The law of human increase, or population based on physiology and psychology / by Nathan Allen.

[From the Quarterly Journal of Psychological Medicine, April, 1868.]

THE LAW

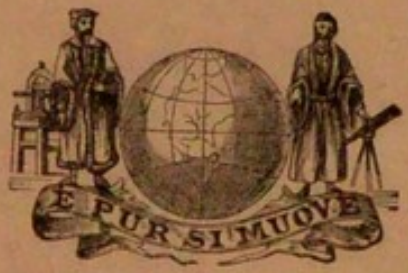
OF

HUMAN INCREASE;

OR

Population based on Physiology and Psychology.

By NATHAN ALLEN, A.M., M.D.,
LOWELL, MASS.



New York:
MOORHEAD, SIMPSON & BOND, 60 DUANE STREET.

1868.

THE LAW

OF

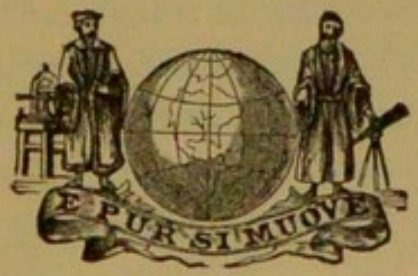
HUMAN INCREASE;

OR

Population based on Physiology and Psychology.

By NATHAN ALLEN, A.M., M.D.,
LOWELL, MASS.

(From the Quarterly Journal of Psychological Medicine, April, 1868.)



New York:
MOORHEAD, SIMPSON & BOND, 60 DUANE STREET.

1868.

NEW YORK:
AGATHYNIAN PRESS, 60 DUANE STREET.

THE LAW OF HUMAN INCREASE;

OR,

Population Based on Physiology and Psychology.

The celebrated play of Hamlet has sometimes been quoted with the character of Hamlet left out, to illustrate more forcibly certain acts or scenes in life. Such a quotation seems most appropriate in its application to the existing works upon the laws of human increase. It is a singular fact, that among all the writers on Population, there is scarcely one who has been thoroughly educated in the science of physiology, or in the practical application of medicine to the laws of life. The organs of the human body, with their various functions —which must certainly have something to do with the increase of population—have received from these writers but little attention. That common sense, and the judgment which we apply to the numerous facts in science, as well as to the practical duties of life, would surely incline us to the belief that the body, its

health and various conditions, must constitute a prominent, if not the leading feature in all the discussions upon such a subject.

The method adopted by these writers, resembles very much the course which metaphysicians formerly pursued in discussing the faculties of the mind, as though they had no fixed connection whatever with the body, or particular dependence upon the brain. On this account that most important study, the science of mind, or mental philosophy, has, within the last fifty years, been passing through many changes, or a kind of transition state; so that, at the present time, those treatises recognizing an intimate connection of mind with body are more generally accepted, and regarded as presenting truths founded upon a natural basis.

To establish a general law which is to have the greatest possible agency in developing the nature of a body and controlling its very existence, the presumption is that such a law must be evolved, in some way, from the designs had in the creation of that body. Such has been found by experience and observation to be the fact in reference to the great laws that pervade the animal and vegetable kingdoms. Though there may be objects and agencies extraneous to the body itself, that may have a powerful influence over its development, yet the most important law of all, the law that shapes its life, character, and destiny, it would seem, must have its seat somewhere in the body itself. Such we should naturally suppose would be the fact in the case of man, the highest and noblest

work of the Creator, and where human agency and accountability have more to do than anywhere else in the world. An examination of the views and theories of writers upon population shows, that the laws which they lay down for its increase have been controlled generally by agents or objects entirely external to the body, and some of them hold only remote or indirect relations to it.

There are two or three other considerations which certainly afford some evidence, that the theories advocated by these writers do not present the *true basis* upon which the laws of human increase rest. No two of the leading writers upon the subject agree in the general principles which they advocate. And, on the other hand, the very doctrines they have endeavored to promulgate have encountered the most decided opposition from the ablest writers to be found. Some slight disagreement among writers upon such a subject, or even bitter opposition to their views by those who have not carefully considered the matter, should have but little influence against their truthfulness or correctness. But great general laws or principles founded in nature, and open to the inspection of all inquiring minds, after having been examined and discussed for more than half a century by the ablest thinkers, should have become well established and generally admitted, which is not the case on this most important subject.

Again, many of the sentiments advanced by leading writers on the subject of population are not in harmony with the law of propagation found in the

vegetable, as well as in the animal kingdom; neither are these sentiments consistent with the evident designs of God in the creation of man, with reference to some of the most essential conditions on which his character, happiness, and future prospects depend. The truth and force of these statements will be clearly manifest upon a careful examination of some of the doctrines of Malthus and others, especially when compared with the law of population based upon physiology. We will here present the opinions, mostly in their own language, of the principal writers on this subject.

The earliest and most popular writer on population was the Rev. T. R. Malthus, commencing with an essay, in 1798, which afterward was enlarged into two volumes, and passed through several editions. His leading principle is, "that population, when unchecked, increases in a geometrical ratio, while subsistence increases only in an arithmetical ratio." Assuming this as a settled fact, without attempting to present proof in respect to the actual power of increase in man, or the relative supply of food, he proceeds at once to show what have been the checks to the increase of population throughout the various countries of the world. He held, that "population is necessarily limited by the means of subsistence," and "invariably increases where those means increase, unless prevented by some very powerful and obvious check." These checks he divides into the positive and the preventive. The former "include every cause, whether arising from vice or misery, which in any degree contributes to shorten

the natural duration of human life," among which may be enumerated "unwholesome occupations, severe labor, exposure to the seasons, extreme poverty, bad nursing of children, great towns, excesses of all kinds, the whole train of common diseases and epidemics, wars, plagues, and famine." The preventive checks include "abstinence from marriage and sexual intercourse from considerations of prudence, and all vice and immorality tending to render women unprolific." Few books have been the theme of greater discussion and controversy than this; and in the opinion of good judges it would be difficult to decide, whether a majority of the public at the present day accept or reject his doctrines.

In 1830, M. T. Saddler, M.P., published in two large volumes an elaborate work, exposing and refuting Malthus's theory, and bringing before the public the following new doctrine of population. "The prolificness of human beings," he says, "otherwise similarly circumstanced, varies inversely as their numbers;" and he presents a mass of evidence to prove that nature has not "invested man with a fixed and unvarying measure of prolificness," but that the Creator has "regulated the prolificness of his creatures in reference to the circumstances in which Providence shall place them, instead of leaving that regulation to the busy, selfish, and ignorant interference of man."

In 1841, Thomas Doubleday published in London a work with this title, "The True Law of Population Shown to be Connected with the Food of the People,"

in which he undertook to demonstrate that, "wherever a species or genus is endangered, a corresponding effort is invariably made by nature for its preservation and continuance, by an increase of fecundity or fertility; and that this especially takes place whenever such danger arises from a diminution of proper nourishment," and that consequently the "deplethoric state is favorable to fertility, but, on the other hand, the plethoric is unfavorable to fertility." Thus, "there is in all societies a constant increase going on among that portion of it which is the worst supplied with food, in short, among the poorest."

The Westminster Review, for April, 1852, contained a most elaborate article by Herbert Spencer, introducing a "New Theory of Population," deduced from the general law of animal fertility. It argues that an antagonism exists between individualism and reproduction; that matter in its lower forms, that of vegetables, for instance, possesses a stronger power of increase than in all higher forms; that the capacity of reproduction in animals is in an inverse ratio to their individuation; that the ability to maintain individual life and that of multiplication vary in the same manner also. He further demonstrates, "that the ability to maintain is in all cases measured by the development of the nervous system."

The latest theory is found in a work on population, published in London, 1854, by G. R. Richards, consisting of some lectures delivered before the University of

Oxford. This author contends, "that by a careful induction from facts, the truth is the very reverse of Malthus's theory; that the productive power of a community tends to increase more rapidly than the number of its inhabitants.

These references and quotations contain, we believe, all the distinct theories that have been broached in works published expressly upon this subject. Fourier and some other French writers have advanced the idea, "that just in proportion as individuals in a community become perfected in civilization, in the same proportion the race incline to run out," but how this happens, and upon what great principles it depends, they do not tell us. In works upon Political Economy these theories on population have been variously discussed: some points approved, others condemned; occasionally some new suggestions have been made, but nowhere has there been any general agreement or platform. As these theories are so various, and even contradictory, they certainly cannot *all* be right; the "prima facie" presumption is that the *true theory* or *law of population* is not reached by any one of them.

