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WHAT CONDITIONS INFLUENCE THE  
COURSE OF INFANTILE SYPHILIS?

BY

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**WHAT CONDITIONS INFLUENCE THE COURSE  
OF INFANTILE SYPHILIS?<sup>1</sup>**

By JAMES NEVINS HYDE, M.D.,

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IN order to take a comprehensive survey of the field covered by the above inquiry it is necessary to determine definitely what is to be understood by "Infantile Syphilis." The words, strictly interpreted, relate only to syphilis in infants. Restricting the discussion, however, to such a narrow division of the subject would mean an exclusion of some of the most important and interesting of the ascertained facts. It is desirable instead, to include under this general term (1) the phenomena of syphilis as displayed in intra-uterine life, syphilis of the products of conception, of the ovum, and of the fetus, (2) extra-uterine, or hereditary, syphilis in the infant, and, (3) acquired infantile syphilis, the disease as it affects otherwise healthy infants who suffer from what has been termed contact-syphilis.

The course of *lues venerea* in the unborn products of conception is one which is often wholly uninfluenced not only by treatment but by external interrupting circumstances. In the acquired forms of the disease this is the exception rather than the rule; for in syphilis of the second generation the social condition of the infected progenitors is a factor of importance. Infantile syphilis is decidedly more common in hospital and dispensary patients, among the poor, the degraded, and the filthy than

<sup>1</sup> Read before the American Dermatological Association, Washington, D.C., May, 1897. By request of the Council.



among the better classes who suffer equally with the others from the acquired disease. The educated, the wealthy, and the comfortably housed contract syphilis, it is true, but after infection secure appropriate treatment, and then, for the most part, refuse to marry or to procreate until there is a reasonable prospect of the birth of healthy children. If infection of the wife does occur and pregnancy follows, treatment is promptly instituted. In the case of the poor, the destitute, the uncleanly, and the ignorant, the mother, without conspicuous stigmata of the disease, concludes her pregnancy prematurely or at term, often without any interference with the complete evolution of the disease both in herself and in her offspring. It is well to bear in mind the errors most commonly committed in the effort to properly interpret the signs of this intra-uterine syphilis of uninterrupted course. Not every abortion, not every miscarriage of a pallid-faced mother whose husband gives a history of premarital infection, is necessarily syphilitic. Not every still-born child, and even, not every macerated fetus is dead in consequence of *lues venerea*.

There is no question to-day among the informed as to the fatal termination, as regards the fetus, in a large percentage of all pregnancies when the product of conception has been infected. This may be set down as one of the few irrefutable facts of syphilis. Waiving, for the moment, consideration of the question whether this mortality is conditioned upon an infection of either paternal or maternal origin, whether the placenta be or be not involved, whether the maternal infection, if such there has been, was



ante- or post-conceptional, with a view to the determination of the present question, it should be asked, what percentage of pregnancies is concluded at term with the birth of a living child, and what percentage is prematurely terminated by abortion or miscarriage? The obstacles to a precise collation of the required data are simply insuperable. The best that may be made is an approximate estimate based upon the statistics of a group of careful observers such as Kassowitz, Lancereaux, Neumann, Coutts, Jullien, and Warner. These authors, it must be admitted for the most part, give figures which it is difficult to compare by reason of the fact that they draw no hard and fast line at the date of the completion of pregnancy, but class together in the fatal issues of each, all instances of abortion, miscarriage, still-birth, and of children dead at or soon after birth, the limit last named being by one of these authors extended to six months. In 1700 syphilitic pregnancies, however, which it is possible to employ in studying the course of syphilis as it affects the fetus, the total number of abortions, miscarriages, and still-births amounts to 579. It follows that about one-third of all pregnancies of syphilitic women terminate by the death of the fetus before or at the completion of pregnancy. These are about the figures reached by a study of the statistics of Kassowitz. When they are added to those representing the mortality of the children born at term and surviving for variable periods, a clearer view may be obtained of the evolution of the disease in the second generation.

