

The intermarriage of relations / by Nathan Allen.

Contributors

Allen, Nathan, 1813-1889.
Royal College of Surgeons of England

Publication/Creation

New York : D. Appleton, 1869.

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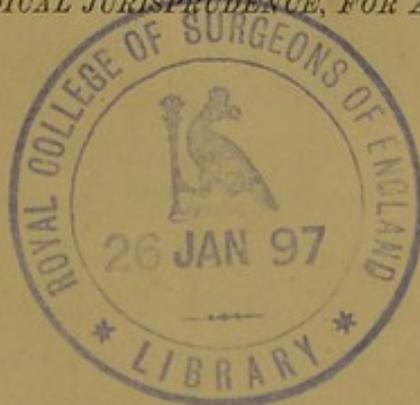
THE

INTERMARRIAGE OF RELATIONS.

BY

NATHAN ALLEN, M. D.

[FROM THE QUARTERLY JOURNAL OF PSYCHOLOGICAL MEDICINE
AND MEDICAL JURISPRUDENCE, FOR APRIL, 1869.]

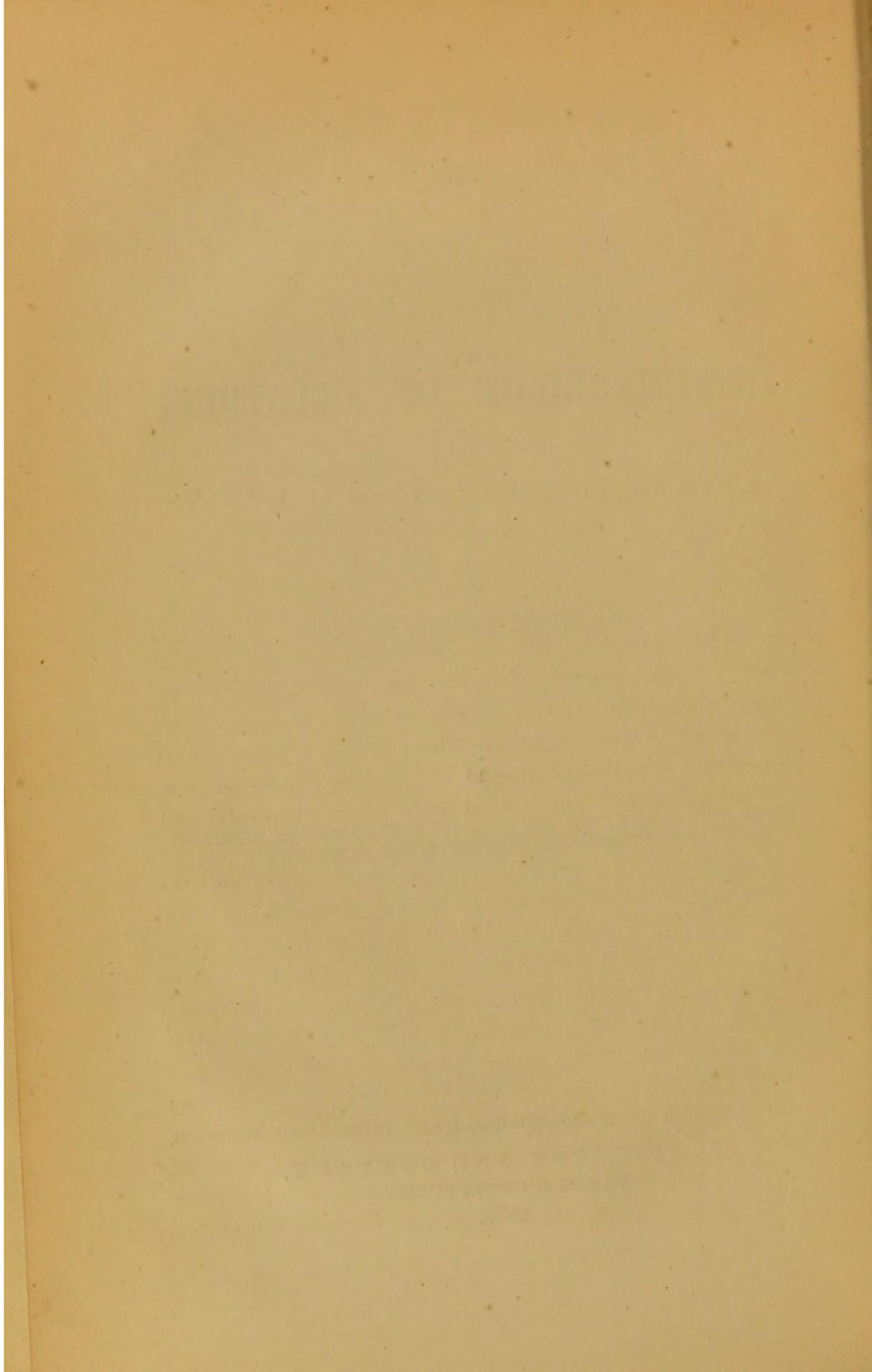


NEW YORK:

D. APPLETON AND COMPANY,
90, 92 & 94 GRAND STREET.

1869.

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THE
INTERMARRIAGE OF RELATIONS.

THE intermarriage of relations is a subject which has always created much interest. The natural instincts of man seem to shrink from the idea of any such alliances between brothers and sisters, or parents and children, and also of unions in the same degree of relationship, as between uncles and nieces or aunts and nephews. But when we come to the third degree, that of cousins, there does not seem to be the same natural aversion, and such marriages have become, at the present day, quite common. Some writers have considered the parties entering into this union the same, whether related to each other by consanguinity or affinity—that is, by marriage. For instance, a man must not marry the sister of a deceased wife any sooner than his own sister, nor must a woman marry the brother of a deceased husband any more than her own brother. Others have taken a very different view of this last relation, and hence there have been many such marriages. Nearly all the leading religious denomina-

tions, both in Europe and this country, have condemned the intermarriage of persons related by affinity as well as those related by blood, and some of the most bitter personal controversies have arisen from this service that can be found in the whole history of the Church. From a literal interpretation of the law of Moses, as well as just construction of language, there are some grounds for this view. Most theories and most legislation upon this subject may be traced directly to the law of Moses, as laid down in the eighteenth and twentieth chapters of Leviticus. From the improper habits and practices of different nations and tribes of people prior to this period, it is supposed that it was found absolutely necessary to promulgate certain laws or principles by which all such alliances should be regulated. In the eighteenth chapter of Leviticus may be found a very minute description of various relationships wherein no such unions should ever be formed; still, a good deal of discussion and difference of opinion have arisen upon the meaning of the phrase "near of kin," found in the sixth verse of that chapter.

While it has been pretty generally agreed that the law of Moses extended only to the third degree of relationship, portions of the Church have extended it even to the seventh degree. Most civilized nations, that have legislated at all upon the subject, have based their statutes upon their understanding of the law of Moses. So also of the religious denominations, though some have been far more rigid than others in the practical application of their interpretation of those laws. The Grecian and Latin fathers as well as the early reformers, adopted the Levitical law. The Roman Catholic Church early introduced it as a canon; and the Episcopal, together with the various branches of the Lutheran,

the Presbyterian, the Dutch Reformed, etc., have considered it generally a fundamental part of their creed. But of late years there has been more and more of a growing laxness as to the observance of these laws, as well as of discipline on the part of the churches belonging to these various religious bodies. The term "Incest" has been applied to the violation of this Levitical law, and seems to have been pretty well understood by many of the nations of antiquity. Not only the Levites and Jews generally understood it, but the Canaanites and Egyptians, as well as the Greeks and the Romans. Socrates said of incestuous marriages at Sparta and Athens that they were "prejudicial to the healthy propagation of the species;" and Plutarch, referring to the laws of the Romans on this subject, says, "They abstain from marrying their kinswomen in every degree of blood."

In an elaborate article upon "Ancient Marriages of Consanguinity," found in the *Medical Journal* of Nashville, Tenn., for 1859, Dr. J. Casselberry, in an examination of the early history of Syria and Egypt, brings out some remarkable facts. He shows that, among the rulers, generals, and leading characters in the history of these two great nations, there was an unusual amount of such intermarrying, and that almost invariably it turned out badly. In the history of the royal founders of different nations there has been at times a great number of such intermarriages, and it is well known that very many of these have proved decidedly unfavorable as far as offspring is concerned. So marked was the effect that a peculiar disease, called the "king's evil," was said to originate from this source, and to become very common and troublesome. The power and influence which these families had endeavored in

this way to perpetuate had come to naught, and their names in history almost extinct. In the history of certain orders, such as the patricians of Rome, the nobility of France, the peerage of England, and other aristocratic classes, where, for the sake of position, wealth, or some other consideration, intermarriages among members of the same families have frequently taken place, and this practice continued through several generations, the hereditary effects have generally proved unfavorable. Both the mental character and the physical organization have suffered by such alliances. It has been found that such classes or orders would, in time, actually run out in offspring, if their ranks were not replenished occasionally by those moving in lower or humbler spheres of life.