Many years since the attention of the writer was called to changes taking place in the population of New England, more particularly in Massachusetts. It was found that the birth-rate of the strictly American class was steadily diminishing, while that of the foreign class was two or three times larger. From a careful examination of the Census and Registration Reports, as well as of town and city records, the fol-

lowing facts were developed. The average number of births to each married couple, and the relative number of children to adults, with the present generation of Americans, did not begin to compare with what it was in New England one or two hundred years ago. A census of Massachusetts taken in 1765 reports almost one half of the whole population as under sixteen years of age; whereas from the best estimates that can be made, not more than one fourth, or perhaps one fifth of the present American population are under this age. Many towns in this State have been settled over two hundred years, including in their history six or seven generations. From an examination of their records it was discovered that the average number of children to each family among the first settlers was from eight to ten, and that for the second, third and fourth generations, the average ranged from seven to eight; but when we come to the fifth and sixth generations the number of children diminished more rapidly, averaging only four or five to each married couple, and that of the present generation the number will not much, if any, exceed three children.

Now, if only three fifths of all children born ever live to reach adult life, which is about the proportion settled by mortuary statistics, by what process of arithmetic can it be shown that such a community or people can increase in population? Besides, if the birth-rate should continue to diminish for the two coming generations as it has in the past two, what is to be the result or final history of such a people or

race? When this reduction reaches a point where the births do not equal in number the producing stock, the decrease in population must go on very rapidly. It should be stated that these changes have not been confined to cities, but pervade the rural districts and country towns almost to the same extent as in a dense population. In fact, in many towns it was found, that for a long series of years the whole number of deaths even exceeded the births. The question would naturally arise in any inquiring mind, Why should there be such a difference between the number of children of married people at the present day, and the families of the same stock fifty, one hundred, or two hundred years ago? And why should the Scotch, the Irish, the English, and the Canadian French women, composing almost the whole foreign element in New England, have about three times as many children as the same number of our American women? What, really, can be the causes of such changes within about fifty years? It has been alleged by writers upon this subject that unfavorable climate, bad government, famine, pestilence, war, want of marriage, and prudential considerations, have always been found to be the principal causes in preventing an increase of population. It will not be pretended for a moment that the four first named causes could have had the least effect in checking the population in New England, and war could not, prior to 1860, and then only for a few years; the marriage rate has fallen off but little from former times, and is almost equal to that of European nations, or of their

representatives in this country. It has been found out in modern times that it is not the number of marriages, but the fruitfulness of this relation, that tells on the increase of population. No satisfactory explanation of this state of things can be derived from the fact of so many young people emigrating West and elsewhere from Massachusetts, for almost as many move into the state from other states as go away; and then the test as to the number of children is applied to those who are married and remain at home. But "prudential considerations" have had their influence in a variety of ways; in postponing marriage till a later age in life, in regarding the care and expense of children as a burden, as well as in preferring pleasure and fashion to confinement and labor at home. To such an extent has this "prudence" been carried that a great variety of means has been adopted to prevent conception, and, in cases of pregnancy, to produce abortion. These practices have been so extensively carried on as to affect somewhat the increase of population, but by no means sufficiently so to account for the great changes that have taken place. Why, too, should the natural instincts of woman so change in regard to offspring? Why should she prove herself so inhuman and cruel? There must be some radical changes in her organization to account for such an unnatural disposition, as well as for this great decrease in population from preceding generations. Having become impressed with the conviction that some important changes have occurred in the organization and nature of woman, and that there

might be sufficient causes and agencies which had been operating for a long time in society to produce such effects, an examination into these causes and changes resulted in the following views, explanatory of the two questions that have already been stated, namely, why should there be such a difference in the number of children between the American families now upon the stage, and those of the same stock fifty or one hundred years ago? Why should there be such a difference in this respect between the American women and the English, the German, the Scotch and the Irish of the present day, and living in the same locality?[1]

Within a few years much has been said respecting the ill health of New England women as compared with that of their mothers and grandmothers, or with that of the Irish, the English, and Germans. American travelers abroad, foreign tourists in our own country, and numerous writers upon the state of society at home, have borne similar testimony upon this subject. Our females are described generally as having pale and sallow countenances, thin and spare forms, feeble and delicate constitutions. One distinguished writer, who had made extended inquiries upon the subject, reports that only one woman in twenty could be found, possessing good general health. Another writer states that it is rare to find a robust, healthy woman either in the city or country. If Dr. Meigs's description of a healthy woman is adopted, we think

[1] Several pages are here quoted from a manuscript read at a meeting of the American Association for the Promotion of Social Science, held in Boston, October 9th, 1867.

it must be difficult. Says Dr. M., "a healthy woman has no experimental knowledge of back, sides, head, lungs, stomach, liver or any other organ; she is conscious herself only as one perfect, elastic, and life-enjoying whole." Once this standard might have been reached in New England by large numbers, but now by scarcely any.

It has long been the opinion of medical writers upon the subject, that married women, as a whole, have better health and live longer than those in single life. And very recently Dr. James Stark of Edinburgh, by a very careful examination of some one hundred thousand cases in the Registration Reports of Scotland for 1861 and '2, proved most conclusively that the married women of that country, on an average, lived longer than the unmarried. It should be observed that this fact is demonstrated among a class of women somewhat distinguished for having large families, and might not hold good in a community where large numbers of married women have no children. There is no doubt but that this same fact was true of the women of New England fifty or one hundred years ago, but if applied in the present state of society it is very questionable whether the result would be the same. The laws of the physical system, we fear, are so frequently thwarted and violated, that the ultimate design of nature in this respect would not be so apparent.

On the other hand, what is the primary object of the marriage institution as pointed out by divine Revelation? Was it intended as a mere partnership?

Was this relationship designed by the Creator merely for the comfort, convenience and happiness of the parties forming it? It is unnecessary here to quote the examples, the sanctions, and the precepts of Revelation to prove that the grand, primary object of this institution is the propagation of the human species. This is so obvious, that the citation of such evidence from Scripture seems here superfluous.

The organization of woman, the history of her diseases, and the rate of mortality, demonstrate that married life and the production of children are the primary objects of her creation. Physiology, pathology, and all history upon the great laws of life and health, prove this beyond controversy as a general law. The fulfilment of this law is found necessary for the greatest perfection of her organization, for her longevity and the greatest amount of her happiness. There may be exceptions to this general rule, but it is a law which God has made applicable to all races and nations; and whatever institutions, habits, or practices interfere with its execution are abnormal, are deviations from the laws of nature and of God.

In regard to some of the questions now agitating the public as to the rights of woman, or rather her true position in respect to labor, employment, suffrage, etc., we have here a standard of appeal, namely, those great laws established by God himself, which govern every part of her system, physical as well as mental. These should be the guiding, controlling principles in the settlement of all such questions. The opinions of individuals, the oral and written appeals,

the resolutions of conventions, and the testimony of public bodies, should have no weight or influence whatever, except as based upon these principles. If these laws are materially changed or evaded, the *true nature of woman* is changed, the design for which God created her is defeated. All reforms, to be permanent, must have their basis in first principles or laws founded in nature.

The evidences of the general ill health of our New England women, as gathered from travelers, miscellaneous writers, newspapers, journals, medical works, and physicians, are so abundant, that they have nowhere been called in question. Many of the causes and effects of this ill health have been more or less discussed, but nowhere, we believe, has its connection with the law of human increase been considered. We propose then briefly, and in as simple a manner as possible, to point out according to the laws of physiology some unfavorable changes taking place in the female constitution.

For the sake of convenience and illustration, we shall here adopt the division made by some writers on the human body into four distinct compartments, called temperaments.

First division: the brain, the spinal column, and nerves of motion and sensation scattered through the body; called the "Nervous Temperament."

Second: the heart, the lungs, and all the blood vessels in the system, called the "Sanguine Temperament."

Third: the organs in the abdomen, the stomach,

bowels, liver, and absorbents; called the Bilious or "Lymphatic Temperament."

