acute pneumonia was something like 40 or 50 per cent., and the late Dr. Wilson Fox used to impress upon us students the fact that pneumonia was a very fatal disease. I am well aware of the fact that other physicians have recorded a very low rate of mortality under certain lines of treatment in this disease. Hence I consider that statistics of the results of any special method of treatment of acute pneumonia are not reliable unless based on a very large number of cases extending over a number of years, and the mortality-rate compared with that of cases under other conditions of treatment during the same period of time and in the same epidemics.

My routine treatment of this disease consists in at once placing the patient on the balcony or verandah of the hospital, where they are kept night and day. A screen is placed round the head of the bed to keep the cold winds from blowing directly on the patient. Of the cases thus treated, in all about twenty in number, only one has proved fatal, and that was an old man over 60 years of age, who was admitted, practically moribund, with extensive consolidation, much cyanosis, and a very feeble pulse. He died within a very few hours after admission. Contrast with this the case of a young girl of 12 years who was admitted under my care some few weeks ago. She had a history of an attack of acute pneumonia some three years earlier, and ever since of having had a cough. I found her propped up in bed, with marked dyspnoea and cyanosis, a temperature of nearly 104°, a rapid weak pulse, and an extensive outbreak of labial herpes. On examination of the chest, it was found that she had signs of pneumonic consolidation at both bases. Previous to my seeing her she had had a little oxygen administered, and had also had a hypodermic injection of strychnine, as her pulse and general condition were considered so bad. She was inclined to be delirious, and had had no sleep for the previous two nights. I ordered her to be taken out of the ward at once, and placed in the open air on the balcony with a screen round the head of her bed. With the exception of a mixture of carbonate of ammonia and cinchona she had no other treatment. The first night she slept well, and the improvement in her condition was most marked. She had her crisis in about thirty-six hours after being placed outside, and rapidly convalesced. I feel sure, from previous experience, that if this patient had been kept in the ward, it would have been necessary to administer oxygen as well as repeated hypodermic injections of strychnine to bring her safely through her illness.

At first I was disposed to hesitate to adopt this method of treatment in the presence of complications, such as bronchitis; but in one of my cases last year, in a woman of about 30 years of age, I followed the treatment with equally satisfactory results.

As regards the effect of the treatment generally, I can say that no unfavourable symptoms of any kind have appeared in any patient thus treated. One cannot, of course, argue *post hoc propter hoc*, but in my experience the open-air treatment appears to have a distinctly beneficial effect on all the symptoms. The temperature has never risen above 103.8°, and no antipyretic treatment has been necessary. In most of the cases the temperature drops, and the crisis occurs in two to three days. In no case so far has the crisis occurred later than one week from the onset of the disease as estimated by the initial rigor. I should not wish to be understood to claim that this line of treatment has any special effect in shortening the duration of the disease; I merely state what has been my experience. An investigation of a much larger number of cases treated by various methods would be necessary to enable one to decide whether the disease is really shortened or not by open-air treatment.

As regards the pulse, an almost immediate effect is noted in the way of improvement, and in only a very few instances was any cardiac stimulant, such as strychnine or digitalis, needed. No alcohol has been given. The tongue begins to get moist and to clean rapidly, and the appetite is much improved; the patients are always ready for their milk. Sedatives have not been required except in one or two instances where there was some delirium at first, but not more than one dose has been requisite. As a rule sleep becomes at once quiet and refreshing. Cyanosis also rapidly disappears.

I have questioned some of the older and more experienced nurses at the hospital as to their impressions of the

results of this treatment. They are unanimous and enthusiastic about the immense improvement in the condition of patients thus treated as compared with those treated on the old lines in former years. They speak of the improvement in the appetite, the patient being so much more ready to take nourishment. They are also satisfied that convalescence is more rapid and satisfactory.

So convinced am I of the superiority of this procedure in the treatment of acute pneumonia, that I have no hesitation in recommending its general adoption. I have yet to learn whether any unfavourable effects can be attributed to it. Probably our more severe climate may have conduced to the success thus far attained, but considering the immense benefits which are well known to accrue from this method of treatment when applied to pulmonary tuberculosis, even in the Old Country, I feel sure that its adoption in cases of acute pneumonia would result in a considerable reduction in the mortality.

I hope, subsequently, to be able to publish my results in a larger series of cases, and merely now record my preliminary experience, that others who may not have used this method may be induced to give it a trial.

THE NEED FOR THE INSPECTION OF ALL RESIDENTIAL SECONDARY SCHOOLS IN MATTERS RELATING TO SANITATION AND HYGIENE.*

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No congress on school hygiene would be complete which did not take into consideration the hygienic and sanitary conditions which exist in our great secondary schools—those schools I mean which, in England, we class under the name of "public schools."