Again: in some small islands or places remote from the thoroughfares of public travel and business, and where there is but little change in society from immigration, the practice of the intermarrying of relatives becomes quite common. The effects of such unions, when continued through several generations, are marked by a loss of mental power and strength, of boldness and energy of character, with an increase of scrofulous and consumptive complaints, of defects in one or more of the senses, and not unfrequently of deformities of the body. With such a people there is not only little real improvement or progress in securing the most important objects of life, but, after remaining a while in a kind of stationary state, they gradually decline both in numbers and character. This change may not be very perceptible in one generation, but, when continued through several generations, it becomes most marked both in reference to the body and the mind. Probably nowhere in the world can there be found more striking

illustrations of this truth than in some of the valleys of Switzerland, where, from the barriers formed by almost impassable mountains, the same seclusion of communities and frequency of family alliances have been found to exist for hundreds of years. Here we find goître, cretinism, scrofula, albinism, mutism, and idiocy, in all their most aggravated forms. A writer in the *American Journal of Insanity* gives the following sketch of this people: "Marriage between blood-relations is nowhere of such frequent occurrence as in the localities where are born the greatest number of deaf and dumb. I have before described certain valleys in the Canton of Berne, the inhabitants of which, collected in masses, and living almost without any means of communication with neighboring countries, offer all the conditions favorable to these unions between relatives. There the men marry very young, in order to avoid the troubles and cares of celibacy without compensation. They marry their cousins, and all the families have been allied for a long time. The children of two brothers, of a brother and of a sister, marry as a matter of expediency, and thus preserve the inheritance intact; consequently the new family is founded in physical conditions than which nothing could be more injurious. It is in the midst of these isolated populations that we find in all its hideousness the degradation of the species, the corruption of the race. There reign cretinism, idiocy, and congenital deafness to such a degree, that the demonstration of the fact I have advanced blazes forth in all its brilliancy."

Some writers have inclined to the belief that there was a peculiar tendency in such alliances to increase the number of deaf and dumb persons. M. Boudin has paid especial attention to this subject in France,

and makes, as the result of his labors, the following statement: 1. That while consanguineous marriages are only 2 per cent. of all marriages in France, the number of deaf mutes born of such marriages is to all deaf mutes—

In Lyons,	25 per cent.
In Paris,	28 “
In Bordeaux,	30 “

He finds further: 2. That the danger of deaf and dumb offspring increases with the nearness of kinship between the parents; 3. That parents themselves deaf and dumb do not as a rule produce deaf and dumb offspring, and that the defect in such cases is not therefore hereditary; and 4. That the number of deaf mutes increases in proportion to the local difficulties to freedom of cross-marrying. This proportion is in—

France,	6 in 10,000
Corsica,	14 “
Alps,	23 “
Canton Berne,	28 “

There is some doubt, we think, whether mutism arises from this source oftener than certain other defects in the senses. As the brain and nervous system hold the foremost rank in the physical organization in point of sensitiveness and vitality, it is the first to suffer by any derangements of a perfectly healthy, normal state of the system. As the senses of speech and hearing constitute the most important as well as conspicuous avenues to the brain, any defects in these organs would be sooner observed and their causes sought out. According to a great mass of facts collected on this subject, the functions of the brain seem to be affected far more than those of any other organ. Hence, a great number of weak or

feeble-minded persons, together with every grade of idiocy, has been reported as originating in such unions. It is through the brain also that certain peculiarities or idiosyncrasies of character, as well as a great predominance of the animal propensities, are thus transmitted. The organs of the senses are so immediately connected with the brain, that their functions would generally become more readily impaired. Rillet considered that epilepsy was the most frequent disease thus transmitted, which has its seat in the nervous system.

Dr. Barlow states that the tuberculous diathesis shows itself in the greatest intensity in the offspring of marriage between relations in whose family the taint has already existed. Hence we have a large number of cases of phthisis—consumption—from this source, as well as scrofula in all its diversified phases. There is also the disease known as rickets, with curvatures of the spine, and deformities of the body in an endless variety of forms. It should be borne in mind that all these abnormal states increase most rapidly with every generation thus intermarrying, becoming thereby intensified more and more. These morbid forces resemble somewhat the falling of heavy bodies where the power of gravitation is constantly accumulating. A small force will hold these bodies in check at the start, but, when far advanced, no power can well resist them.

Dr. S. M. Bemiss, of Louisville, Ky., published a large collection of facts bearing on this subject, in the *North American Medico-Chirurgical Review* for 1857. Says he: "By much labor I have obtained statistical accounts of 34 marriages of consanguinity; of this number, 28 were between first cousins, and 6 between

second cousins. Of the total number of marriages, 27 were fruitful and 7 sterile. The 27 fruitful unions produced 191 children. Of the 28 marriages of cousins, 23 were fruitful and 5 sterile; of the 6 marriages of second cousins, 4 were fruitful and 2 sterile. In both these latter instances of sterility the female was the product of a marriage of consanguinity.

“Of the 192 children resulting from these marriages, 58 perished in early life. In 24 of the 58 deaths the causes were stated as follows: Of consumption, 15; of spasmodic affections, 8; of hydrocephalus, 1. Of the 134 who arrived at maturity, 46 are reported as healthy; 32 are set down as deteriorated, but without absolute indications of disease; and 9 are returned without any statement as to health or condition. The remaining 47 all possess such abnormalities as to render them the subjects of particular observation. These are classed as follows: 23 are scrofulous; 4 are epileptics; 2 are insane; 2 are mutes; 4 are idiots; 2 are blind; 2 are deformed; 5 are albinos; 1 has chorea, and 6 have defective vision.” While these statistics present a goodly number of children, there was an unusual number tuberculous (15 dying of consumption) or scrofulous (23), making 38 in this class. Nearly one-half inherited, probably, an imperfect organization.”

In the Transactions of the American Medical Association for 1858 is an extended paper by Dr. Bemiss on this subject, made up mostly of tables, reporting 833 such marriages, giving the time of marriage, the occupation, the temperament, the health, habits, etc., of the parents, with the number of children, their defects, peculiarities, etc., etc. The whole number of children was 3,942, of which 1,134 were defective; 145

deaf and dumb, 85 blind, 308 idiotic, 38 insane, 60 epileptic, 300 scrofulous, 98 deformed, and 883 died early. The proportion reported deaf and dumb, blind, idiotic, scrofulous, and deformed, is altogether larger than what would be found among the children of families in the community, taking them indiscriminately. The degree of relationship in these cases is thus given: 10 marriages between brother and sister, or parent and child; 12 between uncle and niece, or aunt and nephew; 61 between blood-relations, who were themselves the descendants of blood-relations; 27 between double-first cousins; 600 between first cousins; 120 between second cousins, and 13 between third cousins. In a careful examination of the several degrees of consanguinity here given, the hereditary effects are found to be the worst in the first and second degrees, in the third not so bad; but when we come to the fourth, fifth, and sixth, the difference is not so perceptible.

It is generally admitted that one of the causes of insanity arises from hereditary influence, and where there have been intermarriages between relations this cause becomes more potent. On this point, says Dr. Pritchard, "it is the general opinion that marriages between near of kin tend to produce enervation and debility, and that the mental faculties in offspring show it even more than the physical. The apparent results of frequent marriages within a confined circle have been noted in some royal families, both in ancient and modern times. The offspring of marriages between cousin-germans are very often observed to be weak and defective in both body and mind." Says Dr. Burrows: "Among the highest ranks hereditary insanity is more common than among the lower; for

the former most frequently contract marriage with their own rank, or even with their own family. Hence, whenever the system of clanship or family connection has been most strictly preserved, there it most prevails. Examples are numerous in ancient Scottish families, and insanity is more common in Scotland than in any other country. So likewise in all nations or sects whose civil or religious institutes enforce intermarriages.

In a more modern work on insanity, by Drs. Bucknill and Tuke, is the following statement: "There are several other important physical causes of insanity which ought to be referred to, but we cannot now consider them. The marriage of near relations is one of these." This quotation acknowledges the importance of this cause, but, like most other works and reports on insanity, passes it by without much notice or consideration.

In a report presented to the Legislature of Massachusetts, in 1848, by Dr. S. G. Howe, making inquiry as to the causes of blindness, idiocy, etc., in the State, the following facts were elicited: The parentage of 359 idiots was ascertained. Seventeen were children of parents known to be near blood-relations. Three were from parents who were cousins. One twentieth of all the idiots examined were offspring of blood-relations. The intermarriages of cousins do not constitute one-twentieth of all the marriages—probably not one five-hundredth; therefore, the union of blood-relations produces more than its share of idiots. All sorts of human defects follow such marriages in a similar ratio; namely, deafness, blindness, insanity, rheumatism, excitability, etc. Of the seventeen families where the parents were blood-relations, most of them

were intemperate or scrofulous. In some cases, both conditions prevailed. There were born among them 95 children, 44 of whom were idiots; 12 others were scrofulous or puny. In one family of eight, five were idiotic. Of the seventeen families, the account stands thus: 6 have one idiotic child each; 2 have 2; 3 have 3; 5 have 4; and one has 5—making, of the 95 children from seventeen families, 44 idiots; that is, nearly one-half were imbecile. Add those otherwise imperfect, the 12 scrofulous and puny, the one deaf, and the one dwarf, then we have 58, showing more than one-half in an abnormal condition. The parents who had the four idiots had also four other children who were deformed.

