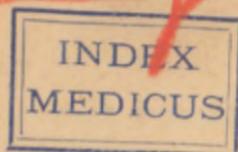


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THE NATURAL HYGIENE OF CHILD-BEARING  
LIFE.<sup>1</sup>

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THE hygiene of pregnancy relates to the preservation of the health of woman during those periods of her life-history intervening between conception and the commencement of labor. With conception begins the existence of a new being, and during the succeeding period of utero-gestation the product of impregnation passes through all the stages of development and growth from a fructified ovule to the complete organization of a being equipped for an independent life. Not only is a new being created, perfected, and endowed with the attributes of human life, but important and complex changes take place in the generative organs as well as in the entire organism of the mother.

These processes of transformation, development, and growth are physiological; nevertheless, they are terminated by more or less violence and injury to both mother and child. The unavoidable mortality, however, is small. In no other condition of human life are endurance and the recuperative power and resources so wonderfully and intricately exhibited. The death-rate of lying-in women is, however, too high to be accepted as the inevitable result of purely physiological and developmental processes. That a large part of this mortality may be attributable to diseases and injuries which find their causes in the perils of labor and the subsequent management

<sup>1</sup> The data for this essay are not original, but have been mainly derived from the investigations of J. Matthews Duncan and Edward John Tilt. Other authors have been incidentally consulted.

of the puerperal period, can not be doubted, but it must be admitted that, perhaps, a larger quota is due to bad or neglected hygiene of the woman during the preceding preparation for the travail which is the common lot of pregnant women.

Assuming that a percentage of the avoidable mortality of the lying-in, many of the cases of puerperal disease, and much of the morbidity of the child-bearing and post-cessation life, are to be attributed to the neglect and violation of the fundamental principles upon which the hygiene of the child-bearing life should be based, I have ventured to introduce this subject that I might elicit the opinions of those Fellows whose experience and judgment are entitled to the highest consideration.<sup>1</sup>

The hygiene of the child-bearing life includes that of pregnancy and the puerperium. These are so directly connected in their practical aspects and daily application that it is not easy to limit the discussion to one without invading the domain of the other. They are equally interesting and important. The scope of such a consideration is, however, far too wide for the present occasion.

The hygiene of pregnancy has a much broader significance than a classification and detailed description of the disorders of pregnancy and the methods of prevention. In this wider range of investigation the cycle of physiological and developmental processes during the reproductive age demands equal, if not paramount, consideration to the pathological disturbances of utero-gestation. The concurrent succession of natural phenomena and results which with such uniformity subdivide the course of normal child-bearing life into epochs which distinctly mark the evolution, climax, and decadence of productivity, point with unerring certainty to the operation of general laws of the female economy. These laws must constitute safer guides of sanitation than the artificial methods suggested by personal experience and observation. The hygiene of pregnancy must be considered as a

<sup>1</sup> The discussion of this subject is limited to civilized life.

natural science, based upon a knowledge of cause and effect and the laws of nature, if the highest success attainable is to be reached. To the consideration of these fundamental principles I limit this discussion.

The processes of waste and repair and of growth and development, which are either called into existence or incited to new activities by impregnation, can not be defined by any sharp and uniform line of limitation at which the physiological ceases and the pathological begins. There is no border-line of health. From its beginning to its end pregnancy is characterized by continuous and progressive functional and organic activity, and along its entire course the signals of danger are displayed in quick succession at short intervals. The entire organism is involved, and each and every organ is invaded by the stimulus of additional assimilation or elimination. The great work of organization and construction must be carried on, completed, and equipped. The organism, charged with such momentous formative energy, must also consentaneously provide for the consumption and disposal of the *débris* and the waste and effete products. All this must be accomplished in a given time, and then the whole is abruptly terminated in suffering, attended with more or less violence, and followed immediately by retrogressive and other developmental changes.

Puberty, matrimony, pregnancy, parturition, lactation, the post-pregnant restoration of ovarian activity, and the menopause constitute epochs in the life-history of child-bearing women. Upon the course, progress, and succession of these events depend health, life, and longevity. Each has its physiological characteristics, and each may be associated with a variety of pathological conditions.

It would thus seem that the life of woman during the reproductive period was thickly strewed with opportunities for disaster, yet Nature has so constructed her complex and beautiful handiwork, and so wisely compensated for the delicacy and intricacy of organization in the perfection and symmetry of its component parts, that the ordinary disturbances

of force and formative processes find, most frequently, speedy readjustment in the natural equipoise of normal functional and organic activity.