1. The subject of school hygiene, in its relation to our great residential schools, is one of the highest importance, for two main reasons.

(a) The place of our country amongst the nations of the world must, in the near future, depend largely upon the physical efficiency of the next generation, and a considerable proportion of those to whom the country will have to look for its workers in every department of life must be drawn from amongst the boys who are now being educated in our public schools.

These boys, therefore, form a valuable part of the nation's assets, and it is plainly our duty to do all that we can to secure for them such conditions as will best fit them to play their part efficiently, whether it be great or small; in upholding the empire which it will be their duty to serve.

(b) It is, as we all know, easy to sap the foundations of physical development in the young, and none know better than my audience that injuries inflicted during the impressionable period of childhood are seldom without more or less lasting ill results, and not infrequently prove to be irremediable.

There cannot, I think, be any doubt that preventable injuries are inflicted upon growing boys at many of our public schools through want of proper consideration of the varied conditions that make for health.

We none of us question the fact that it is possible largely to affect for good or evil the physical development of all living things by the environment in which they are placed and the conditions to which they are subjected.

If you go round a rich man's training stable or dairy farm, you will, if he takes any interest in the matter, find that no pains have been spared to make the conditions under which his creatures live as healthy and orderly as science can make them or the most solicitous care suggest. Can we with any confidence say that the conditions under which boys live at their public schools always give evidence of the same thoughtful care?

(c) I have often been told that it is unreasonable to expect masters to devote much attention to the details which, as we know, affect the health of growing boys, since, it is argued, our public schools are a system for the "survival of the fittest."

* A paper read at the Second International Congress on School Hygiene, Section X.

This may sound very Spartan and practical, but unfortunately there is a serious fallacy in such a theory, for we cannot (if we would) kill off the weaklings only. The process which accomplishes this will infallibly reduce those who are neither weaklings nor yet giants of strength—and do not these constitute the majority?—to a less good condition of health than would have been the case had they been placed under more favourable conditions during their years of growth and development, with the result that they will be turned out into the world less efficient in body, and possibly in mind also, and less fitted for their work in life.

2. Many of our public schools are defective in matters of hygiene.

(a) In saying this I know that I am making a grave indictment, and though I say it, I yield to none in my admiration for them, and I gratefully acknowledge the debt which we owe them for the generally beneficent effect which they have had upon our national character, yet in many ways they are behind the times.

I recognize the splendid work that they do, and know what splendid men they turn out, but I cannot believe that they would be less efficient, or their results less good, if they were conducted more in accordance with modern ideas of sanitation and hygiene.

(b) Much has been done by the medical officers of our great schools to improve their health conditions, and there are some masters who do not neglect anything that can conduce to the health and well-being of their boys; but medical officers are not always allowed a free hand, and there are masters who are ignorant or indifferent. It is not long ago that I was talking to the head master of a well-known school as to the amount and kind of food which was best for growing boys. I asked him whether any accurate observations had been made on these points. To this he replied, "I should think that nobody knows anything about it, except possibly the Japanese, and, by the way, would you tell me what exactly you mean by 'nitrogenous food'?"

Perhaps some of my audience may remember a letter from a public school master, which appeared in the *Times* not very long ago, complaining that teachers are "so fretted and harassed" about questions of physical well-being, that they are "driven to neglect their proper work," and speaking of those things upon which the health and welfare for life of those committed to their charge depend as "trivialities," "poor subjects," to which "masters already give their attention far too largely."

It may well be asked whether all matters relating to the health of boys at school should not be regulated by some expert authority, but, as long as the masters assume the responsibility for the health regulations of the school, there cannot be any doubt that it is their duty to make themselves acquainted with the essential laws of hygiene and physiology, or to defer in such matters to the judgement of their medical officer or other expert.

I believe the time will come when it will be thought incredible that the care of our children in health matters should ever have been entrusted to those who may have no special training.

We should all agree that a parent in sending his boy to a public school should have reasonable assurance that he is placing him under sound health conditions, and that these matters should not depend upon the individual master, or even upon the particular school, but upon certain well-known principles based upon up-to-date knowledge, and applied to all residential schools alike.

(c) We are not in ignorance of the essential laws of health, although it was recently said by a speaker on this subject that but little is at present known about hygiene as a science, and that we are merely on the threshold of our investigations. In some ways doubtless this is true, but, whilst not in any way underestimating the importance of further investigations, which may lead to wider knowledge, I would urge that the first step in a sound system of hygiene must be to insist that those broad lines of health which have already been laid down should be efficiently carried out.

The fundamental laws of growth and development have been carefully studied, and are well understood. Hygiene and sanitation have long since justified their claim to a foremost place in the prevention of disease, and the maintenance of health. In these matters, therefore, there

can be no excuse for ignorance. The main questions of health are not shrouded in mystery.