It may be said that these cases were gathered from an extreme point of view, and do not fairly represent the results of such unions from the better and more healthy families. This is the first impression from reading the above paragraph, but a much larger collection of statistics by the Rev. Charles Brooks, formerly of Medford, Mass., found in the *Medical World*, for 1855, gathered from all classes of society, do not show a much more favorable result. As these statistics cannot well be classified, we will give the substance of these cases, all of which were the fruits of the intermarriage of cousins: one had only "two children, and both died in infancy;" one lost "three children in infancy, and has four now living, no one of them bright;" one "had two sons, died young, one daughter has diseased eyes;" with another, "one boy is club-footed, and one boy died an idiot;" one "had two children, both dying young;" in another case, "their children are blear-eyed and feeble;" in another case, "there are two idiots, born of first cousins;" another

“had two children, both deaf and dumb;” another “had two children, both blind;” another “had three children, all hermaphrodites;” in another case, “one of their children was club-footed, another idiotic, another sick and irritable, another near-sighted, another blind, and the rest feeble;” another “had eight sons and two daughters; two sons and one daughter are unable to walk, the youngest child is deaf and dumb;” another “had seven daughters and one son, three of the daughters are deranged and the rest are nervous;” another “had five daughters, some of whom were far from brilliant, and two of them were cripples:”—another “had five daughters and three sons, one daughter an idiot, and two are feeble-minded;” another “had five children, the first child healthy and bright, but the other four are idiots.”

A respectable physician, says Rev. Mr. Brooks, writes me thus: “I have been a practising physician over fifty years, and I have not the least doubt that a large portion of the hereditary diseases which afflict certain families are derived from the intermarriage of close relations; for I have noticed that some families are predisposed to some particular diseases; and, where families intermarry with those of the same temperament, the strength of that predisposition is doubled.” Another gentleman reports within his knowledge, “a certain family of wealth and respectability have intermarried for many generations, until there cannot be found, in three of the families, a sound man or woman. One has sore eyes, another scrofula, a third is idiotic, a fourth blind, a fifth bandy-legged, a sixth with a head about as large as a turnip, with not one out of the whole number exempt from physical or mental defects.” Another physician writes thus: “On the

southeast extremity of the island there existed a small settlement of people, who, in consequence of a sharp quarrel with the main-land, kept separated from it. The consequence was, they married in and in, till they had nearly all become blood-relations, and by degrees they wasted in intellect and became extinct." Another physician writes, saying: "I have seen many inhabitants of the Bahama Islands the product of the many intermarriages thus of blood-relations, and they were generally homely and short-witted."

Dr. Devay, who has made investigations upon this subject, reports 121 cases of such intermarriages, with 99 having children, and 22 none. Here *sterility* seemed to be the most marked consequence. The same result has been found in a multitude of other cases, confirming the general fact that all such unions tend ultimately to run out in offspring. There is another peculiar conformation transmitted by such marriages, mentioned by Dr. Devay, that is polydactilism, or multiplicity of fingers. In these "121 marriages, there were 17 such cases;" and he states this singular fact: "In a certain secluded spot where the inhabitants had no communication with other populations, polydactilism became quite endemic, but that this strange anomaly disappeared some time after a new road had been cut through the place."

As to what may be the cause of this sterility, Dr. Bemiss makes the following remarks: "I shall not attempt to offer any hypothesis as to the active cause of this sterility in these cases; it is a subject in reference to which physiological reasoning has, up to the present time, furnished no satisfactory results. We cannot force our researches into the hidden penetralia of Nature, and there discover how her processes of reproduction are so interfered with as to render these inter-

marriages disastrous to their issue; nor by what means she avoids these unfortunuate results by rendering many such unions fruitless. We must leave the development of this subject to the future physiologist; if, indeed, the sea of human knowledge shall ever extend its limits in this direction." Connected with the great law of population, we think some light may be thrown upon this obscure and complicated question.

Dr. Spurzheim, who had long been a careful observer in Europe, made this remark in his last lecture delivered in Boston just before his death (1832): "Among the royal families of Europe, who had married in and in, there is now scarcely one of their descendants who can write a page of consecutive sound sense on any scientific, literary, or moral subject."

Dr. Charles Caldwell, of Kentucky (lately deceased), one of the most profound lecturers and writers on physiology that this or any other country ever produced, says: "One source of human deterioration is a long series of family marriages. Be the *cause* what it may, both history and observation testify to the *fact* that the issue of marriages between parties related by consanguinity degenerate. They become enfeebled in time, both mentally and corporally. This practice, which is fostered by the false pride of rank, has reduced almost to dwarfishness the nobility of several nations, especially of Portugal. It has likewise aided not a little, in not only deteriorating, but nearly extinguishing most of the royal families of Europe. This cause is strengthened and rendered more impressive by the fact that the ancestors of these families were the real *proceres* or *natural nobles* of the land; men peculiarly distinguished in their day as well for corporeal stature, strength, and comeliness, as for mental ex-

cellence. Yet, I repeat, that a long line of family intermarriages has contributed much to reduce below the average of mankind, the descendants of those ancient nobles, whose high qualities alone gave them station and influence. In this, the human race are analogous to our domestic animals, which are deteriorated by breeding constantly from the same stock."

Some statistics gathered in France lead to the conclusion that intermarriages of relatives have a peculiar tendency to result in mutism. The most striking evidence of this kind found in this country is in the following quotation from a late Report of the Kentucky Deaf and Dumb Asylum: "From ten to twelve per cent. of our deaf mutes are the children of cousins. Those marriages are a violation of the laws of Nature, as is evinced by the afflictions visited in almost every case on their offspring, in deafness, blindness, and idiocy. And the Commonwealth has a clear *right* to protect itself against these ill-starred matches, whose offspring it is frequently obliged to sustain for life. By prohibiting marriages of this kind, and giving proper attention to infants laboring under these diseases, the number of deaf mutes might be diminished one-half in a generation." It has been reported that, in some parts of the State of Kentucky, there has been an unusual number of such alliances in certain families for several generations, thus intensifying the hereditary effect, which may account, in part, for so large a percentage of mutes in this institution. We are not aware that any legislation has ever taken place upon this subject in Kentucky; but the Legislature of Ohio, in 1855, passed a law, instructing the assessors throughout the State, while they were ascertaining the number of the deaf and dumb, the blind, the insane and the idiotic,

to inquire also what affinity of blood, if any, existed between the parents of these persons previous to marriage.

In the city of Dublin, Dr. Mulligan made observations in relation to 154 families, the heads of which were related as cousins: there were in this number 100 children deaf and dumb. In 34 families there were two in each, in 14, three in each, in 3, four in each, in one family, six, and in another of thirteen children, seven were deaf and dumb.

Dr. Buxton, of Liverpool, states in regard to 170 families thus related, that in 109, each had one deaf and dumb child; in 38, two such children; in 17, three; in 3, four; in one, six; in one seven; and another eight—making in all 269 children, living monuments of a violated law of Nature. In the French Academy of Sciences, where this subject was lately discussed, Dr. Anedon reported, that in the small district of Menorthe, there were 54 such marriages—14 of which were barren, while in seven the issues died before reaching adult age; in 18 the children were attacked with various chronic diseases, and in only 15 were the offspring healthy.

Dr. Cadiot states, that out of 54 such marriages, 14 were barren, seven produced children which all died before arriving at adult age, and 18 produced scrofulous, rickety, consumptive, deaf and dumb, or idiotic children.

Many other facts and testimonials of high medical authority might be obtained, in addition to those already presented, to show that the intermarriage of relations, especially where it is continued through several generations, has a very deteriorating effect upon the offspring. There must have been evils of the most flagrant char-

acter, from such unions among the Israelites, the Amorites, the Canaanites, etc., that led Moses, the lawgiver of Israel, to institute these laws found in Leviticus. And history shows, that those specific directions in respect to the intermarriage of relations, had a foundation in the laws of the *physical system*—that they were no mere arbitrary commands—a dead letter in the decalogue, but were sustained by the principles of physiological science. Whatever effect the promulgation of these laws had at the time upon the Israelites, it is evident, that some knowledge of them extended to heathen nations, and commanded their respect. They had a powerful influence among some of the most enlightened people of antiquity; and wherever civilized nations have legislated at all upon marriage, these laws have been the basis.

Among the largest religious denominations in the world these laws have had a great influence, and, in some of them, they have been adopted as a canon in their creed and practice. The Mohammedans, notwithstanding polygamy is practised among them, are shocked at such intermarriages. The Koran has this remarkable passage: "Ye are forbidden to marry your mothers and your daughters, and your sisters and your aunts, both on the father's and on the mother's side; and your brother's daughters and your sister's daughters, and your foster sisters and your wives mothers, and your daughters-in-law who are under tuition, and the wives of your sons; and ye are also forbidden to take to wife two sisters." The Greek and Romish Churches embody the substance of these laws in a part of their canons, and have been somewhat rigid in carrying them into practice, especially the latter body. The leading branches of the Protes

tant Church—the Episcopal, the Presbyterian, the Baptist, etc.—have adopted these laws as a part of their creeds, and are endeavoring to enforce them practically.