Fourth: the muscles, bones, ligaments, constituting the motive power of the system, called the "Muscular Temperament."

In other words, these divisions may be distinguished by the following terms; the Head, the Thorax, the Abdomen, the Framework of the body; as the organs comprising these temperaments have their seat in those parts.

The word "temperament" is derived from the Latin verb *temperare*, which signifies to mix, to *temper*, etc., but in the modern and more common acceptation of the term, it is used to denote the result of a mixture or tempering of all the qualities, both physical and mental, of any individual. But instead of discussing here mental qualities as affected by or related to the temperaments, we propose to apply the term more particularly to the different compartments of the body as connected with health and the laws of human increase. As all the organs in the body are included in one or other of these temperaments, and as every organ, however insignificant or obscure, has a specific work to do in the animal economy, it is necessary that every one of these organs should have its *natural* development, and perform its *natural* functions.

The human body in its normal or most healthy state may be compared to a perfect machine, made up of a great variety of parts; each part performing its own work, and not interfering with that of the others, so that the wear and tear will come upon all parts of

the machinery alike. Every mechanic will say at once that such a machine, thoroughly constructed and kept in running order, will accomplish for the time being far more work, and last much longer, than one poorly built, not well balanced in its parts, and continually getting out of order. Here is the great trouble with the body. These temperaments are not equally developed; are not well balanced; do not assist each other in their respective functions by doing severally their own proper work, but constantly interfere, thus violating the laws of nature. If the functions of the several organs included in each of these temperaments are carefully considered, their respective importance and relations will be better understood and appreciated.

First division. The "Nervous Temperament," includes the brain, the most important viscus in the whole body; the organ of the mind, of all mental manifestations, of the will, which governs and controls the action of every part of the system. Then, connected with the brain, is the spinal column, the seat of all the nerves of motion and sensation, instruments of wonderful power, and capable of the most intense pleasure or pain.

Second division. The "Sanguine Temperament;" the heart and lungs. The function of the heart is to circulate the blood by throwing the venous blood into the lungs to be arterialized, and by propelling the arterial blood through all parts of the body to nourish and vivify them; while it is the province of the lungs to form arterial blood from a mixture of ven-

ous blood, chyle, and lymph, combined with oxygen from the atmosphere.

Third division. The "Lymphatic Temperament," embracing the stomach, the bowels, the liver, etc., the organs that perform those most important processes, digestion, assimilation, and secretion; the means by which all parts of the body are supported and strengthened.

Fourth division. In this class we have the muscles, the bones, the ligaments, the frame work, the locomotive power, the levers to move every other part of the body.

Though upon a cursory view some of the organs in their functions and relations may seem more important than others, yet every one is indispensable, and has a specific work to do in performing the great drama of life. This subject is beautifully illustrated in the teachings of the apostle Paul, where he says, "the body is not one member, but many. . . God hath set the members every one of them in the body as it has pleased him. . . The eye cannot say unto the hand, I have no need of thee; nor again the head to the feet, I have no need of you. . . And whether one member suffer, all the members suffer with it; or one member be honored, all the members rejoice with it." We are here taught, if there is a seeming difference in the importance of the functions and relations of these members, they are all alike necessary in making up the whole body, and the rights of each must alike be respected.

And if this law is true as applied to individual members of the body, it must hold good with still

greater force, when applied to a whole class of organs included under the head of one of the temperaments, as already described. In carrying on the operations of the animal economy, it becomes necessary that all the organs represented by each of these temperaments should perform a certain amount of work; and if one class is neglected, or exercised too much, the balance between these temperaments is lost. It is, moreover, clearly the design of nature, that there should be a perfect union or harmony of these temperaments, that such was the development of the human body at its creation, and, that in such a state, it is found most exempt from disease, is capable of performing the greatest amount of labor, of receiving the greatest amount of enjoyment, as well as reaching its greatest longevity.

Whenever physical standards of human excellence, or models of the best specimens of the race, have been adduced, they have exhibited this harmonious development. The Apollo Belvidere, the immortal work of the Greek chisel, and the Venus de Medicis, represent a well balanced organization, all parts of the body in beautiful symmetry, the vital organs large, the limbs, the muscles, the bones, the blood vessels, the nerves, distinct and clearly defined, nothing too strong, nothing too weak, nothing in excess, nothing deficient. Notwithstanding such a standard or model of human organization is set before us, the reality is nowhere to be found. No nation, or race, or tribe, or people upon the globe can present perfect living examples, containing all the organs of the body in a perfectly

healthy and well balanced state. They are only approximations to this standard.

Now these temperaments have been constantly changing in every age, and with all classes of people. The causes of these changes originate partly within the body, and partly from external agencies and influences. They often change materially, and sometimes radically, with the same individual between the cradle and the grave. Slight changes in these temperaments do not affect much the physical character of an individual or a people; but when any one temperament becomes very predominant, it has a most marked and sometimes serious effect. It is true, that certain combinations of these temperaments peculiarly adapt individuals, some to one place or business, some to another, and others to a still different place. The applications of this principle are almost endless.

Volumes might be written upon the application of the temperaments to disease, hygiene, health, education, and civilization in all its aspects, but our immediate inquiry is, what have these changes to do with the increase of population? We have dwelt somewhat at length upon the importance of this balance in the temperaments, for it is the key to a sound constitution, perfect health, and long life. Nearly all the diseases, pains, and weaknesses of the body, are but the results of deviations from this harmony or balance, and an observance of the great laws of life and health looks wholly toward restoring this balance. If, then, this balancing of all the organs in the human body is found necessary for the soundness, the health, and

longevity of the race, is it not evident that it is equally necessary for its increase? Do we not find it to be a law running through the whole vegetable and irrational creation, that health is absolutely necessary for the perpetuation and increase of any species? Can a law, that is here of so general application, be made an exception in the case of the human race? Must it not be conceded, that a great predominance of any of these temperaments is not only unfavorable to health, but to the increase of offspring? If only now and then a single individual in the community should be found so constituted, its effect would not be very perceptible; but when large numbers or a majority are found so organized, not more than one, or certainly two generations can pass before such effects become generally known. In our opinion, such a change as is here referred to has been taking place in the organization of the females of New England, and we propose to point out some of the causes of these changes and their effects.

In the discussion of this subject the Muscular Temperament will be first considered, inasmuch as this structure constitutes the ground work of the system, as well as so large a portion of the body. It is estimated by physiologists that full one half of the gross weight of the body in a healthy state is muscular tissue, and from the great supply of blood to this tissue in vigorous exercise, it is probable, with ordinary activity, three fourths of the aliment taken into the body go to nourish the muscles. Now there is a wonderful difference between these organs

in a perfectly healthy state, and one feeble, weakly, and of low vitality. In the former case the muscle is not only larger, but of harder substance, stronger fibre, abounding in arterial blood, and will bear a greater amount of exercise without fatigue; but in the latter case the muscle is soft, flabby, comparatively pale, and easily tires under exercise. No law in physiology is more thoroughly established than that *exercise alone* gives strength to an organ. The order of nature is that this exercise should commence early in life, and that the most important part of this training should be obtained before the system reaches maturity. It is true, however, some improvement may be made in the muscular fibre after the age of twenty, and even thirty, but such a change is not so easy or common. Another design of nature is, that the muscles must have a slow growth, in order to be healthy and strong. It is *moderate exercise*, long continued, and repeated over and over, that gives a healthy tissue. In accordance with this law it has been found that the lighter exercises of gymnastics are more favorable to health than the violent. There is also another important law or condition in this matter of exercise; inasmuch as there is a great variety of muscles, differing in size, connection, and use, there must be also a great variety of exercise in order to develop and strengthen all these muscles.

