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The Normal Standard of Women
for Propagation.

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THE NORMAL STANDARD OF WOMAN FOR PROPAGATION.*

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BEFORE entering upon the discussion of the subject, it may be proper to give a brief definition of the leading terms used in the heading of this paper. The term *normal* implies that there exists some rule or guide for reference. In anatomy and physiology it implies sound structure and healthy function, but in medicine, generally, the term is used to designate a state of health, and the term abnormal is applied to deviations from that state. As there may be different degrees of health, or

*In the perusal of this paper, we would bespeak the "good-will" of the reader on three considerations: 1st. The whole subject is so large and complicated that only a mere outline of facts and arguments can be presented in a short article; 2d. Though the topics discussed may be familiar, the stand-points for examination are quite different from what are usually taken in lectures and books; and 3d. The line of discussion here pursued, in favor of a general law of propagation, constitutes only one out of many others connected with the laws of physiology, in their relations to the various questions affecting the great subject of population.

slight deviations from a perfect state, standards artificial or imperfect may be set up, and the term normal may, with much propriety, be applied to them. So in the application of physiology to propagation, there may be differences in organization, or in the objects to be obtained, as there may be different physiological standards or types. While custom and convenience might sometimes allow such use and interpretation of language, the phrase normal standard is here intended to mean strictly the highest standard or most perfect development which physiology can present. Moreover, the phrase normal standard, as here used, is not intended to apply simply to this or that organ in its best or highest development, but to all parts of the body—to every organ in the human system—that each should be perfect in structure, and each perform its complete function. This standard, that it may be normal both in structure and function throughout, must be based upon a physical system evenly and well developed in every part or organ, so that each can perform its respective functions in harmony with all the rest. While we may not find this perfect physiological standard, we find approximations to it in great numbers—some much nearer than others; but deviations from it may be found in endless variety. Still, the general law, the normal standard, must have its basis in the highest or most perfect developments of the body as regards its anatomy and physiology. That there does exist a great difference in organization amongst women, with reference to propagation, all experience proves. All books treating upon this subject admit it, and give particular instructions founded upon those peculiarities. That, in these differences of organization, one kind of development, one form of body, or one class of organs being better developed than another, is more favorable for the fulfilment of this law of propagation, requires no long array of arguments to prove. What then is the anatomical or physiological development most favorable? Does it consist wholly in the construction of the pelvis or of the organs of that region? In the great law of propagation are there not many other conditions or objects to be considered, besides parturition or the mere mechanism of labor? And may not these other considerations have been too much overlooked, on account of the great prominence given to one particular part of the physical system? In order to under-

stand correctly and observe properly a general law of nature, all its conditions, requirements, and objects must be carefully taken into the account, that the designs of each may be fully secured. Not only the constitution and health of woman, the peculiar effects of gestation and the physical changes occasioned by it, must be considered, but her qualifications for nursing and taking care of offspring, together with the organization and character of that offspring. This last-named point is one of no small moment in the account: it cannot be ignored without invalidating, more or less, the premises or theories upon which it is attempted to base a law of this character. For in all great organic laws or processes of nature, she is universally thoughtful to make provision for the interests of all, so that no one part suffers without due compensation to some other part. In our investigations on this subject, and attempts to arrive at some definite results, many things must therefore be taken into consideration.

In this field of inquiry may be found two extremes. A class of writers, commencing with Malthus, about one hundred years ago, in discussing the subject of population, attempted to define its laws and account for all its changes, without much regard to the structure or agency of the human system. In their view, nearly all the causes that lead to an increase or decrease in population, existed independently of, and outside of the body itself, such as food, climate, government, etc.

According to their theories, man, the most important agent, and factor of all, had but little or no power in directing and controlling these causes. But great changes have of late taken place in the views and theories of writers on population. The teachings of modern science, especially of physiology, have turned the attention of inquirers more and more to the human body, and have led to the conclusion that the laws which governed its existence and continuation, must surely have their origin and support from this source.

Another and much larger class of writers have taken an extreme position in physiology, confining their attention almost wholly to the first principles of life, and the exclusive agency of the generative organs. Aristotle and Harvey may be named as proper representatives of this class. And, since Harvey, nearly all writers on this subject have dwelt chiefly

upon the nature and agency which the reproductive organs alone exercised in the matter of propagation. Very little consideration has ever been given to the relations or agency which other parts of the system, or the whole organism of the body bear to them. In considering the designs of nature in the matter of propagation, it would naturally be expected that all parts of the system must sustain important relations to it, but most medical writers on generation, pregnancy, parturition, etc., have devoted their attention too exclusively to the reproductive organs and the pelvic region. So in that part of physiology represented under gynæcology, or rather obstetrics, writers and teachers have confined their observations to, and discussed the subject principally from, one point of view, viz., the *pelvic region*. However important may be the agency of these organs, they sustain most intimate relations to other parts of the system, and cannot, it is believed, perform their functions completely without calling to their aid, more or less, the assistance of other organs. Thus, in attempting to ascertain and define the highest standard required for propagation, it may be found necessary to consider, not only these organs, whose peculiar province it seems to be, and which are most intimately concerned in the process, but also all other parts of the system; for, as all the members constitute but one whole, and each is linked to the others by a chain of sympathy, if by no stronger tie, so the full development of all must be essential to the perfection and full play of each. Besides, it is not the mere continuation of the race that should be sought, but its improvement and perfection. Moreover, in determining the best type or standard of the physiology of woman for child-bearing, it should constantly be borne in mind that this is her *normal state*—that this harmonizes with her whole organization. The leading features and controlling forces of her organism were evidently intended for this purpose. Not only her physiology, but the history and character of her diseases, her comparative health and longevity, demonstrate that the production of offspring is among the primary objects of her creation. The observance of this law has, moreover, been found absolutely necessary for the most complete development and perfection of woman's organization. All this might be inferred from her physiology alone; but it has been abundantly confirmed by sta-

tistics gathered upon a large scale, and by comparing a large number of married women who have had families, with both married and single women, who never have had offspring. This is also deducible from the fact that, wherever barrenness or sterility exists among married women, it indicates something wrong, some defect in structure or irregularity in function. Whether this arises from imperfection in structure, or some weakness or settled disease, it is considered abnormal; and the greater and more extended these difficulties are, the less likely is recovery, and the wider is their divergence from a true type. In seeking, therefore, after the best and most perfect development of woman, with reference to propagation, all such complaints as accompany barrenness or sterility must be left out of the question.

If, then, the production of offspring is a primary design in the organization of woman, upon what particular type or development, condition or feature of the system is the law found to operate best, or in its highest degree? That there is a difference, a wide difference, in the fecundity of women, must be admitted; a difference, physiologically, in the susceptibility to conception, in the effects of pregnancy, in the ease and safety of delivery, in the physical qualities for nursing, in the constitutional healthiness of offspring. In what, then, does this difference consist? Can it be confined wholly to the reproductive organs or to the pelvic region alone? To settle the question we naturally seek some standard to which we may appeal; and both nature and analogy would lead us to the conclusion that such a standard or model certainly exists somewhere, and that we shall not seek for it in vain. Reasoning, *à priori*, we should naturally infer that it would be found in the highest type or most perfect organization in structure and function; for such is the nature, importance and complication of forces required in propagation, that, for its successful results, it seems to demand the aid of every part of the system. This is certainly the first, the highest, and the most important law in the whole animal economy.

If we study the operations of nature in the framing and government of organic bodies, we never find great principles or laws based upon any particular parts of the system or class of organs, neither upon inferior or imperfect structures. All

the primary laws of nature and the fundamental principles of science, are exemplified in, and illustrated by models of faultless forms and full development. The laws that govern the human system cannot be an exception to this rule. If nature has established such a law of propagation, it is of the highest importance that it be known and understood. While the recognition and knowledge of it would be fraught with the greatest possible interest and benefit to the community at large, it must prove of incalculable value to the medical profession. The law here proposed will be found, we believe, to rest, not upon mere theory or vague speculation, but upon positive facts; and, if so, to lead, in the broadening of our knowledge and our researches to results of a practical and most valuable character.