But what of late years has interested the public most, particularly the scientific portion, is the *physiological* bearing of those laws. Have they their *counterpart in the laws of the human system*? Do the facts, the statistics, the modern discoveries in science, when they are all brought together and fairly presented, prove that these laws have any foundation at all in physiology? While the evidences have been accumulating stronger and stronger that such marriages were the causes of physical and mental deterioration, facts and arguments from various sources have been adduced by different individuals to show that there was another side to this whole question. It is alleged that the statistics upon this subject present only extreme cases, as these would naturally become more noticeable; that a variety of other causes might conspire to produce the same effects; and then many instances of such marriages can be cited where no unfavorable results whatever have followed. At a recent discussion of this subject, both before the French Academy of Sciences and the British Association for the Advancement of Science, strong ground was taken by different persons against the theory of such injurious effects of marriages of consanguinity. Among these was Dr. G. W. Child, of Oxford, whose paper the London *Lancet* for December, 1862, notices as follows: "His argument is mainly founded upon well-known facts in the breeding of domestic animals. In answer to the statistical objections founded on observation of the human race, he replies that in this matter such statistics are

‘peculiarly inapplicable.’ The argument from the successful results of in-and-in breeding, in the production of specific varieties of oxen and horses, appears to us by no means capable of that extended series of inferences which Dr. Child and others deduce from it. The careful selection of animals for such close breeding is followed by important results in altering the relative quantities of bone, muscle, and fat; in modifying shape, and varying the integumentary and other characters. Thus what are technically called the ‘finest’ breeds are procured by continuing from some strain of blood; but there is obviously a source of fallacy in comparing results thus obtained, and even the manner of attaining them, with the ordinary conditions under which marriages of consanguinity are contracted. If the finest offspring of certain relatives, free from defect, were paired; if their children were again wedded, and the strongest married, we should produce a breed in which would be evinced the best qualities of the race selected. We might get a race of six-foot men, or five-fingered men, or black-haired men. It would still remain to see whether they were less liable to disease, or longer lived. We believe that the opposite would be the result. Close breeding in animals will for several generations perpetuate fine points, but presently it leads to vital degeneracy. This is the matter to which we would direct the attention of observers.” It will be seen that the *Lancet* does not agree altogether with Dr. Child, and starts some interesting inquiries, which may be referred to in another place.

In the April number (1862) of the *British and Foreign Medico-Chirurgical Review*, is an article presenting more fully the views of Dr. Child on this subject. The following propositions are the results of his

investigation: 1. That the marriages of blood-relations have no tendency *per se* to produce degeneration of the race. 2. That they have a tendency to strengthen and develop in the offspring individual peculiarities of the parents, both mental and physical, whether morbid or otherwise, and therefore in practice they often do induce degeneration. 3. That there are some cases in which it would be actually safer (as far as the chance of healthy offspring is concerned) for a man to marry a blood-relation than a woman not so related, with whose history he was unacquainted. 4. That by means of a proper regard to known facts relating to hereditary transmission, a physician may predict, with great accuracy, the probable result as regards the health of the offspring of a marriage of blood-relations in any particular case, if he only be sufficiently acquainted with the hygienic history of the family.

In the *British Medical Journal* for March and April, 1861, may be found two articles "On the Intermarriage of Relations as a Cause of Degeneracy of Offspring:" the first by Dr. James Gardner, who believes that the cause must be looked for elsewhere than in blood-relationship; and the other by Dr. E. Crossman. His view is, that such marriages are not always attended with injurious results; that is, however, only the case where the uniting parties are not impressed with the same hereditary imperfections, in consequence of a previous cross having neutralized the tendency." As to particular points in these papers we cannot give them, having only seen the above reference in the *Medical Year Book* for 1861; but the indications clearly are, that both articles take ground against any very injurious results from such marriages. In the discussion

before the French Academy of Sciences, M. de Cassaux, with a view to refute the arguments against such marriages, quoted the example of the ancient kings, who since the time of Cambyses had been in the habit of marrying their sisters and even their daughters, and yet produced a very fine race. After a long and able discussion of both sides of the question, in order to obtain more satisfactory conclusions, the subject was referred by the Academy to a committee to investigate and make a report; but what the character of this report was, or whether any was ever made, we have not the means at command of knowing.

In the *Edinburgh Medical Journal* for January, 1862, is an article by Dr. Devay, who maintains that consanguinity, isolated from all circumstances of hereditary disease, contains, *ipso facto*, a principle of organic vitiation; and he adduces a large number of facts by which he attempts to prove this statement.

Dr. Mitchell, Commissioner of Lunacy for Scotland, has, in the same medical journal for 1862, an article on this subject, in which he arrives at the following results: 1. It is a law of nature that the offspring is injured by consanguinity in the parentage. 2. That this injury assumes various forms. 3. That in all classes and conditions of society its manifestations are not alike. 4. That the evil appears in some measure under control. 5. That isolated cases or groups of cases may present themselves where, in addition to consanguinity, all the other circumstances are so unfavorable, that a confident prediction of much evil would be expected, but where no such evil appears. 6. That where the children seem to escape, the injury may show itself in the grandchildren, so that the defect may be potential where it is not actual. 7. That as regards mental dis-

ease unions between blood-relations induce idiocy and imbecility more than they do other forms of insanity; that with reference to Scotland it may be estimated with safety that about nine or ten per cent. of existing idiocy is referable directly to consanguineous marriages. In forming this estimate the proper deductions were liberally made, so as to avoid an over-estimate. From Dr. Mitchell's position he must have had good opportunities of judging, and more than usual deference is therefore due to his conclusions.

Most of the references here made have been to medical journals, showing a great diversity of opinion among medical men, who should be the best judges in this matter. But the ablest paper in opposition to the statistics showing the injurious effects of such marriages is found in the *Westminster Review* for July, 1863, from which we make the following quotation, particularly on account of certain principles it contains. Says this writer, referring to these statistics: "Their authors are all agreed that close breeding, whether in man or beast, tends of necessity to produce degeneracy in some form or other, and this by some unexplained and apparently inexplicable law quite apart from, and independent of, those ordinary laws of inheritance by the experience of whose action we are made aware, that the diseases and peculiarities of the parent descend to his offspring, and this the more certainly if both the parents are similarly affected; and they present their several sets of statistics with the object of substantiating this view. But what is really meant by deterioration or degeneracy? Every variation from an original type, not to mention every disease, might, we suppose, be spoken of as degeneracy. No one ever doubted the potent influence of close breeding in developing and

perpetuating an accidental variety;—indeed, it is the only means by which this can be done; and similarly no one doubts, that given a degeneracy of any kind—a disease or a morbid tendency already existing—close breeding will tend to develop and perpetuate it in exact proportion to the degree in which it is close. These are merely instances of the operation of the ordinary and well-known laws of inheritance, simple deductions from the time-honored generalization expressed in the homely phrase, ‘like begets like;’ and they are intelligible in the same degree as are any other phenomena of nature which are referred to a general expression which is for the existing state of science an ultimate fact.

“The qualities of offspring at birth may be said to be the resultant of the reaction of the sum of those of the two parents upon one another, together with the modifications superinduced upon them by external circumstances. Now as the antecedents upon which the condition of any offspring depends are thus extremely complicated, it is clear that nothing less than a very large and very unequivocal experience can justify us in asserting that, in a particular case, this, that, or the other phenomenon in the offspring is the result of this, that, or the other antecedent in the parents. Such experience, in many instances, we do possess. Hereditary gout and hereditary insanity are as clearly traceable through many generations in the families in which they are inherent as is the succession of the family estate, and very often much more so. They do not pass upon every member of such families for many reasons, some of which we know, or are apt to think we know—such as emigration, change of external circumstances, habits of life, or even social position, and

still more the influence of successive intermarriages; but all this notwithstanding, the fact remains that such defects or peculiarities once acquired are, as a rule, transmitted to the offspring; and if the writers of whom we are speaking had contented themselves with showing that the marriages of blood-relations are more likely, *cæteris paribus*, to produce unhealthy offspring than others where an hereditary taint exists, they would have made an assertion which, though neither very novel nor very interesting, could not well be disputed. But what they have really asserted is something far different from this. It is substantially that if two persons marry, being related in blood, even at so distant a degree as that of second cousins, their offspring will, as a rule, be degenerate, or will themselves produce degenerate descendants. The questions, then, which he have to examine are as follows: 1. Is such a view as the above borne out by the facts which these writers have adduced in support of it? 2. Cannot these facts be equally well explained by the action of the ordinary laws of inheritance? 3. Are there not other facts left out of view by these writers which are not only left unexplained by their doctrine, but are quite irreconcilable with it?"