Now what has been the early training of our females for the last thirty or forty years, as it respects work, and what are the present practices? It is a fact established by a series of statistics that domestic

labor is more productive of health and long life than any other kind of work or exercise whatever. This field of labor is pre-eminently adapted to the training of the muscles of the young female, not only from the kind and variety of exercise, but because it must constitute the central point of her future interests in life. Once, say fifty or one hundred years ago, nearly all New England girls were trained up to domestic labor, commencing early and continuing year after year. Few domestics were then employed, and what were, belonged generally to our own stock. But unfortunately this practice has not been continued. Domestic service began to be discarded by the last generation, and at the present day it has become still more unfashionable. Girls are sent to school at five or six years of age, and kept there most of the time till fifteen or sixteen years of age. When at home and grown up they are called upon, if at all, to do only the lightest parts of work: all that is laborious must be performed by their mothers, or domestics employed for this purpose. It is scarcely necessary to state here that nearly all the help now employed in domestic service is of foreign origin. The number belonging to our native stock thus employed has for a long time been diminishing every year. And in families where there are daughters, and not means to procure help, it is found too generally that the mothers do all the housework, or the hardest parts of it, and let the daughters do the sewing, or attend to such kinds of work as require but little physical exercise. A great amount of time is now

consumed by young females in employments that do not tax the muscles severely, such as the various kinds of sewing, dress-making, millinery work, embroidery, music, etc. A little attention now and then to domestic labor, or overseeing it, will not contribute much towards improving the muscles. To develop and strengthen these organs as they should be, requires years of labor. And what is unfortunate, no substitute has yet been found or is likely to be to take the place of domestic service. Within a few years some attention has been paid to skating, to cricket and croquet playing, and regular gymnastic exercises; but these can be practised only by a few comparatively; cannot be commenced early and followed up systematically. Besides, the knowledge obtained from these exercises is worthless, compared with that acquired in the performance of domestic duties. But there is another obstacle still more unfortunate and discouraging.

Such has been the training of girls, and such are the influences operating in the present state of society, that large numbers of them are so bent upon obtaining book knowledge or an accomplished education, or are so devoted to the fashions of the day, or absorbed in light reading, that domestic labor is regarded by them as *menial*, or beneath their attention. Connected with this matter of physical exercise, there are two important considerations which should constantly be borne in mind. First, it is indispensable that the muscles generally be well developed and strengthened, in order that all other parts of the body

should have a healthy and vigorous state; second, unless this development of the muscles be obtained under the age of twenty, there is but little probability of much improvement afterwards.

What now are some of the effects of this neglect of muscular exercise upon the female system? We find the whole body feeble throughout; the individual muscles everywhere small, soft, flabby and weak; the limbs slender and wanting in strength. The arms give out upon the least hard work, and the legs refuse to support the body where much standing or walking is necessary. The spinal column is poorly supported by muscles, and so of the most important organs in the thorax and abdomen. As a consequence we have pains in the shoulders, pains in the back, pains through the hips and in the sides, a kind and an amount of weaknesses, aches, and pains entirely unknown to our grandmothers, and of which the English, the Irish and the German women are, in a great measure, ignorant.

As the functions of the organs included in the thorax and abdomen, that is, the sanguine and lymphatic temperaments, are so intimately connected that the effects of their being interfered with or violated cannot well be separated, we shall consider the two classes together. In the upper part of the body are located those most important vital organs, the heart and the lungs, which should have the freest play, and the best possible development. The lungs are composed of a spongy substance, containing more than five thousand air cells and bronchial tubes, and every

motion is one of expansion or contraction. The heart, enclosed in a most delicate membrane, with its ventricles and auricles, four large cavities, requires for the performance of its healthy functions the utmost freedom of action. In the construction of the body and adaptation of the chest particularly, the best possible means have been provided, whereby these vital organs should not be crowded, cramped, or unduly pressed upon by any surrounding or external agents. But what has been the effect of the fashion or style of dress followed by females for many years, upon the development and exercise of the heart and lungs? By the constant and sometimes severe pressure, the natural and necessary expansion of the air-cells, the bronchial tubes, and lungs generally, is prevented, the blood becomes only partially arterialized, and the vitality and whole tone of the system sink gradually lower and lower. From the same cause the natural action of the heart is seriously interfered with, so that the blood cannot be thrown freely to the surface and extremities of the body, allowing these parts to suffer more and more from the cold, as well as causing a congested state of the blood to exist much of the time in the internal organs, which is unnatural and unhealthy. As another consequence from this pressure, the natural force or power of the heart itself for propelling the blood through the system becomes by degrees weaker and weaker. A highly educated physician, who had examined over sixteen hundred bodies after death, states that he invariably found the lungs and heart of women who

followed the usual fashions of the day in dress, very much compressed, and that the cavity of the thorax in such cases was only about one half as large as it should be. But unfortunately the stomach, bowels, the liver and other organs in the abdomen are not so well protected from pressure as the heart and lungs. The ribs do indeed afford some protection to the lungs and heart, but very little to the stomach and liver, and none at all to the bowels. Here are carried on, by the organs in the abdomen, those wonderful processes, so indispensable to the human system, of digestion, nutrition, and secretion. Now the least pressure continued a long time, and especially during the day, when indeed pressure is apt to be the greatest and these organs are most active, cannot but interfere seriously with their natural functions. It should be borne in mind, moreover, that this pressure upon the chest and abdomen, commencing at the age say from twelve to fifteen and twenty, is made most when in the order of nature the enclosed organs are growing rapidly, and changes peculiar to the female system are expected to take place, a period in life of all others when the laws of nature should never be violated. There is no doubt but that dyspepsia, indigestion, and costiveness, complaints particularly prevalent with American women, are very much aggravated, if not sometimes caused by this external pressure. But there is another result arising from this practice, purely mechanical, and fully appreciated only by a medical man, which has a most important bearing upon the laws of human increase. Such is the immediate connection of all the organs

in the chest and abdomen, that any external pressure commencing in the upper part of the body and long continued, has a tendency not only to weaken all the muscular supports below, but to depress all the organs, so that the lowest, especially if confined in limited quarters, must suffer most. It is the opinion of some medical men who have devoted much attention to this matter, that *that organ* in women which has most to do with reproduction, is materially weakened, depressed and displaced by means of this mechanical pressure. It is well known to physicians what a series of weaknesses, derangements, displacements and diseases exist at the present day in respect to this organ. It should be observed, that these complaints were entirely unknown to our grandmothers, and are but little known now with the English, German or Irish; they are peculiarly prevalent with the New England women; and it is needless to say that they interfere not a little with the law of human increase.

But in all the changes that are taking place in the physical organization of females, that of the brain and nervous system is the greatest, and at the same time the most important. Inasmuch as the manifestations of all the social feelings or affections, the intellectual faculties and the moral sentiments, are involved in the functions of the brain, its *healthy* and *proper* exercise is vastly important. It is this which not only distinguishes man from the brute creation, but gives the crowning excellency and glory to all the other organs in the human body. Within thirty or forty years a wonderful change has taken place in the

education of the young female. Colleges and seminaries have been established expressly for her benefit; the High, the Grammar, and the Primary schools have become everywhere common, books and papers without number have been multiplied, and the most urgent motives and appeals possible have been made for her education. The girl has been sent to school from the age of five or six, and kept there continuously till sixteen or seventeen years of age, with only short intervals for rest and recreation. The curriculum of her studies and reading has been constantly enlarging, and the standard of attainments set before her has been raised higher and higher every year. The rewards of merit in the common district school, the stimulus of passing rapidly through the graded school system, the distinctions of scholarship in the seminary, the high qualifications requisite for teaching, the accomplishments of a fashionable education, the attractions of cultivated society, and of papers, magazines and books, all these make powerful appeals to the ambition, diligence, and perseverance of every young woman. Nowhere else is female education carried to such an extent as in New England. It is true there have been at former periods, and are at the present day among the European nations, women distinguished for a profound knowledge of books, of the sciences, and for learning generally; but with no nation or people upon the globe, can so large a number of highly educated young women be found as in New England. Now this education seems a noble, a grand, a magnificent thing for the female; but in obtaining it, what are the effects upon her phy-

sical system, and what are to be the results upon posterity?

The nervous temperament becomes altogether too predominant, the brain and nervous system are cultivated in undue proportion to other parts of the body. There is an excessive activity of the brain, a kind of precociousness in its development, a smartness and a brilliancy in the mental training and character of our girls, that can nowhere else be found. It is a growth too much like that of plants reared in a hothouse, that cannot bear outside exposure.

