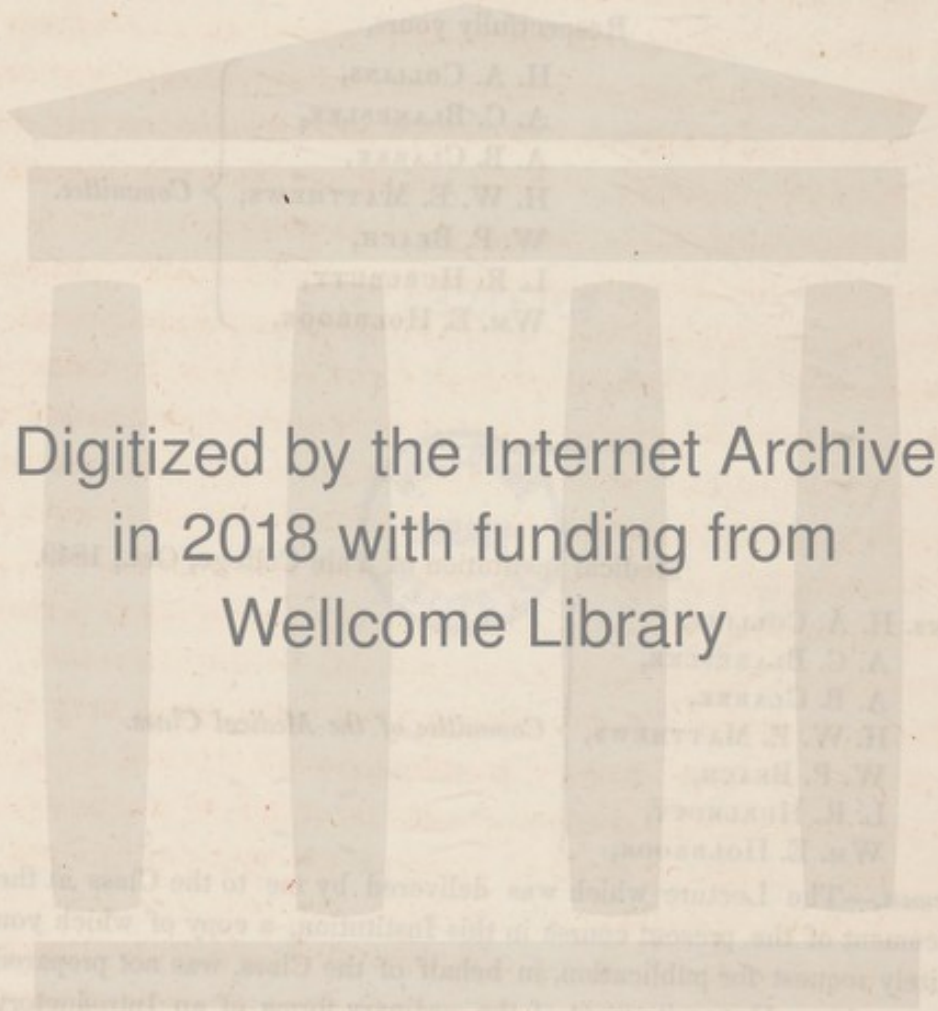
Medical Institution of Yale College, Oct., 1849.

To Messrs. H. A. COLLINS,
A. C. BLAKESLEE,
A. B. CLARKE,
H. W. E. MATTHEWS,
W. P. BEACH,
L. R. HURLBUTT,
WM. E. HOLBROOK,
} *Committee of the Medical Class.*

Gentlemen,—The Lecture which was delivered by me to the Class at the commencement of the present course in this Institution, a copy of which you very politely request for publication, in behalf of the Class, was not prepared for that occasion. Hence its want of the ordinary forms of an Introductory Lecture, and the inappropriateness of the subject to a course of Lectures on Surgery. As however it has met with your approbation, I cheerfully place it at your disposal.

Yours with esteem,

J. KNIGHT.



LECTURE.