The questions here raised are just to the point, and nowhere, we believe, have they been satisfactorily answered. The object of most writers seems to have been to establish a theory by a long array of statistics without a proper classification of them, and not carrying out so fully and so extensively the comparison between these and other classes of facts, as to make it safe to deduce from them any general rule. For instance, take all the marriages related by blood in the first, second, third, and fourth degrees, in any given place or

State; examine carefully into the number and character of their children, including both mental and physical qualities, following it up for two or three generations; and at the same time take an equal number of marriages where there is no relationship, and pursue the same course as to offspring, and then institute a comparison between these facts classified, and some satisfactory results might be obtained.

A great amount of statistics on this subject has been gathered by different writers, and in various localities, which would certainly seem to indicate that some general law must lurk beneath them; yet no very definite principles or settled laws have hitherto been deduced from them. While new discoveries in science and improvements in society generally have been gradually clearing up many obscure and complicated questions, those connected with the effects of such intermarriages still remain in a great measure unsolved—resting in a kind of mystery. That these important facts, so extensively and rapidly accumulating—should thus stand out unexplained is an opprobrium to physiology in its present advanced state, and constitutes, as it were, an exception to the results of inquiries in most other departments of science after the true secrets or laws of Nature.

The great difficulty here has been, the want of some universal standard of appeal, or some general law of increase founded in Nature, whereby all these facts could be properly classified, and then correctly tested. We propose now to suggest such a standard or law, and apply it by way of test to this great class of facts, and see whether any new light can thus be obtained by which these doubtful and disputed points may be settled. If all the facts and theories on this

subject can be harmonized—can be shown to have a foundation in nature, and can be reconciled by application of the law about to be suggested, it will certainly afford very strong evidence of the existence of such a law.

Without going into details as respects all the minor points or the particular evidences in support of this law, we will here present its substance in as brief a manner as possible. It is *based upon a perfect development of all the organs in the human body, so that there shall be a perfect harmony in the performance of their respective functions.* In order to explain and illustrate the theory, we will divide the organs of the body into four distinct compartments called *temperaments*. The *first* division, including the brain, the spinal column, and nerves of motion and sensation, is 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*; and *fourth*, the muscles, bones, ligaments, constituting the motive power of the system, called the *Muscular Temperament*.

The word temperament in one sense denotes the result of a mixture or tempering of all the qualities both mental and physical of any individual, but as here used it is intended to apply more particularly to the different compartments of the body as connected with health and the laws of 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* function.

The human body, in its most normal or 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 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 human system. 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.

This standard of physiology, as represented by a complete development and harmony of these temperaments, is the same perfect organization of man as when he came from the hands of his Maker, and was pronounced not only "very good," but was commanded to "be fruitful and multiply and replenish the earth." But by man's course of disobedience and rebellion, he lost not only the moral likeness and image of his Creator, but that harmony and perfection in his physical organism which he has never yet been able to regain. This same union of the temperaments constitutes the standard for the greatest amount of health, of longevity, and strength, that can be found in the human system.

This same organization 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. Accordingly, whenever models of the best specimens of the race have been adduced, they have always exhibited this harmonious development of the human body. The Apollo Belvidere—that immortal work of the Greek chisel—and the Venus de Medicis represent a well-balanced organization, all parts of the system in beautiful symmetry and proportion, the vital organs large, the limbs, the bones, the muscles, the blood-vessels, the nerves distinct and clearly defined, nothing too strong, nothing too weak, nothing in excess, nothing deficient.

We have dwelt particularly upon the importance of this perfect development and harmony of all the organs of the body, for it is not only the key to a sound constitution, permanent health, and long life, but to the *great law of human increase*. It is true, there may be a variety of conditions or powerful factors that enter largely into the operations and modify essentially the results of this law; but here, we maintain, in this perfect organization of the human system, has this great law of population its germ, its seat and foundation. And the nearer this standard is approximated by parties entering the marriage state, provided the age, the health, the union, the adaptation be favorable, and the laws of Nature are not violated, there will uniformly be found not only the greatest number of children, but they will be at the same time endowed with the highest amount of vitality, vigor, strength, and health.

The general principles of physiology, and especially

the laws known to govern or control hereditary descent, furnish strong evidence that this is the true basis of the *law of population*; and this conclusion is supported and confirmed by numerous facts in the history of various races and nations,—by analogies found to prevail in the animal and vegetable kingdoms, and by the observation and study of living examples. But it is not our object at the present time to state in detail, or discuss those proofs, but simply to state the principles of this law, so far as they will aid in an explanation of certain questions as connected with the intermarriage of relations. And notwithstanding such a perfect model of human organization is set before us as a standard or basis of the law of population, its reality at the present day 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 in a perfectly healthy and well-balanced state. They are only approximations to this standard.

The human constitution, as represented by these temperaments, has been constantly changing in every age, and with all classes of people. The causes of these variations are to be sought partly within the body and partly in external agencies and influences, and are observed to vary materially, and sometimes radically, with the same individual between the cradle and the grave. Slight changes in the organization do not affect much the physical or mental character of an individual or a people; but when a certain class of organs, or, in other words, one of the temperaments becomes very predominant, it has a most marked and sometimes serious effect. And if only now and then, a single individual in the community was found with

an organization thus imperfectly developed or badly diseased, its hereditary effects would not be very perceptible to the public; but when large numbers, or a majority are found so organized, not more than one or two generations can possibly pass before such effects become generally observed and well known. If this standard of organization is strictly the normal state of man, such as he had when created, and would now have in his best estate, all diseases, all weaknesses and imperfections of the body are abnormal, are deviations from this standard, of which deviations there is an endless variety. It is particularly in this imperfect, abnormal diseased state of the system, that the laws of hereditary descent come into more active operation, and have the most powerful influence. In order to understand correctly their agencies in such a state of things, it becomes necessary to examine carefully what are some of the general principles or laws of hereditary descent.

But, unfortunately, this topic has never been so thoroughly investigated as many others in human physiology far less important; yet long and able treatises have been written upon it with reference to the improvement of domestic animals. In most works on physiology and medicine, where the subject is referred to at all, some general principles of hereditary descent are admitted, and that certain diseases such as scrofula, consumption, etc., are transmitted. The proverb, that "like begets like," has a more extended application than has generally been conceived. It does not refer merely to the size and form of the body, the features of the countenance, the complexion of the skin and the strength of the system, but extends to the minutest parts of all the organs, whether external or internal.

Sir Henry Holland, perhaps the highest medical authority that can be cited, writes on these points as follows: "Examples of abnormal conformation of particular organs, transmitted by descent, are alike numerous and familiar. If peculiarities of external form and feature tend speedily to become hereditary, affecting, as we see, on every side, not families alone, but, by intermixture and descent, whole races of mankind, we have no doubt that deviations of internal structure (whether they be of deficiency or excess, or of any other nature) are similarly transmitted; and with them propensities to, or conditions of, morbid action in the parts thus organized. Those deviations from the primitive or common type of the species which occur chiefly in the bony structure, integuments, or muscular fabric, producing varieties in the outward form and feature, in the texture or color of the skin, hair, etc., may exist to a great extent, without affecting, in any important way, the health or natural functions of the individual. But, on the other hand, much smaller deviations from this type in the internal organs of circulation, respiration, digestion, absorption, or secretion, or in the brain and nervous system, may produce morbid actions painful in progress, and fatal in result; each class of deviations alike transmissible to progeny under the same general law. This distinction is obviously one of summary importance in the history of disease, and capable of very wide application. It throws light upon the connection of various morbid states, by giving the relation to a common physical principle in their cause: and this principle, one which is associated with other of the more general laws of life. There is no reason to doubt that hereditary peculiarities of structure are as frequent and varied, per-

haps as extensive, in the internal organs as in the external parts of the body."

We have here, as it seems to us, a very fair and impartial statement of the laws of hereditary descent (at least so far as they have hitherto been traced), and hence it appears that these laws are very minute and extensive, reaching not only to every organ in the human system, as to its normal structure, but also its actual morbid condition.

Inasmuch as these organs are mostly internal, concealed in a measure from our inspection, and many of the changes in them are so slight that even the microscope can hardly detect them, there is a large range for the operation of these hereditary laws, of which we are entirely ignorant, or can obtain but very little knowledge. Besides, there are many secondary causes growing out of external influences, or from the peculiar condition of one or both the parents, especially the mother, that in many cases may essentially change or modify the action of these laws. On this account, it is very difficult to establish any general rules in this matter. And in the examination of cases touching these hereditary laws, in collecting, classifying, and analyzing facts, it should constantly be borne in mind, that there are primary and secondary causes operating, of which we are, in a great measure, ignorant, and for which due allowance should always be made. While we shall find many facts connected with the intermarriage of relations which cannot easily be accounted for, or satisfactorily explained, yet there will be still more that can be understood, and which, properly analyzed, will show, that there are great laws or principles that lie at the foundation of all these changes; or, at least,

will throw some light upon questions which have long been obscure, or in dispute in physiology.

We have, then, before us three central points or leading factors that sustain most intimate and important relations to each other. These are: 1. The facts connected with the intermarriages of consanguinity; 2. The general principles established by Nature for human increase; and 3. The laws of hereditary descent. But before attempting to examine these relations in detail, it may be well to notice some facts in the early history of the world, that led to the promulgation of the Levitical law upon this subject.