In considering the foundation of this law, and the advantages to be derived from it, our remarks will be confined to a few points of view only, presenting a meagre outline or brief synopsis of the subject. As the field of inquiry is comparatively new, and but little can be gleaned from medical works bearing directly on the subject, we would bespeak, in its discussion, the charitable consideration of our brethren.

While many facts and arguments may be deduced from the general principles of physiology in favor of such a law, there are four distinct points of view around which they may properly be gathered, and, in this way, be brought out and illustrated in a clear and more forcible manner. These points are: The *pregnant state, parturition, or the mechanism of labor*; the *qualifications* of a nurse, and the *character of offspring*. If there is a general law of propagation, a normal standard in the organization of woman, based upon the principles of physiology, it will certainly aid us in a better understanding and knowledge of those important changes through which she must pass in child-bearing. Let us then briefly review the leading facts or phenomena in each of these changes, and see what lessons they teach.

One of the most eventful and trying changes the human system can possibly pass through, is that of

PREGNANCY.

This state causes many physical changes—some simple and safe, others complicated and occasionally dangerous. The pri-

many changes cannot properly be considered actual disease, but rather functional derangements. In works treating of diseases of women, we generally find a long chapter, headed "Diseases of Pregnancy," discussing from forty to fifty distinct complaints arising from this source. But pregnancy in itself cannot be considered strictly a morbid or diseased state, inasmuch as propagation, in its normal effects, must harmonize with the principles of physiology. Montgomery, one of the most distinguished writers on this subject, makes this significant remark: "If, with a few, pregnancy has deserved the name of a nine months' malady, fully an equal number suffer little or no inconvenience, and with some it is a period of decided improvement in health; moreover, it appears, from all experience, that women who bear children generally enjoy more even health, and are less disposed to disease, than those who lead a life of celibacy, or who, having married, remain unfruitful." Now, why should there be this difference? why should some women suffer so much from the pregnant state—others so little—and others still improve by it in their health permanently? It may be said that this depends upon *difference in constitution*—the *pregnant* state, in one sense, agrees with the constitution of some women, but disagrees with that of others. What, then, is that agreement—what is the type or character of those constitutions with which the pregnant state harmonizes? Is there not some law or standard by which these can be tested or explained? In the very nature of things, there must be, in these things, the observance or violation of law. Such changes cannot come from chance.

Every experienced physician knows full well that there is a great difference in women as to the effects of pregnancy, and that these effects are various and occasionally very marked. Sometimes the change may affect this organ—sometimes that; and again, almost every organ in the system becomes more or less affected. In some cases the very first stage of this change operates unfavorably; it may induce a little nausea or slight headache, or it may result in the most violent inflammation or convulsions. While some women may be benefited in their health from the change, and their constitutions actually improved by child-bearing, with others it is the commencement of suffering and disease, resulting in impaired health and not unfrequently

a broken-down constitution. Now why should there be these differences, why these disturbances? What are the causes, the constitutional weaknesses, the particular predispositions? If propagation is physiologically a *normal* function of woman, why these pathological changes? What laws have been violated? and why should there be such a marked relation or sympathy between this change in the reproductive organs and other parts of the body? The very fact that one organization is found more favorable for child-bearing than another, implies that there may be another still more favorable; and, if so, let this change or improvement be carried to a standard of organization, where the least bad effects possible arise from the pregnant state. What, then, is that standard, and where is it to be found? Is it not based upon perfection of structure and harmony of function; or, in other words, upon the perfect anatomy and physiology of the whole system, and that on this basis is founded a great general law of propagation?

Let us make an application of this principle to different types or kinds of organization. In tracing out the

EFFECTS OF THE PREGNANT STATE,

we find some difficulty, from the fact that by this change in the uterus, it works in three ways—by attraction, by sympathy, and, gradually, by mechanical pressure. One of its effects is to change the circulation and the direction of the nutritive force. Thus, where in certain parts of the system there has been overaction or excessive excitability, perhaps a strong predisposition to, if not the actual existence of disease, the pregnant state, in changing the circulation by withdrawing from these organs a certain amount of blood and nutrition, actually improves the health, and in some instances undoubtedly prolongs life. Here an attempt is made by a natural law to correct weaknesses and restore health, or in other words, to bring about a more even balance or better harmony of action in the whole organization.

There are other cases where the weaknesses or excesses are so great, or the disease has been carried so far, that pregnancy makes the attempt to change this state of organization; and not only fails in so doing, but, perhaps, indirectly aggravates the difficulty. In all those cases, however, where the health

of women is improved by pregnancy, it is accomplished, we believe, by so changing the current of the vital forces of the system as to bring about a more equal circulation, a better balance of organization, as well as harmony of function throughout the whole body. What, then, is the inference, or what lesson does this class of facts teach? Is it not clearly this: that the better and more evenly balanced the structure of the whole body is, and the more perfect the action of its machinery, the less disturbance will be produced by pregnancy, and the less harm or inconvenience result from it?

Let us look at different types of organization. The more nervous and sensitive a person is, the greater and more marked is the effect of pregnancy. In such cases, generally, the change is sooner discovered, and the signs or indications arising from it are more decided and positive. In some cases, where there is a great preponderance of the nervous temperament, pregnancy, by changing and equalizing the action of the nervous system, may improve the general health and constitution. In other cases it may increase and intensify the nervous activity or excitability, and thus affect, more or less, the disposition and temper of the individual. Now and then a case occurs where pregnancy has a singular effect upon a nervous temperament, to disturb and excite the patient, and sometimes even cause mental derangement. In all such cases, if the exact physiology and pathology of the brain and nervous system could be ascertained, we should find some peculiar sympathy in the relations of the nervous system, or some singular idiosyncrasy of organization in these persons. But such cases do not often occur, and are exceptions to the general rule. Such changes of conduct or exhibitions of character do not occur without a cause; and when the cause can be ascertained and satisfactorily explained, instead of conflicting with, or furnishing evidence against general laws or principles, their history and explanation will rather serve to confirm and strengthen the law.

There are many slight disturbances occasioned by pregnancy in the action of the stomach, bowels, heart, lungs and nervous system, which, as far as they prove anything, show a very well balanced organization in those cases, and also that no marked weaknesses, defects or disease existed. But occasionally the stomach is greatly disturbed, which leads to serious and danger-

ous disease. A careful examination into such cases, will show, we believe, a remarkable sympathy or sensitiveness, between the state of the stomach and the action of the uterus or other organs. It may show, too, that the individual had suffered more or less, for a long time previous, from dyspepsia or indigestion.

Sometimes great physical changes are occasioned by the pregnant state: the woman occasionally losing flesh and strength, continues to waste away till she can scarcely go through the regular periods of gestation, the nutrition going mostly to the child, and the whole change being caused by some defective, or unnatural action of the digestive organs; but, more often, the woman gains in flesh and strength, becoming plethoric, and, as it may be said, corpulent. In such cases, the stomach and digestive organs act too vigorously,—manufacture too much nutrition and blood, certainly for the mother, though perhaps at the expense somewhat of the child. This change is decidedly unfavorable, resulting not unfrequently in convulsions or violent inflammation. The causes of such a change are not easy always to understand, but indicate that there must have been some radical defect in the organization, or something wrong in the habits of the individual.

Sometimes the liver and kidneys are so affected by pregnancy as to change the quality of the blood, resulting in anasarca, thereby enhancing the danger of the condition, and sometimes resulting in loss of life. In some cases, it is thought that pregnancy, by sympathy or by some singular influence upon these organs, connected with the process of digestion, produces albuminuria, causing the most dangerous convulsions, and, in some instances, resulting fatally. This disease, whether caused wholly by the pregnant state or not, is one of the most obscure and dangerous of all diseases. It is not easy to trace out its exact relation to pregnancy, or to describe just what pathological changes had taken place in its preliminary stage.

Future researches in pathology will undoubtedly explain these causes and changes—and, we are confident, it will also show, that there were some conditions in the organization, or in the habits and health of the individual, existing prior to pregnancy, predisposing to this disease, so that this state of the sys-

tem operated only as an exciting cause. As yet pathological inquiries have not been carried far enough in this direction; but, when thoroughly prosecuted, we believe they will show that the sad results of this morbid state or diathesis may be, in a great measure obviated, and, perhaps, show that it is not chargeable to pregnancy alone.