It has been the destiny of syphilis to be confounded



with more maladies than any other single disease. Instances of the acquired form of *lues venerea* are daily assumed to belong to another category. Daily, also, are non-syphilitic affections diagnosed and treated on the assumption that they are of specific origin. It is as common to discover these errors in the inherited as in the acquired forms of the disease, and yet the possibility is often overlooked in accepting reports of cases and in the study of the literature of the subject. In view of these facts one is almost tempted to advance toward the extreme position lately taken by Parker who, certainly with proper appreciation of the dangerous errors committed in this connection, distinguishes between "inherited syphilis" and diseases "inherited from syphilis," demanding, in order to establish the fact of the former, that proof be given of the contagious character of the disease exhibited by the suspected infant. Not every child with Hutchinsonian teeth, with cranial bosses, with a natiform skull, or suffering from a rebellious affection, is the victim of inherited syphilis. Even the painstaking labors of a Parrot have not sufficed to obliterate the distinction between syphilis and rickets. The puny infant with coryza and eruptive symptoms about the mouth and anus may not be a source of infection for others. It would seem trivial to refer to such commonplace occurrences were there not a constant recurrence in the medical press of the blunders originating in the misinterpretation of these facts. Within the last six months, for example, one of our most extensively circulated medical journals of a high rank published a communication from an officer of an important

State institution for the care of the insane, in which it was held that four patients affected with general paralysis (*délire des grandeurs*) suffered from the disease as a consequence of the inheritance of syphilis; because in each instance there was no history of the acquired disease, and yet Hutchinsonian teeth were exhibited, the article being accompanied by illustrations of the teeth in question. Avoiding the possibilities of errors of this and a similar kind, a study of the facts of extra-uterine syphilis of the second generation, when collated from trustworthy sources, throws further light upon the natural evolution of the malady.

As the result of the 1700 pregnancies to which reference has been made, there were born 1121 living children of whom 956 died within the first twelve months. Of the remaining 165 children who chanced to survive a year nothing is known. It is, however, certain that they had not yet reached a stage of development when they could be regarded as exempt from the dangers which had destroyed so many of the others. The proportion of those succumbing later is unknown. The ascertained figures, then, representing the mortality affecting these 1700 products of conception both during and after pregnancy, are 1535, or nearly 95 per cent. of the total number. The estimates made by other competent observers vary between sixty and ninety per cent. of fatal issues when the data of intra-uterine life and those of infancy are combined. For the purpose of comparison I have collated the figures embodied in the histories of twenty-five syphilitic mothers resident in Chicago, consecutively recorded, as a result



of whose forty-one pregnancies there were thirty-one abortions, miscarriages, and children dead at birth or within one year. One of these children unquestionably escaped infection. Of the fate of the nine survivors at the end of the year nothing is known. This points to a mortality of about eighty per cent. of all the products of conception. If these figures be accepted as trustworthy, it follows that the issue of syphilis as it is developed in the products of conception of diseased parents is comparable only with the gravest of the plagues and pestilences to which the human family is subject. Smallpox in infants is estimated to be followed by a mortality as high as ninety per cent. but great allowance should be made for the varying severity of different epidemics. Many of the formidable incursions of yellow fever and cholera spare a larger proportion of victims than survive the scourge which is the subject of this discussion. In point of fact one is at a loss to discover mortality statistics with which these may be justly compared, if recourse be not had to the progress of the plague in Europe during the Middle Ages.

Most of the text-books on syphilis are written for the benefit of the practitioner and of the student who purposes one day to be a practical physician. As a consequence the chapters on hereditary syphilis contain many pages which are properly enough devoted to a description of the clinical and other symptoms of the disease as they occur in the meagre number of survivors of the malady, while but a few paragraphs are devoted to the enormous mass of pathologic facts which are to be gathered from a study of abortions and miscarriages in the syphilitic.



Of the blighted germs and the macerated fetuses only a few are preserved among the morbid specimens of the medical museum, the great mass of which are swept with the sewage into the limbo of the unseen, to descend by retrogressive metamorphosis to the primary elements from which they were evolved. Having in view the number of clinical facts to which the figures cited above significantly point, one is in position to formulate an approximate answer to the question propounded, *viz.*, "What Conditions Influence the Course of Infantile Syphilis?"