There is good reason to believe that, in the early history of the race, the intermarriage of kindred was a thing of frequent occurrence. From the time when the sons and daughters of Adam are supposed to have intermarried, to the establishment of the laws of Moses, all the prohibitions then laid down upon the subject of marriage had been violated more or less in every age and nation. Those ancient patriarchs and distinguished leaders among the people of God—Abram, Isaac, and Jacob—all married wives connected with them by consanguinity, and no intimation is made in the Scriptures of the violation of any law in their case, or that their progeny suffered any deterioration by such alliances. But when the chosen tribes of Israel were about to enter the land of Canaan, and be exposed to new and manifold temptations, it pleased the Almighty to promulgate some new laws for their protection and future prosperity. With the exception of the Israelites, the world at that time had become terribly corrupt and wicked, particularly the inhabitants of Canaan. They had become not only the worst kind of idolaters, but every vice that could degrade human

nature or pollute society was rampant among them. In the black catalogue of these, says Prof. Bush, "the abominations of lust stand preëminent; and whether in the form of adultery, fornication, incest, sodomy, or bestiality, they had now arisen to a pitch of enormity which the forbearance of Heaven could tolerate no longer, and of which a shuddering dread was to be begotten in the minds of the people of the covenant. And, in order that no possible plea of ignorance or uncertainty might be left in their minds as to those connections which were lawful and which were forbidden, the Most High proceeds to lay down a number of specific prohibitions on this subject, so framed as not only to include the extra-nuptial pollutions which had prevailed among the heathen, but also all those incestuous unions which were inconsistent with the purity and sanctity of the marriage relation."

It was in view of such vices, crimes, and exposures, that we have promulgated those divine commands and prohibitions in the Levitical law as to the relations between the sexes, accompanied with their awful threatened penalties. But are we to suppose the revealed law the only command? Had not those commands or prohibitions their counterpart in human nature? in the great laws of increase—in the physical laws of life and health? Would a divine lawgiver institute such specific commands to subjects, if, as Creator, he did not know there had been created in these very subjects an adaptation for these commands, and that practically there must be harmony between the natural and revealed law?

It will be readily admitted that such vices and crimes as are here referred to cannot be practised long without generating the most loathsome and fatal dis-

eases. If only now and then an individual was guilty of such sins, the consequences would not seem so serious; but when large numbers, or a whole people, become thus vitiated and corrupt, the effects are terrible. We find abundant evidence of this in the history and extinction of the Canaanites, as well as of other people given up to such practices. Now, one of the preliminary steps or first stages that led to such a demoralization in ancient times, was undoubtedly the intermarriage of relations. And the Almighty, knowing full well what was the nature of man—what was necessary for the best protection, development, and perpetuation of the race—saw fit to issue those rigid instructions found in Leviticus. It was not merely to guard his people then from temptation, or from intermarrying among the heathen, or simply to promote good morals among themselves, but to afford guides for the formation of such alliances in all coming time. And the spirit, the intent of those instructions as a whole, are more important than what their exact letter or literal interpretation, in the opinion of some, would seem to imply. Neither should one of the minor or doubtful prohibitions be unduly magnified, without properly considering its practical application or particular adaptation. Thus, in the case of a man's marrying his wife's sister, some religious denominations have considered it a criminal offence, and punished the offending party with the severest discipline of the church.

It has been alleged that this law of Moses was necessary in order to protect the members of the human family from temptation, and to prevent here the initiatory stages of licentious habits. Says a distinguished divine: "If the male and female members of a family,

dwelling together in the most familiar manner, were to regard each other in the light of future wedlock, improprieties would be the consequence; and the only way to guard against the evil is to make them sacred to each other. The very thought of crime must be shut out from their bosoms, by making marriage itself between them an utter abomination. This, then, is the reason of the law of incest. It is designed to protect the purity of families; and it thus becomes the great preserver of general chastity. It is an expedient of guarding against a species of criminality which would destroy society in its foundations. Without this expedient, the institution of marriage could not exist; families would become domestic brothels; and the world would hasten to antediluvian corruption." This is strong language, and magnifies an incidental advantage into one of fundamental importance. A thorough knowledge of physiology would have wonderfully aided this divine in a more correct view of the law of incest.

In order to a better understanding of these facts as connected with physical organization, let us recur to the laws of hereditary descent and human increase; and, without repeating what has already been said upon this subject, let us now endeavor to make a more detailed and practical application of these laws. But, lest the correctness of the sentiments here expressed should be called in question, or should not be clothed with sufficient authority, we will first present the views of Dr. James Copeland, one of the highest medical authorities in the English language. Says Dr. Copeland: "It is generally observed, that the constitution, the temperament and diathesis of the offspring closely resemble the parent; and that, whatever disposition

to disorder, whether of function or of structure, the latter may have possessed, it is liable to evince itself in the former. The predisposition of the offspring generally shows itself more strongly at certain ages than at others, according to the kind of morbid constitution or predisposition it may inherit, the causes to which it is exposed, and the nature of the malady which results. Thus the disposition to *hydrocephalus*, *convulsions*, *idiocy*, *ricketts*, *scrofula*, *cataract*, *etc.*, is most apparent soon after birth, and at early epochs of life; to *epilepsy*, *hæmorrhage*, and *pulmonary consumption*, about the age of puberty, or previously, or soon after; to *gout*, *asthma*, or *angina pectoris*, in adult or mature age; to *insanity*, *apoplexy*, and *paralysis*, during the mature or the advanced stages of life; and to various disorders at more irregular periods. But these diseases do not necessarily supervene, although one or both parents have been affected by them; and several usually appear in alternate generations. Some occur more uniformly than others. When the predisposition to them is derived from only one parent, they very frequently never make their appearance unless as the effect of very active exciting agents. But, even when the predisposition is derived from both parents, and when it may be considered as being thereby heightened, exciting causes are generally required to develop the disorder.

“The *sanguine* temperament disposes to plethora, inflammations, hæmorrhages, pneumonia, and to inflammatory fevers. The *bilious* temperament most readily experiences biliary derangements, bilious fevers, affections of the stomach and bowels, hypochondriasis, mental disorder, chronic cutaneous eruptions, and various organic derangements of the abdominal viscera.

Persons of the *lymphatic* temperament are predisposed to catarrhal attacks, slow fevers, chronic discharges, dropsies, scrofulous and scorbutic affections, diseases of the joints and glands, and to tuberculous and other chronic diseases. In persons thus constituted, the powers of life are languid, the preservative influence and vital resistance feeble, and reaction upon noxious causes or agents seldom developed or energetic. The *nervous* temperament disposes chiefly to convulsive diseases, especially to hysteria in the female sex; to mania and insanity, or other derangements of the mental manifestations, as to hypochondriasis, melancholia, etc., to nervous and typhoid fevers, etc. This temperament often modifies the progress of various acute diseases, and imposes upon them a nervous character. When the temperaments are *mixed*, an accordant predisposition may often be remarked; as, in the sanguineo-bilious, a disposition to bilious inflammatory fevers, to hepatitis, to inflammations of the alimentary canal, of the brain and of the serous surfaces, etc., is often manifested."

In considering the predisposition or tendencies to particular diseases of the respective temperaments as stated above, it should be observed, that this occurs only to the extent here mentioned when one of these temperaments greatly predominates over the other. But, when they are mixed or more evenly blended, the tendencies to particular diseases are more varied. Now, by applying the principle in hereditary descent that 'like begets like,' and that where two parties unite in marriage of similar temperaments, with the same organs defective in structure or morbid in function, the evil in their offspring becomes intensified, if not doubled. It is well known that there are generally in families cer-

tain resemblances of features, form of the body, complexion of the skin, color of the hair, and frequently of physical and mental qualities throughout. Now, if marriage alliances take place with parties belonging to these family connections, and if these same individuals happen to have similar temperaments, with the same morbid tendencies to disease, what is the effect? Will it not transmit to the offspring imperfection of organization, weaknesses of the body, tendencies to disease, mental peculiarities, and all these increased, intensified? Let such alliances be continued through two or three generations, and what will be the effect but to make all these evils worse, if not gradually to destroy the power of reproduction? Here comes in the great law of increase or population, which is the source—the fountain-head—whence all the laws of hereditary descent have their origin, their springs, their authority. It is that perfect, harmonious development of the system with which man was created, and which must always be our standard of imitation and appeal. It consists in the perfect development of all the organs in the body, with the harmonious, healthy performance of all their respective functions. And the nearer this standard is approximated in married life, with all other conditions favorable, the greater will be the number of children possessed of a full amount of vitality, vigor, strength, and health. While, on the other hand, the further we deviate from this standard, the more defective the organization of the offspring, and the less and less numerous, so that, when carried to the extremest points, the race is in danger of becoming extinct. For instance, let the physical organization become more and more defective, with a constantly-increasing amount of weakness, ill-health, and positive disease, there is not only

marked degeneracy, but an inevitable tendency to the extinction of such a people. Or let the animal nature alone gain complete ascendancy—its wants absorb all the attention of the mind as well as the labor of the hand, and the whole body sinks into a gross, sensual, and beastly state, and we shall find that Infinite Wisdom has set limits to the race in this direction. Or let the nervous temperament become altogether too predominant—let it absorb all the nutrition of the body, let the mind ascend to the highest possible state of refinement, culture, and spirituality, to the neglect of the body as such, we shall find the offspring physically growing feeble, weaker, fewer in number, and finally incapable of propagating the race.