The *vis medicatrix nature* is the most constant and un-failing resource of the healing art. If, however, a single part of the complex apparatus loses its gearing, or a single organ of the animal economy suffers from exhaustion which usually follows over-exertion, or any one of the special or general functions oscillates beyond the arc of safety, compensatory adjustment may pass the undefined limit of health where disease finds its insidious beginning. The physiological becomes the prototype of the pathological. Such variations and deflections of functional and formative energy may be unavoidable, and will often be perceptible only to the skilled expert, whose timely interference may obviate disorders of the gravest magnitude; but the initial causes of the diseases of pregnancy are less often traceable to physiological disturbances than to human agencies, which are oftentimes exclusively within the control of the patient and her medical attendant. The natural causes are few, the acquired numerous and multifarious.

The paucity of the natural and the multiplicity of the acquired causes is not surprising. Nature's methods of adaptation and conservation of means to the fulfillment of her purposes are usually adequate to the exigencies of physical force and nutritive energy. With the progress in the study of etiology the class of diseases ascribed to spontaneous development and to natural causes lessens; and it is not improbable that in the further progress of investigation many of the cases of disease of pregnancy now inexplicable, except upon the hypothesis of initial disturbance of functional and formative action, will be traced to primary agencies of external and extraneous origin. The ailments of life are often ancestral heirlooms, but rarely, if ever, heirs-apparent of nature.

Nature has definitely subdivided the allotted life-time of human beings into the periods of infancy and childhood,

adolescence, maturity, and old age. The period of most rapid growth and development passes gradually into that of special functional activity which prepares the organism for the higher capabilities of intellectual and organic life. Then follow the wear and waste of retrogression, and gradual decay and death. The child-bearing period of woman's life begins at puberty and ends with the expiration of the years of maturity. Then succeed in continuous progression those changes which mark the decline and decay of organic life.

The limitation of her reproductive life within the cycle of perfected organization and capacities is a wondrous and sublime illustration of Nature's hygiene of life. Not only is the period allotted to the propagation of her species protected from the unavoidable perturbations and disorders incident to the structural and functional alterations of commencing and continuous physiological change and decay, which medical science can only stay or palliate, but the extinction of the faculty of reproductiveness abruptly arrests the mortality of the child-bearing period, which increases in a rapid ratio after the climax of fertility is passed until the epoch of its cessation is reached. Notwithstanding the progressively increasing ratio of morbidity and mortality of late pregnancies, the actual mortality of the later years of maturity and child-bearing is comparatively small, because of the corresponding loss of the powers of fecundity and fertility, and consequent consecutive gradation of the risks of recurring pregnancies. With the lessening energies and recuperative resources of advancing age nature offers the protection of functional and organic involution.

Nature's code of hygiene of pregnancy is not, however, limited to the later years of the child-bearing period.

The fertility of the female sex increases from the commencement of the child-bearing period until the climax is reached, and then declines to its extinction. The age of greatest safety of pregnancy coincides with the age of greatest fecundity. Beyond and under, the mortality increases with the increase and diminution of age, but the rate is

higher with the increase beyond than with the diminution below the age of maximum safety or least mortality.<sup>1</sup>

The manifest conclusion from these general laws governing the child-bearing period is that the age of nubility should correspond with the ages of maximum fecundity, fertility, and least mortality. The greater danger of too early as well as of too late pregnancies has been demonstrated. Youthfulness (Duncan) influences the mortality less than elderliness. First pregnancies are, however, the most dangerous, and the ratio of mortality increases with the diminution of age.

Puberty and nubility are not simultaneous. The period of adolescence is interposed between the establishment of ovarian activity and the development of highest fecundity with least danger and smallest mortality. This intervening period, as the age of puberty and other physiological epochs which complete the cycle of her reproductive life, can not be fixed by the sharp lines of uniform ages, but varies with the life-history of individuals, and more especially and constantly with race characteristics and climatic conditions; nevertheless, the successive stages of physiological development and maturity have clearly established these general, though not universal, laws for the guidance of human intelligence in the exercise of her highest and noblest capacity to "multiply and replenish the earth." The periods of greatest fecundity and fertility mark the epochs of highest physiological and formative energy, most abundant recuperative resources, and maximum powers of endurance and resistance. Too early pregnancies load the economy with the aggressive and spoliative duties of formation and sustenance of a new being before her framework has acquired the requisite stability of organization to completely fulfill the obligations of maternity, and before the organs, powers, and intelligence have attained their complete development.

