break the unceasing monotony. With the advent of warm weather all for whom a possible justification was found in their condition were urged to avail themselves of the facilities presented for the enjoyment of the benefits of country life and mountain air. Appropriate accommodations at an altitude no higher than Denver were offered at an attractive mountain resort, special arrangements annually being made by me for those whose physical conditions would scarcely warrant sojourn at increased elevations. Thus fifty-two spent the summer at Welch's Resort, near Lyons, upon the banks of one of the finest trout streams in the state. A trained nurse was in constant attendance, more as insurance against accident than because of actual need. Special nurses were employed as necessity demanded.

For the benefit of those for whom a residence in a still higher altitude during the summer months seemed plainly indicated, a careful provision was made, as is my custom each year, at Estes Park, at an altitude of seventy-five hundred feet. All available and properly located cottages were engaged in advance, and finally proportioned among the patients according to the various groupings of the improvised families. Competent persons were employed to assume the responsibilities of housekeeping, and not infrequently trained nurses were retained either by individuals or by several jointly. Nineteen participated in the joys of housekeeping at the Park. For others numbering fifty, comfortable hotel accommodations were retained early in the season.

It is not inappropriate to add that from among the very large number of cases sent to Estes Park during the past six or seven years there has resulted but one hemorrhage and one death, and that in the same individual, resulting from an obvious palpable indiscretion. All patients at these two mountain resorts were seen by me at regular intervals (once a week), with such precautionary advice and admonition as appeared called for by the exigencies of the situation in each instance.

Brief allusion may be made to the conditions which justify sending patients home. This has been advised definitely for all who could be embraced fairly under the category of hopeless cases, unless considered inexpedient for good and sufficient reasons. During the past few years permission to return home for a temporary period at a suitable time of year has been accorded frequently to special cases responding favorably to climatic change, yet not strictly reaching the stage of arrest. A permanent return for those who have secured ultimately an apparent arrest of the tuberculous process is offered upon the basis of the degree of risk and responsibility the patient personally is willing to assume. The invalid is made to realize that in spite of his great improvement a certain element of danger must attend his return. It rarely has been my practice to indorse more than a temporary return save after a six months residence in Colorado following the physical and

constitutional evidences of total arrest. It has been my custom to make the consumptive understand, if possible, that once the tubercular infection has become clearly active or extensive, no matter how complete the subsequent arrest, his life necessarily becomes changed in many of its essentials in any climate, and that a continued residence in a favorable region imposes finally less of sacrifice and suffering.

THE GYNECOLOGICAL ASPECT OF MENTAL OVERSTRAIN AT PUBERTY, AND ITS INFLUENCE ON DEVELOPMENT.*

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THE period of puberty is the most critical time in the whole life of the female, because this time of most rapid development of both mind and body may be the starting point for the physical perfection of womanhood or the first beginning of a physical wreck. "Many a young life is battered or forever crippled in the breakers of puberty. If it cross these unharmed and is not dashed to pieces on the rocks of childbirth, it may still ground on the ever recurring shallows of menstruation, and lastly upon the final bar of the menopause, ere protection is found in the unruffled waters of the harbors beyond the reach of sexual storms."

The girl while passing through this period is peculiarly susceptible to mental, moral and physical influences, and during this period may receive the first blow. Ere the girl is fully aware of the change that has taken place, or is warned by her mother of its significance, she has heedlessly exposed herself to injury, and the results may sap her energies through life. It is most important, therefore, that her environment and tendencies should be studied with discreet carefulness.

The average pubescent girl is at school, and under the modern high pressure system of education is straining every nerve to keep up with her duties. Her physical development is slighted, and what vitality she has is all used up in mental effort. It is forgotten that cultivation of the mind and the cramming of the intellect do not comprise the whole of education; and that unless the body is developed along with the mind that more harm than good may be done. The demand for rapid education is the curse of the age. The crowding of children through long years of work often sacrifices health, permanently, for promotion. The work of maturity is demanded by educators, where maturity does not exist.

