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HEALTH AT SCHOOL

HEALTH AT SCHOOL

CONSIDERED IN ITS

Mental, Moral, and Physical Aspects

BY

CLEMENT DUKES, M.D., B.S., LOND.

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PHYSICIAN TO RUGBY SCHOOL;
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HOWARD MEDALLIST OF THE ROYAL STATISTICAL SOCIETY OF LONDON.

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FOURTH EDITION

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"Let men know that they are men, created by God, responsible to God, who work in any meanest moment of time what will last through eternity."—CARLYLE.

To the Memory

OF

THOMAS ARNOLD,

OF RUGBY,

THE BENEFACTOR OF SCHOOLS AND SCHOLARS.

PREFACE TO THE FOURTH EDITION.

THE period which has elapsed since the year 1883, when the first edition of this volume appeared, has been eventful in the history of schools. The general expansion of popular opinion : the modifications and changes of view which have occurred in every department of civil, ecclesiastical, and scientific thought ; the gradual widening of traditional and narrow conceptions into larger and more adequate forms of truth : all these movements in the public modes of estimation and judgment, though often apparently, from their generality, remote from the special region of school administration, have naturally affected this sphere of life and work by reason of the enlarged and more enlightened spirit with which all subjects of contemplation and action are now surveyed. And besides the inclusion of school management and aims under this more intelligent mode of regard, specific influences have been concurrently in operation. A steady development has continued in every branch of education with far-reaching effects, not only upon the true scope and end of education itself, but also upon the appropriate methods demanded of schools for the realization of this end.

Moreover, as might have been anticipated—since details are

an essential element of system—large improvements have also been introduced into the comparatively minor portions of school organization. Many Critics,—and I speak from experience, —who most severely commented upon my suggestions in these respects, and even denounced their value, have, on matured reflection, embodied them in their schemes of school arrangements.

Among the more general signs which have marked the practical interest in education during this period may be cited the establishment, in 1903, of the scheme for Secondary Education by Act of Parliament. And I should particularly refer to the recent inauguration of an International Congress upon School Hygiene, which held its first meeting at Nuremberg in April, 1904. The formation of this Congress may be rightly interpreted as constituting an important era in the mental and physical education of the young through the power which an organic body implies and exerts. Enlarged public and scientific opinion has created the Congress ; and the series of Congresses will in turn react upon opinion in the modes of wisely dominating the form and intensity of its direction, and exhibiting the most enlightened ways in which that direction can be pursued. A significant result of these Congresses is, and will increasingly be, the enforcement upon teachers and taught of the paramount necessity of an elementary (though practically sufficient) acquaintance with physiology, in so far as it fundamentally affects and should direct genuine educational methods, — a suggestion, I may justly and without intrusion add, which has been advocated by me from the commencement of my professional life in its relation to schools.

The preceding changes and considerations have demanded an expansion and partial rearrangement of my book, and its

re-writing to a large extent. The first observation that will present itself to the reader in this edition,—and I, at once, confess its reality—is the alteration in certain views, conclusions, and even in what in previous years appeared to be facts, which extended experience and clearer light have shown to be necessary.

These changes cannot be wondered at when it is borne in mind that I have studied children in all their phases and stages for so many years,—two years at the Hospital for Sick Children in Great Ormond Street, London, followed by thirty-three years at Rugby School,—a professional history which has provided me with an almost unique experience in all that relates to the Health and Disease of Childhood and Youth, and has compelled constant and steady thought upon every aspect of this problem.

In every contention for the welfare of Schools I have uniformly included a concurrent consideration of the parent as well as the teacher and pupil. And where I seem to urge any view or suggestion that may *primâ facie* appear to be extravagant or unreasonable, I have invariably reasoned the question out by placing myself in the position of all whom the criticism or recommendation would affect. I desire to add, that I do not take credit to myself for several of my suggestions, for I owe them to some pioneer or other in school administration who has communicated with me upon the subject: such suggestions accordingly possess, in confirmation of my advocacy of them, the sanction of successful practical embodiment.

A new chapter has been inserted upon those sudden emergencies incidental to school life, which require immediate treatment by Master or School-fellow before the services of the Medical Officer can be secured.

The chapter on Illness at School and the section upon sanitation have been almost entirely re-written, in conformity with the most modern knowledge: I have especially endeavoured to render these chapters a real guide and help to the schoolmaster, as well as to the Medical Officer.

The improvements in the Illustrations are due to my son, William B. Dukes, who has prepared the diagrams and sketches in such a form as to furnish a practical guide in the alteration or construction of school buildings.

Again I have to acknowledge my indebtedness to my life-long friend, Mr. Thomas E. Young, B.A., F.R.A.S., the eminent consulting actuary, for his skill, guidance, and assistance in preparing the volume for the press.

And, finally, my son Lawrence Dukes, M.A., M.B., B.C., Cantab., has afforded me valuable aid on many occasions in working out details.

CLEMENT DUKES.

RUGBY,
January, 1905.

PREFACE TO THE THIRD EDITION.

The seven years which have elapsed since the second edition of this volume was presented to the public have been marked by notable changes in school life, which must have given satisfaction to parents, teachers, and scholars. Even if these changes have been tardy in their advent, they have all been on the side of progress, and have tended to the amelioration of discomforts and the removal of defects. With all these encouraging signs, however, it remains unfortunately true, as those know who have devoted special attention to the questions discussed in this volume, that reforms are still imperative in order that the young may derive the amplest benefit from their years of school education.

These changes have necessitated the re-writing of the greater part of this treatise, and the addition of new chapters, which should have been included in the previous edition. For instance, the important sections on School Examinations; Sunday at School; and especially the School-boy Code of Honour, on which, according as it is based on personal influence directed in the right mode, vital results depend; for I need scarcely point out how essentially the character of the school and scholars is involved in the Code of Honour, which

regulates the tone of life at school, and thus affects moral conduct in after-life.

Wherever it was possible, I have strengthened my opinions by quoting those of other writers whose views are admitted to be of weight.

With a view to rendering this book a thoroughly reliable guide for all who are interested in the education of the young, I have enlisted the services of many friends who are well-known authorities in the several sections of the subject. These friends have afforded me valued assistance by reading either the whole of the proof-sheets or those parts in which they possessed special knowledge, and have furnished me with important hints and amendments, which have tended to increase the value of the work to a large extent.

I have especially to offer my cordial thanks for the never-tiring aid of my friend, Mr. T. Emley Young, B.A., F.I.A., for his great assistance in passing the work through the press.

CLEMENT DUKES.

RUGBY,
April, 1894.

PREFACE TO THE SECOND EDITION.

For many years I had contemplated writing a text-book on School Health, as none was in existence. With this view I had been collecting materials from all trustworthy and available sources, when the resolve was brought to a climax early in 1882 by the request that I should contribute the article on "Health at School" to "The Book of Health," edited by Dr. Malcolm Morris. In preparing this article, however, it was necessary so to condense it that I resolved that, at the earliest opportunity, I would develope the sketch which was then only possible.

The subject of Health at School is so large and so important, that I have found it difficult to discuss it adequately within the compass of an ordinary volume. I have, however, striven to depict with sufficient fulness all that concerns the welfare of the scholar—the manner in which the child should be prepared for school-life, and the circumstances that affect his health during the years at school. I have mainly described the first-grade schools, but all schools are more or less included from the point of view of health.

I trust that the volume, notwithstanding its imperfections, may be found of value to all who have the welfare of our schools at heart and who take an interest in the training of the young for their appointed work in the world.

CLEMENT DUKES.

Rugby,
October, 1886.

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I.

INTRODUCTION.

Like many accepted truths, the unity of man's nature, and the consequent intimate relation between his physical condition and his intellectual and moral efficiency, had long endured the fate of lying bed-ridden, as Coleridge expresses it, in "the dormitory of the soul, side by side with the most exploded errors"—as little operative as though it formed a member of the latter class.

This truth, however, is now being rescued from such companionship, and attempts are being made in various directions to render it practically vital. It will be admitted that at no stage is its effective recognition more imperative than during the period when both the physical frame is in process of natural development and the mental powers are at the same time, by every method known to able and experienced teachers, being brought into active play and power. A false step here,—a want of concurrent development between the mind and the physical basis with which it is connected,—may seriously affect the whole of the future life, and the efficiency of the boy as a worker in the world. It is accordingly a feature of great encouragement to those who have to direct the care of health, that, following the examples set by masters and teachers of sound sense and knowledge of human nature, the teachers of the present day are generally willing and eager to receive and utilize the

progressive teachings of sanitary science, knowing that *their* work is aided and improved by the work with which that science is concerned. Education happily has ceased—or, at all events is ceasing—to be the mere cramming of facts into pupils' minds, to the consequent over-development of memory and the neglect of the active powers of mind; and it is now recognized that it must not simply store brains, but educe faculties, and form character, and, simultaneously, that the physical powers and functions require also a genuine education of their own. The improvement of the race must largely occur through the medium of the school.

How far this encouraging change is due to the enlarged study of natural science, now so prevalent in our schools, and the tone of thought and observation which it produces, it is not within my province to inquire. The introduction of that study has, no doubt, borne its share in the change; while the principles with which it has made parents, boys, and masters familiar, will render easier their perception of the principles of sanitary science, and increase their ability to apply them.

The problem for solution by the genuine educator is—How can I assist in producing the highest type of Life from the material placed at my disposal for the purpose of education? It is, in plain English, to apply to the training of the young human being the scientific methods which are employed in the rearing of domestic animals. In place of this rational course the teacher at the present time is often apt to endeavour to pass all his pupils through the same process, regardless of differences of individual character and capacity, with the result that the capabilities of many pupils remain dormant or stagnant, while others are forced beyond their powers.

An attempt is, accordingly, made in this book to supply an adequate and simple aid to the application of the principles of hygiene to school life: my object being not simply to describe the general principles of health, but to expound

them in relation to the circumstances of life at school, and, as far as possible, to lay down precise and clear rules by which, to an adequate extent, the masters and the boys themselves may be readily guided.

I shall speak largely of the scheme that should be adopted for secondary education in "public schools," with respect not merely to the individual health, but also to the entire surroundings of the boy at that age: his play: his time, amount and mode of work: the sanitary conditions requisite in the schoolroom, the study, and the boarding-house: his meals; and his general course of life while under school control, together with the relations, in respect to health, between the life at home and at school.

It is obvious, however, that my remarks will equally apply, allowance being made for purely local arrangements, to "preparatory schools," whether for boys or girls.

The relation between home and school, in respect to health, is of the most intimate character; for the best supervision at school can only work upon the raw material, so to speak, which the home supplies.

The most elaborate sanitary appliances at school, and the most carefully constructed scheme of life, cannot rebuild the imperfect constitution—so frequently brought to school by the boy—produced, or fostered, by foolish indulgence, by sanitary defects, and by neglect of the rules of health, at home. It is astonishing, however, what a change, even under these adverse circumstances, a few years will effect under the careful training of school life in a healthy situation.

It is to be remembered that in some of our best schools —not always the most expensive ones—boys are *already* better housed as regards sanitary arrangements, more appropriately fed, and more carefully looked after, than they are in the homes from which they come; while other schools—which, from their high social position, their wealth, and the costliness of the education they afford, should lead the van

in all necessary improvements—still furnish almost typical examples of the faults they should avoid.

I, therefore, indulge the hope that such methods and rules laid down hereafter as may be applicable to home life —for, though here regarded in relation to school, they necessarily possess the widest range—will gradually be adopted, until the boys proceeding to our schools shall be, as far as healthy conditions and personal parental attention can secure, strong, manly fellows, who shall complete that happy transformation of our schools throughout Great Britain which for years past has been continuously taking place.

I am, also, hopeful that this result will be aided by the inculcation upon youths of simple personal rules of health, which I shall deal with later on; not only because their intelligent concurrence in some of the methods adopted to secure the fullest health is needed, but also that they, in their future capacity as parents and teachers, may the more zealously and with adequate knowledge devote themselves to the work of providing and maintaining, wherever their influence extends, that sound body in which is to be developed a sound mind.

It was wisely said by Herbert Spencer that: "The most important form of knowledge which a man can acquire is the knowledge how to regulate his own life: the next, how to regulate the lives of those who come after him."

I shall conclude with a few remarks upon the proper training of girls during school life: a most important subject, looking to their destiny as the mothers of the future, and the need of their transmitting a hardy and healthy race. Unfortunately, this subject is not only too often overlooked, so that the physical education of girls is gravely neglected, but some of the prevailing methods of female education—among which I would specify the excessive competition in examinations which

is still so rife among them—are absolutely fatal to healthy girlhood.

I speak briefly upon the mental and moral considerations which are inseparable from all systems of hygiene. The teaching at home of self-reliance, patience, purity, truth, and endurance, followed by the vigilant development of these virtues in the little world of school, while ennobling the whole nature, aid essentially also in securing that simple strength and vigour of bodily frame which will more and more fit it to become the worthy companion and servant to the soul.

The sole test of every religious, political, and educational system is the character of the men and women whom it forms. As Mr. Lecky has observed, "the national type of excellence is, for the most part, the expression, or net moral result of the national institutions and circumstances."

A school is a microcosm; a scene of discipline and preparation equally with the larger and more strenuous discipline of after years. The real test of education consequently is the form of life attained *at maturity*. It is imperative that during school-life, while the guiding hand of the teacher directs, the child should concurrently be thrown to an extent upon his own resources, so that each stage of experience should continuously conduce to the formation of character. The choice of right or wrong is judiciously placed before him, and he learns the consequences of his own prompted actions; but he is not incessantly watched against errors, or the culture of self-control would be defeated. Thus he is wisely aided to become energetic, frank, self-reliant, and trustworthy, and the inculcation and acquirement of self-help in the only stable form—the teaching of actual experience—are thus promoted.

This rational system is in complete contrast to that recorded by Monsieur Léclerc * in the French Lycée, where,

* "L'Education en Angleterre," par Monsieur Léclerc.

from the moment of entering until that of quitting the school precincts, the pupil is subjected to the closest surveillance,—a juvenile convict!

But, even in France, there are now a few schools managed on English lines, even to the playing of English games.

II.

SCHOOL HEALTH.

The character of a nation obviously depends upon the completeness of the mental and moral training of its young. National vigour and enterprise depend, further, on the health and physical training of the young during their years of growth and development. There is, therefore, no more important question for any country to consider than the adequate education and health of its offspring of both sexes, so that they may be fitted to take their part ultimately in the life of the nation. This is true for all classes, and especially for those who are trained at our first-grade schools, who are to become the leaders of this country in all its diverse pursuits. And happily in the public elementary schools also a sense of responsibility in this direction is gradually being awakened.

Education is only *second* in vital importance to Health; and upon every teacher who has the education of the young at heart is incumbent the duty of developing the physical no less than the mental vigour of his pupils. If parents and teachers thought more of sound, healthy *bodies*, and less of encyclopædic *brains*, we should have stronger intellects, finer characters, and less vice. Healthy *habits* become a second nature.

In his address as Lord Rector of the University of St. Andrews, the late Lord Dufferin aptly said: "Our mental

functions, our memories, our attention, our power of continuous application, are even more dependent for vigour and vitality on the general condition of our health than is the play of our muscles."

The question of the primary value of health in comparison with that of education, of social position, or of wealth, appears to involve in its mere expression the only rational reply. In his classic work on Education, Herbert Spencer truly said: "The first requisite to success in life is to be a good animal; and to be a nation of good animals is the first condition to national prosperity."

Where it can possibly be avoided, a *town*, accordingly, should not be resorted to as a suitable place for the school education of children, where about ten years of their life are spent, and this at the most plastic period for formation. City-bred children, it is said, die out in three generations; and country-bred children deteriorate in health and physique when educated in a city.

To ensure Health at School all the conditions affecting the pupils should be so regulated and controlled as to produce, following a maxim of some political economists, the "greatest health of the greatest number." For while an individual pupil may live under obviously unhealthy conditions, and not apparently suffer, yet if a number are congregated together under similar conditions, illness will certainly arise. It is, therefore, manifestly to the advantage of the individual pupil that the arrangements should be such as to secure the health of the number; for a number can only remain healthy when their surrounding conditions are in the highest state of efficiency. It should always be borne in mind, that there is no such sensitive test of the sanitary state of a house, or neighbourhood, as the health, disease, and death-rate of the young who reside in it.

Under healthy conditions alone can the greatest amount of work be obtained from the individual during the period of

adolescence, and the most favourable chances of development secured. Yet parents and teachers often think too much of mental, and too little of physical, education in all its branches; whereas school should be *the* supreme place for producing a vigorous constitution, and even eradicating any hereditary tendency to disease, since it is during the school years, while growth is most fully operative, that this result must be mainly attained. Without strength of constitution brain-power is of comparatively little avail in the rivalries of the world. This is true as a rule; and though there are many well-known instances where the keenest intellect resides in the feeblest body, the latter no doubt cramps the power of its inmate, making the owner wish that it were not imprisoned in so poor a tenement, and causing the world to wonder what more marvellous results the intellect would have achieved had the bodily vigour been robust.

In George Eliot's "Life" (vol. ii. p. 354), we find her saying: "How impossible it is for strong healthy people to understand the way in which bodily *malaise* and suffering eat at the root of one's life. The philosophy that is true—the religion that is strength to the healthy—is constantly emptiness to one when the head is distracted, and every sensation is oppressive." This proposition applies emphatically to the young.

School health can only exist under a mode of life which tends to produce a sound mind in a sound body, and not a well-crammed head on a stunted body. I shall, consequently, have to speak of the pupils' mental and moral training in discussing the subject; for the health of the body is influenced to a great extent by the nature of the mental and moral education, and full and general vigour must rest upon the harmonious and concurrent provision of mental, moral, and physical conditions.

The existence of very large schools—especially under the public-school system—is a feature of English school life; and

this system is undoubtedly the best, since the "plant," essential for mental education, and the organization and appliances demanded for physical training, can thus be obtained through adequacy of means. But while I advocate large public schools, which are continually on the increase, I am convinced that they should be split up into various boarding-houses or sections, as each can thus receive more individual care and consequently superior management; while if infectious illness should arise it is less likely to become epidemic than would be the case if all, or most, of the pupils were congregated in one house.

These boarding-houses should contain neither a large nor a small number of inmates: the most manageable numbers range from thirty-five to fifty. The collection in one schoolhouse of a number in excess of this limit—boys sometimes being herded together by the hundred—assimilates school life to barrack life, and removes the possibility of that personal supervision which is essential in the training of the young. A less number than the minimum I have specified is unlikely to induce a first-rate master to undertake the responsibility of a house, or, having undertaken it, to retain it.

III.

THE SELECTION OF A SUITABLE SCHOOL.

The excellence of a school should be judged, not by the honours gained by the first few boys, but by the character of the training which the *average* boy receives. Parents should not be misled by the scholarships secured by certain schools, for it is an unfortunate fact that there are schools—even high-class ones—where the time and attention are largely bestowed upon the few bright boys, simply as an advertisement, while the average or dull boys are almost entirely neglected. So notorious was this the system at one school with which I am acquainted, that a friend of mine, who became a master, resigned at the end of his first term, rather than see the boys thus generally defrauded of rightful attention while the proprietor earned money and reputation by this unjust and inequitable course.

Some time ago a head-master wrote to me to this effect: "If parents knew, and acted as a body, and demanded their rights, what advances might be made! But they do not, so the schools provide what will pay, viz. 'show'—paint and scholarships."

The boys who gain the honours could probably educate themselves: the quality of the great majority of the boys furnishes the test of the effectiveness of the school. Yet in many schools even the bright boys are alone allowed to do

their best, and little is obtained from them by efforts and methods other than their own; while the dull ones are left hopelessly to themselves.