There is another class of complaints, arising from pregnancy, caused by mechanical pressure, interfering with the circulation especially, in the lower extremities; and sometimes this pressure operates unfavorably upon the natural action of the bowels and stomach, as well as upon the functions of the liver, heart and lungs. This result of the pregnant state cannot well be obviated, or much relieved by any medical treatment, as it arises from a want of proper development of the whole body, or from the too close relations of the internal organs, one to another. The disturbances from this source are more numerous, and their results more serious, we believe, than what are generally supposed.

Again: Is there not a wide difference in the effects of pregnancy as found in different classes, nations and races? Are they not, as a whole, more marked and serious among the higher classes of society than the lower; in cities, than rural districts; and less striking and troublesome still among women living even in a semi-civilized and barbarous state? In fact, wherever the female organization is the most perfectly developed in all its parts, and the functions of every organ are performed in accordance with its own inherent laws, are not the diseases of pregnancy the least marked and serious?

Now in all these changes and diseases, a careful investigation will show, that in case there was always a well-balanced organization and a healthy performance of the functions of the internal organs, we should have very few diseases arising from the pregnant state. And all these complaints are found to diminish in number and severity, just in proportion as we find organizations approximating to more perfect standards. If, therefore, propagation is the normal state of woman; and the more perfect her organization is, anatomically and physiologically, the less are the disturbances or diseases of pregnancy, it certainly points to the fact, or affords evidence that there exists in

nature what may be denominated a great general law of propagation based upon such standards of the system.

For a proper understanding of this law, it is highly important to bear constantly in mind, not only the striking differences in female organization, but to notice particularly the great changes it has undergone in different races, and at successive periods of time. This fact will appear more obvious in the consideration of the next step or process in the development of the law, viz:

PARTURITION.

That there are wide differences among women, in the ease and safety with which they go through this process, all will admit. Now if this process of labor or delivery is natural to woman, is normal physiologically, why is it attended frequently with so much pain and difficulty, and not unfrequently with danger to life? In no other department of the animal economy, where the laws of nature, in a normal state, are observed, do we find such pain, distress, and suffering. Do not these symptoms, therefore, indicate that the laws of organic beings, or the designs of nature, have been in some way violated or perverted? It is true, some women go through the process without much suffering or loss of strength, while to others are allotted nights and days of pain, anguish and distress; and, it would seem that the latter class constitute, at present, the exception to the general rule. Teachers and writers on this subject have taken great pains to ascertain and describe what were the causes of so much difficulty and suffering in parturition, and to inquire what human means or resources of art could be employed to remove these difficulties, and assist nature in this work. To this end the anatomy and physiology of the pelvis have been carefully studied. The relations each part sustains to this process,—what were the precise functions of the uterus,—what should be the presentation of the child,—what obstructions, points of resistance, etc., existed.

No part of the body, probably, has been more carefully studied than that of the female pelvis, and no organs in the whole system perform such important functions as those located in this region. For better understanding and treatment, parturition has been

divided into different stages, and its phenomena classified—such as natural and protracted, tedious and laborious, difficult and complicated labors, etc., etc. Special attention has been given to difficulties attending labor, such as position or wrong presentation of the child, the disproportion between its head and the pelvis of its mother, the imperfect and irregular action of the uterus, the rigidity of the os uteri and the soft parts, the necessity of using instruments, the danger from exhaustion, convulsions, hæmorrhage, etc. These are the points or sources of pain, distress, suffering, and danger. In these eccentric or extreme organizations, the greater are these marked peculiarities of the system, and where we encounter a large part of the difficulties in obstetrics; and the wider these divergences go in any one direction, or the more marked these peculiarities are, the greater these difficulties. On the other hand, the nearer we approach a sound, well-balanced, organization in all its parts, the greater the ease and safety in delivery. Every physician occasionally finds patients that go through this process with comparatively little trouble or difficulty. We find also among women all manner of differences in the process of labor; and these depend mainly upon the kind or type of organization, together with the habits and health of the individual. Now, why these differences, why these peculiarities? Are they not deviations, more or less, from a perfect standard of organization; or in other words, are they not to a great extent abnormal? Are they not the effects or penalties of a law violated, or the result of an artificial—in some respects, an unnatural life?

If a test or direct application of the principles of physiology be here made, it may throw some light upon the subject. Should any class of organs, or some one temperament, such as the nervous, sanguine, or lymphatic, greatly predominate, its effects as a whole will in parturition be found unfavorable. If there is an undue predominance of the nervous system, there will exist far greater sensitiveness or susceptibility to pain; and the process of parturition may produce such a shock upon the brain and nerves, as to render recovery doubtful, if not impossible; if there is an excess of the sanguine temperament, there will probably ensue a greater strain upon the action of the heart, and sudden change in the circulation of the blood, with increased danger of hæmorrhage and inflammation. If

the lymphatic temperament abounds, there is a sluggish state of the system, a lack of force and regularity in the contractions of the uterus, such a deficiency in general vitality and strength, as to render parturition tedious, if not sometimes dangerous from exhaustion. If the muscular tissue greatly predominates in the system, then we find, with violent pains, powerful resistance and rigidity of all the soft parts. It may be, these defects or peculiarities of organization will not show themselves so much in pain and difficulty of delivery, but their effects may become more manifest upon the system afterwards, or upon the character of the offspring.

There is a physiological condition or principle involved in labor or parturition, that is not, we believe, properly considered. We refer to a union or correlation of forces in nature, so that all parts of the system should act in harmony with each other, and in one single direction, when the object to be accomplished requires it. This principle in the study and practice of obstetrics, has been, if we are not mistaken, very much overlooked. Such is the nature and object of propagation in importance and magnitude, that we should expect aid from every part of the system, from every tissue, nerve, tendon and muscle. Parturition is certainly one of the most important and complicated processes in the fulfilment of the law. Now, while certain organs are called on to perform their natural functions, there should be no conflict or resistance from the action of any other part or class of organs. But in an imperfectly developed, and unevenly balanced body, with a want of harmony in the action of all its parts, it is difficult, if not impossible to obtain a union or conjunction of all the forces of nature in the most favorable manner. If the organization of woman, as now found, is a deviation from the normal, perfect standard, it could not be expected that all the forces of nature or the whole organism would aid in the process of parturition, so favorably or to the same extent as they would in a perfectly healthy or normal state. Hence, in considering the causes of pain, the difficulties attending delivery, the force and relations of the whole system should be taken into account, and our attention should not be confined wholly to the pelvic region. It should be borne in mind, too, that we are dealing with imperfect organizations, where a general law cannot be fully applied.

There is another class of facts that have an important bearing upon the subject. It has been remarked that there are not only wide differences among women as to pain and difficulty in parturition, but there are some women, in every community, who suffer comparatively little at child-birth. Now, a careful examination into the structure and functions of the whole organism of such women, we venture to assert, will show few excesses or defects, but, on the contrary, unusually well-balanced, sound, and healthy conditions in every part and organ.

Now let this same principle be borne in mind, as applied to different classes, races, localities, and states of society. It may be difficult to collect here facts upon so large a scale, or to institute such comparisons as would settle any general laws or principles; but still information may, in this way, be gleaned, that will throw much light on the subject. One general fact is very obvious; from medical writers and travellers we learn that woman, living in what is termed a *state of nature*, suffers comparatively but little pain or trouble in parturition; whereas all history testifies that this pain and suffering increases just about in proportion as civilization advances. Thus, in what may be considered a high state of civilization and refinement, not only more pain and distress are attendant on parturition, but increased difficulty and danger.