Occasionally we find in the writings of medical men of high authority sentiments favorable to the views here advocated, though penned a long time since. Such is the following quotation from Dr. Pritchard: "Nature seems to have designed that the conditions and tendencies of human organisms should be kept very nearly in a state of equilibrium. This equipoise necessary to the healthy condition of man, upon whatever inexplicable cause it may depend, may be readily disarranged by giving undue predominance to any particular constitutional phase. The slighter deviations from a normal mean would constitute individual or family peculiarities; while more marked perversions become morbid manifestations, and infirmity results. As in the moral man none are exempt from the taint of sin, so in the physical man each individual of our race has his obliquity toward disease—generally, perhaps uniformly, toward some particular disease. It is, then, reasonable to expect that, when two individuals marry who possess the same morbid proclivity, their offspring

will exhibit that identical divergence, but in a much more marked degree. Thus undoubtedly have originated many family peculiarities, perverted tastes, and morbid diatheses." The first two sentences in this quotation seem to express precisely the same condition or state of physiology upon which the law of human increase, as here advocated, is based. Had Dr. Pritchard lived at the present day, the cause why this equilibrium or equipoise is so necessary to the healthy condition of man would not probably have appeared to him so "inexplicable."

If a careful and thorough investigation should be made into the laws of population and hereditary descent, it will show, we believe, aside from a few isolated passages in the New Testament and the mandates of Moses, that the *marriage institution has a broad, sure, and unquestioned foundation in the great laws of Nature itself*. It can be shown, by these *very laws alone*, that for the healthy increase and perpetuation of the race, such an institution as that of marriage is absolutely necessary. And as a part and parcel of the conditions and results of this institution, comes in here this question of the intermarriage of relations. It is unnecessary to attempt to account for the ill effects of these marriages by advocating that there is some "*organic vitiation*" in such cases, or that there is something mysterious in the "*blood of kindred*." All the effects of such unions, however singular and conflicting, can be explained upon altogether more rational and satisfactory grounds. Admitting the fact that there is a greater resemblance, likeness, similarity, in family connections, extending sometimes to almost every organ in the body, than what would be found in the same number of families not at all related, and that, when these con-

nections form matrimonial alliances, it must have, according to the laws of hereditary descent, a marked and decided effect upon their offspring—if, in addition to this resemblance or likeness, these same parties should both have internal parts of the body imperfectly developed, morbid or diseased, the effect must be still greater and more injurious. The nearer the relation, and the more imperfect and diseased the bodies of both are, the effects become still more obvious as well as injurious.

Again, if this resemblance or likeness in both persons forming the union is based upon a better-balanced and healthier organization, or if even one of the parties should be thus constituted, the favorable effects will be seen at once in the offspring. And the more perfect and healthier the organization, the better and more naturally all the organs in the system perform their functions, with other conditions favorable, the stronger, healthier, and more numerous will be the progeny.

It should constantly be borne in mind that so manifold, so various, and complicated are the constituents entering into these conditions—many of them being entirely beyond our observation and knowledge—what may sometimes appear to us exceptions, still are not inconsistent with the principles of physical organization. No general rule of evil tendencies or bad effects from the intermarriages of consanguinity can well be established upon that fact alone; but, upon certain conditions that are usually found connected with such alliances, certain effects can be predicted as most likely to follow. And inasmuch as these conditions, in the very nature of things, are more likely to be found existing in these cases, and are well known to prove more unfavorable than favorable to offspring; and

moreover, as the evil tendencies rapidly accumulate with each successive generation, it was upon this ground that the Levitical law was established, and on this account such marriages should not take place.

There may be instances of such unions where the organization is so perfect on both sides, where the laws of life and health, of hygiene and good morals are so well observed, that no bad effects whatever follow, and where the children and their descendants have the best health, reach the greatest longevity, and obtain distinguished positions and character in the world.

There are two phrases in common use, which, when applied to the laws of hereditary descent, are very expressive and full of meaning, viz., he belongs to "good stock," and "it runs in the blood." The primary signification of the word *stock* is stem, trunk; their lineage, ancestry, race, etc. As the term is here used, it has a kind of collective or compound sense, meaning the highest and best qualities, physical and mental, combined in some one individual descended from a noble line of ancestry. Such examples may be found even in the line of consanguineous marriages, though more common where there is no relationship. By the word "*blood*" is meant, not that vital fluid common to all and essential to life, but some marked traits of character or peculiarities in one family, lineage or ancestry; but, as more generally used, it designates in the individual some act or qualities that are mean, low-lived, vicious, sensual, characteristic, by association and inheritance, of the family or ancestry, etc.

There are two other phrases frequently used in reference to the improvement of domestic animals, and which are not devoid of meaning when applied to the

human race. These expressions are, "*in-and-in breeding*," and "*the system of crossing*;" and they derive all their meaning and force from the laws of increase and hereditary descent. For a definite and complete understanding of these phrases, the reader is referred to works treating of the improvement of domestic animals, where such principles can be far more readily and effectively applied. What has been found out here by a long series of experiments, could have been ascertained, in a great measure and far easier, by a knowledge of the laws here discussed.

Darwin, who has investigated this subject more thoroughly than any other modern writer, makes the following significant remarks. Says he: "It is apparently a universal law of Nature that organic beings require an occasional cross with another individual." Again he says: "Nature tells us in the most emphatic manner that she abhors perpetual self-fertilization." And in another place he remarks, that "marriages between relations are likewise in some way injurious; that some unknown great good is derived from the union of individuals which have been kept distinct for several generations." But as to the philosophy or reasons, just "*in what way*" the evil following such marriages occurs, or can be avoided, or how and by what principles in different unions that "*unknown good*" can be obtained, Darwin does not tell us. The great beauty and value of all such discussions depend very much upon *how far* they are made clear and intelligible to the common mind, and to *what extent* it is shown that they can be reduced practically to every-day life. Such a result is certainly very desirable in discussing a science like phys-

iology, which professes to expound the laws that govern every human being.

The inquiry naturally arises, then, What are the relations which these laws practically sustain to the published facts upon this subject? It was stated that the nearer the kindred or blood in such marriages, the worse were the effects. In the report by Dr. Bemiss, there were ten cases of marriages between brother and sister or parent and child, and twelve between uncle and aunt or aunt and nephew; the former class had 31 children, 29 of which were defective, and 19 idiotic; the latter class had 53 children, of which 40 were defective, and 3 idiotic. Says Dr. Bemiss: "The increase and diminution of calamities to offspring correspond so closely with the increase and decrease of relationship, as to fix the conviction firmly in the mind that multiplication by the same blood by in-and-in marrying does incontestably lead in the aggregate to the physical and mental depravation of the offspring. And if we admit this statement, which the facts here abundantly prove—that defects of offspring multiply precisely as we multiply the same blood—and to this admission join the fact that all those contingent circumstances of parental health, habits, proclivities of constitution, sexual incongruity, etc., are as liable to affect one class as another, we cannot rationally assign these effects to any other influence than consanguinity."

There are two classes of facts bearing on this point that should here be noticed. It was stated, when speaking of the law of population, that in proportion as the standard of physical organization is let down, in balance and quality, the less in the aggregate will be the number of offspring, and the greater the ten

dency to unproductiveness. Accordingly, in the cases reported of such marriages, it is found that the nearer the kindred and the poorer the organization, the fewer the children and the greater the number of *sterile* cases. As there may be other causes of sterility, it may be difficult to establish any fixed rule, but we think the principle here stated will, as a general thing, hold good.

There are two other correspondences found between the law and the facts. It was said, in describing the law of hereditary descent, that the more the parents were affected with scrofulous and other diseases, the more detrimental were the effects upon the offspring. An abundance of facts could be adduced in support of this position. And, on the other hand, the opposite doctrine is no less true, that where the organization of parents is good, the children generally will not suffer in their physical or mental qualities.

This doctrine of hereditary tendencies is clearly pointed out in the Bible, both by precept and example, in numerous instances. When Jehovah issued His commands in the decalogue, not only to the Israelites, but to His creatures in all coming time, saying, "*I the Lord thy God am a jealous God, visiting the iniquity of the fathers upon the children unto the third and fourth generations,*" it was intended that there should be *some meaning in this visitation*. Whatever divine influences or agencies may be brought into operation in other respects, it is positively certain that here, by the laws of hereditary descent, the iniquities of the fathers *are visited upon the children* unto the second, third and fourth generations. The term "iniquity" has a broad signification, including the consequences or penalties of all violated law, whether that law be ex-

pressed in the revealed command of God, or stamped by the same Almighty power upon the human constitution.