The school, again, which organizes and patronizes its "eleven" at cricket, its "fifteen" at football, and its "eight" on the river, and neglects or does *not* organize the recreation and exercise of the remainder, especially that of the smallest boys, fails more signally in its duty to them than would be entailed by inattention to their school work. More real education, for good or evil, takes place out of school than during lessons.

Before sending a child from home, parents should, therefore, be very careful in their selection of a suitable school. This question involves many points, which require much consideration: thus, there is not only the *choice of the school* itself, but also the *choice of the head- and house-master;* and even more earnestly demanding serious deliberation is the *sanitary state of the house* in which the boy or girl is to reside for eight months in every year, during seven to ten years, and at the most critical time of life. Yet this last inquiry rarely receives any attention from the parent.

To attain the end we have in view—the production of a capable and vigorous race—the conditions must be gathered from the nature of the case, and from experience. The gardener will tell us that no plant will be hardy and reach its normal development which has been checked in growth. "Keep it growing" is his constant lesson: then—and only then—will it fulfil its destiny in Nature. Yet this is precisely the course which is being constantly neglected in dealing with the human plant. Sometimes the human shoot is placed under favourable circumstances; at other times, and more frequently, under conditions the most adverse. And this is done while Nature all the time is admonishing us that she herself effects her main growth and development in the animal—as in the plant—during the warm period of

the year, leaving her charge more or less dormant during the cold and dark season.

In order that the highest physical growth may be attained during school life, it is necessary that the constitution of every child should receive a careful estimate of its capacity previous to the commencement of this period of life—a period of the first importance, embracing as it does the years of most active growth, from eight to nineteen years of age.

It will be obvious that when I speak of the choice of a school for a child, I assume that the parents are free to select. I am aware that this can only fully apply to those whose circumstances are adequate to enable them to exercise a choice. But even under such circumstances, at present little thought and trouble are employed. To advise the poor to select an appropriate school for each child would be as wise as to recommend the choice of a particular brand of champagne. The choice of the poor in all the relations of life is too often the inevitable one of Hobson.

It is not within my province to object to this neglect of consideration when the children are the healthy offspring of a healthy stock. Even the desire to interfere medically under such circumstances would be, to my mind, simply professional officiousness.

But I earnestly protest against this arrangement, in the case of:—

1. Children who are delicate or sickly.

2. Children who have had an ailment which will recur under unfavourable circumstances.

3. Children who are healthy at the present time, but who are the offspring of parents likely, as they advance in years, to develop ailments or diseases which have an hereditary tendency, and which medical men know are apt, sooner or later, to be transmitted; though we at the same time are aware that the possibly latent disease might be eradicated,

or mitigated, were the child surrounded by favourable conditions during the period of school life.

The reason why parents so rarely consider this important subject is partly ignorance, but, in the main, arises from pure thoughtlessness. The point in which their ignorance is manifested is the hopeful supposition that, as their children are healthy at the school age, they have escaped, in their particular case, all tendency to the development of any constitutional ailment which their own family may exhibit; although they may be perfectly aware that, in *general*, the malady is one that in all probability will show itself at the appointed time. They will not allow themselves to entertain even a vague presumption that the disease is likely to occur in *their* children; whereas, if they would only admit that these children may possibly (or probably) be stamped with their die, and set themselves diligently to discover how the hereditary tendency might be counteracted, the children would often have to bless this wise forethought for a healthy manhood.

It is incumbent on parents to bear in mind the just observation of Dr. John Harley, that "within certain limits the healthy body can accommodate itself with facility to considerable variations in the extreme conditions, and those are the delicate who cannot readily do this, and who, in the transition process, are liable to develop abnormal action, or, in other words, disease." Not to heed such tendencies to disease, now that medical science is sufficiently advanced to offer an effective helping hand, is a parental neglect which may hamper the child throughout life, and occasion untold misery not only to the boy himself, but also to his future wife and children, by entailing his premature death, or, frequently even worse, that moroseness of character which prolonged ill-health so frequently engenders.

At the present time children are all but totally neglected in this respect. One hears occasionally of a parent who

thoughtfully and practically realizes his responsibility; but this duty is more "honoured in the breach than the observance." If a child develops a constitutional disease, or succumbs to such a disease, at school, the parent usually regards it as a necessary evil, and never dreams that a rational investigation into the circumstances might have prevented the mischief. Yet this is a tangible question in preventive medicine which is ripe for serious deliberation and advice.

If the physician is to help parents in appropriately placing their children at school, it is necessary that he should be closely cognizant of facts, and ever on the alert to apply his knowledge.

A vigorous manhood is the supremest blessing, and the vestibule to its attainment in the highest state is a healthy childhood. Parental care and forethought at the threshold of life can in many instances secure health for their children, which want of sedulous consideration will forfeit.

Earnestly, then, do I wish to persuade parents, that the worthiest and most enduring endowment that they can bestow upon their children is good health, and, *after* this, a sound education.

I would also strive to persuade them to abandon the present "slipshod" mode of choosing a school, where a child spends, as I have said, ten to twelve years of the most important period of his life, and where every facility should be afforded for his development as a future able and useful worker in the world.

If one mode of procedure more than another would revolutionize the state of some of our schools, it is that parents should, as a class, and not exceptionally, personally investigate the situation, as well as the arrangements, of the school before selection. In this way the misplaced and inferior schools would be emptied, until they provided, in self-defence, the essentials for an adequate education in all respects. But

while parents persist in thoughtlessly sending their children, especially the girls, to inappropriate schools, it is scarcely to be expected that such schools will set their house in order. The main factor, generally, in reformation, is, unhappily, self-interest. While a schoolmaster can fill his school at a "*first-class fare*," with "*third-class accommodation*," it is contrary to human nature to anticipate the provision of "first-class" accommodation.

By the forethought and foresight which are due to every child at the time of his education, the remnants of past ill-health may, as I have stated, be removed, and any hereditary tendency to disease may be minimized, or even completely eradicated.

CHOICE OF A SCHOOL.

Many elements should enter into the parent's consideration of a question so important; and if I were to lay special stress anywhere, it would be on the choice of the boy's *first* school, for not only his health but his character often depend on this step. The parent, however, frequently deems this preparatory school of little consequence, and concentrates attention exclusively upon the public school that is to follow. It is an indisputable fact that all things, whether mental, moral, or physical, grow best in the most adapted soil. But parents and masters must remember that, however suitable —to pursue the analogy—may be the soil of the school for a given boy, weeds will also grow. And it is the duty of the master so to be on his guard that these moral weeds—which vary from term to term, and from year to year—may not only be eradicated the moment they *appear above* the ground, but also that they should be *sought* for *beneath* the soil. Remember that in a school of good soil, the boy whose nature is that of the *oak* may thrive in spite of the weeds; though

even such a boy, in a school of bad moral soil, may develop into a pliable *willow*, without any sturdiness of character, and become a mean, cringing creature, dependent on others instead of on himself.

Moreover, in the choice of a school for his son, a parent should not deem it a sufficient reason for his selection, that "I was there, and my father before me, and my grandfather," forgetting that all institutions change as time goes on, and that other reasons besides **ancestry in schools** should determine the choice. An initial mistake in this respect, as in others, may not only fail to be rectified, but may entail an ever-widening area of mischief.

And first, I think, the boy himself should be considered as regards his *health*—**whether the school be rightly situated sanatorily**—for often, in consequence of a prejudicial local situation, the boy, instead of developing, through healthy circumstances, during the years of active growth, into a vigorous man, may become permanently deteriorated. There may be developed, or confirmed, an hereditary weakness in his constitution which, under more favourable conditions, might have been checked, and perhaps even eradicated. In the Report of the British Association (1883), it was shown that those who live in the more elevated and bracing districts, where there is a freer circulation of air, are physically superior to those reared in the alluvial plains.

I cannot too strongly insist that a healthy life can only be ensured by attention to health during the years of growth and development. Even with this proviso it must depend largely upon two conditions—

1. The inherent properties of each individual organism.
2. The environment in which the individual is reared.

And it is only so long as the individual organism is placed in its appropriate surroundings—*i.e.* is grown in its proper soil—that we can expect to produce typical health and strength. Failing these necessary conditions, we can

only expect to engender imperfect growth, meagre health, an absence of robustness of character and manliness, the manifestation of early disease, and the absence of vigorous old age.

The **surface of the soil** is usually *loam*, and is much the same in all situations. It is loaded with decaying animal and vegetable matter, which, under favourable circumstances, is kept sweet by the aid of bacteria. If this decaying organic matter be in greater quantity than the bacteria can destroy (as in **made ground,** or by reason of the nature of the soil), the **ground air,** saturated with carbonic acid, and other gases evolved during decomposition, may very injuriously affect the inmates of habitations constructed upon the spot.

The **quality of the soil** on which a school is situated is, therefore, of paramount importance, especially in relation to the amount of this organic matter, and the position of the **water-level.** It is well known that water lying stagnant on the surface of land is very inimical to health; but it is not common knowledge that unhealthiness is equally produced where the subsoil is **water-logged,** *i.e.* loaded with stagnant water.

Soils may be classified for our present purpose as pervious and impervious, or those which allow water to pass freely through, and those which retain it.

The *pervious* and fissured soils are gravel, sand, chalk, and rock; while the *impervious* are represented by the clay soils. The water percolates through the coarser particles of the former until arrested by an impervious stratum; its depth varies considerably, and this **subsoil water,** as it is termed, far from remaining stationary, constantly varies according to the rapidity of its natural outfall. A distance of ten or twelve feet should separate it from the surface of the ground.

Where the soil is impervious the water remains on the

surface, unless the ground be sloping, and necessarily renders it damp. Efficient **surface and subsoil drainage,** so as to lower the water-level even a foot or two, will remove consumption and diarrhœa from an entire district, and produce so improved a state of health among the inhabitants that the development of germ life is rendered practically impossible.

In the selection of a school for a *delicate* child it may be accepted as an axiom that, other things being equal, the nearer the school to the sea the more equable the climate: the further from the sea the more is the climate one of extremes. Hence a child whose constitution requires a moist, equable climate, with warm winters and warm nights, must be sent to school at the seaside; while one who needs a more bracing air must be placed inland. A bare open country is drier and warmer than a well-wooded one; but in the neighbourhood of woods and forests the air is damp during the greater part of the year.

In the case of weak children, and those who are liable to disease, their surroundings during school life should be so arranged, and their work so graduated and proportioned, that their imperfect organs may not be unduly taxed, so that, as the constitution improves, they may be fitted to respond more readily and effectively to the demands imposed upon them.

A child is often subject to a more or less *constant catarrh*, or to sore throats of frequent occurrence. The "colds" seem to arise from some constitutional delicacy, which can be aggravated or removed by locality alone. A damp soil, cold winds, residence in a town, and the absence of sun, appear, so far as one can judge, to be the causes of these constant attacks. If these children be removed to a suitable place as to soil, freedom from damp, and from keen winds, if they pass their indoor life in sunny rooms, and their outdoor life in open air, the catarrhs cease, or rarely recur, and

then only when the child is replaced amid unhealthy and unsuitable conditions.

A boy with a *rheumatic* constitution should never be sent to a school situated on clay, and surrounded by a humid atmosphere, where perhaps, as I have known, one boy in every thirty suffers from rheumatism during his residence. A boy from a *consumptive* stock should not be placed at a damp, low-lying school, however famous in name and character, and however honoured by notable ancestors. A boy with a *feeble circulation*, showing chilblains on hands and feet from the slightest cause, should not be placed at school in a cold, bleak situation during the years of growth: his residence should be high and dry, on gravel, and with a climate as genial as can be found. A boy with a *neuralgic* predisposition should not be sent to a bleak, windy, exposed place for his education, or he will be always suffering from neuralgia in the head, face, or ears. A boy with hereditary predisposition to *kidney disease* might be saved from its development by being educated only in the warmest and driest place, and one least exposed to the cold winds of spring. A boy from India, especially if he have suffered from malaria, requires a dry and warm place of residence during his growing years, and should only enter school at the most favourable time of the year for fine and warm weather.

The **best situation** for a boarding-school is the top of a hill, facing south, and having the soil of gravel, sand, or chalk. The side of a hill is, as a rule, unfavourable on account of the difficulty of drainage, since the upper water drains to the school buildings. If, however, the soil be of clay, and the building can be constructed on the side of a hill, with an efficient *natural* drainage, the dryness may be equivalent to that of a gravel soil. And if the school can be so placed that it is protected from the north and east by a shelter of trees, especially pine trees, so much the better as

a health resort for all boys during the period of growth. Such a situation is of incalculable value to every boy, though chiefly to the delicate ones. Sometimes it is advisable to secure the sun on both sides of the house by facing it north-west and south-east. However placed, the sun, if possible, should shine into the living and sleeping rooms which are habitually used. Offices and rooms only occasionally occupied should be relegated to the sunless side of the house.

The **worst situations** for schools are those in close proximity to the bed of a river; those on a low-lying clay soil; and those which, although high and apparently dry, and having a good soil, such as sand, yet stand upon a level subsoil of clay. The soil of all such situations requires thorough superficial and deep draining if any degree of health is to be secured; but it is most unsuitable for the residence of the young. It is right, however, to add that proper drainage of such soils has diminished the death-rate of wasting disease of the lungs alone by about fifty per cent. Stagnant air and stagnant water are both poisonous to human beings. A *town* or *city* is not a suitable situation for a *boarding-school*. For a *day-school* a town or city may be, and often is, the most desirable site—and probably the only one feasible. And where the home residence is in the suburbs or country, the resulting injury to the child's growth is thereby diminished. In these town day-schools a quiet district, not overshadowed by buildings, is a necessity.

It is hardly possible to insist too much upon the healthy rearing of children, especially of those who are tainted with *some* hereditary defect in health; for on this parental care and forethought, even in small matters, the health and happiness of us all largely depend. If a child from a *consumptive* stock, for instance, be placed during the term of growth and education in a good dry country air, away from the smoke of a town, and at a distance from the bed of a river, living in a sunny aspect, with sufficient cubic space indoors,

and wide-open windows by day and night, and be provided with proper clothing, and plain food with plenty of fat, in all probability he will develop a sound constitution. For, although consumption is a disease arising from the attack of parasites termed *tubercle bacilli*, these bacilli only find a suitable soil for their propagation in certain constitutions, or in enfeebled states of the constitution. A vigorous condition of health, engendered by the circumstances described, is obnoxious to their existence.

A child who has *gouty* parents needs not only a dry atmosphere and sunlight, but regular exercise, and the studious avoidance of all kinds of alcohol, and of pastry-cooks' delicacies, so that his digestive organs may be in the highest state of efficiency for digesting plain wholesome food. He should also be especially encouraged to eat slowly and masticate effectually.

Where *insanity*, or even an excitable nervous system which is often exemplified in hysteria only, is known to have occurred in members of the family, the child should be educated where he can be out-of-doors most of his time on fine days, and thus secure the highest chances of physical strength; for in this general health and vigour the brain itself largely participates. Such a child should not be allowed to work at night, or for any examination, until his brain is mature in growth. Above all, such a boy should be taught that immorality in any form is especially detrimental to the stability of his brain.

It is also imperative that a child born with this hereditary predisposition should be educated, from his earliest years to manhood, away from home, and apart from his parents or friends who exhibit the nervous constitution: in a place where a regular life will be maintained under the strictest discipline: where all waywardness will be dealt with by a firm but kind hand, and where he will work and play with those of his own age, who are more robust in health and

character. By such means the nervous tendency, whatever form it may have been about to assume, will be neutralized, if not removed. At the present time, these children are unfortunately retained at home, where they are petted and pampered, never thwarted or corrected, lest the nervous condition should be induced, and where their peevishness, ill-temper, and petty tyranny are allowed full sway. Such surroundings simply constitute a congenial hot-bed for the development of the tendencies which it is essential to check. In the case of girls who are predisposed to a nervous constitution, it is still more imperative that their education should be absolutely freed from the influence of the surroundings I have described.

It is, however, unfortunately still the custom to regard children who inherit some special delicacy of constitution as feeble or unhealthy. If they do not thrive well, their hereditary constitution is considered to form an irremovable cause. Whereas, every effort should be made on behalf of these imperfect constitutions to combat these latent tendencies; and to endeavour, in spite of them, by a healthy situation, appropriate feeding, regular exercise, carefully regulated work, ample sleep, and firm discipline, to produce sound health and vigour during the only years when these advantages can be obtained—those of growth and development. This doctrine, at present, is, unhappily, scarcely recognized; and, to the permanent detriment of the children, insufficient care is exercised in the selection of an appropriate school.

It is a well-known fact that the varieties of trees and shrubs will only thrive luxuriantly in certain localities suited to their growth, and that an attempt to rear them in an unsuitable climate or soil produces degeneration and decay. The analogy holds precisely with human beings, especially in their early stages.

The next question for consideration is the capability of

the scholar, so that the education may be adjusted to his complete general development. Parents and teachers should bear in mind that children do not all possess the same capacity for work of any kind, and that results must be regarded in relation to the individual power of production. They might equally well expect a naturally short boy to become tall, as a boy who has a poor ability to develop into a genius. They should be satisfied if their sons and pupils employ what brains they have to the best of their ability. Neither mentally nor physically are all children cast in the same mould. In the same form at school, children of the same age differ in their powers. One boy may be head and shoulders mentally and physically above his next schoolfellow; or he may be mentally big and physically small; while his neighbour may be exactly the reverse. Yet parents and teachers cast these varying specimens into the same mill, and expect them to turn out equally well. It is, therefore, imperative to remember, if every child at school is to receive his due, that in the same form, or class, there is an infinite variety in the capacity of the scholars. Hence it is folly to act on the assumption, and to inflict punishments accordingly, that because the same teaching is applied to the whole form identical results should be obtained. The difficulties in teaching, thus indicated, suggest much care and thought on the part of the teacher, so that he may encourage the dull and slow boy, who happily rarely fails to respond to considerate stimulus. And here is the province for the teacher's faculty in the impartation of what Locke calls "a relish of knowledge," which infuses vivacity and hope into the pupil's efforts.

The nature of the education at hand requires earnest attention. The parent who regards the highest interests of his child must give him genuine education. By this I do not mean what is termed scholarship, valuable though this acquisition be of the best thoughts of the best minds in all ages,

nor science, nor mathematics, nor modern languages. I intend education of the entire nature, which is essential for fighting the battle of life with honour to himself and his friends. Such an education comprises mental, moral, and physical training, and leaves no side of his organization uncultivated both for personal development and success, and equally for altruistic ends.

It seems to me that schools inadequately consider this *real* education of the individual boy, forgetting that he is sent to school to prepare for contact with the world as a reasonable being, and not simply as a skilled classical scholar, and it may be nothing more. In one boy classics may furnish the most adapted mental training, and may—as is supposed—give him a finer intellectual polish ; but for another boy who, with every effort, cannot master them, the whole school-life is wasted in the fruitless attempt : he learns nothing, and, being disheartened, his health suffers, and, through the depressing influence on the *body* of a hopeless state of *mind*, he physically fails to develop.

That keen observer, Lord Avebury, wisely asked : "What does it matter if the pupil knows a little more or less ? A boy who leaves school knowing much, but hating his lessons, will soon have forgotten almost all he ever learnt ; while another, who had acquired a thirst for knowledge, even if he had learnt little, would soon teach himself more than the first ever knew."