Among the North American Indians, the inhabitants of Greenland, of Labrador, of the South Sea Islands, and among various classes in South America, of the numerous tribes of Africa and South-Eastern Asia, child-bearing, we are informed, is accompanied at the present day with but little suffering or difficulty. There are undoubtedly individual cases in all these countries attended with distress and danger, but then these are the exceptions. In this general statement we do not deem it necessary to go into details of evidence by giving facts, making quotations from different writers, or furnishing various kinds of evidence. Many writers on obstetrics admit the correctness of these statements; in fact, they are nowhere called in question.¹ Now why should there exist these distinctions or differ-

¹ It is more than probable that pain and difficulty in parturition are artificial, and are the consequences of civilization and refinement. For the human constitution, when not under the influences of these causes, will, *ceteris pari-*

ences in pain, suffering and danger attending a process that is considered a natural, normal condition or function of physiology? In a primitive state of society, among a people living in a plain, simple manner, with habits rude and uncultivated, we find but little distress or trouble attending propagation; but in society advanced in civilization, refinement and culture, we find much difficulty, and not unfrequently danger, attending the fulfilment of this law, and the higher the degree, or the more advanced the state of this civilization, the more painful and hazardous are the chances. The question returns upon us, why this difference? What are its causes? Are they necessary? Can they be explained? Can anything be done to modify or to remove them? The inquiry naturally arises, what is the physiology of women living in the countries referred to, where the law of propagation is so easily complied with? May there not be found among them a better developed physical system more evenly balanced in all its parts or organs, a greater harmony in the performance of all their functions, especially in reference to what may be termed the *primary laws* of nature? Writers admit that there may be found, at the same time, individual cases of women living in these countries subjected to great suffering and difficulty in parturition, and sometimes danger in the process or from its effects. If an examination could be made into those particular cases by a good physiologist, it is presumed that some malformation, some defect in organization,

bus, be found capable of meeting and overcoming without any difficulty the ordinary changes produced by gestation and delivery. Of this abundant proof might be given; for the female savage, wherever found, whether under the scorching heat of an African sun or beneath the rigorous sky of the unfriendly Labrador, brings forth her young without the assistance of an accoucheur or midwife; but the reverse of this almost universally obtain among the females of the civilized world. These differences are most probably occasioned by the changes produced on the human constitution by civilization and refinement.

The mischiefs derived from the sources just mentioned are found to consist in the disposition to or existence of diseases, either general or local or both; in those which may affect the system in general, or those which may be confined to the uterus or pelvis in particular, in the introduction and continuance of certain pernicious customs, habits or modes of life, thereby inducing a preternatural degree of irritability, sensibility; laxity or rigidity—and hence the physical necessity of pain and difficulty in parturition among the greater part of women in a state of civilization and refinement.—Dewees' *Essays* p. 25.

or wrong presentation of the fœtus, would be found, which might at once explain the difficulty. If sufficient facts could be obtained and comparisons instituted, it would be found, we believe, that it is not in the extremes of savage life or in the lowest stages of barbarism, but among the semi-barbarous or half-civilized, where this law of propagation is most easily or successfully carried out. For there must be certain modes of living, certain states of society, certain types of organization, more favorable to the development of this law than others.

The question might arise, what was the organization of man at his creation? What were the designs, provisions, conditions, etc., with reference to his continuance? Whether we adopt the Scripture account of his creation, or the Darwinian theory, so-called, of his origin, what evidence can there be found that will explain or throw light upon any such general law of propagation? When man was created, according to the Scripture account, there is reason to believe that it was with a perfect anatomical and physiological structure in all its parts or organs, and that there was a perfect harmony in the performance of all their functions. And when the command was enjoined upon the original pair "to be fruitful, to multiply and replenish the earth," the fulfilment of this command, with a perfect organization on the part of the woman, it is presumed was not attended with much pain or difficulty.

But afterwards, in consequence of the disobedience of our first parents, the sacred Scriptures relate that the Almighty said to the woman, "in sorrow shalt thou bring forth thy children." The term *sorrow*, as here used, has received various interpretations. Some writers maintain that it refers exclusively to the mind—to mental acts—such as anxiety, fear, suspense, distress, etc., while others maintain that it implies also physical pain and suffering.

Then, again, the whole transaction is regarded by some as a judgment or curse pronounced upon woman for disobedience, which was to become universal, and continue through all time, without much relief or change: while by others this declaration of the Almighty is interpreted as somewhat conditional in its application,—that sorrow and pain would follow child-bearing, because the laws of the physical system were violated, and that the amount of this sorrow and suffering would depend upon

the manner and extent to which these laws had been violated. This view of the Scripture narrative is the most natural interpretation. It harmonizes not only with the character of God, and our own moral sense of justice, but is confirmed by all the facts of history, as well as the principles of physiology. It implies distinctly that some change would take place in the operation of this law, which would bring sorrow and suffering to woman. It is inferred that there was none or but little trouble of this kind in her primeval state. This change in the law resulted not from an arbitrary or vindictive spirit on the part of the Creator, but depended wholly upon the *violation of physical laws* by human agency, that, just in proportion as man violated the laws of his own being, in the same proportion would there be *sorrow* attending his birth. Thus, in the various changes and deviations from this perfect physiological standard, to which the human body in all ages has been subjected, do we find an endless variety of sorrow, suffering and hardship accompanying child-birth.

If we adopt the evolution or Darwinian theory of the origin of man, the law of propagation proposed in this paper, instead of opposing or conflicting with the doctrines of this theory, we believe very strong evidence in its support may be derived from this source. Without entering into a detailed discussion as to points of evidence, or harmony, we refer only to two topics. The two leading doctrines of this theory are that of "Natural Selection," and the "Law of Variability." Now the principle, or doctrine of natural selection described as applicable to man in a variety of ways, such as the constant "struggle for existence," "the survival of the fittest," etc., corresponds with, in fact, is nothing more nor less than a normal law of propagation. And the doctrine of "variability," or "laws of variation," may be clearly and fully explained by the laws of inheritance. Unless we admit that nature has established some general law of propagation, and set up a normal standard of appeal, it is difficult, if not impossible to understand the almost endless changes taking place in human organization. The laws of variation or inheritance become, then, full of meaning and instruction, and without such a law, or theory, they are to a great extent enigmas.

A careful investigation will show that great changes, or

deviations from a perfect standard, both in structure and function, have taken place, particularly in woman's organization. For illustration, in a high state of refinement and culture, the nervous temperament becomes predominant, thereby greatly increasing the individual sensitiveness to changes, and susceptibility to pain, while at the same time, other parts or organs become so enervated or reduced in vitality, as not to afford the assistance which nature requires in child-birth. Then as to the muscular tissue, so indispensable in such a process, it may become excessive as well as deficient: take individuals or families where, by inheritance and constant exercise, this tissue has become a very prominent portion of the system, great resistance, as well as rigidity will be found in the uterus, and sometimes in the soft parts. Artificial habits continued through several generations may not only have reduced the vital energies of the system, but changed the size and structure of the pelvis itself, so as to interfere seriously with parturition. In what is considered a high state of civilization, there is a large amount of indolence, luxury, false modes of living, injurious styles of dress, and other evil practices, that interfere not only with a natural development and a healthy state of the whole body, but concentrate, in their bad effects particularly, upon the organs in the pelvic region. Much may be done by individuals even in one generation to bring about unfavorable changes in these respects; but when evil habits and injurious practices are continued through several generations, the effects by inheritance become greatly increased and intensified in their form and extent.

There is another point of view from whence important evidence may be gleaned. It is well known that there is a great difference in women as to the amount of prostration produced by the effects of labor, as well as in the length of time and manner of recovery. This depends much on the strength of the constitution, and also on the character of the labor. With some women, the shock is so great, and the exhaustion so excessive, that it requires weeks and sometimes months to recover, and occasionally there are cases which never regain their former strength and health. There are others who go through the process of pregnancy and labor without much exhaustion, or even fatigue, and it is with great

difficulty that they can be confined, after delivery, a week or ten days in bed. And they will go through this process ten, twelve or fifteen times without apparently any injury to health or constitution—in fact, with scarce any loss of time, and not unfrequently, after having a large family, they maintain remarkable health and live to great age. Now, why are there such differences, such exhaustions, such slow recoveries, and, sometimes, permanent injuries of constitution? Why do some women rally so easily and so soon after confinement, and seemingly improve, or at least hold their way, by every repetition of the process? From a careful examination into a large number of such cases we have always found, that such women possessed a remarkably well balanced organization,—not merely good health, devoid of any particular weakness or disease, but a sound body, fully developed in all its parts and organs.