It is a general law of physiology that the constant exercise of an organ, by attracting to it the blood, develops both its strength and size; and, on the other hand, the muscles or any parts of the body not exercised for a long time lose their strength and vitality, as well as their substance. This is true of all parts of the body having strictly a fibrous structure; but the brain, the spinal column and nerves possessing a tissue somewhat different, are not increased so much in size by exercise as improved in quality and greater excitability. This peculiar change in organization serves to intensify all the activities of the nervous system, and makes it susceptible of the most exquisite pleasure or the most excruciating pain. Hence persons possessing a predominance of the nervous temperament have, on the one hand, a capacity for very great improvement as well as enjoyment, but, on the other hand, are capacitated for an untold amount of suffering and wretchedness. Such persons are frequently afflicted with intense headaches, violent at-

tacks of neuralgia, and numerous other nervous diseases. And what predisposes to, or rather aggravates these complaints, is the fact, that such persons have not enough of the muscular or lymphatic temperament to counteract or overcome this tendency to disease of the nervous system. Such is the nature of the organs combined in the muscular and lymphatic temperaments, that a pretty full measure of their development and activity is absolutely necessary in order to regulate the exercise of the brain, and hold in check all unhealthy or excessive action of the nerves. And here we see the great importance of this balance or harmony in the temperaments.

Besides this liability to nervous diseases of all persons possessing a predominance of the nervous temperament, there is almost always a want of physical strength and stamina in the constitution. Such persons will exercise the brain rather than the body; will always seek excitement, variety, or change; are passionately fond of society and travel, of books and amusement: hard work or domestic labor does not agree with them; they have neither muscle nor vitality sufficient for such service. Unfortunately for them and all interested, they probably inherited a feeble and delicate body, in which the exercise of the lungs, the heart, the digestive organs, and the muscles, never received proper care and attention. Should the inquiry be made, what has this ill health and nervous temperament to do with the law of human increase? we answer, much. Can it be expected that a generation of women feeble and sickly, will have as many

children as one sound and healthy? Certainly not. It does not stand to reason or common sense. All experience contradicts it. Besides, a much larger proportion of the children born of the latter will live and reach adult life, than of the former. No fact is better established by Registration reports, than that a much larger number die now in infancy and childhood than formerly. A little examination will show that a large proportion of this infant mortality comes from feeble and sickly mothers. This fact cannot but have considerable effect upon the increase of population.

But this general predominance of the nervous tem perament in our New England women, is decidedly unfavorable to increase of population. As a general rule, people highly educated, and following pursuits of whatever kind, that severely tax the brain and ner vous system, have fewer children than persons engaged in manual labor for a livelihood. It is a fact well established by all history, that men or women distinguished for genius and intellectual attainments have never, as a class, been prolific in offspring. Many examples of this kind could be adduced, where such families have actually run out, and the name become extinct. In the whole range of history very few instances can be cited where a married woman distinguished for talent, and devoted to literary pursuits, has had a large, or even a medium sized family of children. And whenever the husband and wife, both having a predominance of the nervous temperament, are noted for their talents and acquirements, and especially if they follow literary pursuits, the number

of their children will be invariably small. However incompatible with having a numerous offspring may be the existence of such a temperament in man, it is still more incompatible in woman. Her nature is far more sensitive and emotional, more active and excitable, and subject not unfrequently to states of exaltation and depression. This constant and excessive exercise of the brain and nerves in woman, consumes all the vitality generated in the system from day to day, thereby withdrawing the nutrition and stimulus which should go to support other organs. This intense nervous temperament in woman is abnormal, unnatural, against the designs of nature, and a violation of the great laws of life and health. Writers upon physiology, in describing the organization and functions peculiar to the female sex, give her a predominance of the vital temperament, which is a combination of the sanguine and lymphatic. As far as having and rearing children is concerned, this organization is undoubtedly very favorable, especially for the health and constitution of offspring. But a good development of the muscular should also be combined; in fact, a decided preference must be given to a well balanced organization of all the temperaments. We should then have the brain and the body well proportioned, affording the best possible groundwork for mental activity and development, combined with good physical health and constitution.

But a great predominance of the nervous temperament is decidedly unfavorable to the laws of human increase in a variety of ways. First, the great vital

organs of the system, the lungs, the heart and digestive organs, have not sufficient development and strength to provide the requisite materials for this purpose. The laws of their normal growth and healthy activity have been too much interfered with. And then, in case of having offspring, the poor health, and the frail, delicate organization of the mother, are such that she breaks down; her constitution is comparatively used up in producing only one, two, or three children. Another fact, confirmatory of all the statements here made, and very important in its bearings upon this subject, is the following: from considerable experience and observation, as well as from inquiries upon this subject, we are satisfied that large numbers of our young married women having children at the present day, cannot properly nurse them. This arises from some deficiency in quantity or fault in the quality of the milk, or some trouble connected with the breasts, or, in other words, it results from an extreme nervous temperament with a deficiency of the vital or lymphatic and sanguine. In evidence of this fact, many women of the present day have comparatively no natural breasts; and though the artificial ones look well outwardly, they afford a poor substitute in the nursery. As a consequence it is found necessary to feed some infants, in addition to nursing them; others are brought up entirely by hand; and for others more fortunate, a wet nurse is procured. It is needless to state that this artificial mode of supplying the wants of an infant hazards its life, and that multitudes die just because they cannot have the nourish-

ment and care of a healthy mother. The general fact here stated, that is, the inability of young women to nurse their offspring at the present day, presents one of the strongest arguments possible that there is some grand fault in their organization, and that a great change has, in this respect, occurred within forty or fifty years. Aged physicians speak of this as a marked change in their practice. Once our mothers and grandmothers could nurse a large family of children, and raise them too. The fact that a large number of infants die, arises not only from the feeble, sickly, or diseased state of the mother, and her inability to take proper care of them, but from her predominant nervous temperament. The child itself inherits the active brain and nervous sensitiveness of the mother; the vital organs are all small; there is a want of arterial blood; the child naturally has a feeble hold of life; and great numbers of such infants die, in spite of the best medical skill, nursing, and care. It is now generally believed to be in accordance with the laws of hereditary descent, that the mother, not the father, transmits the vitality, the stamina, the strength of the physical system to the child. It becomes then vastly important that she, the mother herself, should have the *right kind* of constitution.

There is still another topic most intimately connected with this subject which is worthy of far more consideration than what we shall be able to give it at this time. With the great amount of ill health among the New England women, and with this predominance of the nervous temperament, the *sexual propensity it-*

self has undergone changes, not only in its activity and excitability, but particularly in its strength and power of endurance. This propensity was planted in the human constitution by God himself for high and noble purposes. In this light it should ever be regarded and treated, and no denunciation or abuse of it will banish it from existence. If a thorough discussion of this whole question could be had, based upon physiological laws, and connected with an exposure of the facts actually existing in the marriage state, it would furnish, if we mistake not, a key not only to much of the discord in domestic life, but also to the increasing infidelity of husbands to their wives, as well as to the great number of divorces constantly taking place in the community. With these changes in the organization, a falling off in the vital and muscular temperaments, with an undue development of the nervous, there would necessarily follow a change in the sexual organs, as well as a change in the relative strength and character of the propensities of amativeness, adhesiveness, and philoprogenitiveness. This change in character has been observed and commented on by phrenologists.

Lest it might be thought that some previous statements respecting the objects of marriage were not correct, we will here give the views held both by the Episcopal and Catholic Churches, which embrace the largest Christian denominations in the world. These views, professed to be derived from Revelation, are sustained not only by the greatest possible experience that can be obtained in the whole history of man, but

are found to harmonize perfectly with the great laws of human organization. The propositions laid down in the marriage service of the English Church state that the marriage institution is ordained for three purposes: "(1,) *the procreation and the due education of children;* (2,) *the avoidance of incontinence;* (3,) *the mutual society, help, and comfort of the married pair.*" Any union of the sexes in which provision is not made for fulfilling every one of these purposes, or which fails in so doing, comes so far short of securing the great objects intended by this institution. To what precise extent either or all these points are met in the marriage relations of the present day, we will not undertake to decide.