It was well said, too, by Lord Armstrong, that "a man's success in life depends incomparably more upon his capacity for useful action than upon his acquirements in knowledge ; and the education of the young should, therefore, be directed to the development of faculties and valuable qualities rather than to the mere acquisition of knowledge. The teacher who looks upon learning and repeating lessons as the aim of education is not an educator at all, for education means the *educing* of faculty as a training for life."

It has become proverbial, and is nearly true in science and art, as it is in commercial and national life, that, whatever be the work to be done, men will be found, or soon produced, who are exactly fitted to perform it. It is, therefore, incumbent on our schools to see that their pupils receive a high and appropriate education which adapts men for all the affairs of life.

When the subject is thought out candidly and clearly, every one must admit that the object of education is practical equipment for life; and concurrent with this conclusion would be the abolition of all antique and arbitrary methods. A realization of the true *Idea* of education necessarily involves a rectification and adjustment of educational Methods.

The plans too frequently pursued, at present, are on a par with the teaching of shooting with the old match-lock gun, and expecting that this course will develop naturally into the precise use of a Lee-Enfield rifle.

I am quite unable to understand the persistent pleading for the virtues of a classical education as the best training for the youth, generally, of this country. If teachers would use the word *languages* in place of the word *classics*, I could concur with their views; but to contend that classics bear the palm exclusively is untenable.

That *languages* may furnish the best discipline for some minds I freely admit, and to abolish this form of discipline for learners of this stamp would be simply disastrous. But I contend that a scientific education is just as suitable for other minds, and to debar *them* from this discipline is, in my judgment, equally fatal. Mr. Hime* has pertinently said: "Nearly every boy is clever at something or another; and if this or that boy be not clever at anything just now, this may arise from the slow growth of his intellect, not from the fact that he is really a stupid boy. It is the schoolmaster's business to find out for what subjects he has most capacity,

* "A Schoolmaster's Retrospect." M. C. Hime. 1885.

and to what his non-proficiency is especially due. But he certainly ought not to regard him as stupid simply because he is slow in learning Greek, Latin, Euclid, etc. A master's duty is to educate: that is, to develop a boy's best faculties of every kind—his religious and moral, his intellectual and æsthetic, and his physical faculties—his manners being closely attended to all the while. This is a master's duty: a duty which he cannot possibly perform honestly, unless he attend to everything—everything, I say emphatically—connected with the proper up-bringing of the young with whom he is daily brought into contact."

It is contended, further, that classics develop more polished gentlemen. Now, I number amongst my friends some of the best classics—even Senior Classics—and some of the best mathematicians and scientists—even Senior Wranglers—this country can show. I do not find that the classics, as compared with the mathematicians, think better, speak better, or write better; nor do I discern in them a larger culture or taste. I do not find that they are shrewder, more truthful, and more upright; nor that they make better fathers, better citizens, and better Christians; and certainly I do not discover that they are the most business-like men in their own or in other person's affairs. In what, then, does the virtue of this fascinating classical education consist? It has been justly said that the object of education is not really to learn, but "*to learn how to learn:*" that education is not the acquisition of knowledge simply, but the process of training the mind to be capable of acquiring it. It is difficult to see that classics are better adapted than mathematics and science for this purpose. Does it count for nothing that Trollope, an old public-school boy, should say of his teachers in after years—"I have met them all three since my school days, and found them shallow and ignorant, no doubt with plenty of Greek and Latin in their heads, but without knowledge of human

nature, or power of appreciating the different dispositions of their pupils?"

Dr. E. A. Abbott, "a born teacher of the first rank," remarked in 1883, with reference to the teaching of Latin verse composition, "As at present taught, it is one of the most tedious, mechanical, and profitless of our school studies; and a teacher's attention may well be drawn to the best means of diminishing the evils and increasing the benefits that may result from it."

Sydney Smith informed us, in 1809, "that there are few boys who remain to the age of eighteen or nineteen at a public school without making about ten thousand Latin verses. The prodigious honour in which Latin verses are held at public schools is surely the most absurd of all absurd distinctions. You rest all reputation upon doing that which is a natural gift, and which no labour can attain. If a lad won't learn the words of a language, his degradation in the school is a very natural punishment for his disobedience or his indolence; but it would be as reasonable to expect that all boys should be witty or beautiful as that they should be poets. In either case, it would be to make an accidental, unattainable, and not a very important gift of nature the only, or the principal, test of merit. This is the reason why boys, who make a considerable figure at school, so very often make no figure in the world; and why other lads, who are passed over without notice, turn out to be valuable, important men. The test established in the world is widely different from that established in a place which is presumed to be a preparation for the world."

And is this not true still? No argument is necessary: a statement of fact suffices. What becomes of a large proportion of the *heads* of our great public schools? They are selected, on leaving the University, as masters to the schools where they were educated, or to other schools, showing conclusively that the tendency of the education provided in our

public schools is chiefly the production of public-school masters instead of able men of the world. For the boys who are *ablest* at school tend to be fit only for public-school teachers in after years, while their inferiors in knowledge at school tend to reach the higher rank of able and ruling men of the world.

I would, further, maintain, that men who are so competent to learn are often totally incompetent to teach; for they have learnt so easily themselves, that they have never felt, and consequently do not understand, the difficulties which attend the efforts of the average, or dull, boy. An intellectual sponge, competent to absorb knowledge readily into itself, is very different from an intellectual instrument capable of producing external effects. Intellectual receptiveness often exists in inverse ratio to teaching capability.

Again, in 1826, Sydney Smith said: "If there be anything which fills reflecting men with melancholy and regret, it is the waste of mortal time, parental money, and puerile happiness, in the present method of pursuing Latin and Greek." And this waste, in the main, still continues, though with some encouraging exceptions. And Farrar aptly referred to the practically exclusive teaching of the classics as "confining boys for ever between the blank walls of an ancient cemetery which contains only the sepulchres of two dead tongues."

At the meeting of the British Association, held in Montreal in 1884, Lord Rayleigh, the President, remarked:— "From the general spread of a more scientific education we are warranted in expecting important results. Just as there are some brilliant literary men with an inability, or at least a distaste practically amounting to inability, for scientific ideas, so there are a few with scientific tastes whose imaginations are never touched by merely literary studies. To save these from intellectual stagnation during several important years of their lives is something gained; but the

thoroughgoing advocates of scientific education aim at much more. To them it appears strange, and almost monstrous, that the dead languages should hold the place they do in general education; and it can hardly be denied that their supremacy is the result of routine rather than of argument. I do not myself take up the extreme position. I doubt whether an exclusively scientific training would be satisfactory; and where there is plenty of time and a literary aptitude I can believe that Latin and Greek may make a good foundation. But it is useless to discuss the question upon the supposition that the majority of boys attain either to a knowledge of the languages or to an appreciation of the writings of the ancient authors. The contrary is notoriously the truth; and the defenders of the existing system usually take their stand upon the excellence of its discipline. From this point of view there is something to be said. The laziest boy must exert himself a little in puzzling out a sentence with grammar and dictionary, while instruction and supervision are easy to organize, and not too costly. But when the case is stated plainly, few will agree that we can afford so entirely to disregard results. In after-life the intellectual energies are usually engrossed with business, and no further opportunity is found for attacking the difficulties which block the gateways of knowledge. Mathematics, especially, if not learned young, are likely to remain unlearned. I will not further insist upon the educational importance of mathematics and science, because with respect to them I shall probably be supposed to be prejudiced. But of modern languages I am ignorant enough to give value to my advocacy. I believe that French and German, if properly taught, which I admit they rarely are at present, would go far to replace Latin and Greek from a disciplinary point of view, while the actual value of the acquisition would, in the majority of cases, be incomparably greater. In half the time usually devoted without success to the classical languages

most boys could acquire a really serviceable knowledge of French and German. History, and a serious study of English literature, now shamefully neglected, would also find a place in such a scheme."

And yet, what is the state of things which prevails in our secondary schools at the present time? It is almost incredible that in the process of secondary education grave injustice is being committed to an appreciable proportion of the rising generation by reason of the existing system, and the nation thus defrauded in its advancement of some of its potentially ablest intellects, and compelled to content itself with a substituted mediocrity. It passes the wit of man to conceive why the defect has not been expunged. No one will question the fact that even children's intellects are not cast in the same form; so that instead of a monotonous uniformity we possess a serviceable variety of aptitude; and yet our system of education, largely influenced by the examinations of the Universities, and the Public Services, renders unattainable the highest standard of diverse capacity in the several departments of languages, mathematics, history, and science. In the secondary schools, as a rule, a boy's position depends upon his classical attainments. And where this is not the case, his position is assigned in accordance with his average attainments, without provision for proficiency in the subject in which he most excels.

His general school standard, for example, may be very limited, and he is placed accordingly in the middle school; but he possesses a natural aptitude in science, and his appropriate place in this subject would be high in the upper school. This arrangement, however, is not permitted, and he remains stagnant at the top of his form in science in the school, term after term, until he shows an advance in his general work.

Another boy's attainments in classics are also meagre; but he is a genius in history, mathematics, or modern

languages. His position in school is settled on the level of his classics, and he is barred from distinguishing himself in his specialized study, except *pari passu* with his education as a whole. No such rule would be tolerated in physical education, which prevented his inclusion in the cricket eleven because he was not in the fifteen at football, or *vice versâ*. In this department of education, on the contrary, and by no means the least important, the cricketer is encouraged to attain the highest skill in the game, irrespective of any efficiency at football, rowing, gymnastics, or racquets.

Even after leaving school the unreasonable custom pursues him. If, following the bent of his genius, he enter for a science scholarship at the University, his chances of success are again diminished, for unless he be also apt at classics, and other general knowledge, he is outstripped by a candidate who, though he is inferior in science happens to be good all round.

Again, a candidate for the diplomatic service, with special aptitude for modern languages, and an almost instinctive mastery of their idioms, is passed over for one who, in no way excellent in languages, possesses a wider general knowledge. Thus, on this system a candidate, for example, for the diplomatic service, though showing merely average ability, obtains the appointment in preference to a proficient in modern languages, notwithstanding the patent fact that it is precisely this skill in languages which, *inter alia*, the post demands, and which is essential to the effective performance of its duties.

A brain of the finest calibre and cultivation in a given subject may be of meagre capacity in another; and thus the service of specialized faculties is lost to the nation, while the mediocre brain, good but stationary, is assigned a duty which it cannot adequately fulfil.

It will probably be urged that any other system of education, and examination, would produce one-sided men; but

where that one side is required in the highest degree for special work, every facility should be afforded for its utilization. I am ready to admit, that the young should not be allowed to devote extra time to one subject early in their school career; but this course is quite different from the prohibition of the fullest practicable progress in the one subject on the ground that an equal advance is not displayed in others. The ill-judged plan I am criticising not merely fails to stimulate but definitely disheartens, and particularly where the pupil is very backward in some form or forms of study.

That considerable school difficulties must be occasioned by my suggestion where a boy's position is at the top of the school in one or more subjects, and near the bottom of the school in others, I admit; but difficulties vanish when confronted with thoughtful and resolute skill. If one school would only show the courage to face them, others, in self-defence, must follow.

One special difficulty often lies rather in the *person* than in the *fact*: some men are largely limited to *retrospect*: accomplished facts they can admirably use as instruments, but there their capacity ends; but *prescience* is the guide and guarantee of all reform and genuine efficiency.

It may be an essential part of a boy's school training to be taught to master thoroughly something difficult, necessitating great labour for its attainment; but this training may surely be found in science as well as in classics. I think the importance of learning the dead languages, as a training for young minds, is very much exaggerated, and I fail to see their superiority to mathematics, science, and the modern languages, while the latter are far more useful to the average boy on entering the world. Moreover, were these latter subjects more commonly taught, and were the classical languages less the fashion, there would be less scope for the enfeebling use of "cribs."

In his excellent little work on the "Choice of Books," Frederic Harrison states, "that man's business here is to know for the sake of living, not to live for the sake of knowing." He also adds that "the first canon of a sound education is to make it the instrument to perfect the whole nature and character."

The fact cannot be denied that our present system of education prepares boys, in the main, for two purposes—to become schoolmasters, or to be men of leisure.

The advance, notwithstanding, has been so marked in the teaching of science, mathematics, and modern languages in secondary schools, that boys can now enter the public services direct from school without the intervention of the "crammer."

This century owes its distinguished position to the continuous and increasing progress of science, or organized knowledge; and if we as a nation are to advance with the times, and keep abreast with other nations, our schools must reconsider their functions with still greater earnestness, and educate the young practically for their posts in life, instead of compelling them to become deadened over the idioms of defunct languages.

"Who is there," asks Mill, "who would not wish to know the meaning of the common physical facts which take place under his eye? Who would not wish to know why a pump raises water; why a lever raises heavy weights; why it is hot at the tropics, and cold at the poles; why the moon is sometimes dark and sometimes bright; and what is the cause of tides? Do we not feel that he who is totally ignorant of these things, let him be ever so skilled in a special profession, is not an educated man but an ignoramus?"

The day is near when science, its adjunct mathematics, and the living languages will supplant the dead languages as an instrument of education, and the latter will be restricted to the few as science is at the present moment.

Those nations and schools which fail to fall into line will degenerate by natural decay. The change will be produced not from choice, but from necessity, and as surely as electricity is ousting steam and gas. Then languages will be taught, not with the object of puzzling out their idioms, but in their legitimate form of modes of communication between man and man, and nation and nation: then history will be taught, commencing with the history mainly of our own and immediately preceding times, and in relation to all existing nations: a teaching, moreover, founded upon the notion of continuity, and dealing with the evolvement of the peoples themselves; and the mathematics will become the handmaid of science in all its branches.

And in this scientific teaching, the most important branch for the young is the knowledge of the science of life. The reason of the importance of pure air, and the modes of securing it: the laws of heat economy, and how they are to be observed: the physiology of exercise, and the evils of excess and deficiency: the way in which common maladies, such as colds and chills, can be avoided: the reasons why strenuous exercise should be taken in flannel instead of cotton fabrics: the chemistry of food, and of the secretions which help digestion, with the practical rules deducible from such knowledge; and, lastly, the knowledge of instinct. A reasoned foundation will thus be laid for health and vigour: the avoidance of physical sins; and the control of the appetites.

Where a boy has a special taste, let it be nourished and encouraged by every legitimate means, without making him onesided; let him be sent to a school where, having regard to his nature and aptitudes, he can most fully develop, mentally as well as physically. Let his *mental* bread and meat be adapted to his natural faculties, and he will, of his own will and delight, eat plenty. It must be borne in mind in teaching that the organ to be trained and exercised is a very sensitive one: that the mind and intellect, from our

present point of view, are simply brain function: that improper teaching, and excessive teaching, act prejudicially upon the brain tissue, and cause disordered mind, very much in the same way as improper food, or an excess, produces a disordered stomach.

If we wish to see a choice rose-tree develop into its "bright consummate" flower, we do not plant it in a gravelly, and therefore uncongenial, soil: if we do, we shall not only be disappointed in our desire for a perfect flower, but the tree itself will gradually decay and die. If we plant it in its appropriate stiff clayey soil, it will thrive and blossom as our reward. Boys should be treated in the same fashion, and they will prosper. They must be instructed in accordance with their natural aptitude and ability, rather than ground in a common mill to satisfy teachers, or the ambition of friends. Individual bent and capacity must guide the studies, and not external will. They will then become resolute workers, because they like their work: self-reliant, because they can master it: good and honest, because they are employed at congenial labour, with no spare time for thinking evil. Give them uncongenial work, and they mope and languish: dissatisfied with themselves, their masters, and their school: no credit to themselves or their parents: idlers, with the terrible consequences of idleness.

One word seems to be necessary here, for education is becoming more and more a question of *quantity* of subjects versus *quality* of knowledge, to the serious detriment of brain development and consequent brain power. Boys—and, I am sorry to say, girls too—are being educated as encyclopædias, instead of being aided, as the essential of school training,—indeed, of brain-training itself,—to master one or two subjects thoroughly. In fact, they are taught the rudiments of everything, the approximate mastery of nothing—except about five per cent. who are pushed on for exhibitions and scholarships.

It is folly to uphold this system as enlightened and as the most likely to develop healthy, active brain power in the average boy. I look upon it as mentally injurious to press the teaching of many subjects at the same time: not that we want work to be monotonous, for variety of work is as requisite for the brain as variety of food is essential for the stomach. But at the present time, owing to the multiplicity of subjects, there is a want of *thoroughness* in all work, except in the highest forms, in our schools.

John Howard declared in later life, "with more indignation than he commonly expressed, how, after a continuance of seven years at his school, he left it, not fairly taught one thing;" and this state of things continues still, largely owing to our examining institutions demanding quantity of subjects rather than quality of knowledge.

Were I asked to name a quality in which all schools are most deficient, I should, without hesitation, answer, "*Thoroughness.*" Pupils are set lessons to learn which they do not master: they are given "lines" to write which are not examined. They thus become careless in work; evasion and dishonesty tend to be produced, and these defects are apt with increasing force to mar their future character and life.

The same absence of thoroughness in the education of the young is observable even in our first-grade schools. Numberless instances might be adduced. A boy, for example, has failed to learn his lesson by the appointed time. The natural conclusion would be, that he should be compelled to learn and repeat it. But what is the fact? The teacher, as a rule, is too hard worked, or negligent, to see this rational course pursued. The boy accordingly either writes out the lesson, or writes a number of "lines," and thus escapes learning the task altogether. How is a pupil to grasp a subject when necessarily successive steps have been thus omitted? A boy, to take another actual case, disliked, or could not master, a certain lesson which he had occasionally to repeat

before breakfast. Whenever the lesson became due, the boy remained in bed, and escaped on every occasion. He was punished for this misdemeanour by birching; but it never occurred to the master to insist on the lesson being afterwards learnt. Had the master taken the trouble to investigate the cause of the boy's acts, and then insisted upon the lesson being subsequently learnt, a second attempt would not have been made, and instead of a foolish application of the birch, the boy would in all probability, and under sympathetic stimulus, have mastered the subject, and at the same time have gained a valuable lesson in moral discipline.

Evasion and disingenuousness, which this thoughtless proceeding encourages, forms a terrible taint which, with its corrupting influence upon character, may deepen into a habit destructive of all righteous life.

This want of thoroughness is also the main reason why in trades, and professions, the crowd remain at the bottom of the ladder, while few reach the top. Room exists in every occupation for those who have been taught to work with thoroughness.

The character of the school is of moment to the young. Parents should avoid placing a child at a school that is one-sided *in character*, in any sense of the word. Special schools, for special occupations in after life, do not exert a salutary influence on the pupils. All classes of boys should be educated together. It is injudicious to place a boy at a school where the majority form a clique, be that clique clerical, legal, medical, military, naval, political, or masonic; he becomes stamped with a specific die, while the development of sympathies in children and youths should be *catholic* and generous.

If it be desired that a boy should leave school dowered with a wide intelligence, and a strong self-reliant character, able to act with judgment for himself, these cliques should be avoided, for they partake of the nature of serfdom; they

have a savour of "trades unionism," which is most repugnant in the education of the young.

Strength of character, like strength of muscles, is produced only by individual activity and responsibility. Individuality is wanted in schools, and will show itself whenever scope is provided; but "sets" lead to intolerance, and individuality vanishes into dependence on others. Who is not acquainted with boys and men who on certain sides of their nature have never matured, who have no fellow-feeling for the *poor*, no sympathy with the *suffering*, no pleasure in *high principle*, no pain at *mean-spirited* conduct? Yet such characters are, roughly speaking, simply the result of faulty education. They may have received the highest mental training, but the moral education has been wholly or partially neglected—mainly the fault of the parents or teachers.