Some striking facts bearing upon these points may be found in a Report (1871) on the Gynæcology of Iceland, by J. F. Reykjavick, its chief physician.¹ The inhabitants of this island having originated from Scandinavia, Scotland, Ireland and the Western Islands, are represented to possess remarkably sound, healthy bodies, uninjured by the refinements, fashions and luxuries of life. The women are described as of “average height,” “rather tall than stout,” “are generally well proportioned and well formed,” and “have for the most part very regular pelves, although exceptions sometimes occur.” “The women are probably the most fertile of any in Europe,” and “their delivery is in general easy and without danger.” “The most frequent cause of difficulty and protracted labor is the rather common rigidity of the uteri and soft parts.” Instruments “are seldom necessary;” convulsions and puerperal disease, rare; “easy and speedy recoveries” are attributed mainly to a favorable constitution and the forces of nature.

Some marked illustrations on this point of difference in parturition may also be found in an article in this Journal,² by Dr. Joseph Taber Johnson. It was the testimony of Dr. Livingstone, and others, that the women of South Africa “generally suffer less in parturition than Europeans, and, principally, as it appears,

¹ Journal of the Gynæcological Society, Boston, Jan., 1871.

² May Number, 1875.

because they consider it to be an act of nature, and less of disease than do the latter." Dr. Johnson says that this remark of Dr. Livingston "applies almost as forcibly to the negro women in the United States." From the facts and statements presented in this article by Dr. J., it would seem that, in respect to duration of labor, presentation, easy delivery, convalescence, nursing, etc., the negro women have great advantage; in other words, there is found among them much less pain, difficulty, and complication in labor, less call for aid or instruments, less exhaustion, less puerperal disease than among the whites. Says Dr. J.: "Labor seems to progress in these women naturally, and few of them regard themselves as sick, as we understand that word, when they are confined. Their previous modes of life having been so healthful and natural, they have the requisite strength and endurance when the time of need comes. The labor, it seems to me, is normal, the period of convalescence short and uncomplicated, as a consequence of or in proportion to their previous simple and vigorous habits of living."

From remarks made respecting mulattoes, quadroons, and those negro women who have made more progress in refinement, culture and education, though the statement is not positively made, the inference is clearly drawn, that this class experience greater pain and complication of difficulties in parturition.

The differences in size and form of the female pelvis in different nations, and the changes in the form and character of this structure, in the same race through successive generations, from a rude to a highly civilized state, are very important considerations. It is maintained that the foetal head also differs in form and shape; that among a people highly educated the anterior lobes of the brain are larger, and that such change gradually takes place, just in proportion to the advance of civilization. Von Franque, who has perhaps devoted more attention to this subject than any other writer, in accounting for the quick and easy labor in uncivilized nations, says, "we must not forget, in this question, *the influence of culture*, which certainly cannot be estimated too highly; so that, with increase of culture, and super-refinement of customs, not only the most various diseases appear more numerous, but that also, in the

same measure, the labors become more difficult and of longer duration; that, especially, complications step in, which are conditioned by anomalies of the bony pelvis, and which are in general met with but rarely, almost not at all in uncivilized nations."

While we admit that the changes in the shape and diameters of the pelvis effected by culture, refinement, habits, fashions, etc., of civilization, do greatly increase the difficulties of parturition, may not the changes in other tissues, or parts of the body, from the same causes, increase also these difficulties? The muscular power of the uterus is certainly not dependent upon the size and shape of the pelvis, neither is the strength or power of endurance of the whole body. As the quotation from Von Franque states, "various diseases and other complications"—and may we not add weaknesses too?—have been introduced by these causes, and which greatly increase the pain, difficulty and danger of parturition. In fact, if all these difficulties, including the suffering, exhaustion, hemorrhage, convulsion, puerperal disease, etc., were carefully analyzed, what proportion of these originate solely from the bony structure? While no distinct line can be drawn between a portion of these and their primary cause, yet if a survey of the whole could be correctly made, and their causes defined, we question whether one half of them would be found to arise exclusively from the pelvic bones. But it is in the matter of conception, pregnancy, gestation, lactation, etc., that these changes produce their greatest effects on the physical system, to which allusion will be made at the close of this paper.

It should be borne in mind that the changes here referred to do not grow out of a *true healthy civilization*, but from an *artificial* type, from wrong habits, pernicious customs and fashions, from an *unnatural* culture and refinement, where the laws of health and life are altogether too much violated. It should also be borne in mind that these changes have not been the growth of *one* generation but of *many*; and thus, by the laws of inheritance, they have become greatly increased and their effects intensified.

Without going further into details on these points, let us sum up what seems to be the general facts upon the subject. It is admitted that there are wide differences among women as

to the amount of pain and difficulty in parturition. It is found that in the ruder portions of society, and among the semi-civilized and semi-barbarous nations, very little pain or trouble, comparatively, is experienced in child-bearing. From the Scripture narrative, we have good reason to believe the organization of woman at creation was such that she suffered little pain from this source; but afterwards a change occurred whereby her liability to pain and suffering was greatly increased. All history shows, that in proportion as the human body has been changed by artificial habits and vicious practices, woman has been subjected to greater and severer pain, as well as difficulty, in child-birth. Facts also show that the further artificial habits, luxuries and fashions are carried, the greater the distress, difficulty and danger in child-birth. Now what lessons do these facts teach? Do they not plainly indicate that there exists somewhere a normal standard, established by physiology for propagation? Do they not teach that the nearer the physical system of woman approaches that standard, the less pain and suffering she endures? If there is, then, such a standard, what is it—in what does it consist? We answer, a well-balanced organization, sound in structure and harmonious in function, where every tissue and organ is found developed to the highest extent that is compatible with the healthy performance of all their functions.

The next stage in the observance of this law is the dependence of the infant for nutrition upon the mother, or, in other words,

THE QUALIFICATIONS OF A GOOD NURSE.

There must be in this respect, between the two, a natural adaption or harmony of relation. According to the laws of nature, when properly observed, we find, that wherever she makes a demand, she is also sure to furnish a supply. Her laws, too, when correctly interpreted are found not only to harmonize with each other, but, are always complete in design—never disjointed or fragmentary. Thus, lactation, in the natural order of things, must follow parturition, as much as that process must necessarily follow the pregnant state. It was evidently intended by the laws of nature that the child, for months at least, should be supplied with nutrition wholly from this

source. No fact in vital statistics is more firmly established than that, in order to save life and promote health, the infant should be nursed at its mother's breast. The ingenuity of nurses and physicians has been taxed to the utmost, the principles of chemistry and the results of experiments have been brought into frequent requisition; but no substitute can be provided equal to pure breast milk. Nature, in her normal state or highest development, we believe, has made ample provision, in the organization of woman, for nursing her offspring. But in order to provide this nourishment pure in quality and abundant in quantity, she must have a well-balanced organization, especially a good development of the lymphatic and sanguine temperaments, together with vigorous and healthy digestive organs. The mammary and other glands should be neither too large nor too small; the powers of mastication, digestion and assimilation must not be deficient, must be equal to the demands which nature makes upon them in this direction. If there is a great predominance of the brain and nervous system, and a constant strain is made upon those parts, thus requiring a large amount of nutrition and exhausting the vitality of the system, there must be a failure in lactation. On the other hand, if the organization of woman partakes too much of the lower animal nature—abounds in flesh—if she is physically large and unduly corpulent—the powers of lactation here fail, the organs of digestion and assimilation may work vigorously, but the nutrition will go to the mother, and not to the child. A careful examination into the physical qualities of women who nurse their offspring best, will show a *natural fitness or adaptation* for this purpose. This same law holds good in the animal creation. There, it has been made a special study for a hundred years or more. There, experiments have been tried without number, and observations made upon the largest scale; no pains or expense have been spared in devising ways and means whereby the best and largest quantity of milk could be obtained from domestic animals for the use of man. But how little interest or attention has been devoted to the subject of obtaining a proper supply of human milk for infantile life? Is not the life of the infant as valuable as that of the adult?