From the ninth to the sixteenth year is the period of most rapid growth in height and weight, and sexual development begins. From now until the pubertal change is fully established there may be manifestations of physical, emotional and intellectual turmoil characterized by the various neuroses as: hysteria, chorea, epilepsy, somnambulism, neurasthenia, romancing,

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cardiopathies, gastric, hepatic, renal, vesical, genital, metabolic, pulmonary trouble, convulsions, nervous laughs, nervous coughs, anemias, deformities, etc. The neuroses may be of a purely psychic type as: hallucinations, ecstasy, delusions, night terrors, idiocy, imbecility, the various types of insanity, stupor, love, jealousy, anger, hate, theft, rape, arson, homicide, suicide, alcoholism, and the various forms of mental disturbance other than insanity. There may be periodic headache, capricious appetite and muscular twitchings.

During this period the body is developing so fast that brain weight is actually lost by the lessening of the usual blood supply to the brain, which is diverted to nourish rapidly growing organs. The child brain under these circumstances is easily fatigued. What is acquired by a brain that is tired is soon lost, memory becomes impaired, vital force is required faster than it is generated; the work of to-day is done on to-morrow's credit, and the system of the child becomes wholly at a loss to protect itself against disease and accident. "I am convinced," says Pearce, "that from the neurologist's standpoint such children in the cities would do better to have only one session in school, than be compelled to rush to a midday meal, then back again within an hour to recitation, which necessarily requires the freest circulation in the brain to the detriment of digestion, which, of course, is ill carried on under such abnormal circumstances. Over half the general aches and pains, including headaches, are due to disturbance of metabolism from various causes."

The physiologic processes of puberty make greater demands of the girl than they do of the boy, and yet in addition to performing the same work in school as her more rugged brother, her parents are not only anxious that she shall excel in the regular studies, but that she shall also acquire accomplishments, such as music and painting, at an early age. Is it any wonder then that under this system of high pressure and overstimulation the overworked girl, robbed of rest, sleep and exercise, fails to develop physically into perfect womanhood? These years of endless antagonism between brain growth and body growth, years perhaps the most important in her whole life, are very needful for the perfect development of the reproductive organs and the establishment of their functions. On them may hang the whole future health and happiness of the woman and her usefulness as a member of society.

Let me illustrate for a moment what I mean: To-day girls are absolutely started to school before they can dress themselves. They sit in miserably ventilated rooms from six to eight hours with perhaps a few minutes' recess, when they hurriedly eat a cold lunch. At twelve years of age they are studying English, mathematics, and a host of other things. The girl reaches home in the afternoon tired and worn out from efforts that have been too much for her. She must go at once to her music and prac-

tice for two hours, or until she becomes so nervous that the notes fail to strike harmony. Supper is announced. Afterward she must begin her preparation for the next day's work, often being forced to study as late as ten or eleven o'clock. Then, of course, her tired brain and body are too exhausted for sleep. This is not an over-drawn picture, and every physician knows that it is not right to subject a girl verging on menstruation, or one in whom nature is making a desperate effort to maintain this function, to such an exhausting strain as this.

Visit the female colleges and you will be impressed with the large numbers of pale-faced girls whose roseate blushes of youth have been chased away by nervous exhaustion born of the shadows of midnight toil; bright eyes have been dulled by brain fag, and sweet temper transformed into irritability, crossness and hysteria, while the womanhood of the land is deteriorating physically and filling our hospitals with invalids, neurasthenics and sexual incompetents. After this weary, worn-out, rest-needing girl is released from school, she launches into the dissipations of society. She may be highly cultured and shine in society, but her future husband will discover too late that he has married a large outfit of headaches, backaches, and spineaches instead of a woman fitted to take up the duties of life.

Accompanying this prolonged strain of school life there is usually a combination of other causes also involved in the school breakdown. Home life is often badly regulated, and the parents or guardians must in many cases share a part of the blame on account of carelessness and unwise indulgences at home. Scant attention is given to the functions of the bowels and bladder. Gross carelessness is the rule. There is an utter disregard in many cases for the menstrual week, when by their own feeling and sensations women ought to know that they are unfit for exhausting brain work or fatiguing body work. The religious systems of Moses and Zoroaster made provision for this period, and even savage Indian women show more wisdom at this period than the product of modern civilization. The tepce of the menstruating Indian is built so low that she is compelled to lie down. Again, the stomachs of girls are often spoiled by an unwholesome diet of sweetmeats, pickles and highly seasoned food, and the bad habit of nibbling between meals. Too long confinement in impure air, inadequate supplies of light, little exercise and poor sanitation complete the evils that other factors have contributed to.