It is also undoubtedly true that strength of character and high principle, as well as vice and low-spirited conduct, are as contagious as measles, and each type is apt to impress itself upon the entire mass.

Some schools *have* noble and venerable traditions; others, more modern, *will possess* splendid traditions, in time; but parents should select a school where the traditions—however noble, venerable, or splendid—are subservient to the public-school system, which is older, broader, and more liberal than mere traditions; and masters should so strive to educate, that, when the boys leave school, they are not Eton, Harrow, or Rugby boys, but simply public-school boys. A parent or master will then have fulfilled his duty. Then, and then only, will the boy emerge from school open-hearted, fearless, and ingenuous; instead of a weak, cringing, dependent sectarian, or member of a clique, incapable of thinking or acting with self-reliant wisdom and power.

Traditions, when not supported by continued nobility of purpose, lapse into unimpressive and soulless routine. Yet

to a large proportion of people a thing is appraised according to its age alone, irrespective of its worthlessness and unsuitableness; it is forgotten that bad things are none the better for being old.

In the *Edinburgh Review* of 1825, Sydney Smith, in speaking of the wisdom of our ancestors, which is very often on a level with the folly of our infants, remarks:—"This mischievous and absurd fallacy springs from the grossest perversion of the meaning of words. Experience is certainly the mother of wisdom, and the old have, of course, a greater experience than the young; but the question is, who are the old, and who are the young? Of *individuals* living at the same period, the oldest has, of course, the greatest experience; but among *generations* of men the reverse of this is true. Those who come first (our ancestors) are the young people, and have the least experience. We have added to their experience the experience of many centuries, and, therefore, as far as experience goes, are wiser, and more capable of forming an opinion than they were. The real feeling should be, *not*, Can we be so presumptuous as to put our opinions in opposition to those of our ancestors? but, Can such young, ignorant, and inexperienced persons, as our ancestors necessarily were, be expected to have understood a subject as well as those who have seen so much more, lived so much longer, and enjoyed the experience of so many centuries?"

I yield to no one in the importance I attach to school traditions; a school possessing them wields a power of incalculable value in stimulating boys to imitate noble examples, whether they be recorded of individuals or enshrined in customs. But there is a limit to the value of these traditions, for often, under the spell of "ancient use," the most ridiculous mistakes are continued, the greatest faults are perpetrated, and the grossest cruelty is enacted.

If there be one class of institutions which should prepare for the future, and refrain from dwelling upon the past, it is

our schools, where the young of a nation are prepared for participation in the ampler and happier progress of the world.

CHOICE OF MASTER.

Under whose care and supervision a boy should be placed at school is a question of deep importance, for there are masters and masters; and while all may be equally able as scholars, and all equally high-minded in character, they are not equally efficient as teachers, or wise in the management of boys. Above all, a master should be avoided who is lax in discipline.

In a "preparatory school" the master who conducts is supreme in control. He himself is the sole "governing body;" he appoints his own assistants, teaches what he pleases, and manages the whole establishment alone. Excellent schools many of these are, some even leaving nothing to be desired either in their arrangements or tuition. Whereas of others little good can be asserted in any respect, so greatly do they vary.

Our great "public schools"—great in every sense of the term—of which we are justly proud, are among the most splendid institutions of our country. Established five centuries ago, these institutions have never halted in their success, but enjoy at the present day a higher position, and wield a greater power in the country, than at any previous period of their history. Like all other institutions, however, they are not perfect, and I shall have to speak of their defective elements as well as their admirable features—the latter, however, greatly preponderating.

The "Public Schools Act" of 1868 appointed a "Governing body" for each of our great public schools, in place of the former "Trustees." It was thus recognized that these schools belonged to the nation, and should be managed for the national benefit, so that the youth of the country might secure the advantages of the higher education.

The "Governing Body" appoints its own **Head-master,** and the conduct of the school, in every respect, is placed virtually in his hands. It may thus be affirmed with precision of phrase that no individual in this country occupies a more autocratic position. In such a sphere this absolute power may be, and often is, of inestimable value, not only to the individual himself but also to the institution which he serves; but with feeble or unwise capacity the misfortune to the school is equally pronounced. It has been truly said, "that a monarchy, when there is security that the monarch himself is a wise man, is the best of all forms of government."

The conclusion is evident that head-masters must imperatively be "something more than competent scholars with agreeable manners."

"It is a work good and prudent to be able to guide one man; of larger extended virtue to order well one house; but to govern a nation piously and justly, which only is to say happily, is for a spirit of the greatest size and divinest mettle."* So wrote one of the wisest and most practical of Englishmen. And the statement is equally applicable to our great schools, since it is on their basis that the nation is ultimately formed.

But our great public schools can never attain their highest efficiency until some alteration is introduced in the selection of head-masters. It may be said that a system which has elected head-masters like Arnold, Temple, Butler, Bradley, and Percival, is amply justified. But I would urge that such men are found in spite of the erroneous system, and I would further add that many more of similar character and power might be obtained were the method of election rightly enlarged.

It is an indisputable fact that a head-master is not required as a *teacher* any more than a *general* is needed to fight in the ranks. His essential qualifications are those of

* Milton, "Areopagitica."

a wise organizer, a judicious manager of men and boys, an experienced judge of character, and a man well versed in matters necessary for health, or imbued with a sympathetic appreciation of such subjects; for the duty should attach to his position, and he should be partly chosen for his fitness and convinced readiness to perform it, of seeing not only that boys receive proper food, with ample *time in which to eat it*, but sufficient fresh air also in and out of doors, together with appropriate daily exercise. His sanitary sense, as it may be termed, should be prominent.

Rowland Hill and his brother, the greatest school organizers of their day, observed: "The head-master, too, ought to be relieved from all necessity of taking any department of teaching himself, in order that he may be at liberty to attend to the regulation of the whole; to watch for opportunities of improving every part; and, by engaging his pupils in conversation, to seize the proper moments for exciting them to inquiry and reflection."

Yet, a rule exists—unwritten, perhaps, but in force with most of the "governing bodies"—that a head-master must be not only a *teacher*, but a "*Clerk in Holy Orders.*" Few have realized what this restriction involves.

In some schools the further rule exists that the head-master must be an M.A. of one of the older universities. But why an M.A.? Why not a B.A.? For the difference between an M.A. and a B.A. at Oxford and Cambridge (not so at the University of London) is pecuniary, and does not imply or necessitate increased knowledge.

In past years a large proportion, if not most, of the masters in our great public schools were "in orders." There was, therefore, little difficulty in the selection of a suitable head-master; but times have changed.

When the second edition of this book was published in 1887 the proportion of masters who were *not* "in orders" was about 73 per cent., so that the choice of head-master

was limited to 27 per cent. of masters holding appointments in the chief public schools.

At the issue of the third edition, after a lapse of only seven years, of all masters appointed to our chief public schools, about 80 per cent. were *not* in "holy orders;" so that the area of selection of head-masters was practically confined to 20 per cent. of all public-school masters, while 80 per cent. were almost wholly excluded. At the present date, after the expiry of a further term of ten years, the numbers are shown in Tables I. and II., so that the proportion of clerical to lay-masters is 14·47 : 85·53.

I.—TABLE SHOWING THE PROPORTION OF CLERICAL AND LAY MASTERS IN OUR CHIEF PUBLIC SCHOOLS IN ENGLAND, IN 1904.

Name of School.	Total number of Masters.	Clerical Masters.	Lay Masters.
Eton	57	7	50
Harrow	42	4	38
Rugby	36	8	28
Winchester	31	5	26
Westminster	18	4	14
St. Paul's	30	2	28
Merchant Taylors'	23	5	18
Charterhouse	35	6	29
Marlborough	36	6	30
Shrewsbury	19	4	15
Wellington	33	8	25
Repton	18	4	14
Haileybury	30	6	24
Uppingham	29	5	24
Clifton	43	4	39
Cheltenham	48	5	43
Sherborne	14	4	10
Christ's Hospital	31	5	26
City of London School ...	30	2	28
University College School ...	28	1	27
King's College School ...	17	1	16
Dulwich College School ...	36	3	33
	684	99	585

II.—Table showing the Proportion of Clerical and Lay HEAD-MASTERS of our Chief Public Schools in England, in 1904.

Name of School.	Head-masters.	
	Clerical.	Lay.
Eton	1	—
Harrow	1	—
Rugby	1	—
Winchester	1	—
Westminster	1	—
St. Paul's	—	1
Merchant Taylors'	1	—
Charterhouse	1	—
Marlborough	—	1
Shrewsbury	1	—
Wellington	1	—
Repton	1	—
Haileybury	1	—
Uppingham	1	—
Clifton	1	—
Cheltenham	1	—
Sherborne	1	—
Christ's Hospital	1	—
City of London School	—	1
University College School	—	1
King's College School	1	—
Dulwich College School	—	1
	17	5

It is obviously to the disadvantage of the schools themselves, that in the choice of head-master six-sevenths of the masters are excluded, and that the selection is restricted to one-seventh only of the candidates who are otherwise qualified. It is unreasonable to suppose that the masters in this "one-seventh" section are really more capable, or in any way more suitable than some of those amongst the six-sevenths. In fact, it is *primâ facie* fair to assume that the

proportion of qualified men for head-masters is greater—as 6 : 1—among the excluded six-sevenths.

From a national point of view, it is obviously preposterous that the choice on so vital a question should be restricted to this narrow range, and particularly that the determining criterion of selection should not be absolute fitness for specific duties, but a relic of custom lingering on from mediæval times. I venture the prediction that the course of events, and the dominant requirements of the nation, will tend to the appointment of men of science as head-masters, who, of course, exhibit also the gift of administrative control.

The arrangement is unjust also to the masters themselves; for each suitable man, whether lay or clerical, should feel that he has an equal chance for the highest and most coveted post in his profession.

Are the lay masters in our public schools such incompetent men that they are unfit to be appointed as head-masters? On the contrary, in a large proportion of cases it is precisely the reverse, and the very ablest men are simply passed over in the selection of head-masters, because in early life they have not taken "orders." This is indicated in the appointment of head-masters to the great public schools for day-scholars. For here, in most cases, where the selection of a head-master "in orders" was not deemed a necessity, as in boarding-schools—an assumed necessity which, as I shall show, is untenable—but where the choice was made from both lay and clerical masters, a lay-master was appointed in preference, on account of his superior fitness for the post. Such evidence, obtained from the action of the governing bodies themselves, is of the most weighty character.

Our great schools consequently do not progress in commensurate ratio, by reason of this encumbering remnant of a dominance which has passed away. Instead of taking the

lead in the advancement of education, they tend to dwell in the past, cling to methods which are fossilized, and hand over to the "crammer" any special technical work which is demanded.*

The Governing Body of a boarding-school that will abrogate this unreasonable rule, and appoint the best man to be found, be he lay or clerical, will serve their school well and their country better.

The practice is unsatisfactory also in another aspect, since the restriction holds out a premium to masters to take "orders." Masters are thus tempted to this course with the view solely to qualify as head-masters—a result sedulously to be shunned in the interests of our schools, no less than in those of morality.

The evil is emphasized when, as has happened, Governing Bodies have appointed lay head-masters on the understanding that they shall take "orders" before assuming the position!

The question, accordingly, urgently demands serious consideration in the welfare of our public schools. It is difficult to overcome the inertia of custom, and the clamours of interest, but the imperative necessities of our schools must supersede all counter claims.

The Governing Body of Marlborough College is, therefore, to be congratulated that, in July, 1903, they appointed

* In connection with this subject it should be remembered that the whole of the moral and religious teaching of our schools, with the solitary exception of the sermon of fifteen minutes on Sundays, is as much in the hands of the lay, as the clerical, masters, even to the preparation of candidates for confirmation! At the Church Congress held in Birmingham in 1893, during a discussion on the Religious Education in Public Schools, the head-master of Rugby truly said, "A good deal of the very best religious instruction, in the highest sense, in their schools was given by laymen." Moreover, the permanent influence generally upon the fortunes of a school and upon the life of the scholars depends mainly upon the personal character of the head-master, and not upon his capacity for preaching, or upon his orthodox views.

a lay head-master, without any ecclesiastical condition, and solely on the ground of his eminent adaptation to the post. This action will involve, it may be confidently anticipated, far-reaching consequences, for it definitely inaugurates the only appropriate principle of selection based exclusively upon aptitude.

Our great schools need head-masters such as Mr. Sidgwick * describes :—"What it was, to come for months or years into daily contact, at the most impressionable time of life, with a man whose every look and tone and word spoke to us of high aims and resolute endeavour, whose life in the sight of the dullest and weakest of us was plainly based on duty and self-devotion, whom all could absolutely trust, to whom the most timid would naturally turn in trouble or perplexity, whom all could love and venerate without reserve—such an experience it is not likely that one who had ever known it could forget or ignore." Such was the influence exercised by Frederick Temple at Rugby.

I admit that a head-master of "scholarly instincts and interests" will ensure the intellectual respect of boys by reason of his scholarly repute and knowledge. Such a one was Thomas Arnold, of Rugby, of whom Mr. Sidgwick says :—"When he was composing sermons, histories, notes on Thucydides, and teaching Rugby better than any school was ever taught before, he was writing letters, as his Life shows, on every mortal subject of interest—the Newmanites, Niebuhr, Rome, the Jews, the Chartists, London University, the French Revolution. This width of interest took hold of the boys, as it always does and must. And he himself knew it and felt it. 'The more active my own mind is,' he said, 'the more it works upon great moral and political points, the better for the school.'" But how rare are such men !

I also admit that the beneficial power which a head-master "*in orders*" possesses, by the influence he can exert

* "The Practice of Education." 1883.

from the pulpit over the school, may be incalculable; and, in testimony, the power of Arnold, Farrar, Temple, Butler, Bradley, and many others may be cited. But, then, it is an essential condition that he should be able to preach suitably to boys, and reach their hearts. Those who have listened to preaching of this stamp can testify to the benign influence exercised Sunday after Sunday in touching the hearts of a whole school, and stimulating and aiding endeavours after a higher and more unselfish life.

How many, however, are able thus to preach; and further, is this their only faculty? The capacity of preaching appropriately to boys must generally be innate, and is, therefore, proportionately rare. The fact, moreover, that in some of our oldest public schools, fees are paid to the head-master, even up to the present time, for the "chaplain's" salary, is evidence that the holding of "orders" was not originally intended to form a necessary qualification in the head-master. This closely observed rule accordingly has not even the virtue of antiquity.

But there are *many* qualities—often absolutely ignored, or not borne in mind—which are essential, and indeed imperative, in a head-master, for the right government of boys and men in large numbers. Nevertheless, as I have said, a head-master is too frequently selected on account of his being "in orders," and on the ground of his knowledge of classics or mathematics: the more needed and momentous function of wise administration being relegated to a second rank. A master of the former type is simply a *teacher:* the latter is an *educator* in the largest sense of the term. The functions of the one are exercised in school, while those of the other are more closely concerned with the well-being of the boy during the daily eighteen hours passed out of school, when he is practically left to his own devices—hours in which, far more than in the hours of school discipline, the *character* is formed.

A head-master *must* possess great force of character: he must be upright, just, and gifted with a large share of "common sense." The great difficulty with a weak head-master is that he will not follow when he cannot lead. Like all weak men, too, he constantly resorts to strong measures unnecessarily and on inopportune occasions. It must not be forgotten that a head-master has to deal with a little world, in which he sees the beginning of every phase of the greater world's doings; and upon him rests the deep responsibility of forming character while it is capable of being readily moulded to good or evil. In "Coningsby," Disraeli observed that, "the schoolboy, above all others, is not the simple being the world imagines. In that young bosom are often stirring passions as strong as our own, desires not less violent, a volition not less supreme. In that young bosom what burning love, what intense ambition, what avarice, what lust of power; envy that fiends might emulate, hate that men might fear." Stanley says * of Dr. Arnold, that he recognized in the peculiar vices of boys the same evils which, when full-grown, became the source of social mischief, and that he governed the school precisely on the same principles as those which he would have applied to a great empire. In speaking of the qualities necessary in a leader, General Gordon remarked:—"The main point is to be just and straightforward, to fear no one, or no one's sayings; to avoid all tergiversation or twisting, even if you lose by it, and to be hard on all if they do not obey you. All this is not easy to do, but it must be my aim to accomplish it."

And it is a head-master of this type that a great school still requires. He has to exercise the functions of a just and impartial judge: he must act uniformly in similar circumstances: his punishments, besides being invariably attendant on transgressions, should be precisely adapted to

* "Life of Dr. Arnold."

the class of offence. Irregularities must not be assessed, as routine suggests, in the *gross*, but with a nice discrimination of degree and circumstances. We should not then hear from time to time of a head-master who is uncertain in his dealings—sometimes treating a heinous offence lightly, at others a trivial offence with severity. Nor then would the moral feeling of a school be shocked by the unworthy act of dismissal of one master for a mere whim, and of another from personal spleen.

If head-masters only kept a private record—which should be their invariable rule—of their verdicts in dealing with parents, masters, and boys, and would examine it at the end of each year, they might see that their decisions were often diametrically opposite in respect of the same offence—sometimes ridiculous, often unjust, frequently dependent on the mere caprice of the moment. We should not then hear of the unjust and irritating punishments so continually allotted to boys—the keenest critics in the world—whose life may be warped by an inequitable sentence, independently of the wrong inflicted upon parents and friends. Would not these wrongs be minimized were the graver school offences dealt with by a council formed of the head and some of the senior masters, who should "minute" the offence and punishment? Would not such a system effectively tend to protect the rights of parents and boys, and remove opportunity for the exhibition of personal spleen and caprice? Which is often the graver evil—the wrongs sometimes committed by boys, or those committed by a head-master who deals unwisely and unjustly with them?

Were boys accustomed to uniformly just and consistent judgment on the part of the head-master a most valuable moral training, and in the most effective form, would be presented for their imitation, which would prove of service throughout life.

Under the present system too autocratic a power is, I

think, centred in one man—the head-master. This would not prove so great an evil were he placed in his position by reason of his special capacity for exercising that power; but under existing conditions there is no reasonable certainty that this requirement will be fulfilled.

Moreover, neither masters, nor parents, nor boys, possess a right of appeal from any arbitrary exercise of judgment. I need scarcely say that it is contrary to human nature to expect that any man can wield such power without committing grave errors of judgment: wronging colleagues from whom he differs: dismissing boys who are merely troublesome, with detriment to their future prospects; and occasioning needless expense and sorrow to parents and friends. To retort that such acts are rare under the present *régime* is no argument in its favour: it should not be possible that the fate of a master, or boy, should be dependent on one man.

In all institutions necessary changes, as a rule, do not originate from within: they are only initiated externally, and often after serious injustice to individuals and classes.

I have discussed the question of the appointment of an appropriate head-master in this treatise, because it is clear that the mental, moral, and physical health of a school depends mainly upon his capacity and character; and because I am convinced that this fact is insufficiently recognized, with consequent injury to school life.

Mr. Salt has well remarked,* "The selection of his **Assistant-Masters** is not the least important of a head-master's duties. The 'University Calendar' is an interesting work; but it is an insufficient guide to character, and a 'First Class Man,' even a 'Senior Classic,' may be a very incompetent instructor." Often the greatest failures of all are not the inferior teachers, but the splendid scholars who cannot maintain the order requisite for the effective exercise of their abilities.

* *Nineteenth Century*, January, 1885.