As to this matter of nursing, a variety of opinions has been entertained by different writers. It has long been observed

that there were great differences among women as to their qualifications for nursing; some furnish an abundance of milk, some only a partial supply, while others are unable to furnish any. Instead of studying into the physiology of women, and inquiring what there was in their organization that made these differences, attention has been devoted almost exclusively to the means of providing an artificial supply. Upon examination into the instructions and directions on this subject, as found in books and lectures, there seems to be something wanting:—the obvious principles or teachings of physiology have not been properly expounded in their application to this function; neither has it seemed to be considered that the laws which govern, in this respect, the animal creation, are precisely the same as those that govern the human race. In confirmation of our statement, we will make a quotation from an address before a large body of physicians, by a professor of obstetrics and diseases of women in one of the oldest and largest medical schools in the country. Says this professor: “Why do American born females make such poor wet-nurses compared with the immigrant from Ireland or Germany? After nearly thirty years of practice I cannot answer the question. That it is the fact, few practitioners in our large towns and cities doubt. Allow that some women with us, as with foreigners, object to being bound to their children’s calls, yet the mass of American females are totally unable to act the wet-nurse with success.” It is not three years since this statement was made and published. This is, we imagine, a more candid comparison than many medical teachers or writers would care to make. But it is the truthfulness of statement, and the explanation offered, to which special attention is here called. Why should there be, in this respect, such difference between American women and the Irish or Germán immigrant? Why should New England women of the present day differ from their mothers and grandmothers, who found but little difficulty in nursing their offspring? Formerly, it was a rare thing in New England for a mother to be obliged to resort to a wet-nurse or to feeding by hand. But now it is certainly within bounds to state, that not half the New England women in cities and large towns can properly nurse their offspring. It has been supposed, however, by some that all or nearly all our American women

can nurse their offspring just as well as not—that the *disposition* only was wanting. But this is found practically a great mistake. While there may be cases, here and there, of this indisposition to nurse, it is a fact, that large numbers who are anxious to nurse, make the attempt, but fail. They find, after repeated attempts, that their milk does not satisfy the child, or that it does not thrive—that there must be deficiency in the quantity or defects in the quality of the nourishment. In many cases, after trying the experiment for weeks or months, they are compelled to give up nursing entirely, while others, depending partly upon nursing, resort also to artificial means for feeding the child. So impressed have writers been on this subject, and also practitioners of medicine, that the nursing of offspring harmonizes with the laws of physiology, and, as a general rule, proves beneficial to the health of the mother, they uniformly advise that the mother should *by all means*, nurse her child. This has always been a favorite theory with obstetricians, and its correctness has been confirmed by the results of experience and observation gathered from all quarters. Such we should expect from the obvious teachings of physiology, and it certainly accords with the common judgment of professional nurses and mothers themselves. But if the principle here laid down is correct, why should nursing be so often attended with pain and difficulty? That there is sometimes a defect in the form of the nipple, and the act of nursing becomes very painful, we easily understand. There are some cases where the act of nursing causes the most painful sensations, extending through the breast to the spine, and, from thence, through almost every part of the body. There are cases, too, where, after a most faithful trial, nursing actually disagrees with a woman and proves, in a variety of ways, unfavorable to her health, so much so that she is compelled to give it up for the preservation of her own life. There are other women, at the same time, with whom it agrees—is found to improve the health through the whole process—that they were never so well as when nursing, even though this process should be repeated from the tenth to the twentieth time. Now, why do we find such difference in the effects of nursing? Why should it ever be attended with pain and difficulty? Why should it injure the health of one and

improve that of another? There must be causes or reasons for those various differences.

Now, while these facts as to the inability for nursing may be found, perhaps, more obvious and common in New England, cases of this kind are not wanting in other portions of our country, both among the immigrant as well as native-born women. Such incapacity has been found to exist, more or less, in all countries, and among all classes and all races. It has not been confined to any age, climate or country, or to any tribe, race or color. But formerly this inability was not so common—occurred only occasionally, and, when partial, did not attract any attention. As long as such cases constituted exceptions to the general practice, they did not create much interest, or lead to remarks or observations on the subject. The same fact is true at the present day in respect to the German, French, English and Irish; a large majority of these women nurse their offspring—those who cannot or do not, constitute the exception. But in New England a gradual change has been taking place: the fact has become more and more apparent that large numbers of women cannot nurse their children, so much so, that in certain localities or classes those who do are beginning to constitute the exception.

The question may very pertinently be asked, why this change? Why this anomalous state of things? Why do we find so many exceptions in the observance of one of the most important functions of the system? What is there here abnormal and unnatural? These inquiries open up the whole question as to what constitutes the physical qualities of a good nurse—not merely in New England, but in all countries, and among all classes and people.

It is evident that this whole matter of the mother's affording proper nutriment to her offspring at birth, and afterwards as long as its nature requires, is governed by some fixed laws. The fact is indisputable, and there can be no question or hazard about it. In the very nature of things these laws must have their foundation and support in physiology. As in other organic functions, so in the secretion of milk, there must exist the requisite organs in good development, and these must have their proper share of aliment and support.

The organs classified particularly under the Lymphatic and

Sanguine Temperament must be not only well developed, but other parts or organs of the system must not be found altogether disproportionate to these. In this case those portions of the body that are predominant require an undue share of nourishment, if it should happen to be the nervous system, and particularly the brain—as this tissue requires relatively a much larger proportion of nutriment than any other—such an organization would be poorly fitted to afford proper aliment for offspring. The more carefully all the physiological developments or conditions requisite for a good nurse are investigated, the more convinced we shall be that they depend not merely upon what may be considered a sound and healthy body, but upon one well-balanced, evenly developed in all its parts. As far, then, as lactation is concerned, this type must be considered its normal standard.

That the human body has undergone changes from time to time, all will readily admit. Many of these changes, occasioned by the artificial habits of life as well as by the fashions of the day, are found not only unfavorable to female health, but must prove decidedly injurious to the race. Nearly forty years ago Sir Astley Cooper made this statement: "It is melancholy to reflect that a life of high civilization and refinement renders the female less able to bear the shock of parturition; it has a tendency to lessen her attention to her offspring and really diminishes her power of affording it nourishment, so that she is often a worse mother in these respects than the female of the middle ranks of life, or even the meanest cottager." This remark was undoubtedly made as the result of extended observation and long experience many years ago; and it implies not merely a change of disposition, but also a change in organization, from the fact that such mothers could not properly nurse their offspring. Sir Astley Cooper observes that the proper development of the mammary glands is often prevented by a constant pressure. We might go further, and say that continued compression of the chest and abdomen is calculated to impair the development and healthy action of the lungs, the heart and digestive organs, as well as those in the pelvis.

If we consider that this compression commences with the girl or young woman, when the system is in a state of growth and most susceptible of change—that it may be continued for a

series of years, and, by the laws of inheritance, intensified, it shows very clearly how such effects upon the system disqualify women for some of the most important duties of maternity. A great variety of causes, other than those here stated, might be adduced to account for physical changes of constitution, or changes which might especially interfere with the lacteal functions. Among these causes may be mentioned, educational pressure, constant excitement, depression of spirits, too much society, hard work, great exhaustion, etc.

In the matter of nursing much depends upon the daily habits of the individual, the kinds and quantity of food consumed, the nature of drinks taken, etc. While these agencies have, for the time being, a marked influence upon lactation, it is the particular type or standard of organization most favorable to nursing, that constitutes the present object of our inquiry. We have stated that in the matter of nursing, there was a great difference between the women of New England at the present day and the early settlers. That there has been here a decided change in female organization within fifty or a hundred years, there can be no question. Formerly, there was more muscle, a larger frame, greater fulness of form, and a better development of all those organs that are classed under the sanguine and lymphatic temperaments. The brain and nervous system relatively were not especially predominant; neither were they taxed continuously or excessively above any other class of organs. Those of the Germans, English and Irish who best nurse their offspring at the present day, possess an organization similar to the one here described. If an inquiry could be thoroughly prosecuted in any tribe, race or people, and the individuals or classes that were found most successful in nursing their offspring could be picked out, we should find that they possessed an organization much alike, and not dissimilar to the one already described.