Schmidt-Mounard found in the schools of Leipzig that headaches, sleeplessness and nervous ailments were frequent, especially among girls. Those schools, however, in which attention was given to gymnastics and other forms of exercise had a much smaller proportion of children suffering from these complaints than those in which it was not.

The adolescent period has been termed "the golden period of life when the faculties of both soul and body reach their acme." It is, writes

Alice Smith, "the transitional period when youth begins to look out upon society with the dawning insight of maturity. It is the time when childish illusions are dispelled, and the time when broad, educational influences are most needed." The work should not be such as will overtax either the mental or the physical powers. Girls especially should be exempt from gymnastic work and other heavy physical effort during the menstrual period lest they bring about pelvic disease; and severe mental strains lest they fail to properly develop and functionate. "The gymnastic ideal should be to develop a splendid physique, a sound condition of the body, which means the uniform development of the organism in all its organs and parts." There should be a perfect adjustment of structure to function, a conserving of energy against the strain of future emergencies, and a creation of perfect metabolism, *i. e.*, the balancing of nutrition and waste.

While the inflexibility of school requirements acts as one of the factors in maintaining and perhaps in creating this unhealthy physical state among girls in many instances, yet we are well aware that there are also other and potent causes for it, such as the unsuitable dress of the average female, social excesses, indiscretions in diet, neglect of sleep and the bodily needs which contribute to the result in a large degree. Could the teacher understand the nature and the signs of the extra physical strain to which so large a per cent of the female pupils are periodically subjected, and were she free to temper the demands of the curriculum to meet the condition, much and serious injury might be avoided. Certainly one of the strongest factors in bringing about a reduction of nerve energy and laying the foundation of a future psycho-neurosis is menstrual disorder and an unhealthy condition of the generative organs. The bane of the existence of the schoolgirl worn out from her overwrought and overstimulated life is dysmenorrhea. Chapman thinks that fully 75% who have reached the age of puberty would give a history of scant and painful menstruation. Engelman in a tabulated list of 5,000 cases among schoolgirls found 66% suffering from menstrual troubles. As a result of observations made on 2,000 girls in the schools of New England Jane Kelley Sabine found 75% with menstrual troubles, and 90% with leucorrhea and ovarian neuralgias; 60% had to give up work for one or two days in each month. The fact of the pain being increased with hours of intensity of study, with worry and emotion, and being diminished or ceasing entirely without treatment of any kind during vacation time is a fitting commentary on the underlying causes. These are nervous menstrual pains oftentimes due to a spasmodic action of the uterine muscular tissue. They are augmented by physical exertion and mental strain. The mental or nervous element is a more prominent factor than we usually take it to be, and shows the importance of general management of the girl and the elimination of all injurious conditions of worry and debility, mental or

physical, for psychical conditions and nerve influences undoubtedly have much to do with this function.

"Statistics have clearly shown the tremendous susceptibility and the almost feverish activity of the system in the pre-pubertal period, the period of developing womanhood; susceptibility indicated by heightened morbidity and nerve excitement; by increase of stuttering and hysteria; heightened physiological activity by increased growth; and resistance to disease by lowered mortality, — all gradually wane as the vital energies are claimed more and more by the reproductive function, and reach their lowest ebb with the advent of puberty, again rising after menstruation is established, and it is at this period of still unstable equilibrium that we find the schoolgirl."

Similar conditions less intense recur before each menstrual period. Investigation has proven the increased pulse rate, blood tension and temperature, increased nerve excitation and muscular power, with a depression consequent upon the appearance of the flow; the system slowly regaining its normal tension with slight rise shortly after cessation, and these scientific facts are verified and emphasized by the status of young womanhood of to-day, which reflects the present conditions of life and indicates the susceptibility of the physiological function in early years of puberty and during menstruation.

This mental depression is evident in the listlessness, indifference and inability to master tasks easy at other times noted by every observant educator as indicating the presence of the flow and the period of its first advent. It is at this period that overstrain most readily occurs. The powers of attention and concentration are most quickly exhausted and the brightest mind, the most sensitive, high-strung, nervous organization is, as a rule, most responsive and most liable to impairment during the first menstrual periods. The nervous system in the healthy and vigorous frequently shows an excitability which may not pass beyond psychical limits; but in the less strong, often, symptoms which are pathological are developed and the connection between the menstrual epoch and the mental status becomes pronounced. The younger the girl, the nearer the period of puberty, the more impressionable is her nervous system and her susceptibilities for influences good or evil, so that the greatest amount of harm is wrought in the first year of her functional life.

