Original Articles.

THE SCHOOL AND THE HEALTH OF SCHOOL GIRLS.

THE SCHOOL IN ITS EFFECT UPON THE HEALTH OF GIRLS.¹

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WHEN one sees a large number of children during the most important part of their lives, he is impressed with two facts: (1) The large number of girls who are weak, anemic and nervous, and (2) the very marked difference between the condition of the girls and that of the boys, when the procession reaches the developmental stage. At this point there are a large number of girls who are distinctly below par, who show evidences of distinct neuroses, and who are working dangerously near or beyond their fatigue limit. Of the children who apply to the hospitals in consequence of physical developmental defects hardly more than 5% are boys.

That this condition exists is a matter of observation, and to this is being given constant testimony by those who are continually being called upon to care for these conditions, occurring in so large a number of girls during this age. When we look for statistics concerning the health of children at this age we find indisputable ones taken from a large number of observations and carefully recorded. Hertel's investigation of 4,352 school children, found in 3,141 boys 31%, and in 1,211 girls 39%, who had chronic disorders. By commissions appointed in Sweden and Denmark it was found by one that of 17,595 boys 29%, and of 11,646 girls 41%, had chronic disorders. By the other it was found that of 11,210 boys 44%, and of 3,000 girls 61%, came under the same class. It is noteworthy—this report goes on to say—that one-half of the girls were chronically ill in their thirteenth year. Upon entering school 20% were chronically ill; but the curve of illness rises rapidly after entering, until in the eighth year 28% were ill.

Professor Key found that children who had less sleep than the normal amount (which he considered to be from ten to eleven hours for the young children, and eight to nine for the older) showed in the upper classes 5%, and in the lower classes 8%, more cases of illness than the other children. Out of 100,000 English school children, 8% suffered from nervous disorders of various kinds.

It is true that these statistics do not represent the actual condition here with us. They may not be paralleled by ours, but they do suggest grave questions in regard to conditions of child life, and in the minds of the medical profession naturally excite inquiry as to the causes which lead to them.

As a matter of experience and observation, we know that excessive mental exertion during the

developing period interferes with the healthy and normal course of development. No special form of disease may show itself then, but the foundations may be laid and be manifested later. On physiological grounds we "know that an organism which does not receive the full share of development which was laid out for it by nature, and which it under favorable surroundings should have had, experiences during its lifetime a reduction of its achieving power and a lessening of its power to resist disease."

With these conditions, so frequently seen among our girls, of physical inability, abnormal development and mental exhaustion, with the accompanying distaste for work, and recognizing that the causes which are operative in them are, excessive mental work, with the resulting development of one part of the organism at the expense of the other; failure to adapt the training to individuals; too little sleep, and too little play out of doors, the question then naturally arises as to the responsibility for this condition. Clearly it is divided between the home and the school. Many of the conditions are beyond the reach of the school, and the co-operation of the home should be expected to supplement the training in school life, which must play so large a part, and, therefore, the home should demand for itself a proportion of the time for that development which the school cannot and is not expected to supply. I refer to family duties, recreation and social associations, without which the child is a machine, and which need not demand an unreasonable amount of time. The household duties which, from necessity, some of the children are expected to perform, are not excessive except in some instances. From a large number of children taken from among the working class there was found an average of less than three hours per week to children between the ages of ten and sixteen.

Recognizing that the school does play an important part in the life of the child we may ask: What is the school demanding of the girl at the time when the physical claims are insistent, and cannot be disregarded without injuring her health and menacing her complete development; moreover, are the demands of the school consistent with a due amount of home life, or do they encroach upon the time which belongs to the parents for the training of their children?

The regular school sessions of five hours a day and five days a week is practically a constant standard, but the amount of outside work varies with the requirements of the various schools. In some of the older schools the figures vary from forty-four to fifty-two hours of required work per week. From two to fifteen hours per week, of outside work, was required of 124 school children of between the ages of ten and sixteen who were requiring attention for their physical condition. This made the minimum five and one-half, and the maximum eight, hours of mental work per day. The question of importance is, whether this amount of work is injurious to children, and par-

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ticularly is it injurious to girls. The laws of Massachusetts have restricted the working hours of minors to about eight and one-half hours per day, as it deems that amount of physical work all that the developing child should be allowed to do.