That there is a great difference in constitution and health, between the women now coming upon the stage and those living fifty and one hundred years ago in New England, all will admit. Nearly all married women then were mothers of large families, performing in most cases their own work, seldom feeling an ache or a pain, and living to a good old age, scarcely knowing what weakness or sickness was. In their persons the temperaments were remarkably well balanced, and they afforded some of the best specimens of female organizations that can be found in the history of the world. There is one feature in this difference which deserves special notice, and which has nowhere, we believe, been fully considered, that is, the difference in the *form* and *size of the body.* This result necessarily follows from the change in temperament. A good development of the sanguine and

lymphatic temperaments gives a good-sized chest and abdomen, and thorough exercise of all the muscles, long continued, enlarges the frame-work of the body. The descriptions and portraits of our Puritan mothers, and of New England women in several successive generations, represent them as possessing well developed bodies, and, in many instances, of large size. Such is the testimony of elderly people generally, and they speak particularly of the diminutive size and slender form of the women of the present day.

The inquiry naturally arises when this change in female organization commenced? From the best information that can be obtained, it started, in our opinion, about two generations ago, or the beginning of the present century, but was of very slow growth in its earlier stages. The change was not very perceptible till twenty or thirty years ago, since when it began to be developed more rapidly, and never was making so rapid progress as at this very time. This diminution of children occurred also at the same time, and follows the same law. The leading agencies that first produced the starting points of this change, operate still with great power not only to keep it up, but also to increase it. Fashion in dress and style of living are powerful. All irregularities of the system, all weaknesses of the body, all abnormal conditions, tend constantly to increase. A long continued disuse of the muscles destroys nearly all love of physical exercise, and creates a dislike for hard work, thereby encouraging an easy, indolent course of life. A cultivation of the brain and nervous system, exclusive of other parts

of the body, demands constant excitement and stimulants. In this state of things, children are a trouble and a burden; domestic labor a tax and penance; house duties irksome and distasteful; extravagance takes the place of economy in the household; the fashionable call and company, the last novel and romance, have the strongest attractions. It is no wonder that the thoughtful, considerate young man, in view of such things, shrinks from marriage, and puts far off the evil day.

It may be said there are other causes than what have been enumerated to account for the ill health of women. We admit it. Our object has been to point out the primary causes as connected with the violation of those great laws of physiology which affect more directly the propagation of the species. A careful examination, however, will show that most of the incidental and secondary causes of ill health in women are connected, more or less, with a violation of these very same laws. There is not only a great change in the health and temperament of the New England women of the present day, and of those living fifty or one hundred years ago, but a still greater change has occurred in the type and character of their diseases. But this same difference in organization exists between our Yankee women and the English, the Irish, and the German women, whether found in Europe or in our own country. The representatives of these nations are particularly designated, because they constitute a larger class in this country than the immigrants from any other European nations. Now these women

have generally a large development of the muscular and vital temperaments, while very few of them have an excess of the nervous temperament. This difference in organization explains why they have so many more children than the American women. The diseases most common to the latter are scarcely known among the former. The only women upon the globe whose organizations correspond very nearly to the American are the French. And though some of the causes that have produced this change in their organizations may have been different, the results in the matter of disease and of child-bearing are very similar. The temperament of the French women is very generally nervous; but among the poorer classes, and those engaged in physical labor, there is still a good degree of the vital and muscular. A great change has taken place, at some time, in the organization of these women. One hundred years ago, the birth rate of France was equal to that of any of the nations in Europe; but since the present century commenced, the number of births has been every year approximating nearer and nearer to that of the deaths, so that now the population of that great nation is almost stationary. Fifty years ago the average number of children to each married woman in France was five; it was afterward reduced to four, and now to three in the rural districts and provinces, but to only *two* in Paris and the other cities. What can be the causes of such a change? We can here allude to only a few of them.

It is well known that the French women for a long time have been supremely devoted to fashion in dress.

As a class they have been very much given to the enjoyments of society, to amusements and light literature. They have also sought the lighter employments, and tried to make domestic labor and household duties as easy as possible. Their food, their manner of living, and their habits generally, have tended to develop mainly the nervous system. As a consequence, the women of the upper classes in France, and especially those living in cities, have an intense nervous temperament, with few or no children. In contrast, take now the same people living in Canada, following rural pursuits and a more simple, natural mode of life: the married women here are prolific, having large families with scarcely an exception.

No women in the world have been so supremely devoted to fashion in dress as the French and American, and this devotion has produced a most marked effect not only upon their moral and mental character, but upon all their social and domestic habits. It has been a powerful agent in changing their organization, and interfered seriously with the great laws of maternity. The fatuous devotion, the blind admiration, the unreasoning spirit of imitation, with which American women have caught up and adopted fashions emanating from foreign capitals, is without a parallel in the history of civilization. Should it be said that at one time a similar rage pervaded the capitals of Prussia and Russia, it is obvious to remark, that the fever was more limited in its range and duration. How long can this continue, and what is to be its final result? The question whether there has been any degeneracy

in American females or not, has found disputants on both sides. The merits of this question must be determined by the *standard* which is set before us. And there can be only one true standard founded in nature and established by God himself. This must refer to the body as well as the mind, and includes all the laws that govern both.

After the remarks that have already been made respecting the importance of the balance in the temperaments, that their harmonious development constitutes the standard required by the laws of nature and of God, we submit whether the organization of women as here described is not only unnatural and abnormal, but unfavorable to human increase.

While we have dwelt mainly upon the changes of organization in the female system, there have also been changes going on in the constitution of the other sex, with habits and practices introduced, which are decidedly unfavorable to the laws of increase. Men, in many respects, are more to blame than women; but time and space will not allow us here to go into detail in this direction.

We propose now to show more directly, *that it is upon this harmonious balance of temperaments, that the great laws of human increase or of population are based.* This presupposes that all other things or conditions are favorable, that is, as far as the male sex is concerned; as far as the age, the health, the union and adaptation of both parties are involved; that with this standard, and provided the laws of nature are not violated or interfered with, there will uniformly

be found not only the greatest number of children, but they will be endowed with the highest amount of physical vigor and health. The following arguments in support of this theory are deduced from physiology alone. This balance or union of the temperaments constitutes the perfect organization of man as he came from the hands of his Creator, and was pronounced "very good." It constitutes also the standard for the greatest amount of health, of longevity and strength that can ever be found in the human system. This is proved by the laws of physiology, as well as by facts gathered from experience, observation, and history. This balance of organs presents the only perfect standard of beauty for the human form: for there is such a standard founded in nature and represented by art; a perfect standard of beautiful figure for the eye, as well as of taste for the mind, when all its faculties are trained and cultivated to their highest degree.

This theory of increase is in harmony with all the laws of the body. Every organ, or class of organs in the system must receive its proper proportion of nutrition. Dr. Carpenter, in his work on Physiology, makes this statement: "There is a certain antagonism between the nutritive and reproductive functions, the one being exercised at the expense of the other. The reproductive apparatus derives the materials of its operations through the nutritive system, and is entirely dependent upon it for the continuance of its functions. If, therefore, it is in a state of excessive activity, it will necessarily draw off from the individual fabric

some portion of the aliment destined for its maintenance. It may be universally observed, that when the nutritive functions are particularly active in supporting the individual, the reproductive system is undeveloped, and *vice versa*." Here is a powerful argument from the highest physiological authority; and the statement so simple and plausible must commend itself to the common sense and judgment of every person. Let any class of organs or portions of the body be unduly or excessively exercised, and it requires the more nutriment to support it; thereby withdrawing what naturally should go to other organs. Let any of the temperaments become too predominant, and the others must suffer more or less. Let this be continued through two or three generations, and the evil becomes intensified. If the female becomes pregnant, there must be a good development of the vital temperament to support her well in that condition, and also to afford sufficient nutrition to the child when born. Otherwise one or both must suffer, and perhaps sink under physical weakness and disease.

A negative argument may also be deduced from physiology. In all the works treating of "impotence" and "sterility," the causes are generally found to exist in a feeble or diseased state of some parts of the body, or to arise from abuse of certain organs. Such causes are not often, if ever, found in a well developed and proportioned body, where, too, the laws of life and health have always been properly observed. If the great law of increase is then based upon such an organization as is here represented, we do not believe

any evidence can be adduced to show that it violates a single principle in physiology.

If, then, such an organism constitutes the standard for *health*, for *longevity*, for *strength*, and for *beauty*, and is also in harmony with all the known laws of physiology, may it not constitute the only true and natural basis of human increase?