There is another point worthy of notice. In all medical works treating of nursing we find very minute descriptions of physical qualities requisite for a good wet-nurse. Certain conditions are insisted upon as indispensable, such as well developed mammary glands, strong digestive organs, good health, freedom from diseases, or any particular weakness; she must be neither too thin and spare, nor too fleshy and corpulent; the

nervous temperament is described by several writers as particularly unfavorable. We find a similarity, a correspondence in qualities everywhere described—nowhere opposite or contradictory qualities. In fact, if we should quote the various descriptions or directions given for selecting a suitable wet-nurse, from different writers, in their own language, we should find that they correspond almost precisely with that normal standard of organization upon which we believe the law of propagation is based.

The evidence derived from this source is valuable for two reasons : *first*, these writers have drawn those descriptions (of what constitutes a good “wet-nurse”) from their own experience and observation, without any theory of their own, or any design of contributing evidence to establish a general law ; and *secondly*, these descriptions of what constitutes a good wet-nurse come from a large number of medical writers of diverse character, living in different countries and writing at different periods. Such a remarkable agreement or uniformity in all their statements shows, that the great facts or truths of science wherever carefully studied and collected, not only harmonize with each other, but must have a basis or foundation in the primary laws of nature. And further, in regard to the matter of nursing or affording natural support to the infant, it should be carefully observed, that it bears most intimate relations to other laws. As the laws of nature come to be more correctly and fully understood, we always discover a natural harmony, consistency, or adaptation to specific ends. Scarcely any truth or general principle is more firmly established, than that where nature makes a demand, she invariably furnishes a supply, and *vice versa*. The existence and character of the one presuppose that of the other. There may, it is true, be grades or different degrees, in the matter of demand and supply : but wherever the supply is the most ample or pure, the inference or indication is clearly manifest, that it points to where the law of demand, in its best estate, has its basis and support. The natural necessary inference then is, that the organization which is found best adapted to afford proper nutriment to the infant, must be the best for its production ; or, in other words, must be regarded as the true physiological or normal standard upon which is engrafted a general law of propagation. The con

ditions best calculated or indispensable to support life must exist necessarily in the organization that produces it. This is a universal law of nature, supported by all experience and observation. Let us repeat it: the physiological conditions in nature found necessary for furnishing the proper nutriment for its productions, must also constitute the same standard of organization upon which nature, in her normal state or highest development, has established the law of production. If, then, all the conditions or qualifications of a good nurse in the best or highest state, are brought together, they furnish virtually the physiological or normal standard of woman for propagation.

The fourth topic for consideration is the

CHARACTER OF OFFSPRING.

While this might be considered a sequel or consequence of the former conditions, arguments may be deduced from this source also to establish the doctrine already laid down. It is scarcely necessary to state, that wonderful differences exist at birth in the physical qualities or constitution of the infant,—that many are born into the world with the seeds of disease, with weaknesses, imperfections, deficient vitality, organs poorly balanced, etc., etc.,—while others inherit a sound healthy constitution,—free, comparatively, from weakness or any actual predisposition to disease, with an organization adapted to enjoy good health and long life? Now what makes this difference? Why are some children born with feeble and diseased bodies, or predisposed to disease and premature death? Why, in civilized society should nearly one-third of all infants die the first year of their existence, and almost one-half under five of years age? Is there not something *abnormal*, *unnatural*, in such mortality of infantile life? How, on the other hand, does it happen that large numbers are born into the world with strong, vigorous and healthy bodies, scarcely ever subjected to disease or suffering, and live till they die from old age? Now, what makes the difference in these two classes? Evidently the difference in the physical stamina or constitutions of the parents. Which, then, of these two classes harmonizes best with the laws of physiology in its normal state? Most clearly the latter class.

The question naturally arises, then, as far as the character of offspring is concerned, upon what type or feature of physiology, should we expect to find a general law of propagation based? Would it not be upon one sound, well-balanced and healthy in all its parts and functions, instead of one imperfect and deranged, possessing the seeds of disease and decay? Such an inference surely accords not only with all our experience and observation, but with the established laws in the orders of the lower animal economy. All the primary laws of nature, or the fundamental principles of science, have their start from, and foundation upon perfect standards. The laws that govern the human system cannot be an exception to this general rule.

There is another view that may be taken from this point. Wherever in nature, we find derangements, imperfections, the seeds of disease, decay and destruction, does it not clearly indicate that some laws have been violated, that there have been deviations from a more perfect standard, or, in other words, that such a state is abnormal, unnatural? As we study the present developments of human nature, we find not only a vast amount of pain and difficulty attending pregnancy and parturition, but that pain, disease and premature decay follow their production. These, too, we find, are to a great extent the common, uniform results and not exceptions to a general rule. A careful review of all the facts connected with the state and organization of infants at birth, with the nature and character of their diseases, together with the early decay and premature deaths of so many, all go to show that if there is a general law of propagation, it is certainly not based upon present standards or models.

This topic—*character of offspring*—might be greatly enlarged upon, as connected with the law of propagation, and the designs of nature. It has been well remarked that the two strongest instincts of man are, 1st, that of preserving life, and 2d, that of transmitting life to others. Now, if nature has established some general law for this purpose, as she undoubtedly has, it should result in the highest development of offspring. It should produce sound, healthy structures, and not an organization, impregnated so much from its very origin with the seeds of disease and premature decay. It is unnecessary here to follow out the argument, that in order to perpetuate the

race as it should be, there must be sound and healthy stock. There is no one thing so important at the present day in the progress of the race, or in the advancement of civilization, as that greater attention should be paid to the observance of this law.

We have now passed in review four distinct points or topics, viz.: pregnancy, parturition, lactation and offspring, which constitute the leading stages, or more prominent events connected with the law of propagation. The facts and inferences gathered from each of these sources, all go, we believe, to show that there exists in physiology a normal standard for this purpose. Now, if by gathering up all the facts and indications to be found in each of these stages or events, we find them all in the main pointing in one direction,—all agreeing with each other, and aiming at the same result, it certainly strengthens the argument, and affords an accumulation of evidence on the subject. As the four heads above mentioned seem to cover the whole ground, if not a single conflicting fact or argument can be gathered from any one of these sources—particularly when the four heads are brought together—it furnishes strong evidence in favor of a general law of propagation.

Several reflections naturally grow out of the present discussion. The subject is altogether too large and complicated to be unfolded in one short paper; all that can possibly be attempted at the present time, is to present a few thoughts and suggestions upon a thesis that would require volumes for a full and thorough discussion. Inasmuch as this essay opens new views on questions which are obscure in their nature, far-reaching in extent, and upon some of which there has long existed a great variety of opinions, the sentiments here advanced should not be judged of hastily; we could wish that no preconceived opinion or prejudice should be allowed to interfere with their calm and dispassionate consideration. The only just and fair method of testing their correctness or falsity is by some definite knowledge of the subject—a knowledge obtained from the study of nature, and the deductions of facts, collected from one's own experience and observation.

The process, by which many of the leading principles of science were first established, has been slow, and attended with opposition and difficulty. The more radical these prin-

ciples were, and the more sweeping in their application, the greater the contention and the strife, and the slower their growth. But, whenever in the history of science any theories or principles had a sure basis in nature, though they might for a time be opposed and be controverted, they were sure ultimately to prevail.

So in reference to the doctrines contained in the present paper, if they constitute a part and parcel of the laws of physiology, opposition and prejudice will in time give way, and their truth and worth will come to be universally acknowledged. In fact, the history of medicine furnishes instances of new discoveries or modes of practice, which, on their first promulgation or introduction, were bitterly opposed and even ridiculed, whose truth and value came in time to be admitted, and which are now acknowledged according to their real worth and importance.