The greater survival of children born during the same

<sup>1</sup> These ages may vary with races and climates, but the general statement is equally applicable to all races and peoples. There are many individual exceptions.

period, as does the law of survival of first pregnancies, points to the years of greatest fecundity as the fitting age of nubility. Certainly, then, if the command to "multiply and replenish the earth" is to be fulfilled in accordance with the inexorable edict of natural laws and ovarian life, it can only be accomplished by obedience to the decree which prescribes the fifth quinquenniad, subject to geographical and race variations and exceptional individualities, as the period during which the laws of fecundity, nubility, and survival find their natural complement in relatively highest gradation of perfection.

The persistence of fertility, survival of child-bearing, longevity of post-cessation life, healthfulness and survival of offspring, contributions to adult population, diminished frequency of abortion, and lessened frequency of sterility—all indicate the years of greatest fecundity as the proper period for matrimony.

Kleinwaechter<sup>1</sup> professes to have shown that a long interval (six to sixteen years) between first and second pregnancies increases the morbidity and mortality of the lying-in, and also the mortality of children. In such cases uterine inertia is more marked. Laceration of the perineum, post-partum hemorrhage, adhesions of the placenta, renal disease, and edema of the extremities are more frequent.

First pregnancies are the most dangerous, and the danger is increased by too early and too late primiparity. Primiparity, after the climax of fecundity is passed, is rarely succeeded by a second pregnancy after a prolonged interval, because of the decadence of the faculty of fertility and the advent of the turn of life. The ratio of relative sterility and abortions is greater among those married during the years immediately succeeding puberty than among those married during the years of maximum fecundity and fertility. The probability of a prolonged interval between the first and second pregnancy, with its attendant dangers, would, therefore, seem to increase the nearer primiparity approaches to puberty.

<sup>1</sup> *Archives de toxicologie*, May, 1885.

The period of lactation is an important epoch in child-bearing life. Maternal lactation is the natural method of supplying food to the infant. The secretion of milk is the ultimate product of those changes in the mammary glands which begin with pregnancy and are completed during the earlier days of the puerperium. The function is not suddenly established, nor does it subside suddenly. The periodical evolution of the breasts corresponds with the progress of pregnancy. The gradual subsidence and cessation of the function should correspond with the gradual involution of the gland structure and its return to the state of quiescence and diminished size. The developmental and retrogressive changes are gradual, and follow a definite course. With the recurrence of pregnancy the process of evolution and functional activity is reawakened. No other organs of the body, except the uterus and ovaries, are subject to similar periodical changes. To the functional irregularities and derangements caused by artificial interference with the processes of evolution and involution must be traced many of the tumor diseases to which the mammary glands are so liable.

These laws find corroboration in circumstances which, if not of such general and uniform application, are sufficiently significant to be considered in the study of the code of natural hygiene of the child-bearing life of woman. Delayed puberty and retarded adolescence are usually the precursors of prolongation of ovarian life beyond the ordinary period of its cessation, and denote healthy activity of all the functions of vegetative life, a vigorous maturity with corresponding power of endurance, and longevity. The post-cessation health is more positively and quickly restored, and the date of climacteric decay is deferred. The demisé and not the morbid cessation of ovarian life is a more general and effective conservator of health, as shown by woman's greater longevity, lesser liability to sudden death, and greater immunity from diseases of old age than man's.

The extinction of the procreative function in woman protects the remaining vital forces from the decay of coming

age, rehabilitates her changed life, and restores to her the blessings, pleasures, and pastimes of life, from which she had been divorced by an era of physiological sacrifices. The final and tumultuous readjustment of her frame and constitution to the smooth tranquillity of the post-cessation years and declining age is but the counterpart and climax of those successive readjustments of constitutional vigor and ovarian activity which secure the greatest possible health and strength for each subsequent pregnancy and parturition.

The death of ovarian life takes place at an earlier age than the extinction of the procreative faculty of man. Each marks the epoch of sexual involution. In the male it is the precursor of graver and more rapidly progressive degeneration; in the female it may be, and usually is, the harbinger of reinvigorated health and vigor and longevity. In the male, life flows in one continuous stream from puberty to death; in the child-bearing woman it oscillates between physiological repose and change and epochal dangers until the menopause is safely passed. If, however, the seeds of disease (Tilt) have been sown during the child-bearing period, the change of life may increase their activity.