This theory of population is confirmed by laws drawn from both the vegetable and animal creation. The New York Post, of October 18th, 1867, in commenting upon the paper already referred to, presented at the Social Science meeting in Boston, suggested that there might be other causes than what were enumerated to account for the change in population, and presented the following summary of facts from Mr. Doubleday's work. Says Mr. D., "it is a fact admitted by all gardeners as well as botanists, that if a tree, plant, or flower, be placed in a mould, either naturally or artificially made too rich for it, a plethoric state is produced, and fruitfulness ceases. In trees, the effect of strong manures, and over rich soils, is, that they run to superfluous wood, blossom irregularly, and almost or entirely cease to bear fruit. In flowering shrubs and flowers, the first effect is, that the flower becomes double, and loses its power of producing seed; next it ceases almost even to flower. On the other hand, when a gardener wishes to save seed, he does not give the plant an extra dose of manure, but he subjects it to some hardship, and selects the fruit that is least fine looking, knowing that it will be filled with seed, while the finest fruit will be nearly destitute."

"In the animal kingdom," Mr. D. says, "fecundity is totally checked by the plethoric state, while it is induced and increased by the deplethoric or lean state. Rabbits, swine, sheep, and horses, when overfed will not reproduce; but break up their state of plethora, put them out of condition, as it is called, and they instantly resume their fertility. The story of the good old French dame, in the fable of '*Une femme et sa poule*,' is in point. She wanted her pet to lay more eggs, and fed her accordingly; but the result was, instead of more eggs, no eggs at all. Overfeeding had done the business. Tame pigeons, sheep, mares, and numberless sorts of other animals, when they are stuffed to satiety, do not want, or do not care to raise, or are incapable of raising others."

If these facts furnish any evidence in favor of Mr. Doubleday's theory of population—that "it is connected with the food of the people"—they afford still stronger evidence in favor of the principles advocated in this article, by showing the *modus operandi*, the *how* and *why* the food or nutriment changes the laws of increase. In vegetables it changes the healthy balance of organization by stimulating or nourishing unduly certain portions of the structure, and leaving other parts defective. As the plethoric state of the plant or tree is reduced, it is brought into a more normal state, in harmony with the laws of increase; while, on the other hand, if the soil is too poor for the plant or tree, and its cultivation is neglected, not only its growth is affected, but its power of reproducing gradually ceases.

In the animal kingdom the laws of breeding, as it is termed, have received much more attention. The change sought here has generally been *improvement in quality* rather than *increase in number;* in cattle, good beef, in cows, a large supply of rich milk, in hogs, the greatest possible amount of nice pork, and in sheep, the largest quantity of fine wool: these have been paramount objects in stock growing. There is one feature in all these improvements worthy of notice. It has been found that in proportion as you improve *the quality* of animals, and the further this improvement is carried in any single direction, the number or increase of the species almost in the same proportion is checked, and that this improvement may be carried to such an extent as to run the species out. The explanation of this result is found only in the great fact, that the true law of increase is here based upon the balance, or harmony of the organization of the whole animal. Says a distinguished writer on the physiology of breeding, its great secret is "a system of counterbalances," that is, to obtain a harmonious development of the temperaments. In the case of the horse, the laws of physiology have been reduced to a more scientific basis. The temperaments here are divided into three kinds, the nervous, the thoracic, and the abdominal. Says a well known English writer "what is called *breed* in horses consists in a superior organization of the nervous and thoracic temperaments as compared with the abdominal; the chest is deeper and more capacious, and the brain and nerves more highly developed. More air is respired, more blood

is purified, more nervous energy expended. While the heavy cart horse may be considered to possess the lymphatic temperament, the blood horse may be regarded as the emblem of the nervous and sanguine temperaments combined, the latter, however, predominating. When the nervous temperament has the ascendancy, the animal will carry but little flesh, but will go till he drops, never seeming to tire. When the sanguine temperament greatly prevails, the horse will have great muscular powers, but not much inclination to put them to the stretch. When the lymphatic temperament has superior influence, the animal, though looking fresh and fat, and starting well at first, will soon flag and knock up, and will rather endure the lash than make an extra exertion. The full development of the abdominal organs is essential, inasmuch as it is through the food that the muscular and nervous energy is furnished. If the digestion is weak the other powers will be insufficiently supplied. The sanguineous organs are needed to furnish the muscular powers, and the nervous system is demanded to furnish the muscles with the requisite energy, and the capability of endurance. What is called *bottom* in the horse is neither more nor less than the abundant supply of nervous energy, the muscles being at the same time well developed. It is the *happy combination* of the three temperaments that makes a perfect horse." Connected with this well-balanced physical system, and growing out of it, the laws of increase have also their origin and foundation. If, therefore, after experiments have been tried here for a long series of

years, and the lights of physiology have been brought to bear upon the subject, it is found that an organization such as is described above, constitutes a "*perfect horse*," and the best stock for increase, what may we not expect when similar principles and an analogous treatment are applied to the culture and amelioration of mankind? We say analogous, because however rational and irrational tribes may resemble each other in conformation, propensities, or habitudes, the moral difference between them necessitates a difference in training and discipline. Still, notwithstanding this difference, there yet remains enough of resemblance to warrant us in drawing lessons from these analogies; and will it not be found, that in the perpetuation, maintenance, and elevation of our species the agency and influence of physical laws are more potent and imperative than has been generally considered or conceded?

There is a large class of facts in history referring to changes in population, which go directly to substantiate the principles here advocated, and cannot be explained so satisfactorily on any other hypothesis. Some of these facts have been quoted by writers upon this subject in confirmation of their theories; but when the direct connection between cause and effect, or the philosophy of the thing, is carefully scrutinized, the propriety and force of such references are not very obvious.

In examining the family history of men or women distinguished for intellectual power and character, and where the physical system has not been called

into vigorous exercise, we find, as a class, they have few or no children. Such has been the case generally with great scholars, authors, poets, and writers upon abstract or recondite subjects, particularly where mental exercises and pursuits were commenced early in life. How many such families, who have acted a prominent part in history, have actually run out in offspring, and their names even become extinct? The brain and nervous system were altogether too highly cultivated in proportion to other parts of the body. Such facts are scattered all through ancient as well as modern history.

Again, if we take classes of individuals who have been burdened with great cares and responsibilities, or have lived high, stimulating the brain and nervous system, with physical habits indolent and luxurious, thus violating the great laws of life, and changing this balance of temperaments, these classes invariably run out in the course of a few generations. Such has been the family history of many of the sovereigns of the European nations and their leaders, of the aristocracies and nobility of these nations, of the peerage especially, and not only of all classes subject to excessive mental exercise, but also those who give themselves up mainly to ease, indolence and luxury.

The same fact is true in our own country. Examine the family history of the Presidents of the United States, or that of individuals who have been most prominent as leaders in the national government and separate states, and we shall find that their genealogical history is not abounding in numbers or promis-

ing in descent. There may be found exceptions in this history, but in all such cases a more careful scrutiny will disclose some reasons for the exception. In our own country, as far as there has been a class devoted exclusively to authorship and literary pursuits, the same fact holds good in reference to family history, but would become more marked when applied to two or three successive generations of this class.

Again, let us take those families which in society are denominated "the upper classes," who live upon inherited wealth, or obtain their means of livelihood by the brain, without much physical exercise or hardship, especially on the part of the women, and what is their family record as it respects children? Persons of this class are more generally found in cities, or in thickly settled places immediately contiguous to cities, and it has been admitted that were not these families frequently supplied with fresh recruits in marriage from the country, they would certainly become extinct: whereas, it is a notorious fact that the poorer, or laboring classes, as a body, abound in children. Still it should be remarked that the extreme poor, those who are kept for a long time reduced by excessive hard labor, and without proper nourishment, to an abject state of poverty, are not prolific in children. In this case the muscular organs are unduly exercised, and the vital temperament is not properly supported.