*The Virus.*—Twenty years ago the word "virus" would probably have been defined as a secretion containing an animal poison; to-day the word is set down as equivalent to a pathogenic micro-organism; to-morrow it will be necessary to add the words "or its toxin." In the case of syphilis the germ and the toxin, if such there be, are as yet undemonstrated as efficient factors in the production of the disease. But no better working hypothesis is at hand than the general assumption that syphilis, with regard to its ultimate cause, is to be aligned with the other infectious granulomata, and is dependent upon an undiscovered bacterium, which, either by virtue of its presence or by the potency of its toxin, is capable of transmitting the disease. Does this virus of syphilis, recognized as effective in the second generation of its victims, differ in its energy according as it acknowledges a paternal or maternal origin in the first generation? Looking to the facts of inheritance in general, we can discover no preponderance of one sex over the other in the power to transmit disease. Inherited tuberculosis descends



with equal destructiveness from father or mother. Syphilis offers no facts controverting such a position. That the energy of the virus is to a degree related to the activity of the disease in the progenitors is generally accepted. It is conceded that with both parents recently infected the chances of grave syphilis in the offspring are increased, that with one parent exhibiting the disease in marked activity, the dangers are greater than when the malady in the parent has waned, that the virus furnished after the production of a series of abortions and miscarriages is likely to be attenuated to the point of lessening its activity and its capability of transmission, and lastly, that in almost every syphilis of the parents there are to be recognized periods, often alternating, of aggravation and of amelioration, transmissibility in these pauses of the disease being either greatly weakened or wholly lost. Even after due consideration of the appalling mortality which furnishes one of the chief symptoms in syphilis of the second generation, it is not to be forgotten that cases of mild inherited syphilis do occur, and that recovery, complete and satisfactory, follows in a small percentage of the patients.

*The Individual.*—Turning now from consideration of the virus, it is apparent at a glance that the individual product of conception in syphilis is practically deprived of the resources provided, in the great majority of all other patients, for resistance to the onset of the disease. The individual attacked with acquired syphilis is often assured of a sound ancestry, and of uninterrupted opportunity for nutrition and development prior to the date of his or her



infection. In hereditary syphilis, on the contrary, the individual is poisoned *ab ovo* by the introduction of a pathogenic germ, either into the sperm-cell or ovule, or both, and at every point of subsequent evolution suffers from impaired nutrition and from a retardation of growth through the influence of a morbid process which is likely to invade every organ. Shall we then hasten to infer that in syphilis of the second generation the virus is wholly efficient and the individual absolutely helpless in influencing the course of the disease? It is, indeed, rare in the purview of nature that man is abandoned as an utterly unaided creature in the face of the encroachments of disease. Even an aortic aneurism may undergo calcification! In the case of infantile syphilis, when the odds are heavily against the survival of the remnant, an individual is provided with resistance by the force of whose interference the course of the disease is influenced to a remarkable degree. This is a fact the significance of which is apt to be overlooked, and the instructiveness of the result is of the highest importance in throwing light upon the two factors named in the subject of this discussion. The individual in this case is the mother who can offer to her child a breast filled with milk, a being at one time undivided from her child, a being really taking position as a separate individual only after the child is weaned. It is a well known fact that in some of the vertebrata the suckling at the mammary gland is often enclosed in a protective pouch where it exists in a fetal state for some time after extra-uterine existence has begun. The influence upon the mortality statistics of infantile syph-



ilis of the nursing mother operating under the disadvantages of a cachexia which is shared by both parent and offspring, cannot be challenged. Several writers, such as Henoch,<sup>1</sup> claim that all infants affected with hereditary syphilis die if they are not suckled at the breast. Widerhofer<sup>2</sup> puts the percentage of such deaths in children artificially reared as high as ninety-nine per cent. Other observers conclude that between ten and twenty per cent. of infants affected with hereditary syphilis are either completely snatched from peril or enjoy prolongation of life in consequence of being nourished at the breast of the mother. On a field then, more thickly covered with a proportion of the dead and dying than any battle-ground of modern times, we find women stricken with the same dart which has destroyed the multitude, who succeed in snatching from destruction a calculable number of infected infants by simply providing them with breast-milk. This notable result is attained solely by virtue of improving the nutrition of the infant. We are therefore justified in somewhat qualifying the response to the categorical question which forms the subject of this debate. The virus is *not* solely efficient in influencing the course of infantile syphilis. The individual, in this case represented by the mother who is the food-supply of the helpless being, is capable of diminishing the mortality of the disease to the extent of saving between ten and twenty out of every hundred of infected children. If the mere fact of an improved nutrition can work this effect in the vic-

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<sup>1</sup> *Vorlesung über Kinderhautkrankheiten*, S. 105, 1889.