In considering the subject proposed, I shall as far as possible avoid the use of the words contagion, infection, and others of the same kind; because they have been so often employed with so many different meanings, that they scarcely convey any definite idea at all. Instead of them I shall use the term communicable disease; a phrase which needs no definition.

There are certain diseases which are undoubtedly communicated from one person to another, and most commonly exist in consequence of such communication. One class of these are simply local affections, unconnected with any constitutional disease, and for the most part seated in the skin. Of these scabies is the most common and may be taken as an example. This disease is undoubtedly produced by the combined influence of personal uncleanness, impure air, meagre diet and want of exercise, and when thus produced is communicable by direct contact.

The susceptibility to this disease from exposure is very different in different individuals. Adults are rarely affected by it, and among children there are many who do not take it readily, and not a few to whom it cannot be communicated at all, unless perhaps by direct inoculation.

There are not only these individual differences, but there are equally marked diversities in the certainty and extent of its communicability at different seasons, different periods of time, and in different places. It is stated to have prevailed in a severe form as an epidemic at Nuremburg and the vicinity, about the middle of the last century. All are aware of its prevalence in some parts of our western country. It may be stated then, in regard to scabies, that it appears as a *primary* disease; that it is communicable; and that it is more readily taken by certain individuals

and at particular seasons, periods and places; all tending to prove the existence of a predisposing and exciting cause in its propagation. It is hardly necessary to state that several other of the communicable diseases of the skin are subject to the same laws.

Another class of communicable diseases, are those which, beginning with a local affection, become after a time constitutional. Syphilis and some of the forms of Lepra, are examples of this class. I mention both of these because while they are alike in the particulars above mentioned, they differ from each other in this; the one, Syphilis, is always a communicated disease, the other, Lepra, is both primary and communicated.

There is the same different individual susceptibility to Syphilis as has been mentioned in regard to the more simple affections of the skin. Some are affected from the slightest exposure, while to others it will not be communicated by any ordinary exposure. This difference is still more striking in regard to the constitutional than the mere local affection. It is probable that the great proportion of those affected with chancre, will get well of this, and have no secondary constitutional disease, without any specific treatment; while in a smaller number, the constitutional symptoms will shew themselves in regular succession, notwithstanding the greatest precaution and the most judicious medical treatment.

Whether there are the same individual variations in susceptibility to Lepra, I have no means of determining. It is not certain that either of these, or any of their kindred diseases, are under the influence of the laws of Epidemics, though it is well known that they are more prevalent at one period than another, and differ in severity at different times.

Another class of communicable diseases consists of those in which the local affection, usually of the skin or mucous membranes or both, is preceded and accompanied by constitutional symptoms of a febrile character. These are all of the Exanthems. All of these resemble each other in many important particulars. All of them come on at a tolerably regular time after exposure; in all, the constitutional precedes the local affection; all, with incidental variations, run a regular course, and all are self-

terminating diseases; most of them are also solely communicated diseases. Some of them, however, make their appearance in a manner so strange, as to give rise to the opinion that they may arise spontaneously.

As all the prominent features of this class of diseases are more distinct and marked in small pox than in any of the others, it may be well to examine its mode of propagation more particularly. As I shall make no statement but of well known facts, no reference will be made to particular instances in proof of them.

Small pox at the present day is always a communicated disease, and is taken by the application of the secreted virus to an abraded surface, or by the application to the mucous membranes, probably of the lungs in breathing, of something exhaled from the body of the sick or from some of the secretions after removal from the body. In this way it is often communicated at great distances both of time and place. By some of these modes of exposure nearly every person may be made the subject of it.

Now although small pox is more strongly marked in the particulars above named than any other of the Exanthems, yet there will be found all the differences in its propagation which have been mentioned in regard to other forms of communicable diseases.

It is well known that of many who are exposed, in the same manner and at the same time to the disease, provided this exposure is not of an intense kind, a portion will take it and others will escape. Even when inoculation is practised, the readiness with which it is communicated differs much in different individuals; so that when many are inoculated with the same virus and at the same time, it is by no means unusual for some of them to escape the disease and to require a repetition of the operation. So also there is occasionally one who is insusceptible to the disease; and another, whose susceptibility is so great that it is not exhausted by a single attack, but who will take it again and again; and another still who will escape after intense exposure, and subsequently will receive it in consequence of an exposure comparatively slight. These facts show a marked individual difference in susceptibility

to the disease, or in that unknown state of the body which predisposes to it.