Why is it, again, that in the *scholastic* profession **the training of teachers** in the method and art of teaching is considered unnecessary? Is technical aptitude of less importance here than in the medical and legal professions? Is the art of teaching so essentially an instinct that no training is requisite? Why should not teachers be compelled to obtain a **Licence to Teach,** just as a doctor or lawyer receives a licence to practise? It has been said,* "It is indeed passing strange that the duty of instructing boys 'to learn how to learn' should be so confidently committed to those who have themselves never been 'taught how to teach.'" An observant Frenchman has also remarked of our scholastic arrangements in England, "To become a lawyer, doctor, or officer, you must pass examinations; to become a schoolmaster it is quite unnecessary; you open a school for boys or girls just as you would open a grocery-shop."

It is indisputable that teachers need to be "taught how to teach" just as much as members of all other professions require a special education; and this indispensable condition will sooner or later receive public recognition and demand. In his excellent little book, "Form Discipline," Mr. Sidgwick, himself a genius at teaching, says: "It will have struck most of those who have been following my hasty sketch of the practical difficulties of the schoolmaster, that while there must still remain very much for everybody to learn from experience, yet there is much which it would be both useful and possible for those who are entering the profession to learn from a properly qualified teacher. As it is, the teachers in all our first- and second-grade schools have to get all their experience at the expense of the boys. Every term there are drafted into the profession batches of new teachers who, however successful they may ultimately prove, yet begin by making a large number of mistakes which might have been

* *Nineteenth Century*, January, 1885.

avoided. Nobody pretends that having been a year in a training-school will by itself make a good master when the other requisites are not present; but that everybody is improved by training is conclusively shown by the experience of the primary schools. They have, in their trained masters, far inferior material to begin with than the public schools, who can command the pick of the universities; and yet one has only to go into a primary school to see what an immense lift the training gives to the young men when they first begin to have the management of a class of boys. In ease, in resource, in confidence, in mastery of handling, a certificated master could give points to any average graduate —even to many of the best—fresh from the universities. I do not suppose that there is a man of experience in the profession who would not admit that the boys, as well as himself, would have been saved from much that was better avoided if he could have had a regular training."

In an admirable paper on this subject, Mr. J. J. Findlay urges, that while training—strict scientific training—is essential, a **Training College** may not be the best means of ensuring this result: that for the practical purpose of higher education a master might **serve his apprenticeship,** not in a special college, but at a large **school of reputation,** where suitable provision would be arranged for his instruction. To accomplish this he advocates that, in connection with some of the leading public schools, a constant succession of young graduates should be instituted, partly teaching under supervision, and partly studying the subject of education under the direction of experienced masters on the staff. This form of training has now been established (under the title of the *Seminar Jahr*) in the German higher schools.

At present, "an intelligent knowledge of the science and art which lie at the basis of teaching" is most inadequately

recognized in this country. It is encouraging, however, to observe that King's College, London, has not only organized a department for the training of teachers for secondary schools, by means of a course extending over two years, but has also offered six exhibitions for competition. At Cambridge, examinations are held in the theory, history, and practice of education, and in practical efficiency in teaching. The Royal University in Ireland has also founded a diploma in education, and examines candidates for the qualification; and Trinity College, Dublin, is now moving in the same direction. When we acknowledge its universal necessity, which seems within measurable distance now that the Board of Education has, quite recently, recast the regulations for the training of teachers, and for the examination of students in training colleges, the present crudities and anomalies will vanish, and education will become, what its name implies, a drawing out or development of mental faculties with the least possible waste of energy, and with concurrent advantage to physical powers. In the mean time we are violating nature's laws by overstraining the immature faculties of children, and restricting their natural activities.

The **training of teachers** involves many essential elements, at which I can only hint:—

1. The *management of themselves* in their methods of teaching, in their example, and in their temper.

2. The *management of children*, and the practical exhibition of sympathy and patience with their idiosyncrasies and their necessarily immature powers of concentration.

3. An *accurate knowledge of the subjects* to be taught, and an attractive and inspiring method of imparting it.

4. **A sufficient acquaintance with physiology** in its relation to **the structure and functions of the brain,** which forms the soil for their judicious cultivation,—even tillers of the ground are now taught the properties of the various soils they have to till, and their suitability or

otherwise for specific crops! The teacher should know, too, that the relation between mental *capacity and head diameters* is of fundamental importance: that *the relation between the transverse diameter and the capacity is most significant;* and that the more the cranial cavity's contents are increased, the greater is its tendency to assume a spherical shape.

The brain is the organ of mind: the body is the organ of the brain; and the teacher should learn that the brain, whose training forms his care, is an immature, growing organ, which, like all undeveloped tissues, will not bear strain. If it be supplied with sound red blood, which can only occur when a maximum of health is induced, its vigorous growth is possible. Diminish, however, the supply of healthy blood to the brain, evidenced by pallor and anæmia, and implying a supply of inferior quality, and the brain not only ceases to grow, but the tissue already formed deteriorates in quality. It is the number of the red corpuscles in the blood which indicates its nutritive quality; and when these are reduced, as they invariably are by deficient or inappropriate food, by insufficiency of air, light, and exercise, and by overwork, the brain is handicapped and incapable of genuine work. The mere physical appearance, at the end of term, of school children trained under the existing system, condemns the method, or rather the absence of method, which now prevails.

Then, again, whence is derived the individual brain which the teacher has to cultivate? We none of us need pride ourselves on our brains. True, we may have helped to make, or mar, them by our own industry or laziness; though even this power of use and abuse is not entirely our own, but implies a largely inherited faculty, which demands, where the form of inheritance is serviceably valuable, a spirit of thankfulness instead of boasting. **Galton's law** of ancestral heredity, now recognized as one of the cardinal principles in biology, affirms that *each parent* contributes one quarter, and

each grandparent one sixteenth, and so on *ad infinitum*, to the characters of the young.

Every brain is thus the product of many generations; and all its cells, fibres, and tissues work naturally and freely or restrainedly and feebly as they have been trained and taught to work in ancestors from whom they have sprung. The blood has been mainly accustomed to nourish muscles: the teacher suddenly requires it to nourish brain. The sensory apparatus has been wont to obey external stimulus; now the senses—sometimes violently—are arrested into quiescence, so that the boy may be stimulated from within. The nervous energy must flow in new channels: the will must somehow control, in unknown ways, but under known laws, the entire nerve structure, and make it laboriously perform unaccustomed work. The whole machinery of life must be remodelled; and nature frowns upon these abrupt revolutions.

It is true that the genius sometimes springs from a previously uneducated, and practically dormant source; but this is of the nature of the "sport" in the vegetable world, well known to the gardener, and recognized as an exceptional, though much sought for, growth. Or rather, are not such instances cases of reversion to some long-quiescent type?

The brains of children whose forefathers have led a muscular life need the gentlest handling, since their nervous tissue is unfit for pressure. It is thus palpable that what may be hard work for one child is scarcely work at all to another.

Until the training of teachers becomes general, I would urge that all first-school appointments should be made for one, or at most two, terms, so that if a teacher be found incapable the appointment may not be permanently conferred. This is gradually, I am glad to learn, becoming the custom in some public schools.

From the assistant-masters the **House-masters** are appointed according to seniority or selection. Whenever a boarding-house becomes vacant it is the rule for the next assistant-master in seniority to undertake, or refuse, it as he feels disposed.

In a public school, the character and capacity of the house-master under whose care a boy is placed are all important, since he has absolute control during the boy's residence in his house. It is this autocracy of the house-master which confers a distinctive character upon each boarding-house in a school, and almost independently of the school—often so marked that a boy bears, willingly or unwillingly, the stamp of his boarding-house throughout life; hence the boarding-house and boarding-house-master are a distinct element for good or evil.

This house-feeling, however, I think, is more frequently an adverse element in a school, and should not be encouraged. There is no doubt that it is generated and fostered not simply by respect for the house-master, but mainly by the fact that boys play their games as members of a "house," and not as members of the school, as is the case in many schools, and this point I shall discuss in the section on "Play." The feeling induces too early in life a party spirit. A soldier's enthusiasm attaches to his *regiment*, and not to his *company*, however much he may be devoted to his captain and comrades. A school-boy's feeling is too often for his *house* only, in almost entire forgetfulness that he is a member of the *school*. This sentiment may tend to the advantage of the house-master; but I am clear that it is not beneficial for the boy to be limited thus early to membership of a party, however renowned.

Parents should usually avoid a "popular" house-master; for it may be surmised, as a *general* rule, that some failure in vigorous duty exists when all the "house" speak well of him. In all houses there must be boys who need a

very firm hand, and who will dislike, and speak disrespectfully of, the man who controls them, however much they may learn to appreciate him after their school-days are ended.

Many years ago, I was greatly interested in the diversity of character ascribed to one of the ablest house-masters of the day by members of his house during his absence. I knew the master intimately, and his boys well. In every case where the master was applauded, the praise came from boys who did their duty and behaved themselves, and were a credit to themselves and him. In every instance where he was unappreciated, and was spoken of slightingly, it was by boys who required a strong hand, and felt it. In most cases I could have foretold the verdict, before I elicited the information, according to my knowledge of each boy's character. Nothing was clearer than the inference that this master was doing his duty to every individual boy under his care: to be regarded disparagingly by the bad or the lazy boy was the highest evidence of his worth.

The boarding-house of that master should be avoided who never believes that his boys are telling him the truth, and who, consequently, acts the "spy;" the same remark applies to the master who foolishly believes all that is told him, irrespective often of evidence to the contrary: these opposite characters both tend to develop inveterate untruthfulness in the pupils. Few things are so demoralizing to a boy's character as the feeling that he can "*do*" his master.

It is a general rule that nearly every person who knows a boy at all has an opportunity of more intimate acquaintance with him than his instructor usually possesses. This is a grave defect. It is obviously as much the duty of the master to learn his pupil's character thoroughly, as it is the physician's duty to comprehend the constitution and the disposition of the individual patient: to fail in either case is

incompetence. Yet how many masters know their boys with sympathetic insight and encouraging aid? How many ever enter into the lives, characters, temptations, and troubles of their boys, and strive to help them to lead upright lives? The discrimination of the tendencies of individual character and of the diverse forces of motive is too frequently ignored in thoughtlessness or avoided on the ground of trouble. Our custom is too generally, as has been stated, the heedless and helpless one of judging in the gross. Imagination, born of sympathy with the hidden struggles, the hopes and fears, of others, and based upon our own personal experiences, is demanded; and sympathetic companionship, on which true organization depends, has its cost. As in man, so in the boy: the effort is as severe in some instances to keep right as, in other cases, the avoidance of wrong is apparently effortless. In the boy's inner world the agencies at work can never be counted small; they are pregnant with largeness of result; and appreciation of true endeavours, even and especially under failure, is a sign of wise and guiding power of influence and control.

They are well taught from books: they are kept tolerably straight by threat of various punishments, often most inappropriate; but how many masters so gain a hold upon the average boys as to win their affection and confidence? Many, no doubt; but unhappily the *proportion* is small. The duty would lose the aspect of duty and assume the form of a high ambition if masters would only reflect upon the gracious power of genial fellowship between them and their pupils in the construction of a pure and useful manhood.

The statement is sometimes made that the amount awarded to a house-master for boarding-house expenses is excessive in comparison with the benefit which each boy receives. But it seems to be forgotten that a house-master receives his stipend for the performance of three distinct functions, viz.—

1. For tuition, since he usually instructs the highest forms, which involves arduous work and responsibility.

2. For providing board, lodging, and washing.

3. For general supervision while the boy remains at school.

Now, where a house-master does his duty to each boy, the last function is the most important he has to perform; for the character of a boy frequently depends upon the conscientious fulfilment or neglect of this office. And obviously no price would be too high for the capable and judicious performance of this work.

And as regards the *sanitary* condition of the houses, one master will seek out and effect every improvement, while another can only be moved by a great crisis which renders changes imperative.

Boys in one house meet boys from other houses in form and in chapel, but for the rest of their time they act, as a rule, independently. They usually play together as houses, and not as a school; and a boy in one house does not generally visit at another house, though in some schools this custom does not apply to the elder boys. It is thus evident that one house may differ, from various causes, very considerably from the rest, and while the tone of the school as a whole may be excellent, the tone of any particular house may be the reverse; or, the tone of a house may be all that could be desired, while that of the school itself may be comparatively mediocre, or even bad.

Our great schools, as a rule, are officered by some of the very ablest men in the land—men whose peers it would be difficult to find. Such schools require such masters. And a parent needs a master who will take his place, and be able to instil confidence in his son; so that a mutual regard shall exist which may generate not only respect, but affection. Some of the most helpful lifelong friendships have been, and are continually being, formed between a boy and

his master. This was eminently the case with Thomas Arnold—whose spirit, it is grateful to record, still pervades all our schools in various degrees—the friendship of whose pupils lives in English literature. It was also exemplified in James A. Garfield, the teacher, afterwards President of the United States, "who perfectly inspired his pupils with admiration and love for him, because he strove to gain access into their inner soul-life, to teach them a higher conception of life, and the part they have to bear in it."

But genuine friendship between the teacher and the taught is not identical with familiarity or an assumption of equality: the natural respect of the younger for the older must necessarily be preserved, and this relation will be most fully maintained in its reality and yet lose all its formality when associated with that cordial and unaffected concern which the young are keen to detect and appreciate.

Masters, like boys, differ much in disposition; and while both may be equally estimable, they may yet be incompatible, and thus incapable of getting on well together, by reason of continual irritations on one side or the other, frequently without cause: *e.g.* a quick, impulsive boy may unfortunately be placed with a master of similar temperament; whereas if such a boy had been assigned to the care of a more placid, even-dispositioned master, there might then have been cultivated that love of his instructor which constitutes a powerful element in the formation of character, and a consequently enduring gain.

But how can a righteous influence be exercised over a pupil where he realizes the casual way in which he is frequently permitted to evade his lessons: the unjust, or unsuitable, method of his punishments: the inferior housing and food provided; and the absence or deficiency of those sanitary and other necessities for his growth and development? How can this salutary influence be possible where the pupil is left so largely to himself, and receives little or

none of that care and teaching which are essential for avoiding the pitfalls incidental to school life?

It is not only requisite that the pupil should have a suitable "house-master," but also that thought and judgment should be bestowed in the selection by the school authorities of his **Form-master.** Let me explain what I mean. A parent once told me the following story about his son, who was admitted to be the ablest boy in a large school. In his "home reports" he always received the highest character, except in one particular. The parent remonstrated with his son; still, for several consecutive terms, the report never varied—a fine character except for this single defect. At last the parent perceived the reason: his son and the master must be incompatible in temperament, probably from no fault on either side. After much pressure on the part of the parent that the boy might be placed under another master in this one subject, the request was reluctantly granted, and his son subsequently received the highest character from all his masters. What the incompatibility was, it would, perhaps, be difficult for either to describe; but of its existence there could be no doubt. If, then, at any time a boy fail to make satisfactory progress, a change of form-master may sometimes have the desired effect, and this course should be tried before the boy is condemned.

It is advisable in teaching a "form" to speak firmly, impressively, and with precision; but this does not necessitate *shouting*, which generates fear in some boys, and sullenness in others.

The virtue of *punctuality* can never be instilled into pupils, unless the practice be exemplified in the teachers: by many it can never be learnt except by perpetual and enforced habit.

One often wonders if teachers ever attempt to realize the value and extent of the stimulus of happiness which would result if their pupils could always feel that, so long as their

best was done, the teacher sympathized equally with their incapacity and failure, as with their ability and success!

Every profession has its **Etiquette**, which is usually an understood code of simple straightforward common-sense rules—literally, personal honour, and "to do as you would be done by"—for the guidance of its members in the facile and considerate conduct of professional life, and for the protection also of the public from their own unwise suggestions and requests, which too often lead to infinite trouble. For instance, a most salutary rule in the medical profession prescribes that a patient having selected a medical adviser to attend during a certain definite illness should, except for a consultation, retain his services to its end. But there are occasions when this rule may be, and should be, justly broken by the patient; and cases also, not sufficiently allowed, occur on the other side, in which the only straightforward and self-respecting course open to the medical man is to refuse further attendance. A very similar etiquette exists in our great schools—that a parent having once placed his son under a certain house-master, should retain him there during the time he remains at school. This is a most wholesome regulation: in fact, the only one that can work satisfactorily for the boy or the school; for no course could be so prejudicial from both aspects as a frequent change from one house to another. But to compel a boy to leave the school altogether, rather than permit a deviation from the rule, may sometimes inflict a serious hardship upon both parent and boy. The rule taken absolutely is, I think, indefensible; for occasions must arise, in which a relaxation would prove generally beneficial.

In the medical profession, again, one sometimes hears of a doctor so unreasonable as to expect that an attendance, once begun, implies a perpetual professional tie. And in schools a similar irrational precept is not unknown. A parent not long ago transferred his son from one private

school to another, and the master from whose school he was removed remonstrated with his friend who had taken the boy, as if he were a receiver of stolen goods.

We are all too apt to forget that schools, hospitals, churches, and law-courts exist for the benefit of the public, and not the public for the benefit of the professions.

CHOICE OF BOARDING-HOUSE.

Boarding-houses are often, and will be, with some exceptions, what parents demand them to be.

If parents are satisfied with placing their boys in a house or school whose dormitories allow only 300 cubic feet of air space per boy instead of 700 to 800, that area will alone be provided: if parents demand cubicles, cubicles will persist, notwithstanding their undesirable nature: if parents are satisfied that the drains of a school should be connected *directly* with the sewer of the *town*, that serious defect will not be remedied: if parents prefer a school in the *country*, with cesspools situated on a higher level than the well (so that their contents can overflow into the well, and thus supply an infusion of sewage into the drinking water), instead of the adoption of earth-closets, or Dibden's method, this fatal arrangement will continue unchanged; and the same remark applies to all defects. This statement is no mere conjecture, as some will be inclined to assume, and as is too often suggested when evils are exposed.

It is an incontrovertible fact that in some schools the dormitory accommodation is actually worse than that insisted on by Government for paupers in workhouses—less than 300 cubic feet of space per head being provided. And in schools where the boys live and sleep in *cubicles* it is quite refreshing to find 700 cubic feet allowed—the lowest limit allotted for paupers, who occupy the same room day and night, in workhouses.

But the most unsatisfactory fact is, that the expensive school, where the rate of payment suggests to a parent that the most favourable hygienic conditions must exist, is frequently the worst of all. When pupils return home for the vacation looking unwell, parents generally, and justly, complain. The reasons assigned are that "the boy or girl has been worked too hard," or "that the food has been insufficient in quantity or inferior in quality;" while in most cases the primary cause has been an insufficient allowance of air *indoors*, with the consequent necessity of breathing the same unchanged air more than once.

Air is the greatest essential to life—greater far than water or food; and yet schools, as a rule, provide plenty of food, are less particular about the quality of the water, but show comparatively little regard to the amount—and therefore to the quality—of the air.

Not that the boy does not get out-of-doors sufficiently, for this out-of-door life in most boys' schools—I cannot say the same for girls—is ample: the defect lies in the insufficient air-space indoors, especially in the sleeping apartments, where a third of every day is spent. This latter fact implies that, in a term of three months, one month is passed in the dormitory, where the air-space is generally so deficient that the room literally stinks in the morning after eight hours' occupation.

Fortunately, so much time is spent in the fresh air, that the evil, to a great extent, is counteracted; yet, I would urge, that no growing boys, or girls, can properly thrive while a third of their time is passed under these unfavourable conditions. Some boys apparently are not greatly affected; but the presence, or absence, of this adequate air-space determines, in the case of many a delicate boy, whether he shall grow strong and hearty, or whether some possibly latent disease shall develop which otherwise would have been arrested by a propitious school-life. It is an important

and relevant fact that, by abolishing the "stuffiness" of barracks, the mortality from consumption alone in the army has been reduced from 12·5 to 1·5 per cent.