<sup>2</sup> *Klin. Vorlesg. Wien. Allg. Med. Zeitung*, 1886.



tim of hereditary syphilis, I will leave it to my distinguished colleague to estimate the value of the same factor in acquired disease. To ignore it would be as short sighted as it would be fatal to safe conclusions. The subject of late inherited syphilis, as it relates largely to the adult, is relegated to the gentleman to whom has been assigned the duty of reporting on that branch of the subject.<sup>1</sup>

With respect to acquired infantile syphilis, it is gratifying to note that the disorder is far less common than is usually believed. Fournier has a record of but forty-two patients of this class coming under his observation, though he adds that he believes as many more have been seen by him in regard to whom no notes were taken. I have a record of less than a score of cases in which there was no doubt respecting diagnosis. Five resulted from arm-to-arm vaccination; two from soiled instruments; two others were produced by the kisses of women whose lips were the seat of mucous patches; one infant was infected from the chancre of a male parent when the two occupied a bed in common; the other eight occurred in families in which there were infected adults, but in which the mode of transmission is unknown. With two exceptions (one of the vaccination cases, another described more fully in this paper), all these were dispensary patients coming from the very lowest grade of society.

The most remarkable contrast is afforded by the statistics of recovery in this class of young subjects as compared with those suffering from inherited syph-

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<sup>1</sup> "What Conditions Influence the Course of Syphilis?" THE MEDICAL NEWS, October 30, 1897.



ilis. Fournier states that all his cases resulted in recovery save in one instance, that of a child dying of cachectic pneumonia. With reference to the issue in the patients who have come under my personal observation, it can merely be set down that no one of the children is recorded to have died of the disease, though, as is well-known, American dispensary patients are remarkable for the ease with which they escape from observation and elude the compiler of statistics.

It is so rare that an infant acquires syphilis at the moment of birth, or almost immediately thereafter, that a study of even one such carefully observed case, when compared with that of a child affected with hereditary syphilis, possesses some interest:

A well-nourished infant, aged two and one-half months, of parents who were both wealthy and of good social position, was brought to me by the physician who had delivered the mother, himself a professor of obstetrics in one of our large medical schools. The child had a well-developed but lapsing initial sclerosis over the tip of the right ear (at the site of a wound inflicted by the obstetric forceps with which it had been brought into the world). It exhibited, also, accompanying adenopathy, and a brilliant macular exanthem. Mucous patches existed in the mouth, and the child had promptly infected its mother who exhibited a chancre of the nipple, with axillary adenopathy. The eruptive symptoms in the mother made their appearance in due time, in fact, after those of the child had quite disappeared. The father, who was absent from home months before and after the birth of the child, was carefully examined on his return, and was found to be even in unusually sound health, and denied prior venereal disease of



every kind. The medical attendant was one of those brilliant and busy men to be found in all large cities, doing a great deal of work under an enormous pressure, and eventually dying under the strain of it. When privately taxed with the possibility of having used unclean instruments in this case, he could only say that he was in the habit of taking proper precautions. The nurse who had dressed the child after birth was examined and found free from evidences of disease.

The mother of this infant had been a delicate woman before marriage, and could give her child only deficient alimentation by the breast. It was necessary to resort in part to artificial feeding. A photograph of this child stripped naked, after it had attained two years of age, indicated that the result of its prolonged treatment had been wholly satisfactory. It was plump and well nourished. The mother had a long and serious convalescence after repeated attacks of iritis, with at one time the formation of a gumma in the breast.

With a view, then, to answering the question, what conditions influence the course of acquired infantile syphilis, the virus or the individual, experience would point to the conclusion that in infants the individual, as against the virus, exerts that degree of higher influence which may be recognized in the case of acquired syphilis of adults. Many writers who touch upon this theme have introduced, in the presentation of these cases, the influence of treatment as a modifying cause. With a view to gaining some insight into the truth of the matter, we may be permitted to compliment the Council in the elimination of the element of treatment from the terms of the present discussion. Here it is a question simply