Do these conclusions, deduced from statistics and confirmed by professional experience and observation, rise to the dignity and force of natural laws, alike applicable to large communities, peoples, races, and countries, or are they mere episodes in the lives of individuals? As laws of the animal economy they must constitute the fundamental basis of any code of hygiene that will attain the highest aim in the prevention of the diseases of pregnancy, reduce the mortality of child-bearing to its minimum, and promote the longevity of post-cessation life.

How to enforce these laws to obtain the best results is a problem not easily solved. Hygiene has achieved marvelous progress in recent years. Constant and persistent discussion of its methods and beneficent effects have accomplished much good, but its advance is due mainly to the appalling

mortalities of the epidemics that have decimated communities, cities, and regions of country. These scourges have destroyed very many lives, but the lessons taught have more than compensated in the lives saved. Such mortalities have not, perhaps, in any single year, exceeded the aggregate of the mortality of child-bearing in the same time; but a mortality too small to attract public attention, and distributed over the civilized world, does not impress masses of people with the same terrors and dangers of disease as do epidemics that slay hundreds and thousands in circumscribed localities. The death, here and there, of a young wife in first pregnancy or labor brings grief to the family circle and sorrow to friends; but widowerhood usually finds solace in the speedy rehabilitation of matrimonial life. There is always another willing to succeed the departed. Congratulation replaces sorrow, and the emblems of mourning are relegated to the account of loss and profit.

The sorrows, miseries, and afflictions which this special department of hygiene seeks to mitigate, lessen, and obviate, are too sparsely distributed to appeal directly either to the cupidity or humanity of mankind; nevertheless, it will acquire momentum and make progress by continued agitation. The fallacies will be sifted out, and truth and reason will assert their sway. Custom, based upon the laws of life and nature, will supersede the practices of the well-meaning but misguided.

State interference might prove a dangerous expedient—more potent for evil than for good. Yet, if the age of majority of women could be made to correspond with the first year of the period of maximum fecundity, popular prejudice and love of custom, which have popularized the age of majority as the minimum age of nubility, would, sooner or later, conform fashion to the law. This influence, together with the legal disabilities of minority, would continue a formidable hindrance to precocious matrimony. If, however, the age of majority should be too far advanced,<sup>1</sup> the marriage of

<sup>1</sup> As in France. So, also, under the Roman law.

many would be indefinitely postponed, and with many more delayed beyond the fitting age of nubility.

Spinster matrimony finds its protection in the decadence of fecundity and fertility; in the increasing incapacity of the uterus to carry an ovum, with longer disuse; and in the greater disparity in the ages of the bride and bridegroom. Beyond these immunities the consignment to suffering and death must follow the law pertaining to the later years of reproductive life. The dodging time will interpose its hindrances and worry life through the tumult of an uncertain series of erratic disorders until the menopause is established. There is no fixed minimum age of spinster life, but, singularly enough, the concurrent opinion of the sex in this country has indicated thirty as the age when the flower begins to fade and the "seer and yellow leaf" marks the wane of nuptial opportunities. And even more remarkable are the circumstances that this age corresponds with the age of beginning relative sterility and relative increasing mortality of child-bearing. To this may be added the further fact that child-bearing women who have escaped the perils of first pregnancy (Duncan) and parturition and reached the age of thirty have acquired an expectancy of life equal to that of the unmarried, and greater than that of the unmarried after the thirtieth year of age.

The instinctive dread of spinster life and the intuitive designation of thirty as the initial year are illustrations of that innate perception of the female mind which leaps to a conclusion without ratiocination. But too often the conviction exhausts itself in a paradox at variance with common sense, especially when relating to the physical well-being of the sex, and to the esthetic phenomena of civilized society. Precocious matrimony is the decisive preventive of celibacy and tardy marriage, and is the postulate of that spontaneous, habitual, and emotional apprehension of the coming time of ebbing virginity, which retires the victim to relative exclusion from the pleasures of society, diminishes the expectancy of life, and consigns her to the charity and ecclesiastical

duties of parochial life. But it does not follow that too early marriage is the only and best escape from too late matrimony or celibacy. It may be the least of three evils, but does not secure the best results to the sex and promote longevity. Such marriages are less fertile, and the mortality of children is greater than of marriage at the proper nubile age.