Dr. W. Gill Wylie pointedly expresses the truth when he says that "the American horse receives on the average better treatment than the young woman of America from the time of early girlhood until the age of development has passed. The stock breeder never forces the young animal during the period of development, realizing that it is the time the greatest care should be taken, while American parents, especially of the middle classes, with great ambition for their children and the desire that they develop intellectually beyond their own standard,

allow their heads to be crammed with knowledge so rapidly that the brain cannot assimilate it, and the result is that all the strength of development is devoted to the brain, and the physique finds expansion as best it can. New England furnishes the extreme type of this woman, supposedly more perfect than in any other section, intellectually above the average, but with a physique below par, with greatly reduced reproductive powers, all due to the forcing of study at the age of development."

This forced education, therefore, at or subsequent to the time of puberty leads to flabby muscular development, poorly developed lungs, weak heart and arteries, feeble digestion, anemia, malnutrition of the nervous system, nervous irritation and an increase in neurasthenia, chorea, hysteria and final collapse.

Careful observation will show that a large proportion of the women who make up a neurotic class have arrested development of the sexual organs in varying degrees. The human brain is approximately one forty-fifth of the body weight. It demands about one seventh of the blood to supply its needs. If the education be forced at the developmental period of puberty it needs more to meet the strain. The growing uterus and adnexa must suffer, therefore, in consequence of the withdrawal of blood and the nutrition it should receive. The result is a defect that is very common,—the failure of the uterine cervix to develop. It retains its infantile characteristics. Under these circumstances the uterus is usually abnormally anteфлекed, and the canal of the uterus less patulous than normal, with a very small os. The cervix is long and conical in shape and the uterine functions imperfectly discharged. These women nearly always suffer with scant and painful menstruation, while amenorrhoea, menorrhagia and metrorrhagia, endometritis and leucorrhoea are common. The entire uterus as well as the tubes and ovaries may be involved in this imperfect development, and may remain more or less rudimentary. Under the strenuous responsibilities of life it is this class of patients who are most likely to break down and suffer from neurasthenia and hysteria, and if of an unstable stock even develop insanity. Much of such lack of development and final breakdown, undoubtedly, has its beginning back in the forcing process of school days, the insufficient attention to physical development, which is allowed to struggle for recognition as best it may, the abuse of the corset and other vicious habits of dress and person.

As preventive measures much can be done by a watchful study of the girl for overwork, by restricting the studies during the establishment of puberty, and if this cannot be done, by taking her from school altogether until menstruation is established. Ambition to excel must be curbed when it is pressing too hard with school duties. Better sacrifice the first place in the class, or fail on an examination than get through at the expense of a poorly developed body, a nervous breakdown, and a dwarfed womanhood.

Especial attention should be paid to a proper regulation of habits at home. All stimulants and excitement, such as late hours, children's parties, and the many artificialities of our so-called modern civilization which tend to bring about a premature maturity should be avoided. Childhood is the time of active development and growth, and as sleep is nature's great up-builder and restorer, children should have an abundance of it, especially while their vital capacities are being drained by exacting school duties. Especial care must be given to the general health, daily evacuation of the bowels and frequent emptying of the bladder. Proper diet should be looked after, hurried eating and eating between meals absolutely forbidden, knick-knacks and sweetmeats restricted, while plenty of outdoor exercise and healthy recreation should be engaged in.

Even more care is to be employed as the period of puberty advances; that period when the woman's womanhood is struggling with all its energy for recognition, and when the rapid growth of pelvic organs is making exacting demands upon her strength, vitality, and nervous system that must be met. If her supply of vital force is expended in mental pursuits her physique must suffer. Undue excitement, mental worry, or anything that may divert the vital forces from the great work they are performing in the development and perfecting of her womanhood must be jealously guarded from the pubescent girl, for in all her entire life this short period is the most important to her, mentally, morally and physically, and her whole future happiness may hang upon it.

Not until teachers and parents remember that health is more important than knowledge; not until schools realize the futility of the forcing process of education, and guard the health of their girls by diminishing rather than increasing the work of the pubescent period; not until they appreciate more fully that a sound mind depends upon a sound body, can we hope to diminish the pitiable army of suffering neurotics and sexual incompetents, who so largely constitute the womanhood of the land, and who are to be the mothers of the men of our country.

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