Those classes or communities, on the other hand, who have proved most prolific in history for several generations, will be found, we are confident, to possess well balanced physical organizations. Among the

foremost in this class may be reckoned the earlier settlers of New England. They were probably made up of the best stock that the world ever produced. All parts of the body were well developed and harmoniously exercised. They possessed large frames, strong muscles, powerful digestive organs, good lungs, and active brains. The women were equal in this respect, if not superior to the men. Accordingly we find here large families, each averaging from eight to ten children. Next in fecundity, perhaps, may be reckoned the better portion of the Irish race, whether living in Ireland or America, together with what may be called a middling class among the English and the Scotch. Some portions of the Canadian French should also be included. All these classes, upon careful examination, will be found to have, as a general thing, not only remarkably healthy organizations, but a harmonious development of all the temperaments. Here is found in its highest perfection this great law of increase. It is not in climate nor government, not in the supply of food, nor in density of population. And whenever or wherever the human system deviates from this balance of organization, even if all other conditions are favorable, we find its fecundity begins at once slowly to decline.

In a former part of this paper we dwelt somewhat at length upon the unfavorable effects of an excessive development of the nervous temperament; but similar results will follow in case other portions of the body become equally predominant. Cases of this kind, though not so common or numerous, can readily be

found in history, or in every community. It has been frequently remarked that women, when put down to excessively hard work, will not have so many nor so healthy children as if not so severely taxed. And it is well known that very fleshy persons never have many children. In such cases the vital temperament becomes altogether too predominant. The law of increase varies either way just in proportion as this balance of organization is disturbed.

We have made a practical test of these principles from a pretty extensive obstetric experience of over twenty-five years in a mixed population of all classes, American and foreign. Besides, by personal acquaintance and knowledge, extending into other cities and localities, we have pushed our inquiries, and wherever there has been marked fecundity or large families, the parents, especially the mothers, have uniformly been found to have a remarkably well balanced temperament. Occasionally where such an organization in married life has been noticed without children, an explanation of the fact has been found in some personal weakness, disease, or violation of physical law. In cases where there are few or no children, and no preventive means have been employed, we generally find feeble bodies, poor health, or an intense nervous temperament.

On the other hand, where the muscular, lymphatic, or sanguine temperament greatly predominates, there are few or no children to be found. The law here holds good, though in a highly civilized state of society such organizations are not common. Among savage or

barbarous or half-civilized people a predominance of these temperaments is quite common, and in all such cases few or no children are to be found. Thus where the merely animal nature becomes most predominant, and nutrition goes mainly to support the body of the *individual*, there is generally a want of offspring. Here in this direction are limitations as well as at the other extreme, namely, a great predominance of the nervous temperament.

There is one thing in this discussion which deserves particular notice. It is a well known fact that the age of the parties, especially of the woman, entering into the married state, has a great influence on the number of offspring. It has always been noticed in the history of different communities and nations, that early marriages were decidedly favorable to increase of population. But in a recent work on "Fecundity, Fertility, and Sterility," by Dr. M. Duncan, of Edinburgh, some important facts have been established by statistics deduced mainly from the Registration Reports of Scotland and England. Admitting the great variety which usually occurs in the ages of women at marriage, it was found that the most productive period of life was from twenty to thirty, and that about three fifths of all children born were of women under thirty years of age; that after thirty fecundity gradually declined, and after forty very rapidly. It will thus be seen, that if marriage in the case of women should be generally deferred till after thirty, it would make a vast difference in the increase of population. This law of fecundity in women reaches its climax at the age

of thirty, and then declines, so that this great boundary line in the life of the female sex, when the term *old maid* is applied, is full of meaning.

In connection with the age of women there is another fact having an important bearing on population. It is found that the children born of mothers between the ages of twenty and thirty are far more likely to live and grow up, than those born of mothers between the ages of thirty and forty.

The testimony of the medical profession, though not perhaps very explicit, is still, as far as expressed, favorable to the principles here advocated. Hippocrates says, "the want of fruitfulness arises from sedentary life, indulgence in riding in carriages, want of exercise, profuseness in living, fatness, and muscular laxness or weakness in the female sex."

Aristotle and Lord Bacon, though not strictly medical men, were remarkable for their knowledge of human nature. Says the former, "the condition most favorable to procreation is a habit of body inured to labor." Says the latter, "repletion is an enemy to generation."

Dr. Short states that "the poorest and most laborious part of mankind are the fruitfulest," and "the most voluptuous, idle, effeminate and luxurious are the barrenest."

Dr. Buchan says, "would the rich use the same sort of food and exercise as the better sort of peasants, they would seldom have cause to envy their poor vassals and dependents the blessing of a numerous and healthy offspring. The cause of this comparative bar-

renness among the wealthy is, affluence begets indolence, which not only vitiates the humors, but induces a relaxation of the solids, a state highly unfavorable to procreation."

Dr. Black says, "high refinement is an obstacle to propagation." Dean Swift remarks with reference to the Irish, "low diet and moderate exercise are the great restorers of the breed." Alison, the historian, states that "the rate of increase of population is slowest in the most opulent classes." Testimonials similar to these in great numbers could be obtained from works on medicine and history, had we time and room for such references. A great amount of evidence confirmatory of the views here presented might be gathered from general history, where changes of population with their causes are delineated, also from the history of particular tribes and classes of people, as well as from the genealogical records of individual families through several generations.

It is an interesting fact, that the late writers upon population have approximated in their views nearer and nearer to the laws of increase as based on physiology, particularly Thomas Doubleday and Herbert Spencer. But the views of Malthus are very far from harmonizing with the laws of physiology or the principles of the moral government of God. The fundamental doctrine of Malthus was, that "population, when unchecked, increases in a geometrical ratio, while subsistence increases in an arithmetical ratio." That is, population would increase "as the numbers 1, 2, 4, 8, 16, 32, 64, 128, 256, and subsistence as 1, 2,

3, 4, 5, 6, 7, 8, and 9. In two centuries the population would be to the means of subsistence, as 256 to 9; in three centuries, as 4096 to 13; and in two thousand years the difference would be almost incalculable." This proposition was predicated upon very loose evidence. There was nothing in the history of the world or in the nature of the case to prove that this increase of population or food should follow in just such ratios. The difference between the geometrical and arithmetical ratios, it will be seen, is slight at first, but in a series of years diverges with wonderful rapidity. Admit this proposition, and then we must have the "checks," the "positive" and the "preventive," as defined in the first part of this article. But this whole theory, with all its checks and consequences, reflects in the most serious manner upon the moral government of God, impeaching his wisdom, his goodness, and his justice.

While the doctrines of Malthus have been shown over and over again by eminent writers within fifty years, to be false in their nature and most pernicious in their tendencies, no new theory or law of population has in the mean time been advanced, which has commended itself generally to the public, or has been adopted to any considerable extent. There must be a law or laws *somewhere* in this great field of inquiry. Here are involved agencies and influences that affect most powerfully the welfare of man in this world, as well as in his relations to his Maker. In matters so momentous, God, who governs every part of the universe by law, would never create immortal and ac-

countable creatures, and thus leave them without law.

The principles or laws of physiology, when rightly interpreted, are a part of the will and government of God in this world. The law of increase, as here based on physiology, explains the free agency of man and human accountability as in perfect harmony with the divine government. It is a part of that great plan of the Creator, made so evident by his works, as well as by divine Revelation, of placing man in a probationary state, wherein he is compelled in a great measure to work out his own destiny. The law of population here advocated, represents man in his duty to himself, and in relation to his fellow man, as well as to his Maker, in a very different light from that of all previous theories. By these theories man is regarded, in the increase of population, in a great measure, whether as a passive or an active agent, as having but little influence or control over the evils of violated physical law, or of the vices and miseries that prevail in society. But according to the physiological view of this increase, man becomes at once a free moral agent: and though he may suffer by the laws of hereditary descent, and by a state of things in society which he cannot personally control, yet he can act in the whole matter as a voluntary, intelligent, and accountable being.

A full discussion of this subject would show human and divine agency always operating in beautiful harmony, and all tending to the same great ends. This physiological view of increase opens up most important principles in respect to the marriage and parental

relations, as well as to all the duties connected with the family. It might be shown that the practical application of this law would enter largely into some of the leading elements of human progress, would assist in explaining difficult questions in political economy, in exhibiting the importance of a well-developed body combined with physical education, in correcting certain vicious practices in society, as well as false standards in fashion and morals—in fine, in illustrating, enforcing, and exalting in every department of human life, the laws of God. The subject itself in all its bearings, is so vastly important, so extensive in its various applications, and so far-reaching in its influences, that a full and thorough discussion of it would require more time and space than our present limits will allow.