Precocious nubility is the congener of precocious puberty. The latter is popularized as the sign and the former as the complement of maturity, whereas, in fact, one is the symptom and the other supplies proof of immaturity. Conjointly they represent the premature evolution of a function in an organism unfitted for its fruition. It is a law of the animal kingdom that premature reproduction arrests the growth of the body and diminishes functional energy; so, likewise, in the vegetable kingdom, premature fruition injures development and impairs future productiveness. It is not, however, necessary to appeal to analogies found among the lower order of animals and in vegetable life for proof of the detrimental effects of the too early use of the faculty of productivity. Nor does its premature establishment necessarily imply that precocious matrimony will determine its maturity. Puberty must precede and marriage should succeed nubility. The order of succession is fixed, but wedlock should conform to the law which prescribes the period of greatest fecundity with least mortality and greatest survival of children as the fitting time.

Precocious matrimony is, then, the sequel of precocious puberty, and, if it entails harm, the root of the evil must find its radical in too early puberty. In this country, and in the higher walks of life, the ratio of precocious puberty is manifestly on the increase. Whether equally so among the middle and lower classes I do not know. If there is a like increasing ratio among the same class in other countries, the cause or causes might be more easily ascertained. But in some countries the hindrance of an advanced age of majority and the requirement of parental assent restrain pre-

precocious matrimony; consequently the evil tendencies and effects of such increasing ratio would be less prevalently diffused. I apprehend that if the ratio of increase is not common to all classes it soon will be, because the sedulous cultivation of the faculty of imitation is rapidly obliterating the class distinctions.

The influence of tropical climate in lessening and of arctic temperature in retarding the age of puberty are factors which can not be controverted, but they are conditions which probably control organic development as well as functional evolution. In any event, they are agencies too far removed from secular restraint to be considered here.

In this as in other departments of medical science the discovery of abuses is far more easy than the ascertainment of cause and the application of correctives. Whenever medicine confronts popular prejudice, established habit, and the instinctive truisms of woman, it encounters obstacles not easily surmounted. The esthetic obligations of civilized society and the masterly antagonisms of human depravity bid defiance to medical science and the laws of nature. If, then, I suggest that precocious puberty is one of a series of grievous evils growing out of the organization of society, you will be prepared for a confession of failure to point out a method of reform. In brief, it may be stated that the immature appearance and establishment of the menstrual function is but one of the phenomena of precocity.

The complex phenomena of precocity refer to erethism of those nerve-centers which preside over the brain and reproductive faculties. The predominance acquired by these vital activities subordinates those of the ganglionic system, and impairs nutrition. Over-use and disuse of faculty and organ, if not equally potent, are commensurate causes of disturbance. Exaltation of the cerebral and generative capacities involve corresponding deterioration of formative energy. This sovereignty of special attributes is more often traceable to external and extraneous stimuli than to heredity and defect of organization. Heredity is undoubtedly a prevalent

factor. As runs the legend: One generation accumulates a fortune, the second divides, and the third squanders it; so one generation inaugurates the artificial methods of premature culture, the second intensifies the refinement of intellectual possibilities and emotional display, and the third explodes in caricature extravagances. The young, highly organized, and vascular brain-structure is stimulated by over and too constant work. Repose and rest are sacrificed to baneful amusement and harmful entertainment. Early to bed and early to rise is the law of natural life, now becoming obsolete. One or more of the special senses are strained to the utmost attainment of mature development. The emotional excesses are displayed as esthetic accomplishments. The passions and impulses are cultivated by indulgences. The whims and caprices are gratified either by acquiescence or evasive suggestion of reprehensible expedients. The body, stilted on elevated heels, is geared from foot to crown into unnatural posture and ungainly carriage. Vital capacity is limited to the expansion of closely fitting corsets, and the figure is made to conform to the style of fashionable dressing. All these and many other practices are diligently taught to crown the adoration of parents.

I intimated in the beginning that I should present debatable issues. There has not been, perhaps, one statement made which will not elicit diverse criticism. I do not aspire to martyrdom in the advocacy of the hygiene of child-bearing women; but if I can sufficiently interest the Fellows in a subject which so much concerns the mother and ruler of man, and the better half of mankind, I shall have accomplished my object.