Parents should understand that reasonable hard work rarely makes a boy look ill, provided he is well fed, properly housed, and has regular exercise, with sufficient sleep. But I have known disease and death to be caused by compelling boys to work hard under most unfavourable conditions.

I have *seen* living and sleeping rooms combined in schools where the safety for the boys who occupied them lay in the fact that they only lived in them for three months in succession: had they resided in them day and night for twelve consecutive months, every occupant would have been ill. For instance, a boy working hard at school begins to lose health and spirits day by day: an acute illness—brain fever (tubercular meningitis)—supervenes, and he dies. What is the verdict? *Overwork!* But is this true? Is not the cause traceable rather to hard work under unfavourable hygienic conditions? Had the boy been allowed plenty of fresh air and light, instead of working in greatly deficient light, living, too, in the same air day and night, which was re-breathed again and again, the work would in all probability have been effected without ill effects.

I have *seen* the cesspools at one of the most popular and expensive schools in the kingdom in a state of offensiveness which may be justly termed indescribable. No one appreciates, as I have stated, the benign influence of venerable institutions and noble traditions more sympathetically than myself. But even more decisively do I counsel, where these ancient institutions are forgetful of essential hygienic conditions, the prudence of avoiding them, and the preference of the superior hygiene of a humbler school which is wise enough to put in practice even the rudiments of sanitary science. To seek education at the risk of health, and even of life, involves too great a cost! On the other hand,

many schools exist—some with illustrious traditions, others daily evolving them—where health is already a primary consideration.

The preceding remarks and illustrations are conclusive that the sanitary state of our schools is a question that demands the primary consideration of parents in the exercise of their choice. It is encouraging to learn from the proprietors of schools themselves, that the present book has caused personal inquiry by many parents upon the points discussed prior to the selection of a school.

The house or school improvements which parents deem to be *necessary* will frequently need to be expressly demanded; otherwise, as a rule—fortunately, with some notable exceptions—they will not be supplied, except under extreme circumstances which, when the mischief has occurred, absolutely compel reform; but if masters find that parents are alive to the necessity of certain arrangements for ensuring the safety of the school, and require them before sending their children, those arrangements will be effected.

The approximation to a sanitary ideal in the boarding-house of a public school, and in the dwelling-house of a preparatory school, will be considered hereafter.

IV.

BEFORE ENTERING SCHOOL.

Before the child has attained the age for school-life the basis of all subsequent education, mental, moral, and sanitary, has been laid, suitably or unsuitably. If the mother has fulfilled her part in this early tuition, which no one but herself can accomplish, the gain to the child is lifelong and priceless. What mother does not realize those beautiful words—of Lady Gifford to her son, the late Marquis of Dufferin and Ava—when she parts with her child for his first school?

"At a most solemn pause we stand!
From this day forth, for evermore,
The weak, but loving, human hand
Must cease to guide thee as of yore."

INTELLECTUAL EDUCATION.

Before entering school the child should be taught something, however little, with thoroughness; whatever may have been learnt should have been inculcated with method and completeness. The plan of keeping young children at work for a certain number of hours, quite irrespective of what they may learn, is wrong. I mean, that work which ought to take half an hour to accomplish should be finished in that time, and cease, and should not be permitted to

occupy three hours: the moral habit is thus early and steadily formed of saving and utilizing time in addition to the intellectual gain.

Moreover, there is little hope of ever inculcating the virtue of *diligence* unless some such reward is bestowed early on the child for doing his best. Under the present régime, most children know that, however industrious or lazy they may be, their hours of work will be unaltered. And the intelligent child who learns easily is thus taught to *waste time*. The **training in diligence** marks the chief difference between success and failure in life.

Early pressure of work cannot be sufficiently deprecated, nor long hours for young children: each evil may cause an acute brain illness, or entail prolonged ill-health.

Children, as early as possible, should not only be taught to exercise their *memories*, but should also be encouraged to develop their *reasoning faculties*, so that they may learn to think before they speak, instead of asking stupid, unmeaning questions. A little wholesome *chaff* at home—especially sisters' chaff, which does a boy a world of good—when a senseless question is put, or a foolish observation made, will frequently act as an effectual, though mild, corrective, and will save the boy from much of that unpleasant teasing which, owing to his "greenness," he is apt to receive at his first school, and for which he has often to thank his parents. This avoidable torment frequently makes his school-life, during the first few weeks, a misery; sometimes causing him to be really ill; occasionally ending in his "running away" from school.

MORAL EDUCATION.

A child's *Moral Education*, also, cannot be too soon commenced: it should, indeed, begin at the earliest age. The

moral nature resembles all our animal functions in this respect—that the highest performance is only obtained by fullest action, while inactivity leads to atrophy and death.

The nursery life of the child, physically considered, must be healthful, bracing, and passed in an unartificial atmosphere; while, morally considered (in the larger sense of that term), a patient, firm, yet gentle discipline should be consistently pursued as the formative power of a steadfast and respecting character.

The mental, moral, and physical natures in man are undoubtedly inherited to a large extent. While the mental qualities generally, and the moral characters of geniality and probity may be developed and strengthened by the environment of home companionship, good schools, or other well-equipped institutions, their origin, nevertheless, like that of physical traits, such as gait, lies deeper down; they are inherent in the stock, and not created by the surroundings. It is the stock itself that constitutes the home environment, *i.e.* the home standard is itself the product of the parental stock, so that the relative gain from education depends to an almost incalculable degree upon the raw material. So argues Karl Pearson, who, however, makes the wider statement that the physical characters which form the backbone of a State in the modern struggle of nations are not manufactured by home, society, school, or college, but reside in the individual structure itself.

I desire, however, to emphasize the fact, as forcibly as possible, that where **hereditary tendencies** appear to prevail, their features arise more from the circumstances amid which the child grows up—its environment, in short—than from inherited qualities, whether moral or physical. Perhaps I should express myself more clearly if I adopt a concrete illustration—*as soon as a child is born*, remove it from the unfavourable conditions which may actually exist to more

propitious ones, and any seemingly hereditary taint will fail to appear. Let him be exposed for a time to these adverse external influences, and a transfer then to a more congenial environment will cause the *suppression* of any unfortunate traits of character or phases of health which may have been rudimentarily exhibited; but if the impress of these qualities has become deeply ingrained by more prolonged exposure to unpropitious surroundings during this susceptible stage of life, the child becomes tainted, not from hereditary transmission, but by reason of the power of external circumstances: mimicry, so to speak, prevails over heredity.

The child cannot be placed too early within an environment which shall be favourable to character: in which case it is the environment which will dominate over what *primâ facie* appears to be the result of descent. During school-life the influence of school-fellows in the education and formation of character is deep and permanent for good or evil. No subtler and more impressive power exists at this stage than that which is described by the terms, "bad form," and "good form." Looking to the effect of this influence, I would not lose heart over any boy who, removed from even the most adverse associations, came under its sway; provided the removal was not too long delayed to admit of these inferior associations having become ingrained.

The chief reason why bad boys are so frequently found at school is the almost criminal neglect of parents during their early years, when the foundation of character should be laid. It is during these years that many parents, when they do not spoil their children, transfer their care to subordinates, with the consequent ignorance of wrong-doings which might otherwise be checked before they hardened into *habits*. For it is the rule, unfortunately, for parents to support the child against the governess or nurse, instead of selecting, after much care and anxious thought, the most

efficient substitute for themselves, during their absence, and giving her the heartiest support and sympathy. The child soon perceives this partiality of action, and seeing that the governess or nurse is not trusted implicitly, more and more develops any fault of character, and this virtually with the parents' support. The governess or nurse naturally strives to endure misconduct, rather than incur the displeasure of her employers and the taunts of her charge. In the larger world and temptations of school, the growing defects expand into grosser faults, and sometimes culminate in vice or crime that demands expulsion. Then the parents are aghast, and the school and school-fellows are blamed, whereas the offenders are the neglectful parents themselves, who have violated a solemn trust at the stage when it should most righteously have been discharged. One main reason why many children deviate from the right is the blind belief of parents that their own offspring are patterns of propriety and incapable of evil.

Parents must bear in mind, if they desire to be spared these serious calamities, that truthfulness, honour, and uprightness are habits which are formed in the earliest years—really before school-days commence; nay, more, that it is all but impossible to produce such habits afterwards. In effecting this early formation of character punishment may be requisite, but it should be uniformly adapted to the offence, without varying according to the humour, temper, or caprice of the parent; and it is well to remember, as a rule, in moral administration, that the rewarding of good conduct is often more effectual than punishing bad conduct. But if I were asked, What is the most important feature in the rearing of children, I should unhesitatingly reply, *Justice;* for nothing impresses them so keenly as injustice, from whatever source it may arise. The real exercise of sound judgment and impartial temper consists, not in inability to form a clear decision on the

evidence, but in the nice and discriminative sense with which the evidence is weighed.

If this moral education be commenced at home from the outset, and be wisely pursued, the child will act rightly almost intuitively, and will shun wrong without hesitation. If it be neglected, self-control becomes a hard lesson to learn: sometimes only attained after many deplorable falls, sometimes never reached at all: the untrustworthy boy becomes the dishonourable man.

That a child should be taught to speak the *truth* under all circumstances is admitted as an axiom. But this is not enough. It is imperative that children should be trained, from the commencement of life, to speak and act manfully with perfect directness, and thus avoid the possibility of adroitness. A timid child is often practically *taught* to tell a lie by the severity of the parent or teacher, or through fear of consequences which are altogether irrelated to the offence. It is, therefore, essential to deal gently with them: *never to take them by surprise*, and thus frighten them into untruth—a course which is too generally pursued.

Severity, too, generates bad temper, and yet there is no feature of character which judicious early training is more capable of moulding than that of *keeping the temper*, without which a happy and useful life is seriously impeded.

Now, comparatively few parents think of the importance of teaching the virtue of *self-restraint*: even infants are allowed to cry until they are tired, when a slight attempt at diversion would at once be effective. This is a virtue which should be instilled into a child before it can walk or talk, and should even be enforced, until the habit is so firmly consolidated that its practice becomes almost automatic. In this way only can strong *will*-power be developed. From infancy to manhood children have often simply to be importunate in order to gratify desires which should be repressed.

Above all, parents should early teach their boys to act from *high principle:* they should learn that there is but *one* Morality and *one* code of honour—applicable everywhere and to every condition of life—not one kind of morality suited to home, another to school, another to social relations, and another to politics.

An artificial conscience too often overlays the natural one, and tends to reconcile a man, in the name of *policy*, to many an act against which his genuine feelings protest. Policy is allowed to reign disastrously above *conscience.* Macaulay's dictum—applied generally—is too often true, "that many a man, with a wig on his head, will do, for a guinea, things which, without the wig, he would not do for a thousand pounds."

In one of his public speeches, Lord Armstrong said, "Moral teaching and religious teaching are difficult to separate, and the best school for both is a virtuous home." But how many parents or teachers, even in questions of religion, teach their children that the place of worship is a mere matter of local convenience, while the Object of worship is universal and paramount!

The child should also be persistently taught *self-respect*, for his own sake as well as that of others: he will then be ashamed to do wrong as a self-humiliation. If he respect himself, he will soon learn to respect others, whether they be superiors or not: he will not only learn, but feel, that wholesome lesson, so important for a *boy* to know, that a school-fellow is not—in schoolboy language—a *gentleman* or a *cad* according to his birth or means, but by reason of his personal character and conduct alone.

Parents are prone to allow—frequently to encourage—their children to presume upon their noble and ancient birth, and to expect homage on account of ancestry. A long line of noble ancestors (in the true sense of the term) is much to be coveted; but noble birth does not cover worthless

personal conduct. Better far, simply to teach children, that each may become, and should strive to be, a noble ancestor to succeeding generations.

It would be invaluable if parents would teach their children something, too, of the *manliness* of the Christ as the one permanent model to pursue. Let them dwell on this aspect of the Christ's character—the utter absence of effeminacy as the result of a Divine and unselfish life: his very gentleness being a sign of strength: this highest form of manliness would appeal to a boy's nature with refining power. The chief feature in a boy's character is the desire to be, or to appear, manly—sordid and contemptible though his idea of manliness may often be. Still, the trait exists, and it is incumbent to nourish it, and to place before him persuasively the ideal manliness. Under the stress of this example, *self-reliance* will be gradually developed, and vigour and manly broad-mindedness of life produced. In the encouragement of self-reliance, a maxim of Dumas fils is the guiding one, "Never forget that others will depend upon you, and that you cannot depend upon them."

Especially must it be constantly remembered, that in youth the appetites, desires, and passions of manhood exist, untempered by reason, uninstructed by experience; at no era accordingly is delicate, deliberate, and thoughtful guidance more imperative and critical than at this nascent stage. Expressing the position in a plainer form, the passions at the school-age are at least as acute and urgent as those which prevail in adult years; indeed, it may be rightly asserted, that they assume a more dominating aspect, having regard to the almost absolute absence, to which I have adverted, of the controlling moral forces which the discipline of life can alone develop.

And yet, unhappily, how few boys—and still fewer girls—receive the slightest aid or counsel as an essential portion of home-training: a *policy of silence*, frequently fraught with

lamentable consequences, is too customarily and mistakenly maintained.

It may be suggested that, in a treatise upon Health at School, I am venturing beyond my province in introducing observations upon education, and its mental, moral, and social aspects; but I cannot consider the boy at school apart from his surroundings—what he is and may be mentally and morally—since on them his happiness largely depends, and, if his happiness, his health. I might also appeal in vindication to the inter-influence that exists between a well-ordered mental and moral condition, and the physical framework through which it acts.

SANITARY EDUCATION.

Some few points connected with the health of their children should be considered by parents before the transfer from home to school.

And, first, I would mention **proper clothing**—clothing being used not only for adornment, but for protection of the skin against cold and warmth.

The **functions of the skin** are of essential importance to the animal economy, and must be aided and promoted in every possible way; for unless their action be healthy the entire system will suffer. The skin provides not only a tough, elastic *covering to the body*, but serves as a *support also to bloodvessels*, nerves, glands, and ducts, which *secrete* in the adult 10,000 grains of water, 300 grains of solids, and about 400 grains of carbonic acid gas, during the twenty-four hours. The skin, again, regulates the *temperature* of the body by means of its bloodvessels, which are dilated and contracted by a marvellous system of nerves, called the vasomotor nerves, that turn on, or shut off, the blood, in the

same way that the stop-cocks regulate the supply of hot water in the pipes used for warming buildings. Health depends upon the equability of the temperature of the body. Whether we live at the equator, or the poles, our temperature is always the same, 98·4 Fahr., and must be the same if health is to be maintained. Nature effects this important function by the agency of the skin. In *cold weather* the superficial bloodvessels are so contracted that they circulate (in the skin) very little blood, which is therefore nearly all retained within the body itself, so as to sustain the heat of the blood, and prevent its cooling by exposure to the air, through radiation and evaporation; thus the heat of the body is not unnecessarily lost. In *hot weather* the cutaneous bloodvessels are relaxed and enlarged, so that a larger quantity of blood circulates in them and is exposed to the air, which, being usually cooler than the blood itself, moderates its heat; a safety valve is thus provided for the heat generated. Added to this is the enormous cooling power of a sweating skin, which, during the evaporation (which always takes place according to the amount of external heat), lowers the temperature of the surface of the body, and consequently that of the superficial bloodvessels, and thus maintains the general temperature uniformly at 98·4 Fahr., however great the external heat may be.

So long as the skin perspires freely, the body may live in a temperature considerably higher than its own, as is seen in the case of stokers at furnaces, and others; and it may be even safely placed for a time in an oven which is hot enough to cook meat. Those who cannot perspire are unable to reside in a country even as warm as India. All have experienced the shivery feelings arising from the cooling power of too rapid evaporation, incidental to the retention of damp clothes after exertion, or after getting wet. No one ever catches cold, or receives harm, from keeping on wet garments so long as he is warmly clad, *i.e.* so long as rapid evaporation

or icing is prevented. So that in the event of dampness from sweating or from getting wet when the clothes cannot be changed, the protective remedy is the addition of further garments if they can be obtained. If neither of these courses can be adopted, the chilling effect of excessive evaporation should be counterbalanced by the generation of heat produced by constant motion. The slightest feeling of chilliness indicates a too rapid cooling of the blood, that is to say, the abstraction of heat from the body in excess of its generation.

This specific action of the skin, it will thus be seen, forms the most important regulator of bodily heat, the bloodvessels opening and shutting according to the amount of heat internally generated, and according to the external temperature in which the body is placed. The *function of excretion* of the skin is that which is most directly necessary to the maintenance of life. The fluid excreted by these glands is continuous, and is formed so gradually that the watery portion escapes imperceptibly by evaporation as fast as it reaches the surface. This evaporation is termed insensible perspiration, and amounts to about $2\frac{1}{2}$ pounds in twenty-four hours. But during severe exercise, or in warm weather, it occurs so rapidly as to be visible on the surface of the skin as drops of fluid. It is then termed sensible perspiration or sweating.

With such important functions attaching to the skin, the utmost care and prudence are requisite to enable it to perform its duty, and to prevent its normal action being arrested by sudden changes of temperature; yet the greatest carelessness and thoughtlessness prevail upon the subject. To obviate its sudden exposure to the various changes of temperature to which we are liable, the skin requires a *non-conductor* next it: in winter, to retain the heat and exclude the cold: in summer, to prevent a sudden check in its action; to delay evaporation from its surface at any time; and to secure its

efficient working under all conditions. The *nature* of the non-conductor is not essential, provided it be really a non-conductor. In defiance, or ignorance, of this requirement, parents allow their sons to go to school with linen next to the skin—the most ineffective of all non-conductors—flannel being the best, then merino, silk, calico, and linen, in the order enumerated.

If a good non-conductor be worn winter and summer, it matters little about the rest of the clothing, and the question of overcoats is less material. This rule applies to all children, but especially to children from a delicate stock, to those who have been recently ill, and to those who have come from India and other hot climates.

For the purposes above mentioned, *woollen material* is the most efficient, and white flannel is the best form. It is the worst conductor of heat, and thus allows the skin to act adequately under all conditions; for, however sudden the changes of temperature, this kind of material prevents a check to the skin's action. It is, moreover, the best absorber of moisture, and the best retainer of it and of the other elements of perspiration. All will admit that flannel is the best for winter wear; but it is not so generally allowed that it is even more necessary during summer. No one, however strong, whether living in a hot or a cold country, should be without a good non-conductor next the skin throughout the year.

This underclothing of flannel should be always worn by day, though its consistency may be varied in winter and summer according to the temperature. But in this country the summer season should be well established before a change is made in the thickness of the underclothing, as much illness is caused by a premature change suggested by a few warm days in April or May.

It often happens that on the first warm day in February boys leave off their merino or flannel vests, and simply wear

a white linen shirt next the skin. This is sometimes very dangerous; and it is always unwise to incur the risk which this premature change involves. Every boy should be taught that the most manly thing is to strive so to live that he may be always in good health, and avoid encountering risks which lead to illness and disease.

There is a somewhat pernicious habit taught to children, to which I desire to call attention. It is that of folding up their day-clothes on going to bed; whereas the healthy course is to spread them out to air and dry, so that they may have opportunity to sweeten.