So also there is an equally striking difference of susceptibility to the influence of the cause of the disease in masses of men at different periods of time. At one time it appears in a comparatively few almost isolated cases; at another it spreads with lightning like rapidity, carrying with it terror and dismay, and almost depopulating the places which it scourges.

The diversities in the type of small pox, at different periods of time, are even more striking and obvious than in the readiness of its communication; at one time nearly all the cases will be of the distinct and comparatively mild kind, while at another they will be confluent, and the accompanying fever of a highly malignant type. In every form of the disease it has its rise, progress, decline, and disappearance: the number of cases at first small, gradually increases until many are affected, when they gradually diminish and after a variable period, usually of a few months, no more are affected. This cannot be merely because, as is often said, all in the community have been affected by it, and it ceases for want of subjects, for it frequently happens, that after a short time, perhaps twelve or eighteen months, the disease reappears, in the same or a different form, when subjects enough are found who are liable to and pass through it.

Thus, although it is perhaps always a communicated disease, yet in respect to the readiness of communication, type and gradual spread and disappearance, it is governed by the same laws which are recognized by all as controlling epidemic and endemic diseases. This is so true that some of the older writers, who saw the disease, uninfluenced by inoculation, speak of it only as an Epidemic, without reference to its contagious character. No one, in reading the account given of it by Sydenham, as it appeared during a long succession of years, would suppose that he had any knowledge of the fact that it was communicable, or that he recognized it as such.

The same thing is true in regard to all the febrile, communicable diseases, such as measles, scarlatina, &c., they all appear at

different times in a different garb: different in the type of the accompanying fever, different in the readiness of their communicability, and in other important particulars. This is especially true of scarlatina; at one time it is scarcely if at all communicable, appearing only here and there in scattered sporadic cases, while at another, its spread is attended with circumstances inexplicable upon any other notion than that it extends directly from the sick to the well; to those who would not have had it except from exposure to those already affected.

All these facts shew that there is something behind and beyond the mere fact of exposure to the sick in most and perhaps all the communicable diseases, especially those of a febrile nature, controlling their character, and favoring or retarding their propagation; some state of the body existing in individuals and communities, produced by the ordinary epidemic influences whatever those are, predisposing to the disease.

There are other diseases which resemble the communicable febrile diseases, in the number of those affected by them at the same time or in quick succession; in their progress from one region or country to another, and in other particulars, which still are believed to be produced solely by epidemic influences. Influenza is a fair example of these affections.

Others still, attack the inhabitants of particular localities, sometimes a few, at others nearly all of them, and are occasioned by that state of air, or earth, or water, to which the term miasm has been applied. Such are intermittent and remittent fevers. The facts concerning both these classes of diseases are too well known to demand a recapitulation. They are by common consent excluded from the class of communicable diseases.

From the facts which have been stated very briefly, and others of a similar kind which might be brought forward almost indefinitely, certain inferences may be drawn, which may serve as rules and guides, in judging of the mode of propagation of another class of diseases to be hereafter considered, concerning which much difference of opinion has always existed.

1st. It is no proof, although it may afford a presumption, that a disease is communicable because many in the same family, neighborhood or region of country are affected by it, simultaneously, or in rapid succession; or because it extends, either rapidly or slowly from place to place. This is as true of Influenza, and of intermittent fever, as it is of small pox or measles.

2d. It is no proof that a disease is not communicable, that in its greater prevalence at one time than another; that in its rise, increase and decline in a community; in its attacking a portion of the inhabitants while others escape who have been equally exposed to it; that in these and many other similar particulars it obeys the laws of epidemic diseases. All these things are true of those which are so communicable as to deserve the name of contagious, such as small pox and measles.