Yet we know that the recovery from mental fatigue is much slower than that from physical, but we approach dangerously near or exceed this limit with the severer tasks of mental work, and it would be but natural to expect these long hours should show their effects.

Investigations also have shown that chronic disorders are especially frequent among children whose instruction extends over the whole day, and that the percentage of disease is greater among those who go to school all day, than those who go in the morning only. Hertel found that illness was 7% higher among children who worked excessively than those who worked a usual amount.

It is a known fact that during the periods of accelerated growth there is a noticeable diminution in the power to resist fatigue, and the most important of these periods of growth—when the foundations of the health of the woman are being laid—occurs at a time when excessive demands are often made upon her mental powers. The girl needs an elastic consideration which is not necessary for the boy, for her more delicate nervous organization enables her to carry through an amount of work to a brilliant finish, leaving the results of this in her physique to manifest themselves later. Naturally the records of attendance and number of graduates do not show this most serious consequence.

We would not for a moment wish to underrate the importance nor the effects of the school, but at the same time there is the feature which must at times exert a far-reaching injurious influence, namely, that of its inelasticity. The conditions which are imposed on the whole should not be those which might with safety apply to the selected few, or to the most favored class, but to the average individual who is to make up later in life the bulk of the working force, and we must believe that the school is not accomplishing the most desirable and complete fulfilment of its highest purposes, if our educators do not recognize the necessity of making the training correspond to time and rate of development and growth of both the body and mind.

The school is responsible for much of the conditions found among our women in so far as its demands interfere with the usual and necessary amount of sleep and out-of-door play. It is responsible in so far as by a competitive or ranking system, it increases, during the periods of accelerated growth, its demands on the mental powers, and in so far as it trains the mind at the expense of the body.

It is responsible in so far as this system fails to recognize individual variations in the child, and especially between the boy and girl, and thus fail to adapt the training to the individual need, for

not only is the method not adapted to girls as individuals, but not even to girls as a whole.

We can only turn to our educators with this condition which so frequently meets us, and ask if there is not some way by which the need of the individual may be provided for in our public schools.

THE HEALTH OF SCHOOL GIRLS.¹

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So far as theoretical considerations bearing on overwork are concerned, there are certain well-known and well-accepted facts that must be considered.

During the periods of rapid growth, less mental work can be safely required of children than when growth is less rapid or has been finished. The size of the brain in its relation to body weight and to the other organs is much larger during the entire period of youth than at other times. It does not assume a constant relation to these organs until the eighteenth or twentieth year.

Certain physiological experiments upon the working of children's brains must be considered because they have a direct bearing upon the question of the arrangement of studies and the examination question. It was found that there was an increase of 33% in the mistakes made by children in dictation tests given early in the morning and after four or five hours of study and recitation.

In pupils from twelve to thirteen years of age it was found in boys that in the third quarter of an hour of continuous work there began a marked deterioration in their ability to apply themselves to mental work. Taking five hours of interrupted work such as the ordinary school routine furnishes, it was found in a ten-minute test taken every succeeding hour that the amount of work increases up to the third or fourth hour but diminishes in the fourth or fifth, and that the number of pupils making no mistakes decreases from the first to the fifth hour. The fact that the mental processes are impaired by continuous application in the third quarter of an hour of continuous work is too important to be set aside easily.

This bears directly on the question of examinations. Not only is the worry beforehand detrimental, but the stimulating effect of competition is undesirable apart from the well-established fact of mental exhaustion from continuous mental application. It is significant that Ignatieff found that 191 out of 242 children lost on the average three and one-half pounds during the examination period.

The relative endurance of boys and girls is of the greatest significance as bearing on the question. Christopher, in some work recently done in the Chicago schools, tested 5,636 children with the ergograph as to the conditions of fatigue. The ergograph is a machine in which a weight—

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