Of all clothing, *excessive* clothing is the most injurious. Parents who consider their children delicate are apt to swathe them in an inordinate quantity of clothes. I have seen four to six layers of flannel on such children. How could children be otherwise than delicate with so oppressive a burden? Their skins were consequently never dry, but in a continual state of moisture. As soon as they were properly clothed they ceased to be delicate. The object of all clothing should be to keep the skin warm, short of being moist, under all conditions except active exertion. The moment there is perceptible moisture on the skin under ordinary circumstances, night or day, nature is warning us that the clothing is excessive, and that harm will result.

It is unsafe to travel a long journey to school on a cold day without an overcoat. Yet boys are continually permitted to leave this coat at home on returning to school for the summer term in April, when the evenings are very cold; and they are apt to suffer severely in consequence.

One word more on this subject of clothes. Some boys at our schools, frequently those who come from homes of affluence, might as well be without mothers or sisters, judging from the condition of their clothes, especially of their underclothing. I know boys are careless in the way they deal

with their underclothes, in dressing and undressing; but their under-garments are sent to school from some homes in a state that would disgrace any poor cottager who was short of time to mend, and of means to buy. With some palpable exceptions, I do not think one would be very wide of the mark in judging a boy's probable character from the state of his underclothes; as this would generally be emphatic evidence whether the boy had been well brought up by his mother, and had known the influence of a mother's or sister's love and care.

A mournful chapter could be written on the suffering caused to children through misfitting **boots**, or those which they have *outgrown*. Unfortunately, the prevailing parental sentiment, even among the wealthy—unless the subject is utterly neglected—is that, whatever the growth of the foot, the boots must not be discarded until they are worn out. While the feet are growing rapidly, too many pairs should not be provided at the same time. What a vast amount of good might be effected on both sides if outgrown boots were passed on to poorer neighbours !

Too much care cannot be devoted to ensuring *warm feet* at all times. The boy should be well shod with thick boots to exclude the wet, and be provided with a sufficient number of pairs to allow each pair to become thoroughly dry, after getting wet, before they are worn again.

I would also urge the great importance of providing means for the thorough *drying of boots*, so that, after they have been completely sodden, as so frequently happens after playing on wet grass or brook jumping, they may be perfectly dried before they are again worn. For this purpose a heated chamber is required, well ventilated to let out the moisture, and having narrow bands of galvanized iron, with a serrated edge, on which the heels of the boots can be hung: they can then be dried rapidly inside and out.

The boots should be of sufficient *length*, so shaped that

the inner border from the big toe to the heel lies in a straight line, and so *broad* in the sole that the foot may obtain its full tread without being cramped in its growth and losing its natural arch. The soles should be thick enough to keep out damp, and the heels not sufficiently high to tilt the foot from its natural position. Tight boots destroy the natural elastic movements of the foot, and by their interference with the circulation produce *chilblains*, especially in those who have cold, clammy, swollen, congested extremities, arising from depression of vasomotor control. Chilblains occur even in the month of June in many children.

If appropriate boots were worn, there would not then be produced so many cases of that most painful trouble, an in-growing toe-nail; nor would the toes become anchylosed from inability to move freely in consequence of the shortness or tightness of the boots. This question of the provision of suitable boots during the growth of the boy's foot is so seriously neglected by parents and teachers that permanent suffering is frequently caused. If more care and interest were taken by parents, the medical officer would not be advising so often upon the deformed condition of the foot, or having so constantly presented to him those painful cases of chilblains, corns, bunions, and sore heels, which are chiefly produced by improper or imperfect boots, and which, preventing work and play, and entailing suffering, generate a considerable amount of ill-health. The usual fashion of high-heeled boots for girls during their growing years cannot be too strongly denounced, for it causes an unnatural, and therefore an ungraceful gait, and tends to curvature of the spine, in consequence of the weight of the body being thrown on to the front of the feet.

Flat feet, so prevalent in the young, and painful, can be prevented to a large extent by properly fitting *shoes*, so long as the foot has not outgrown them; and can best be cured by "skipping" on the toes several times a day for a few

minutes, and, when sitting down, by assuming the attitude of the tailor.

We laugh at the Chinese about their voluntarily deformed feet; but I could show instances without number of which a Chinaman would be heartily ashamed, so great is the deformity just as wilfully produced by fashionable (!) boots. The last thing that is thought of in the purchase of boots is their conformity to the shape of the foot, with necessarily injurious consequences.

The bootmaker is usually abused for making such boots; but how is he to avoid it? He exists for the public, not the public for the bootmaker. He must make what he can sell, and consequently he can only regulate the form of his goods in accordance with the nature of the demand, and not in conformity with the requirements of nature.

Warm *woollen socks*—never cotton—and dry boots, are requisite for the preservation of health: they keep the feet both warm and dry, while cold feet are a fertile source of innumerable small ailments, which often constitute what is called "delicacy."

The delicacy of whole families is constantly dependent solely upon coldness and dampness of the feet, and arises mostly from the want of wisdom and forethought on the part of the mother.

It is a good plan, originated by a schoolmaster who carried it out in a very large school, to change the socks with the boots in the evening, when out-door exercise has ceased.

I am aware how commonplace these observations are likely to be considered, and others I shall have to make; and yet, when one sees errors repeatedly committed, even by intelligent people, and remembers the serious character of the consequences, it is obvious that remarks which superficially seem to be trifling may point to important facts. It is the commonest experience that many essential truths tend

in time to be regarded as truisms and hence become treated with neglect. Nature itself is built upon seeming trifles.

There are other subjects also of so commonplace a nature, at first sight, that it seems almost ludicrous to mention them; while in fact their real significance is inversely proportional to their apparently trivial character. Among these subjects is that of the necessity of a **daily natural relief.** Parents constantly neglect teaching their children that this "*natural relief*" is daily imperative at a certain hour; and this omission, while entailing a vast amount of discomfort to the child on coming to school, often produces a great deal of ill-health, with occasional danger.

It is one of the characteristic features of the nervous system to resume the same mode of action at stated times, and therefore regularity is of great moment in the exercise of the function to which I have referred. It is but a small percentage of the pupils in our schools who have ever received at home this wholesome lesson. The subject has never been thought of; or, if it has, the suggestion has never occurred that the action is naturally amenable to rule, and an aperient has been deemed the appropriate remedy.

The necessity and practice of the daily natural relief should be enjoined from infancy with uninterrupted regularity: if observance is found to be difficult, the practice should be *enforced:* medicine should seldom be resorted to. I am now of course only referring to children in health; and I have never seen any who really required the perpetual aperients which are given. The difficulty which the child often experiences is simply the result of early bad management. I have frequently proved this to parents by curing a child at once by a system of rewards in place of a course of physic. One marked instance occurs to me. A boy, about twelve years old, had had an aperient daily, or almost daily, for two years: he never otherwise obtained a relief. On being

consulted, I refused to continue the past mode of treatment, but gave him one aperient to start him fair. Then I instituted this plan: I promised him sixpence every time he had his daily relief at 9 a.m., and paid the amount at the moment of success; but he was to forfeit a shilling every time he failed, to be discharged at the time of failure, so that the reward was precisely concurrent with the success, and the penalty with the failure, and these he connected mentally. On the first morning he earned his sixpence, but on the second he lost his shilling. This was too much for him: he never lost another, but had his daily sixpence (and made his fortune), without requiring another aperient. I could repeat very many similar instances.

A little patient painstaking on the part of parents from the very beginning would save trouble to all concerned. It is neglect—early neglect—and that only, which causes subsequent difficulty.

But where parents have neglected this duty, teachers must realize the fact that constipation dulls the mental capacity: renders the disposition morose and lethargic: is sometimes attended by dangerous consequences: always facilitates the development of disease from within the body: renders the body more susceptible to external influences; and, as years advance, tends to the production of various discomforts and diseases. They should further instil into their pupils' minds that, to allow refuse in the body to accumulate, putrefy, and poison the whole system, is a mark of personal uncleanliness. The importance of this habit has been effectively expressed by Sir Lander Brunton, in these words: —"As a rule, people are now fully alive to the risks they run from poisoning by sewer gas, or, to put it more widely, from poisoning by products of decomposition *outside* the body; but perhaps we do not all of us keep so clearly before us as we ought the fact that *inside* the body there are all the conditions for the formation of putrefactive products,

and the most favourable arrangement for their rapid absorption."

I would suggest, as a simple and effectual method of obtaining the desired result, that some such notice as the following should be printed, framed, and glazed, and placed conspicuously on the inside of the door of every water-closet at schools :—

A MAXIM OF HEALTH.

It is important that every boy should strive to obtain a daily action of the bowels.

The only way to ensure this is to visit the W.C. every day AT THE SAME HOUR: the best time being immediately after breakfast.

It is scarcely possible to exaggerate the beneficial effect of the **Morning Cold Bath,** especially for the young and growing—boys and girls. When used with discretion, nearly every one is capable of enjoying it. The strong may take it cold all the year round; but the weak, and those with a feeble circulation and no after-reaction, should in winter have the temperature raised to that of summer cold water, about 65° F., and even, if necessary, with the feet in hot water. Where the practice has been commenced early in life, and been continued, the bath produces a most agreeable shock to the system. This contracts the superficial blood-vessels, and drives the blood back on the heart and internal organs. The heart then redoubles its action to overcome the resistance, and refills the vessels of the skin with increased vigour. Thus the tone of the heart and blood-vessels is invigorated and rendered competent to accommodate itself to the ordinary changes of temperature. But if the bather remains too long in the bath; or by standing about insufficiently clad, gets chilled beforehand as so many do; or if he be, unfortunately, one of those individuals who

has so feeble a circulation, or a nervous power so deficient that he is unable to take a cold bath in the morning, a disagreeable shock is then experienced, which amounts to a nervous depression, and is accompanied by blueness, or whiteness of the extremities, a sensation of cold, and the absence of a glow. A bath attended by these results has no salutary influence, and should be avoided altogether, or used in such a way that these evils may be escaped. If the skin is to act vigorously as the supreme heat-regulator of the body, its bloodvessels must dilate and contract rapidly, so as readily to respond to the temperature in which it may be placed. All baths invigorate when appropriately taken: languor only occurs with indiscretion in their use. I am inclined to think that the reason why the bath is not more frequently adopted as a daily luxury on rising, is owing to the very common practice of bathing infants and young children in the nursery in the evening instead of in the morning. Owing to this course the delight of the morning bath is not experienced from the commencement of life, but is a "new thing" which has to be started after children leave the nursery; thus it is neglected, and the start rarely made. If mothers would only see that their infants and young children were bathed in the morning, with warm water at first, gradually using cold water as they become older, and would provide a bath in their room when they leave the nursery, the practice would become continuous as a matter of routine. The habit is not only cleanly, but invigorating, and when commenced early in life, and practised systematically in a proper manner, is incapable of injuring boy or girl.

On the other hand, the hot bath at bedtime, so commonly resorted to compulsorily, and so often strongly advocated, is capable of serious harm to many a boy by suggesting ideas and feelings which lead to practices that otherwise might never have been originated.

On rising from bed the pulse is feeble, while the skin, being relaxed by the warmth of bed and of sleep, and thus less competent of resistance, is then very susceptible to cold. Hence the value of the cold bath on *rising*, in order to excite the heart's action, to stimulate the contraction of the blood-vessels of the skin, and to close its pores. The morning cold bath, followed by a cup of hot coffee or milk before "first lesson," tends to health and vigour at school.

It may be opposed that it is impossible in a large school to give every boy a morning bath. This is not so, for the practice is already established in some very large preparatory schools, and in some boarding-houses of public schools, and might be effected in all with little trouble. It would be desirable to provide arrangements also for drying the bath-towels after use, which can be readily done by means of a coil of hot-water pipes.

V.

ENTERING SCHOOL.

A NEW BOY.

A NEW boy! What an interest is comprised in these few words—embodying, as they do, a Record and a Prophecy! A record, let us hope in most cases, of a happy past: a prophecy whose event is yet hid in darkness, and is largely to be determined by the history at school. The pain often attending the first entrance on school life, and recurrent frequently with the return to school, is a very real one; and parents should sympathetically strive to diminish it by instilling encouragement and hopefulness in place of stimulating it by dwelling on the grief of parting. The transition of the boy may be momentous for the future; and requires to be accomplished, therefore, with discretion and loving judgment.

The new boy, in many cases, is welcomed by his schoolfellows on entrance, and a happy commencement is thus given to his school life, with far-reaching consequences. In many instances, on the contrary, he is slighted and shunned, after the fashion of the average school-boy, so that not infrequently he is morally crippled at the start. The information he requires for his guidance he is expected to discover as he can. His teacher looks to his work being properly done, although in the novel atmosphere and

surroundings the mind must naturally be inelastic and restless for a time, and needs sympathetic guidance and some experience of the new aspects of life before it can rightly employ its powers. Under such circumstances, combined with small appetite and insufficient sleep produced by the change, the boy often becomes bewildered and dull; and a state of inertness and pure submission, thus engendered, is not the fitting soil for mental and moral expansion. The various customs, again, provided for the mortification of the new scholar, form a tradition that is often barbarous, and not infrequently cruel in its effects.

The question arises, Can *these* miseries entailed upon new boys be lightened by any means, short of changing schoolboy nature? I am confident they can; and though they may not be extinguished, they can distinctly be ameliorated. For instance, *parents* should write only cheerful letters, and not more than once a week; moreover, they should not visit their children at school for several weeks—say, not earlier than mid-term.

The *teacher*, too, must not expect much work at first, and must abstain altogether from punishing, until it is quite clear that the boy has found his level, and has become comfortably accustomed to the school routine. But the most important detail I have reserved until the last—that every *new boy* should be placed under the charge of some *old boy* of nearly his own age, or of his own form, or of his own study or dormitory, who should be responsible for him during his first term, and to whom the fresh boy could apply whenever any doubt or difficulty arose. Of course, I know that many boys act in this way amongst themselves already; but the peculiar, shy, or diffident boy is the very one who needs special sympathy, help, and protection, and the practice, therefore, should be systematically arranged for *every* new boy. At present, I have no hesitation in saying that the majority do not require this help; and that the

minority, who really need it, do not obtain it. In discussing a large question with a head-master some time since, where a small section of a school were, in my judgment, grossly neglected, the head-master, with great indignation, replied: that, if in a large school, seven-eighths of the boys were well-cared for, nothing more could be expected; whereas I maintain that a head-master's duties are incomplete until the remaining one-eighth are equally well-provided for. The seven-eighths in all schools can more or less take care of themselves: it is for the helpless remainder that I mainly plead: were it not for the frequent neglect of this minority, much of the present book would not have required writing.

The preceding plan of supervision is already carried out at one school with which I am acquainted, where it works admirably; and this is due to the fact that the head-master is a pioneer, not merely in the details of teaching and the demands of sanitary science, but also in all matters pertaining to the welfare, from every aspect, of the school-boy.

PERIOD OF ENTRANCE.

The parent, having decided to send his child to school, and having selected the most appropriate school, naturally asks himself the question—*when* shall I send him?

At what age a boy should be first sent to school must depend on many circumstances, but should largely be determined by his disposition and character. The epoch at which he can safely part with the individual attention of a parent, or a governess, is a matter for mature consideration in each case, and should be partly decided by the fact whether his first school is to be a day- or boarding-school. I, therefore, think this question should be an open one, to

which no general rule can be applied. But, in the exercise of discretion, it should be borne in mind that the pain of separation from home is much more acute when it is deferred until the age of thirteen.

If it be true wisdom, as my readers will admit, to expose the constitution of the young to as little hardship as possible during their growing years, all children should obviously commence school life at the **time of year** when the transition from home will prove as little abrupt as possible. To translate the young suddenly, especially the delicate, to a perfectly new environment is an experiment which should involve the least sensible break; and this course will be accomplished if the transfer be made at the commencement of the summer term, when the weather is warm and bright, the days long, the nights warm, and the conditions consequently the most favourable for easy adaptation to the new surroundings. The constitution of the child will then readily and naturally accommodate itself to the change. I would emphasize this point by stating that it is wrong to send a child to school for the *first* time during the cold autumn and winter months; for, as already intimated, he has enough to contend with without superadding the miseries of bleak, damp weather, with the first lesson in the dark before breakfast. Moreover, the long dark winter evenings offer covert for the bully to exert his sway, and the bad boy to exercise his sinister influence—evils that possess the greater power by reason of their occurrence before the fresh boy has had time to fit in with the conditions of his new life. Graduated exposure to novel circumstances is almost invariably the criterion of ultimate harmony between an organism and its environment.

With a strong, hearty, self-reliant boy it may not greatly signify, from the point of view of health, when he enters school; but to a delicate boy; or one who, though strong, has had a recent acute illness; or one lately arrived from

a hot climate, the time of entry is an element of great importance. The boy in any of these latter cases should always *enter school* in the spring, so that he may become accustomed to the change of place and life during the most favourable season, and thus avoid the risks of bad weather at a period when he is most susceptible to its influence.

It is better, no doubt, from the educational aspect, that all boys should enter school at the commencement of the "school year," which begins, after the summer vacation, in September. This consideration, however, is of minor importance compared with the decision of the question in relation to health. And it can be quite well arranged that school life should begin in the spring, so long as it terminates at the end of the summer term for those proceeding to the Universities in October.

PHYSICAL EXAMINATION.

The boy, on entry, has usually to undergo a searching ordeal by the masters, with the view of ascertaining whether his knowledge is sufficient to sanction admission into school; and, from the standard which he is found to have reached, of determining the *form* in which he should be placed. By this means he is not set at tasks unsuited to his capability, and a fair knowledge of his working powers is also gained.

A similar examination is, or should be, enforced in order to ascertain the capacity of every "new boy" to join in the *school games*, which should be universally compulsory—for it is necessary to restrain some, and to incite others in order to avoid that worst of evils, Idleness—unless his medical examiner excuse him for some significant and valid medical or surgical reason.

This **Physical examination** should be as searching as

an examination for life assurance, for on several occasions I have accidentally found boys with mitral disease of the heart,—which demands the avoidance of strain while the heart is still growing—and other diseases, joining in all the school games, some of which involve active and prolonged exertion. Without this early care, the cavities of the heart are certain to dilate, with attendant discomforts and danger, instead of being permitted to develop the compensatory hypertrophy of the walls, which is essential in valvular disease.

This physical examination should extend to the hearing; and also to the eyesight, where a defect is often the cause of a boy's failure to cope with his work, and entails very considerable suffering from intermittent, and then persistent, headache. Many are the boys and girls who have had their health permanently damaged, and their bodies deformed, as the result of defective eyesight, which might have been obviated by treatment suggested by an examination of the eyes on entering school.

Just as the head-master, therefore, regards it as essential to the boy's success in education that he should be examined intellectually on entrance, so the head-master should request the medical officer to ascertain the physical capacity—what form of exercise will increase, and what retard, his development.

Physical examination for school purposes is merely relevant to the pupil's physical fitness for the adequate endurance of school training during the ensuing five to ten years. It reveals his vigour and defects: his vulnerability to disease: his capacity for work and play; and thus discovers the pitfalls which require to be avoided in order that a maximum of health may be attained, and a durable foundation laid for vigorous future development.

On the corresponding examination for Life Assurance the viability of the applicant is the essential question to be

determined; while in the physical examination for the Public Services the requirements of the State involve, in addition to soundness of constitution, an estimate of the probable duration of efficiency, and of the extent of the liability for Pension, so far as medical foresight can approximately assign.

Equally in the examinations for Assurance and Government Service the hereditary tendencies and family longevity are of paramount importance. In the Public Services, especially in the examination of Naval Cadets, who enter at very early ages, hardship sometimes occurs in consequence of the unfinished growth of the candidate, for some boys start growing comparatively late. Delayed physical development, however, often proves the more stable by reason, probably, of the longer period over which it extends, and the more solid conformation which it thus secures.