3d. It is no proof that a disease when fully formed is not communicable, that in many, and perhaps in the great proportion of cases, it arises from some of the common external causes of disease. In proof of this I mention as a notable example, hospital gangrene: a febrile malignant disease, whose local affection is a rapidly sloughing ulcer, taking the place of some preëxisting wound or sore.

This formidable disease is produced by the many deleterious agencies which exist in ill-ventilated, over-crowded hospitals for those suffering from wounds; and from its first appearance is communicated, perhaps through the atmosphere, and certainly by the application of the purulent secretion to any abraded surface. It is stated by Mr. Hennen to have been certainly produced by lint and by instruments which had been used in dressing the ulcers of hospital gangrene, having been applied to healthy ulcers, after they had been thoroughly washed. This fact does away with an argument which has been very much relied upon by those who oppose the communicability of certain diseases. The argument is this: many cases of the disease in question, be it dysentery, typhus or cholera, are known to arise, without any connection, and perhaps without any possibility of previous connection either direct or indirect with the sick: it was not then

communicated to them, and therefore it cannot in any other case be communicated. Without stopping to point out the absence of all logical connection between the conclusion and the premises, it is a sufficient answer to the argument, that there are diseases which arise spontaneously, or are produced by the common causes of disease, whether epidemic, endemic or others, and which when formed are communicable.

4th. It is no proof that a disease is not communicable that it does not obey all the laws of some other communicable disease. More errors in reasoning upon this subject have arisen from a want of knowledge or recognition of this law, than from all other sources. It will be proper therefore to spend a little time in examining it in several important points. The course so commonly pursued as to be almost universal, by those who are examining the mode of propagation of diseases, is to select for comparison with the one to be investigated, some one of those which, while its contagious character is undoubted, is also strongly marked by other characteristic features, and if they are found to be unlike in one or more of these strong points, to infer that they are also unlike in the mode of their propagation. Perhaps small pox or some other of the distinct exanthems is more commonly selected for this purpose than any other. Now let us look at this method of reasoning, for the purpose of determining its accuracy. Small pox is a disease which comes on at a definite time after exposure, is attended with a distinct and peculiar affection of the skin, and those who have ever had it, are for the most part exempt from future attacks. The other exanthems are like it in these particulars. From this it is inferred that some other disease, dysentery perhaps, being unlike these, in the regularity of the period of accession after exposure, or perhaps coming on without known exposure; in not being attended with any skin affection; in not being followed by exemption from future attacks, is also unlike it in its mode of propagation. Let us look at this in the form of a syllogism, and see how it will stand.

Small pox, a contagious febrile disease, is attended by an eruption on the skin which is essential to it.

Dysentery, a febrile disease, is unattended by an eruption on the skin.

Therefore—Dysentery is not a contagious disease.

The want of connection between the minor proposition and the conclusion is too obvious to require a remark. Before an argument of this kind can be of any force, it must be shewn that all known contagious diseases, are, like small pox, attended by an eruption. A single exception destroys it. Now it is well known that Pertussis, a febrile communicable disease, has no attending eruption; nor has, usually, that form of Typhus, recently called ship fever. A similar course of reasoning will lead to the same result, in regard to exemption from future attacks, and many other similar circumstances which characterize some of the communicable diseases, and are absent in others. It should be borne in mind that each one of these diseases, as well as all others, is governed by its own peculiar laws, and that each is different from all the others in many important particulars. It would be just as pertinent an argument to say that measles cannot be communicated, because it is not attended like small pox by a pustular eruption, affording a fluid with which others can be successfully inoculated, as that some other disease cannot be communicated, because unlike both of them, it is attended by no eruption.

5th. It is no proof that a disease is not communicable, that all who are equally exposed to it, or that many who are exposed to it in every degree, do not receive it. This is measurably true of all communicable diseases. Of one hundred persons exposed in the same degree to small pox even, some will receive it while others will escape. The difference will be more obvious in those diseases which are less distinctly contagious than this is. This difference in susceptibility appears to depend upon some unknown individual peculiarity of constitution. If an objector inquires what this individual peculiarity is, the proper and pertinent answer is, that an explanation will be given, when it is shown why the human constitution is susceptible to these diseases at all, and how this susceptibility is destroyed by once passing through them.