It is well known that good food, and plenty of it, is necessary for the growing child, and experts do not differ largely as to the quantity and quality of the food required.

Equally it is insisted upon, by those who know, that plenty of rest and sleep are necessary for the right development of the brain and nervous system, and physiologists and physicians are practically in agreement as to the amount of sleep that is necessary.

It is known that good exercise of muscle and brain are needful for their proper development, and that undue strain of either must retard and possibly altogether hinder full development.

Further, it is known that an abundance of light and fresh air are essential to keep growing children in health. It is well known that undue cold is injurious, and is more felt by children than by older people. We are not ignorant of these and of many other facts relating to school hygiene.

What we need is not so much elementary knowledge on such elementary matters, but the will to put that knowledge into effect.

Our Chairman, who presides over this section of the Congress on School Hygiene, has spent a lifetime in the study of schoolboys under many different aspects. His writings have had a wide influence on many problems of school hygiene, but no one knows better than himself the difficulties with which the school doctor is often met if he is too insistent.

At present in many schools the work of the medical officer seems for the most part to be limited to the attendance on the sick; preventive medicine—that most important branch of our work—forms but a small part of his duty. If a boy ails he sees him at once, and I suppose is expected to make him well; but with those arrangements of the school upon which, in the first instance, the boys' health so largely depends, he has often but little to do, and if he shows too much zeal in these matters, there seems to be a tendency to look upon him as a "crank."

He may appeal in vain for reforms—consistent with modern views of hygiene—which, if adopted, might prevent sickness, and promote the better development of the boys committed to his care.

In some public schools that I know of, boys are not infrequently badly fed—the food badly selected, badly cooked, and ill served. In a large number no substantial meal is provided by the school after the mid-day dinner.

As regards sleep, a question in which I personally have been much interested, it is unanimously agreed by those who have paid special attention to the subject, that a minimum of nine to nine and a half hours is a physiological necessity for the average boy during his years of growth, if the body and central nervous system are to be maintained at their maximum efficiency; yet (although several public schools have modified their hours of sleep) there are still many in which the hours fall far short of this, and in one school with which I am acquainted, small boys of 13 may be placed in dormitories where it is impossible for them to obtain (except for a few weeks in the year) more than seven and three-quarters to eight hours of quiet.

The increasing hurry, stress, and competition of life make it all the more necessary that the children of the present day should not be pressed before they arrive at maturity, but in some schools boys may have to do eight or nine or even more hours of work a day, play hard, and, of necessity—as there are only twenty-four hours in the round of the clock—get altogether insufficient rest.

I am myself a firm believer in the advantages of hard work and hard play, but in moderation. I know that one cannot compensate for the other, and I know that to drive growing boys in this way is bad for them. Even a trainer does not overpress a young horse. If he wants to make the most of it he takes good care not to overwork it before it has reached maturity; and those who wish to win a long race do not force the pace at the beginning.

There must be many amongst my audience who, like myself, frequently see boys who have broken down under the stress either of work or play in their public school life; and this is not always, as is sometimes suggested, owing to lack of ordinary stamina in the boy.

With regard to those matters which come more strictly

under sanitation—light, warmth, fresh air, ventilation, etc.—do we not all know of small, dark studies, cold, ill-ventilated class-rooms, and other such evils?

A friend of mine, himself a head master (for I have several friends amongst head masters), writes: "There is at present no expert who examines drains, shape of desks to suit growing boys, and all those things which are necessary to physical salvation. If there were our historic schools would not take first prize."

Amongst the many instances of disregard of ordinary principles of hygiene which have come under my own notice I may mention the following:

At a school well known and justly celebrated, there were two dormitories, one above the other. They had windows, but the dormitory below ventilated into the one above. A parent of one of the boys there offered, at his own expense, to reorganize this obviously defective system of ventilation, but his offer was refused.

Again, I know a school where, until recently, in one house there were four so-called studies with no direct communication with the outer air. I have seen small school studies, whose cubic capacity was less than that of a standard prison cell, occupied by two boys, and lighted by unventilated incandescent gas.

In a well-known school I have also seen kitchens that for dirt and disorder would have been a disgrace to any house, however poor.

Again, I am acquainted with a school where, until a few years ago, there was no sanatorium. After it was built I had occasion to visit a boy professionally who was put into it. He was suffering from an infectious disease, and had a temperature of 104°; he had to be laid on the floor until his bedding was fetched from his house. This condition of things, I need hardly say, has been altered, but it shows how very elementary were the views of hygiene held until recently in that particular school.

At another school where boys, even with infectious diseases, are commonly nursed in their rooms, a boy, who was acutely ill, was, as a matter of precaution, locked in his study, without any communication with the outer world, as there was no bell in it.