If the views presented in this paper are true, any candid person acquainted at all with the laws of physiology or the principles of medicine, must admit that they are of priceless value. For illustration: In all studies, whether of nature, science or art, there are great advantages in having leading principles or fixed standards to guide us in our inquiries, and present beacon lights in every direction. If, while investigating the facts connected with propagation, such as the complaints of pregnancy, the difficulties of parturition and infantile diseases, we can more clearly understand their causes and what particular laws have been violated, it must afford immense satisfaction, and might, perhaps, enable us to devise new means or agencies for relief. It will show what types or models of female organization are best adapted for propagation, most exempt from pain and trouble, best qualified to nurse their offspring and transmit a sound, healthy stock. It will throw new light on the laws of inheritance, explaining changes which the body may have undergone in past generations, and suggesting what are some of the most fruitful sources of improvement. When we have formed a just conception of the original or normal standard of human nature, according to physiology, and keeping this standard constantly in view—when we see the endless deviations from it, and find that these changes have all taken place in accordance with the laws of inheritance,—then we begin to real-

ize their power, value and importance. Within a few years great interest has arisen in reference to these laws, and inquiries are being pushed in every direction for more light, more instruction in relation to them. No one thing will infuse such interest into these inquiries and furnish so valuable a guide, as the fact that there is fixed in physiology a normal standard of propagation, from which all these laws emanate, and around which they all cluster. In fact, in order to understand correctly those hereditary influences, and trace them out in all their bearings, some such chart or guide is indispensable. For, in default of a standard or of some general principles to guide us, the powerful agencies of heredity cannot be fully comprehended or accurately defined, or judiciously and advantageously applied. Nor does social life, or life in any of its phases, constrain or invoke attention to any sources or agencies affecting the well-being of mankind, at least physically, which operate for good or evil, more powerfully than the laws of inheritance. In fact, while it is impossible to estimate the advantages of these laws when applied to human improvement, their value and application must always be limited, unless we have a perfect normal standard as a guide.

Another reflection connected with this subject is that in attempting to account for the sufferings and difficulties attending child-bearing, and finding that they arise in a great measure from changes in the human body brought about by artificial life and the violation of physical laws, the inquiry naturally arises, what are their remedies? What can be done to relieve or remove them? While we cannot easily or hastily reform the present artificial state of society, or improve the physical developments of the human body, as it would require several generations to make any radical changes in this direction, yet, by understanding the true causes or sources of these pains and difficulties, it may enable us to give instructions or exercise an influence that, in process of time, will tend to improve or modify these agencies, including the laws of inheritance. Inasmuch as all sanitary agencies, such as regular exercise, wholesome food, pure air, good sleep—in fact, every influence, mental and physical, which is calculated to improve the general health of woman—these should all be encouraged as tending to, nay, as essential to the realization of nature's plan and

design. The more perfect the health of woman is, the more evenly balanced her organization, the fewer weaknesses and predispositions to disease will occur, the better is she prepared for the pregnant state, for the process of labor and the duties of maternity. All preparations or treatment that are calculated in any way to bring about a normal standard of womanhood, should by all means be encouraged and brought into requisition. There is no doubt but that much has been and may be done in this way to prepare the system for these changes, and that more or less suffering, disease and danger connected with child-bearing arises from the want of such precautions.

It should, however, be borne in mind that inasmuch as most of these causes of pain and difficulty are the results of violated laws, extending back for several generations, they cannot at once be removed, and the idea that we can have "*parturition without pain*" (as is claimed by some reformers)—especially in the present state of society—is perfectly preposterous. No such desirable boon can be obtained by any "course of diet" or "rules of hydropathy." It has been advocated by some that if the pregnant woman subsisted upon food entirely free from phosphate of lime, the osseous portion of the infant—especially the skull—will become very much modified in hardness—thus making its passage through the pelvis much easier. While in some instances experiments of this kind may have proved apparently successful, in other cases, they have not been attended with the same result, and as to offspring, we believe such a course of diet must prove decidedly injurious.

But attention has not alone been confined to this kind of preparation and treatment: expedients, in great numbers and variety, such as anæsthetics, medicines, instruments, etc., have been resorted to, in order to relieve the pain and difficulties of child-birth. This is all well, but these are all artificial helps, relieving only for the time being; how much better is it to go further back, and remove, if possible, first causes? Let us understand the particular changes in certain parts of the body, from a normal to an abnormal state, whereby the sufferings and dangers of child-birth have been greatly enhanced; let the laws of inheritance be correctly taught, and our duties in relation to them be properly enjoined; let these laws be

generally observed—and, in the course of a few generations, we should undoubtedly perceive a great diminution of these evils, and the condition of woman greatly ameliorated in child-birth.

One of the most beneficent features—and we might say, almost the leading object—of the medical profession, is the relief of pain—the amelioration of human suffering. Whether, under medical treatment, disease can be cured and life prolonged, or not—*one thing* is certain, pain and suffering, in all cases, can be more or less relieved.

While hitherto, in medical practice, *cure* has been the watchword of the profession, let, hereafter, another term, expressing a higher if not a nobler object, stand alongside of it—that is, *prevention*.

A gold medal was very properly awarded lately in London to the writer of an essay on “The Therapeutical Means for the Relief of Pain;” but a richer and more enduring reward, in the thanks of great multitudes, awaits the advanced guard of the medical profession who are laboring to expound sanitary laws, and diffuse a knowledge of hygiene for the *prevention of pain*. So in obstetric practice: while the most protracted study and greatest skill and ingenuity have for years been exhausted in devising means to relieve pain, and save human life, in the most critical periods of woman’s existence, let us turn our attention more to the *primary causes* of this suffering and danger, and earnestly inquire for *preventive* as well as *curative* treatment. Let us fully realize that, if a normal standard of physiology generally prevailed, if its principles and developments were perfectly exemplified at the present day in the human system, woman would suffer comparatively but little pain or danger at such periods.

In bringing this paper to a close, we wish to enlist in its behalf the attention particularly of that portion of the profession engaged in *obstetric practice and teaching*. The history of physiology and pathology, in reference to the diseases of women, together with the improvements in obstetrics, should prepare the mind of every practitioner of medicine for new discoveries or suggestions in this direction. In no other department can the correctness or advantages of the views here presented be so well tested as here—by individual experience and observation. Let every obstetric case be tested by the standard

of organization here described ; let the changes through which the system of each woman passes in pregnancy, parturition and lactation, be compared with the doctrines set forth in this paper, and let the results of such observations in a large number of cases be brought together, analyzed and compared ; then from these data some correct and rational conclusions can be deduced.

Partly by way of illustrating the principles of physiology, as here set forth, but more particularly to show their bearings on population, we present a few facts which first directed our attention to this subject. Many years since, while attending obstetric cases in a mixed population, including English, Irish, Scotch, German, French and American, we were struck with the great differences in the fertility of these women, as well as in the difficulties accompanying parturition. Comparisons were instituted, treatises on obstetrics, works on population, census returns, etc., were examined, and then changes in population. It was found by an examination of town records, genealogical histories, registration reports, etc., that the birth-rate in New England had steadily diminished in every generation, but more rapidly in the last one or two ; that, commencing with an average of eight or more children in each family, it averaged at the present time in Massachusetts only about three ; and that with the strictly American the birth-rate and the death-rate were approximating nearer and nearer together. If one-third of those born die before reaching adult life, and a portion of the living never enter the marriage relation, the question arose, in view of such a record, what will be the result on the increase or decrease of population ? With such a diminution of numbers among the native American, and an increase of offspring in the foreign element of more than double, what could make this change and this difference ? How can we account for such anomalies ? On the other hand, a careful examination disclosed great differences in the organization of these women, which might account in some measure for such a state of things ; the causes of these differences were analyzed as far as practicable, and the relations which they might sustain to an increase of population. It was found that a great change had taken place in the physiology of our New England women, that there had been a marked loss of muscular power

and a great increase of the nervous temperament; that weaknesses, diseases or complaints of one kind and another had greatly increased and become so common, that good health and sound constitutions were the exceptions.

Again, uterine diseases and complaints were found particularly to have greatly multiplied, for which there must be special causes. Among these the compression of the chest and abdomen, from the style of dress and fashions of the day—commenced early and long continued—had had a very injurious effect upon the internal organs, especially upon those in the pelvis, thereby causing displacements, weaknesses and diseases. With a general loss of muscular strength and an increase of nerve tissue, aggravated, too, by other causes, the reproductive organs had become abnormal, incapacitated to perform healthy functions, which, of course, must seriously interfere with conception, gestation and parturition. Add to this a constant strain upon the brain and nervous system, requiring relatively too large an amount of nutrition, we have as a result an undue predominance of the nervous temperament, which in some of its aspects is decidedly unfavorable to the domestic relations, as well as to the laws of maternity. Thus it will be seen that, as far as physiology is concerned, the true law of population must be based upon the same general principles as that of propagation, and that a correct knowledge of the former cannot be obtained without reference to the latter.