6th. It is no proof that a disease is not communicable, that at certain times and places, none of those exposed to it will receive it. This also is true, to a certain extent, of the strongly contagious diseases. How common is it for measles, for example, to prevail in one village, and not in its immediate neighborhood, although in free communication with it; or for a failure to communicate it out of the locality where it prevails. This can be attributed only to the presence or absence of that epidemic or endemic influence which is unknown except from its effects. If these remarks are true, the force of several objections to the communicability of certain diseases, is very much impaired or entirely done away with. How often is it asked with an air of triumph, as if the question was unanswerable, why is it if a disease, yellow fever for instance, is communicable, that physicians, nurses and others who are about the sick, escape? and why is it that if a patient is removed from the locality where it prevails, none of those about him are affected by it? In regard to the immunity of physicians, &c., it is not true to such an extent as to afford a basis for a conclusive argument; and if true, it would be just as valid an objection to any other imaginable cause of the disease; for the question may with as much force be asked, why they escape when they are exposed to the same morbific influence, whether animalcular, atmospheric, malarious, electrical, or any thing else. It seems also to be true, in regard to yellow fever more obviously than to any other of those diseases whose mode of propagation has been the subject of dispute, that after it has prevailed for a time it forms for itself what is appropriately enough called an infected district, within which its ravages for the most part are confined.

It is proper now to inquire into the mode of propagation of several diseases, whose communicability has been and still is doubted by medical men and philosophers, of great learning, extensive observation, and intellectual vigor. The most prominent of these diseases, which ever appear in this part of the country, are Cholera, Dysentery, Yellow Fever and Erysipelas, including one form of Puerperal fever. All of these diseases,

consist of a malignant grade of Typhoid fever, with a local affection of some of the mucous membranes, for the most part that of some portion of the alimentary canal; as of the stomach in Yellow fever; of the large intestines in Dysentery; of the stomach and small intestines in Cholera; and in Erysipelas, whatever other part, as the skin or cellular membrane, may be affected, the fauces usually share in the disease. In regard to all of them, the question arises, are they communicable or not? Let it be remembered that the question is not whether they are communicable in the same degree, or under the same circumstances as small pox; nor whether like that, they are eruptive diseases; nor whether one attack produces immunity from all future attacks; nor whether all or the greater portion of those who are exposed to them will be affected; but simply whether they are communicable from the sick to the well, whether persons in health, or in that state of predisposition produced by ordinary or extraordinary epidemic influences, will contract these diseases from communication with those sick with them, who without such exposure would have escaped.

All of the diseases mentioned resemble each other in most of the important facts which bear upon this subject; and as it would occupy too much time to examine them all, we will look mainly at one of them, Cholera. One great fact in regard to the propagation of cholera is that it is a progressive disease, advancing gradually, from place to place, with differing degrees of rapidity, usually, though by no means uniformly from east to west; and following almost absolutely the great lines of intercommunication by which men hold intercourse with each other, whether these are by land or water. Another leading fact in regard to it is, that it usually begins in one or more isolated cases, and gradually extends until many are seized with it, the number of patients gradually increasing during a variable period of from four to eight weeks, when it gradually decreases, until it entirely disappears. Now when the disease is very prevalent, there is no opportunity of determining whether it is or is not communicated from the sick to the well, for the cause of the disease, whatever

that may be, is so generally diffused that all are exposed to it, and of course all trace of its progress is lost. Hence physicians and others who witness the disease where it prevails most generally, have usually decided that it is simply an epidemic, dependent for its propagation solely on that atmospheric constitution which predisposes to it. Another significant fact in regard to its progress is, that usually more than one and often many in the same family and locality are seized with it in rapid succession, and that when it once enters among a body of persons shut up together, as in alms-houses and prisons, a large proportion of the inmates are affected.