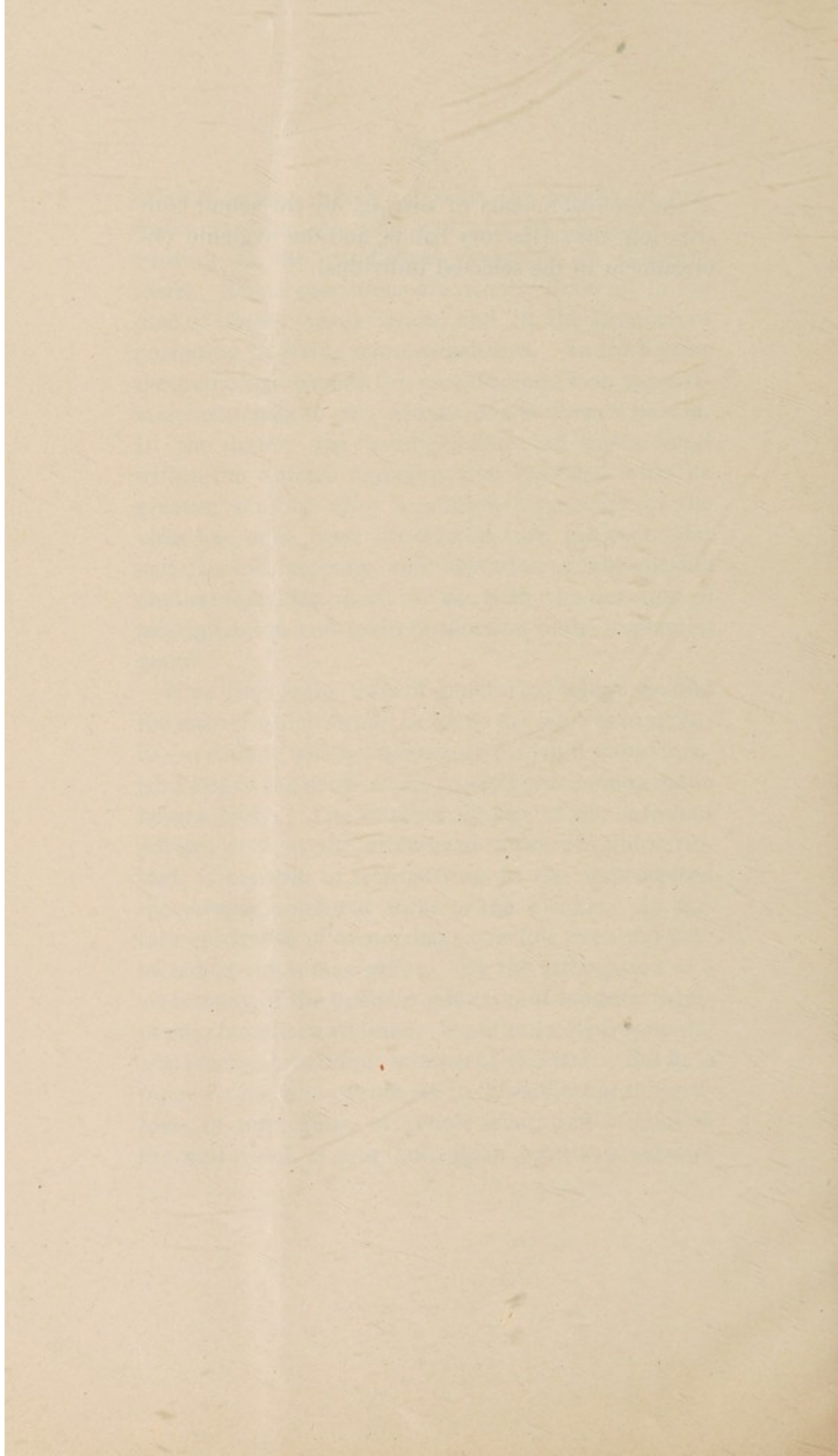


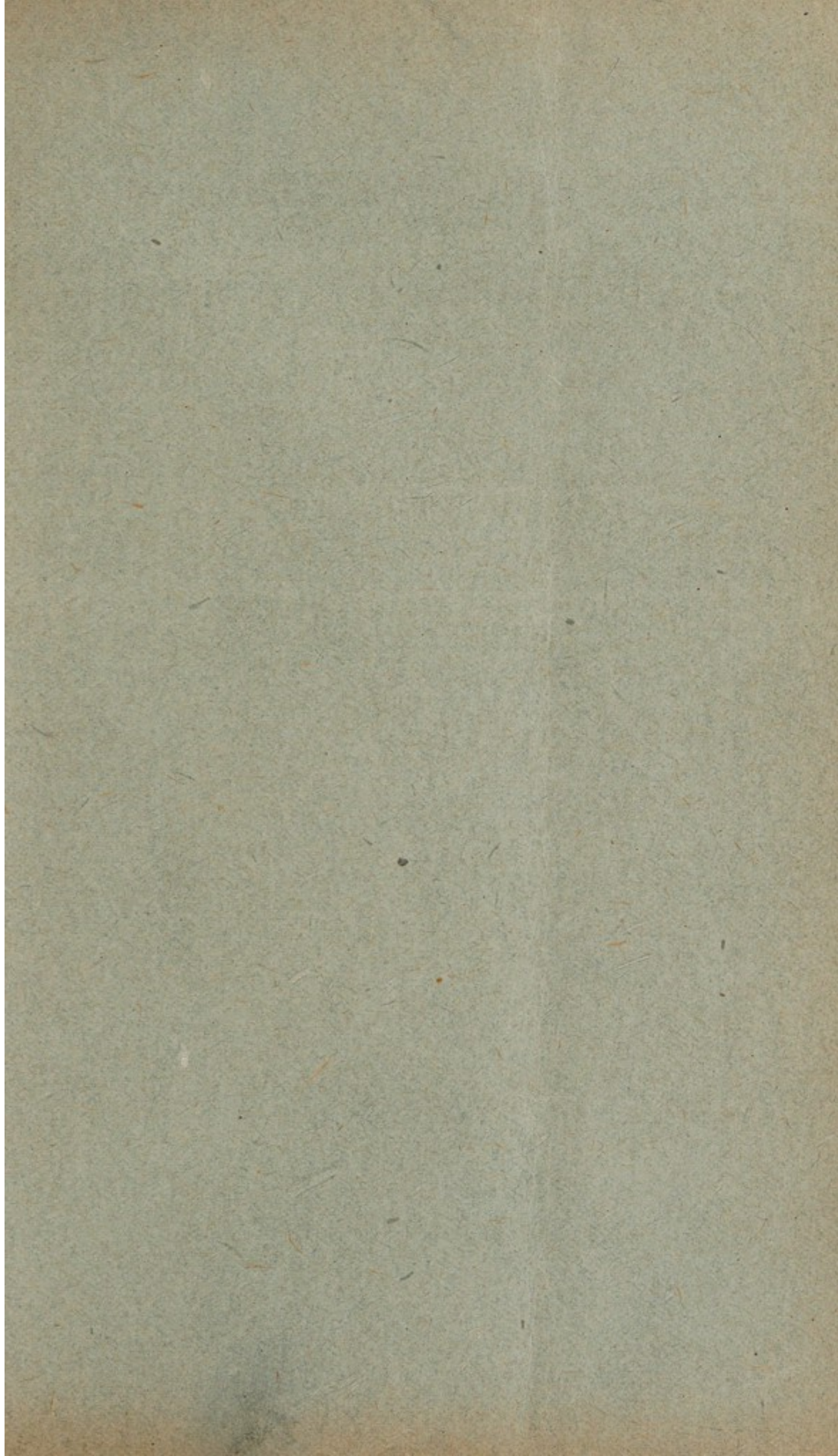
of virus *versus* individual, with the weight of evidence now on one side and now on the other, according to the conditions presented in different cases. These conditions are wholly different in the case of chemic intoxication, and in the instance of poisoning by living micro-organisms. In the former the pathologic results are proportioned with approximate exactness to the dosage of the chemic poison. In the latter, the multiplication of fission-fungi within the animal organism may proceed with the greatest activity after a minimum quantity of the virus has once been introduced into the economy; and the soil, together with favorable or inhospitable environment, has much to do with the question of multiplication and toxin production of the implanted germs.

If we turn to the facts of general pathology we find the answer which awaits us there the same as in syphilis—a malady which Andral once declared would furnish a key to the study of all morbid phenomena in the human body. The smallest dosage of the variolous poison, even in the attenuated form of mild varioloid, is capable of transmitting to the unprotected the severest confluent form of the disease. In certain epidemics of hemorrhagic variola even the protected at times may suffer. By the attenuation of a virus many of the brilliant advances of modern therapeutics have been attained. Diphtheria, hydrophobia, and tetanus bear ample witness of this fact. But he is indeed blind who cannot see in the subject of tuberculosis, of septicemia, of yellow fever, and of cholera the wall which is ever and again built as a bulwark

to the encroachments of disease, by the sound constitution, the satisfactory habits, and the hygienic environment of the selected individual.









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