As there are only two classes of marriages in question that really, at the present day, create very much interest—that is, the intermarrying of cousins, and the marrying of a wife's sister—it may be expected that the merits and demerits of these should be particularly noticed. In respect to the former class, the objections and prejudices which once existed against such unions seem to be dying out, and such marriages are becoming more and more common. It is a grave question still with some divines, whether it was the intention or not of the Levitical law to extend to cases of this kind. The relationship by affinity, making the wife's sister the same as a sister by blood, does not seem to commend itself generally to the common-sense of mankind.

While, from the fact that she has, by chance, been a member of the same family or in frequent social intercourse with it, in the opinion of some it would present an argument against the formation of such alliances; on the other hand this very experience and acquaintance—especially where there are small children—would constitute a very strong argument in its favor. If the question was to be settled by any principle, it should be on the ground of organization, and adaptation of the parties interested. The effects of such a union are far more important and permanent in this direction than anywhere else; and it was mainly to reach and regulate these, that the Levitical law was first established. The strong tendencies of the popular mind at the present day—and we think physiological

laws sustain this sentiment—are in favor of such unions.

But in respect to the intermarriage of cousins, it has never been asserted that these were specifically interdicted by the law of Moses, though very strong prejudices have always existed in the community against the practice. We cannot, perhaps, express the opinions that some persons entertain upon this subject better than by quoting the following sentences from one of our popular periodicals. Says this writer: "Whether cousins should intermarry, or be considered as within the forbidden degrees, it is indisputable that many cousins have intermarried; and it is equally beyond dispute that, in many instances, the offspring of such marriages are, to all appearance, as well calculated to make good figures in life as any young persons. Every man must have among his acquaintances families like those spoken of, and can testify that the marriages of cousins do not always lead to the birth of idiots. Hence it is not just to speak of such marriages as if they must lead to the increase of imbecility; and the sweeping language that is sometimes employed on the subject, besides being unsupported by facts, causes no little misery to men and women who do not deserve to have their lives made wretched by extravagant assertions that would place them in the black list for life. Cousins who have married, and to whom it never occurred that in marrying they violated any moral or physical law, are startled when they read in respectable publications that their children's only inheritance is to be 'all the ills that flesh is heir to.' True, their children may be possessed of sound minds in sound bodies, who shall say that they may not soon become idiots? The doom is upon them, though the sins of the parents

may not be punished through their offspring at once. They are, as it were, in the condition of a person who has been bitten by a dog, and whose mind is constantly haunted by the dread of hydrophobia! Life becomes almost unendurable under such circumstances, and all because of some wild assertions based upon a few facts, while nothing is allowed for other causes that may have operated to produce these facts. Circumstances sometimes promote marriages between cousins, and they have been common in many ages, and it is probable common they will continue to be; and, though we do not advocate them, we do not think it is quite fair to speak of such unions as if they were necessarily great evils, and productive of nothing but misery. Many such marriages have been very happy, and the children from them have not been inferior to children born of other marriages in every thing that is calculated to promote the welfare of individuals or families."

While in this plea for cousins there is much truth and good sense, the admission that some mysterious agency for evil, or maleficent influence like "*mad-dog poison*," hangs over such unions, is altogether a mistake. It is nothing more nor less than the relation between human responsibility and the operation of organic laws. The question resolves itself simply into this: what is the organization of the two parties—what the temperament, health, morbid tendencies to disease, etc., of each, and their adaptation in marriage in respect to effects upon offspring? As individual cases cannot be examined, and the parties at the time are not in the mood to judge correctly, what do general principles indicate in this matter as far as they have been ascertained? The most extensive collection of facts upon this point that has ever been gathered is found in the

paper of Dr. Bemiss already referred to. These statistics were carefully collected, mostly by medical men, from almost every State in the Union, and from no extreme point of view; they may be considered therefore as a fair and correct representation of the case as it is found in all grades or classes of society. This report gives 580 instances of intermarriage of cousins, resulting in 2,778 children, of which 793 were defective; 117 deaf and dumb; 63 blind; 231 idiotic; 24 insane; 44 epileptic; 189 scrofulous; 53 deformed; and 637 died early.

The proportion of offspring here reported as defective, diseased, constitutionally impaired in body or mind, is certainly much larger than what would be found in the same number of children taken from the same number of families indiscriminately in the community. This same report embraces a large number of such marriages where there were few children with defective, diseased, or impaired organization; and also some families among them having numerous offspring, very healthy and promising in character. These were instances where the parents had not only good sound constitutions, but temperaments and a physical organization different, so that the parties were well adapted or matched to each other, rendering the union prolific and the progeny comparatively sound.

But inasmuch as there is in cousins, according to the best statistics gathered, so much of a family resemblance or likeness, and so much imperfection of structure or morbidness of function or eccentricity of character is found to accompany it, that the hereditary effects are decidedly prejudicial to offspring, we are warranted in laying it down as a general rule, *that cousins should not intermarry*. This rule is the more imperative, when

it is considered that the evil effects accumulate with wonderful power in every successive generation, and that there is no absolute necessity for the formation of such marriages. *As free moral agents and accountable beings, then, we have no right to inflict upon the innocent such an untold amount of misery and suffering.*

At the same time, there may occasionally be found instances of such intermarrying, where the parties have better organizations and are more healthy than the average run of people, with children equally as numerous and healthy. In such cases there can be, as far as we can discover, no valid objection whatever to cousins intermarrying. This representation of the case is in accordance with the great body of statistics collected, is sustained by the laws of human increase and hereditary descent as here set forth, and will commend itself, we doubt not, to the common-sense and intelligence of the most enlightened portions of the community. It places the responsibility, whether for good or evil, upon the free-agency, knowledge, and moral sense of individuals most interested, just where God designed it should be.

A few reflections will close this paper, already extended beyond the original plan. One of the principal objects that led to its preparation was to afford some proof in favor of the great law of population. How far we have succeeded in this direction the reader can judge. If there is any truth in the proverb that "*like begets like*"—that there are great fixed facts in the very nature of physical organization, which by unchanging laws descend from parent to child—the same evidence that proves this affords strong proof that when all hereditary laws are summed up and carried back to their original source—their starting-point, they all

tend toward establishing the truth of this great law of population. This is only one mode of proof; there are a multitude of other modes which cannot here be discussed.

In advocating this doctrine of population, it is admitted that other powerful factors or agents, such as climate, food, government, and other external influences, enter largely into its operations. They serve in two ways to change the action of this law: 1st, by gradually producing changes in the body itself; and 2dly, by modifying the developments of this law. But they do not constitute the law itself. This must have its seat, its fountain-head, its original source, in the perfection of human organization. When God created man a *free agent*, and commanded him "to be fruitful and multiply," He also established a *law of increase*, which man, in order to obey, must understand, must know what are its conditions, requirements, penalties, etc., etc.

The question may be asked, Why has not this law, so important, been discovered before? In reply it may be briefly said, 1st, that nearly all writers on this subject have been looking to other sources than the *body itself*, for a foundation of this law; and 2dly, the attention of the medical profession—as far as turned in this direction—has been devoted almost exclusively to the reproductive organs—dwelling not so much upon their structure or general functions as upon certain normal or morbid conditions; whereas both the anatomy and physiology of these organs are very much dependent upon, as well as affected by, the development, health, and other conditions of all parts of the body.

It seems to have been the design of Providence, that the great truths of Nature should be slowly

brought to light at different periods, and sometimes in a very incidental manner, as well as by humble agencies. The laws of gravitation were the same, and similar phenomena had been witnessed by multitudes, long before Newton, from the falling of an apple, caught the idea that there was some peculiar or occult power indicated by that apparent accident. The heart had been repeatedly examined by anatomists—its structure and functions had been carefully studied by large numbers of physicians before Harvey discovered the circulation of the blood. So, the morbid structure and functions of the lungs had been made a special study by many medical men, long before Laennec discovered, by auscultation and percussion, that the physical outward signs could give such a wonderful insight into the pathology of this organ. All great truths, when once discovered, are very simple, and the surprise to all is, that they were not generally known before.

If the theory here advanced is the true law of human increase or population, it is not a mere theory or an abstract general principle, but it is capable of almost endless applications, for instance, in affording us a better knowledge of the nature of man—his duties and responsibilities in relation to himself, to the family, to society, and to his Maker; in furnishing a guide, or great principle by which certain practices and fashions in society; certain modes of education, systems of morals, legislation, etc., can be tested; in showing the importance and sacredness of the laws of life and health, that they are a part of the will and government of God in this world, as much as His revealed commands.

From the application of this law (which is the key of the whole thing), in the present article, to explain certain facts in physiology respecting marriage, some

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idea may be obtained of its importance and advantages. In the discussion reference has been made to the harmony between the facts in science and the principles of Revelation. Thus, when certain discoveries were made in astronomy, they were at first thought to conflict with the Bible: the same was true in geology; but, by more thorough researches, a most surprising harmony was found to exist between the teachings of Revelation and the laws of Nature. May not the same result prove true in physiology? As far as most practical purposes are concerned, we have as yet only reached the threshold—the vestibule of this temple of *the science of man*—with which, in point of actual value and utility, the sublime truths of astronomy and the more wonderful revelations of geology sink into comparative insignificance.