From these facts in the progress of the disease, common persons always come to the opinion that it is communicated from the sick to the well, and it requires a long train of reasoning, showing that if it is so, it ought to have proceeded differently, to have had a different train of symptoms, and been followed by different effects; in short, to have been more like small pox, before this opinion is abandoned by them. In truth all of these facts can be tolerably well explained upon either notion, and there are so many exceptions and irregularities about them, as to render doubtful any conclusion from them. There are others, however, of a more definite kind which deserve consideration. Let us look at some of these. Dr. Sterling's account condensed.

On the first of December, 1848, the ship New York, from Havre, arrived at the Quarantine in New York. For a week or two previous to her arrival, there had been several fatal cases of cholera among her emigrant passengers. Up to this time there had been no appearance of cholera, or any indication of it at that station. From this time to the 2nd of January, 1849, cases continually occurred, not only among the passengers from the New York, but also among the other inmates of the hospitals. A summary of the cases is as follows:

Passengers from the New York, 58 cases, 29 deaths.

Other inmates of the hospitals, 48 cases, 25 deaths.

Again—Dr. Fenner's account in New Orleans:

The ship Swanton arrived in New Orleans from Havre on the 11th December, 1848. Immediately before her arrival, cases of cholera appeared among her passengers. At this time cholera had not been noticed in that city, so that the Board of Health gave official notice on the 14th, that cholera was not in the city. Still according to the testimony of several physicians, bowel complaints of an usual character had for a time been somewhat prevalent. On the 15th, several cases of cholera were reported, and from that time to the 28th, these rapidly increased. On that day the number of deaths was ninety-six—after this it gradually decreased. The progress of the disease is strikingly alike in these two places, in the mode and period of its commencement; in its duration and decline. The only differing feature is, that in New York, there had been nothing resembling it before the arrival of the ship, while in New Orleans, bowel complaints had existed for a time.

The facts connected with the appearance of cholera in this place and vicinity in 1832 and 1849, deserve to be mentioned in this connection. They were furnished to me by C. Hooker, M.D., who observed and recorded them for the most part at the time of their occurrence, and their accuracy may be relied on.

The first case of cholera in New Haven in 1832, occurred on Tuesday, July 10, in the person of Mrs. N. She arrived the day before, from New York, with her son six years old, at the house of her father, Mr. J., in Grand street. In the house which she left in New York, there had been several cases of cholera and two deaths. She was attacked the morning after her arrival, and her son on Thursday, two days afterwards. Both had the disease severely but recovered. On Friday, July 13, Mrs. J. the mother of Mrs. N., and on the night following, Mr. J. her father, were attacked and both died, one in eleven and the other in nineteen hours from the attack. No other case of the disease was observed in the city for more than three weeks. The house of Mr. J. was almost solitary, and in a perfectly healthy location.

On Saturday evening, August 25, 1832, a mulatto seaman arrived at the public house of Mr. J. E., in the eastern part of the

town of Guilford. On Sunday evening he sickened with cholera and died on Monday. Whether he had been exposed to the disease was uncertain. On Wednesday evening, August 28, Mrs. E., and in the course of the night Mr. E. and two of his children, aged eight and sixteen years, were attacked with the cholera. Mrs. E. died on Thursday, the others recovered. The disease had not then and did not afterwards prevail in that neighborhood.

On Saturday evening, June 23, 1849, a colored woman with her daughter, and a nursing child, came to New Haven from New York in the steamboat. In the house in New York from which they came, there had been several fatal cases of cholera. The girl was seized with cholera on Sunday, the day after their arrival in New Haven, the woman on Monday and the infant on Tuesday. The house in Hudson street, in New Haven to which they came, has an airy, healthy location, and the inmates were of temperate and cleanly habits. On Wednesday afternoon, about three days after the attack of the girl from New York, a woman who resided in the house became sick and died of cholera the next day. On Thursday afternoon a man in the same house had an attack of the disease, from which he recovered. At this time and for several weeks after, there were no other cases of cholera in New Haven. In these three instances it is difficult to resist the conclusion that the disease was brought from abroad and communicated from the sick to the well; to those who, without such exposure, would have escaped it.