In another, during a severe epidemic of measles, the nurse in charge of the boys habitually went to daily chapel.

I do not of course mean to imply that such conditions are frequently to be found at our great schools, but such facts show that it is possible for such incredible conditions to exist.

3. There is no doubt that our public schools are, in various ways, behind the times. The reasons for this, I venture to think, are not far to seek.

(a) In the first place, they are practically free from competition. It is useless for a parent to complain. If he does not like the arrangements of the school, he is told that he can remove his boy, for every vacancy is filled for many years to come.

With the preparatory schools it is different. They have the benefit of active competition, with a result that as a whole they are far in advance of the public schools in these matters. If they were not they would cease to exist.

(b) Again, these schools are not subjected to independent expert inspection in matters of hygiene.

The Board schools throughout the country are not only designed by experts, and much attention devoted to all the sanitary and hygienic details, but the health arrangements are also subject to supervision.

Many of our private residential primary schools have voluntarily submitted themselves to inspection in sanitary matters, but I should like to ask how many of our most honoured secondary schools would safely pass the ordeal if inspected on the lines required for public elementary schools, as far as the buildings alone are concerned.

"The premises of the school must be healthy, safe in case of fire, must have suitable and sufficient sanitary . . . accommodation for the scholars in attendance, must be adequately lighted, warmed, ventilated, cleaned, and drained, must be kept in proper repair, and must be sufficient, convenient, and suitably arranged for the instruction of the children in attendance. . . ."

(c) As far as I can ascertain, the endowed schools, with the exception of two, are liable to inspection, although the

inspection has not been carried out. Two or three secondary endowed schools have, however, voluntarily applied for inspection, and another is to be reported on this year.

Doubtless there are secondary residential schools (I know, at any rate, of one) in which it has not been thought a waste of time or money to pay attention to those details which make for the health of the boys.

These are hopeful signs, and may encourage us to do all in our power to secure that all residential schools shall alike be subjected to independent criticism and report, and, further, that they shall be required to publish annually what I may call a "health audit."

The year before last a great deal of discussion took place at the Head Masters' Conference, relating to the inspection of schools, but the only inspection contemplated had regard to the instruction given.

Surely, if it is desirable that the teaching in public schools should be inspected, it is at least of equal importance that all matters relating to the physical well-being of the boys should be inquired into by trained observers.

Is it not an anomaly that inspection should be invited and carried out in those matters in which the masters are themselves experts, but that in the important matters of health, of which so few have expert knowledge, no inspection should be sought or desired?

4. Systematic inspection from outside appears to be the most effectual remedy for the present defective conditions.

This inspection should include all matters relating to health, cleanliness, cubic space, ventilation, lighting, warming, feeding, sanitary arrangements, water supply, and sanatoriums for infectious diseases.

Not long ago Dr. Dukes wrote:

"Nothing short of a Government inspection of our high-grade schools will ever make them approximate to an ideal condition; and even this plan will be insufficient without an annual publication of all cases of infectious illness occurring at school, so that the public may protect themselves and their children. At the bare suggestion of such an annual return I seem to see this and that great school attending to its sanitary arrangements long before the first return requires to be furnished—rectifying all defects that could produce illness, or even deteriorate general health—in order to obtain the cleanest possible bill of health."

Machinery already exists for the inspection of secondary schools. There is reason to believe that this inspection will include all matters relating to hygiene and sanitation, though not dealing exclusively with them. As set forth in the regulations for secondary residential schools, which came into force on August 1st of this year, the Board of Education will publish a list of schools recognized by them after inspection to be efficient. The difficulty will be to induce those in authority to submit their schools to this test. It is to be hoped that the time is not far distant when parents will refuse to consider any school as efficient which has not this or some such guarantee.

I am encouraged by this great gathering of those interested in school hygiene to hope that attention may be more generally drawn to these and similar questions affecting the health conditions of our public schools, so that by degrees an enlightened public opinion may be formed, which will not tolerate conditions known to be opposed to the best development of the young. As Dr. Clouston writes, we need to cultivate "a health conscience," so that we may "not be able to . . . rest" without making some definite and systematic attempt to remedy the defects which now exist.

REFERENCE.

¹ *Health at School*. Fourth Edition, p. 451.

NOTE.—A resolution bearing on the points raised in the above paper was carried unanimously in Section X of the Congress, which dealt with the hygiene of residential school, and at the final general meeting the following motion was carried without a dissentient voice: "That, in the opinion of this meeting, it is desirable that all secondary schools, including public schools, should be subjected to inspection in matters relating to hygiene and sanitation, and that a copy of this resolution should be forwarded to the President of the Board of Education, praying him to take such steps as he may consider necessary to carry such inspection into effect."

THE University of Giessen has conferred the degree of M.D. (*honoris causa*) on Geheimrat Dr. Louis Merck.