Many similar cases have occurred in many parts of the country, all leading to the same conclusion, that the disease was carried there by those already affected by it. Now suppose in the place of cholera, the small pox had been brought into the quarantine station in New York, or into the other places named, that other cases in the same number as there were of cholera had followed, and that after a time it had ceased without any known cause; would any one have doubted what was the origin of the disease? Is it objected that a small number only of all who were exposed were attacked; or that at

another time no cases follow the introduction of those sick with it. All this is true, and is to be explained, so far as it can be at all explained, by the influential presence in one case of that epidemic influence which predisposes to the disease, and its absence in the other. The state of a community in relation to cholera after this epidemic influence has prevailed for a time, is very similar to the same community in relation to small pox when vaccination has been generally but not universally resorted to. If the small pox is introduced into the latter, a portion of the inhabitants who are entirely unprotected will be attacked by the disease in its full force; another portion, partially protected by imperfect vaccination will pass through it in a form variously modified, while a larger part, in whom the susceptibility has been entirely destroyed, will altogether escape. What is this, but saying in other words, that some persons, are for a particular, and in this case a known reason, susceptible to the cause of the disease, while others are not. Now in the other case, after that epidemic influence which predisposes to cholera has been for a time present in a community, a portion of the inhabitants will become susceptible of the disease in its most appalling form, others less affected will pass through it mildly, while a large part escape entirely. Now in this state, the disease will be propagated variously, according to a great variety of modifying influences. Sometimes, especially, when along with this epidemic influence, there are the concurrent circumstances of a crowded and diseased population, impure air, great fatigue, unwholesome food, &c., the disease appears suddenly, and spreads with a rapidity which forbids the idea that its propagation depends solely or principally, upon personal communication—as in the British army in India, under the Marquis of Hastings, in November, 1817, which consisting of 10,000 English troops, 8,000 Sepoys, 50,000 or 60,000 camp followers, lost 9,000 men in eight days —when the army continuing its march, and reaching a different location, the disease suddenly ceased. In other cases the disease begins and advances more gradually, commencing with those whose constitution has been impaired by previous excesses,

and after a time seizes upon many of previously sound constitution and correct habits. In this case the immediate exciting cause, is often some temporary imprudence in regimen or diet, or the influence of the depressing passions. In other cases still the outbreak and progress of the cases are so directly connected with the presence of those sick with it, as to leave no doubt that this fact was essential in the case to the production and extension of the disease.

Now the same circumstances and the same train of thought might be stated as belonging to the other diseases named, Dysentery, Erysipelas and Yellow fever. Not that these are precisely alike in all the features which have been described, for each has its own peculiarities; yet they resemble each other strongly in all those great and leading facts which prove the combined influence of the epidemic constitution of the air, and of personal intercommunication in their propagation. Any attempt, upon an occasion like the present, to state the facts concerning each of these diseases, would be an intolerable demand upon your patience; I will therefore make no such attempt.

It cannot be expected that all the members of the medical profession will concur with me in all, or perhaps in any of the principles, which it has been my endeavor to establish. We are accustomed, each of us, to look at the same object from different points of view, and the same object will present different features according to the position from which it is seen. Those who have accustomed themselves to look at these diseases as epidemics, and see that they are in many points controlled by epidemic laws, will be apt to believe that their propagation depends solely upon causes of this kind; while others viewing more especially those facts which belong to them as communicable diseases, will ascribe their spread entirely to direct or indirect personal intercommunication. The following propositions express the views which I entertain upon this subject, and are drawn from, and I believe supported by the facts and reasonings heretofore presented.

1st. All febrile diseases, of a typhoid and malignant type, depend upon, as their predisposing cause, a certain endemic or epidemic constitution of the atmosphere. What this state is, is entirely unknown.

2nd. This epidemic constitution, aided by the common exciting causes of disease, is at times sufficient to produce them.

3d. Whenever this epidemic constitution is present, they will be communicated from the sick to the well, and this communicability is a common cause of their propagation.