I append a suitable form (pp. 97 and 98) for recording the results of the physical examination of boys which, drawn up by me many years ago, has been in constant use at Rugby School, and has proved to be most serviceable.

Having made a complete investigation of the present condition of the entering pupil, and having also studied the Medical Report, described hereafter (which should accompany the boy when he presents himself for examination), the Medical Officer is in a position to certify the amount of physical exercise and education for which the pupil is competent. He can then prepare the appended form (p. 99) for the boy's master, by naming the school games in which he should join, so that the master will possess an efficient guide in the supervision of the physical training of his pupils. In this way no boy can shirk his appropriate exercise, and a greater variety can be imposed, which will aid in his suitable development.

N = Normal.

PRIVATE AND CONFIDENTIAL.

PHYSICAL EXAMINATION.

I. NAME.....
RESIDENCE.....

DATE.

II. AGE.....

HEIGHT. INCHES.
Average.....

WEIGHT. LBS.
Average.....

CHEST MEASUREMENT. INCHES.
Average.....

III. GENERAL APPEARANCE.

1. Aspect.....
2. Physique.....
3. Nutrition.....
4. Deformity.
   - *a.* Lateral Curvature of Spine.....
   - *b.* Pigeon Breast.....
   - *c.* Bow Legs.....
   - *d.* Knock-Knees.....
   - *e.* Flat Feet.....

Colour of Eyes.
Violet
Grey
Blue Grey
Blue
Green
Hazel
Brown
Brown Black

Colour of Hair.
Albino
Very Fair
Fair
Light Brown
Brown
Dark Brown
Black Brown
Black
Red Brown
Dark Red
Red
Golden
Light Red

IV. NERVOUS SYSTEM.

1. Intellectual Standard: Form..... Previous School.....
2. Nervous Peculiarity.....
3. Hearing
   - Normal.....
   - Imperfect..... { Eustachian..... / Aural.....
   - Discharge from Ear.....
4. Sight...
   - Normal.....
   - Hypermetropia.....
   - Myopia.....
   - Astigmatism.....
   - Colour Blind.....

ENTERING SCHOOL.

V. DIGESTIVE SYSTEM.	1. Teeth	Good, and well-cared for / Require Dentist's attention next Vacation	
	2. Tongue		
	3. Action of Bowels	Regular, after Breakfast / Irregular	
VI. RESPIRATORY SYSTEM.	1. Respiratory	Number / Nasal / Oral	
	2. Throat	Tonsils / Post Nasal Growths	
	3. Lungs	Percussion / Auscultation	
VII. CIRCULATORY SYSTEM.	1. Heart		
	2. Bloodvessels	Arteries / Veins	Pulse
	3. Chilblains		
VIII. GENITO-URINARY SYSTEM.	1. Puberty	Attained / Not attained	
	2. Genital Organs	Phimosis / Paraphimosis	Testes: Descended / Undescended
	3. Rupture		
	4. Varicocele		
	5. Character of Urine	Specific Gravity / Albuminuria / Sugar	
	6. Incontinence		
IX. PREVIOUS IMPORTANT ILLNESSES.			
X. IMPORTANT ILLNESSES AT SCHOOL.			

Signed.....
Medical Officer.

N.B.—Appropriate space must be provided for inserting the details of the Physical Examination.

SCHOOL GAMES.

Adapted to.....

O Not to play. X May play. XX Ought to be made to play.
XXX No restrictions.

Cricket						
Football						
Rowing						
* House Runs	Little Side ...					
	Junior ...					
Athletics						
Gymnasium Physical Drill						
Skipping on Toes ...						
Cycling						
Swimming						
Skating						
Rackets ... Fives ... Tennis ... La Crosse ... Hockey ... Base Ball ...						
Golf						
Wrestling ... Fencing ... Boxing ...						
Rifle Corps Drill Rifle Shooting Camping Out						
Workshops						
Gardening						
Walking Exercise only ...						
Natural History Excursions ...						

Signed.....
Medical Officer.

* *No physician can certify that the boy* **can** *run, although he may sometimes be able to say that he* **cannot**.

As soon as it is clear to the Captain in charge that the boy **can** *run well, the sooner he is promoted to the next longer run, the better for his welfare in every respect.*

HEIGHT AND WEIGHT.

In the preceding physical examination the weight and height should be recorded, with the object of ascertaining the nature of the boy's growth before he entered school. This record should be continued year by year, for the purpose of observing whether the natural standard of height and weight is being maintained : a failure in either of these respects being the surest sign that the boy is not thriving, or that illness is imminent. Moreover, this tabulation forms a most valuable guide to the teacher in his educational work. For the scales and measure will indicate, more conclusively than any other standard, whether a boy's dulness and apathy are the result of laziness and idleness: whether they are physical, arising from over-growth ; or whether they suggest deficient growth incidental to unhygienic conditions such as over-work, excessive exercise, insufficient feeding, inadequate sleep, or are indicative of incipient disease. In some of the schools in Germany a measure is attached to the jamb of the doorway of every class-room, so that the height can be estimated frequently, and with the least expenditure of time and trouble.

The measurement of the *height* should be taken in the socks, without boots: that of the *weight*, in ordinary clothes and socks. And the *girth of the chest* should be measured at the nipple-line on the bare skin, with the arms hanging by the side—as a soldier stands at attention—both after the deepest inspiration and expiration, and the mean should be recorded thus $\frac{28}{31}$. It is important to specify the full inspiration and expiration ; for while one boy may show a chest expansion of only one inch, another may expand four inches with ease. In this way the capacity of the lungs can be ascertained.

But in assessing the significance of these records, it

must be remembered that most children grow by fits and starts: rapid growth requiring great care, more rest, more sleep, and little work: while with loss of weight, all work should be diminished, or should cease entirely. Whether children have been brought up in town or country is also shown in this record; for Dr. Charles Roberts has stated that between the ages of 10 and 20, children living in the country exceed in *growth* those living in towns by an inch in *height*, and in many cases by 7 lbs. in *weight*.

Dr. Squire has furnished the following scale as a trustworthy average standard of height and weight for the following years:—A child 8 years of age should measure a height of 4 feet, and weigh 4 stones; at 12 years of age, a height of 5 feet, with a weight of 5 stones. At the school age of adolescence—

a pupil of 5 feet 6 inches in height should weigh 8 stones.
" 5 " 8 " " " 9 "
" 5 " 10 " " " 10 "
" 5 " 11 " " " 11 "
" 6 " 0 " " " 12 "

Girls should show a higher rate of growth at the age of 11 to 12 years, or healthy development is being impeded.

The following table applies only to English public-school boys, and is, therefore, precisely appropriate for this treatise:—

TABLE VI.—SHOWING THE AVERAGE HEIGHT, WEIGHT, AND CHEST MEASUREMENT OF THE ENGLISH PUBLIC-SCHOOL BOY.

Age.	Height.		Weight.		Chest Girth.
Years.	feet.	ins.	stones.	lbs.	ins.
13	4	10·5	6	0·25	28·5
14	5	0·75	6	9	29·5
15	5	3	7	5·5	30·75
16	5	5	8	4·5	32·5
17	5	7	9	2·5	34·25
18	5	8	9	11	35·25

The following tables were carefully and laboriously worked out by Dr. Charles Roberts—

TABLE VII.—SHOWING THE AVERAGE AND MEAN HEIGHT AND WEIGHT AND THE ANNUAL RATE OF INCREASE, OF 7855 BOYS AND MEN, BETWEEN THE AGES OF 10 AND 30, OF THE ARTISAN CLASS—TOWN POPULATION—

Age last birth-day.	Height, without shoes.				Weight, including clothes of 9 lbs.			
	Average.	Growth.	Mean.	Growth.	Average.	Growth.	Mean.	Growth.
	Inches.	Inches.	Inches.	Inches.	lbs.	lbs.	lbs.	lbs.
10	50·52	—	50·50	—	66·31	—	66·0	—
11	51·52	1·00	51·50	1·00	69·46	3·15	70·0	4·0
12	52·99	1·47	53·50	1·50	73·68	4·22	74·0	4·0
13	55·93	2·94	55·50	2·50	78·27	4·59	78·0	4·0
14	57·76	1·83	58·00	2·50	84·61	6·34	84·0	6·0
15	60·58	2·82	60·50	2·50	96·79	12·18	94·0	10·0
16	62·93	2·35	63·00	2·50	108·70	11·93	106·0	12·0
17	64·45	1·52	64·50	1·50	116·40	7·66	116·0	10·0
18	65·47	1·02	65·50	1·00	123·30	6·97	122·0	6·0
19	66·02	0·55	66·00	0·50	128·40	5·08	128·0	6·0
20	66·31	0·29	66·25	0·25	130·60	2·20	132·0	4·0
21	—	—	—	—	—	—	—	—
22	66·60	0·29	66·50	0·25	135·40	4·81	136·0	4·0
23-30	66·68	0·08	66·50	—	139·00	3·58	138·0	2·0

TABLE VIII.—SHOWING THE AVERAGE AND MEAN HEIGHT AND WEIGHT, AND THE ANNUAL RATE OF INCREASE, OF 7709 BOYS AND MEN, BETWEEN THE AGES OF 10 AND 30, OF THE MOST FAVOURED CLASSES OF THE ENGLISH POPULATION—PUBLIC-SCHOOL BOYS, NAVAL AND MILITARY CADETS, MEDICAL AND UNIVERSITY STUDENTS—

Age last birth-day.	Height, without shoes.				Weight, including clothes of 9 lbs.			
	Average.	Growth.	Mean.	Growth.	Average.	Growth.	Mean.	Growth.
	Inches.	Inches.	Inches.	Inches.	lbs.	lbs.	lbs.	lbs.
10	53·40	—	53·00	—	67·4	—	67·0	—
11	54·91	1·51	54·50	1·50	72·9	5·50	73·0	6·0
12	56·97	2·06	56·50	2·00	80·3	7·39	80·0	7·0
13	58·79	1·82	58·50	2·00	88·6	8·27	88·0	8·0
14	61·11	2·32	61·00	2·50	99·2	10·61	98·0	10·0
15	63·47	2·36	63·50	2·50	110·4	11·21	110·0	12·0
16	66·40	2·93	66·50	3·00	128·3	17·92	126·0	16·0
17	67·84	1·46	68·00	1·50	141·0	12·69	140·0	14·0
18	68·29	0·43	68·50	0·50	146·0	4·97	146·0	6·0
19	68·72	0·43	68·75	0·25	148·3	2·20	148·0	2·0
20	69·13	0·41	69·00	0·25	152·0	3·87	150·0	2·0
21	69·16	0·03	—	—	152·3	0·27	152·0	2·0
22	68·93	—	—	—	154·7	2·44	—	—
23	68·53	—	—	—	151·7	—	—	—
24	68·95	—	—	—	149·2	—	—	—
25-30	69·06	—	69·00	—	155·2	0·42	154·0	2·0

The Anthropometric Committee of the British Association published the following remarkable statistics in relation to different social and physical conditions, based on an examination of 37,574 males:—

TABLE IX.

Class of boys.	Age.	Height.
		Inches.
Public School	11–12	54·98
Agriculture	" "	53·01
Factory	" "	51·56
Industrial School ...	" "	50·02

The record of the height and weight is so certain a guide to the appropriate rearing of children, that I make no apology for inserting a further table from an excellent paper, which appeared in the *Lancet* of 1888, by Dr. W. Stephenson, on the relation of weight to height in the English-speaking races. In this paper he furnishes the average height and weight, and shows how the relative weight may be ascertained in cases which exceed, or fall below, the average.

TABLE X.—AVERAGES OF HEIGHT AND WEIGHT OF BOYS AND GIRLS OF ENGLISH-SPEAKING RACES, CALCULATED FROM THE TOTALS OF BRITISH AND AMERICAN STATISTICS.

BOYS.					GIRLS.				
Age.	Height in inches.	Annual gain in height.	Weight in pounds.	Annual gain in weight.	Age.	Height in inches.	Annual gain in height.	Weight in pounds.	Annual gain in weight.
5	41·30	—	40·49	—	5	41·05	—	39·63	—
6	43·88	2·58	44·79	4·30	6	42·99	1·94	42·84	3·21
7	45·86	1·98	49·39	4·60	7	44·98	1·99	47·08	4·24
8	47·41	1·55	54·41	5·02	8	47·09	2·11	52·12	5·04
9	49·69	2·28	59·82	5·41	9	49·05	1·96	56·28	4·16
10	51·76	2·07	66·40	6·58	10	51·19	2·14	62·17	5·89
11	53·47	1·71	71·09	4·69	11	53·26	2·07	68·47	6·30
12	55·05	1·58	76·81	5·72	12	55·77	2·51	77·35	8·88
13	57·06	2·01	83·72	6·91	13	57·96	2·19	87·82	10·47
14	59·60	2·54	93·46	9·74	14	59·87	1·91	97·56	9·74
15	62·27	2·67	104·90	11·44	15	61·01	1·14	105·44	7·88
16	64·66	2·39	120·00	15·10	16	61·67	0·66	112·36	6·92
17	66·20	1·54	129·19	9·19	17	62·22	0·55	115·21	2·85
18	66·81	0·61	134·97	5·78	18	62·19	—	116·43	1·22

These results are more clearly exhibited in his subjoined graphic charts :—

CHART XI.—ANNUAL INCREASE IN WEIGHT IN BOYS.

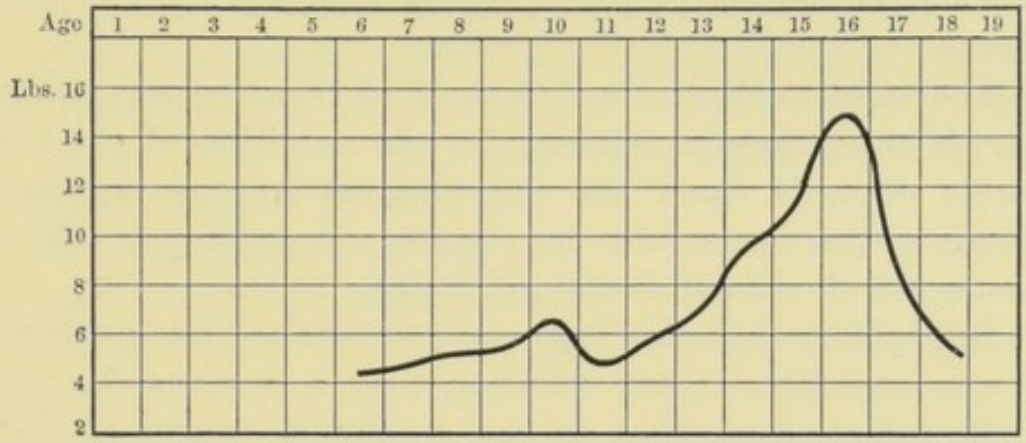
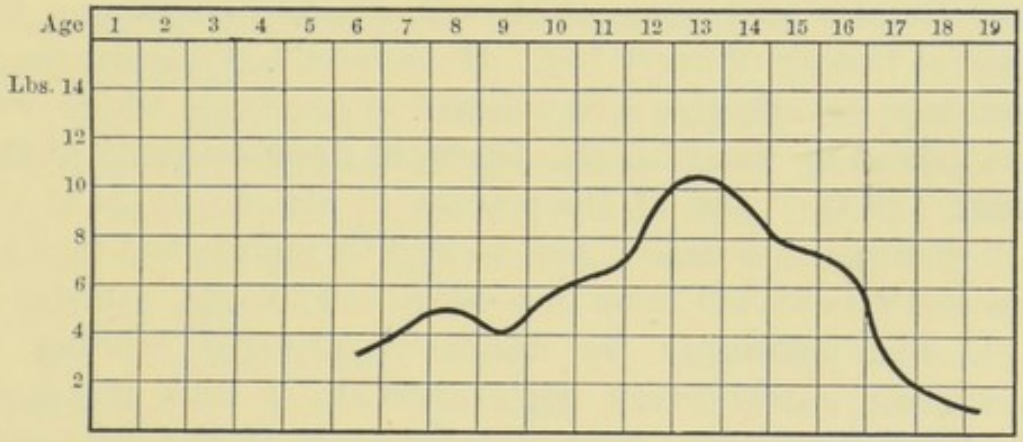


CHART XII.—ANNUAL INCREASE IN WEIGHT IN GIRLS.



These charts show that the year of most active growth in boys is sixteen, and in girls thirteen. It will be noticed that a marked dip occurs in respect of boys at eleven, and of girls at nine; while the ratio at nine and eleven is the same as that at thirteen and sixteen, *i.e.* the proportion of four to five. From this it is evident that about the ninth year in girls, and the eleventh in boys, growth is at its lowest depression, and children do not seem at these epochs to thrive so well as at other times; whilst in the thirteenth year in girls, and the sixteenth year in boys, growth attains its highest annual elevation. From these latter points the

curves descend and reach a minimum in the eighteenth year of boys, and the nineteenth year of girls—the fall being more gradual in the case of girls. These data prove that boys and girls should not be compared at the same ages in respect of growth.

The most authentic indicator of physical capacity, however, is **chest measurement,** for the nutrition of the body mainly depends upon the development of the organs it contains—the heart and the lungs. A capacious thorax means well-developed heart and lungs.

In evidence that this important question is not neglected in some schools, I may mention that a head-master very kindly informed me that he had a physical record of every boy in his school taken by the same man, a sergeant-major, three times a year since 1874, with a ledger containing the physical history of every boy. He pointed out the enormous advantage in effective and relative supervision which was thus gained by watching the **physical development of the chest,** and the value of the process in the diagnosis of the earliest signs of disease. And he rightly maintained that his registers established some impressive conclusions, namely:—

1. The possibility, by means of adjusted exercise, of developing nearly every boy's chest to a high standard. The following *average* chest measurements of the boys were furnished by him.

TABLE XIII.—THE AVERAGE CHEST MEASUREMENT OF THE BOYS AT SCHOOL IN APRIL, 1892.

Age.	Girth of chest in inches and decimals of an inch.
14	32
15	33·8
16	35·9
17	37·3
18	38·2
19	39

2. When a boy's chest is increasing steadily in girth, his lungs are certain to be sound.

3. When a boy's chest ceases to expand—at the growing age—he should at once be medically examined.

He further stated that from this record his medical adviser had discovered two or three cases of incipient chest delicacy, of which there was no other visible symptom than the failure of the chest to develop.

These **physical registers** are of great value in providing an accurate **life-history** during residence at school: in indicating whether the boy or girl is suffering injury from the mode of life: from overwork: from insufficient or improper feeding: or from unsuitable accommodation; and in elucidating the advent of disease, as well as showing the adequacy or inadequacy of the care devoted to the child's physical welfare.

These tables are excellent as averages; but the most valuable facts consist of personal charts, recording the height and weight of *each* child, and thus enabling a comparison to be made between past and present ratios in individual cases.

Mr. Francis Galton* has very carefully prepared a "Life-History Album," suitable for similar purposes in families, the only objection being that the requirements are unfortunately likely to prove too complicated to ensure its complete usefulness. In this album, charts are furnished on which to record the stature and weight; and these, with kind permission, are given as examples on pages 108 and 109.

In referring to the advantages resulting from these measurements, Mr. Galton points out that only in this mode can conclusive data of great importance be obtained. For example, we have no knowledge, he says, of the degree in which the promises of youth are realized in after-life. How far may the vigour, strength, keenness of senses, and

* Macmillan & Co.

Chart XIV.—On which to Record the Stature and Weight from 10 to 15 Years of Age.

The printed curves show the average Stature and Weight of the Male and Female population during this stated period of life.

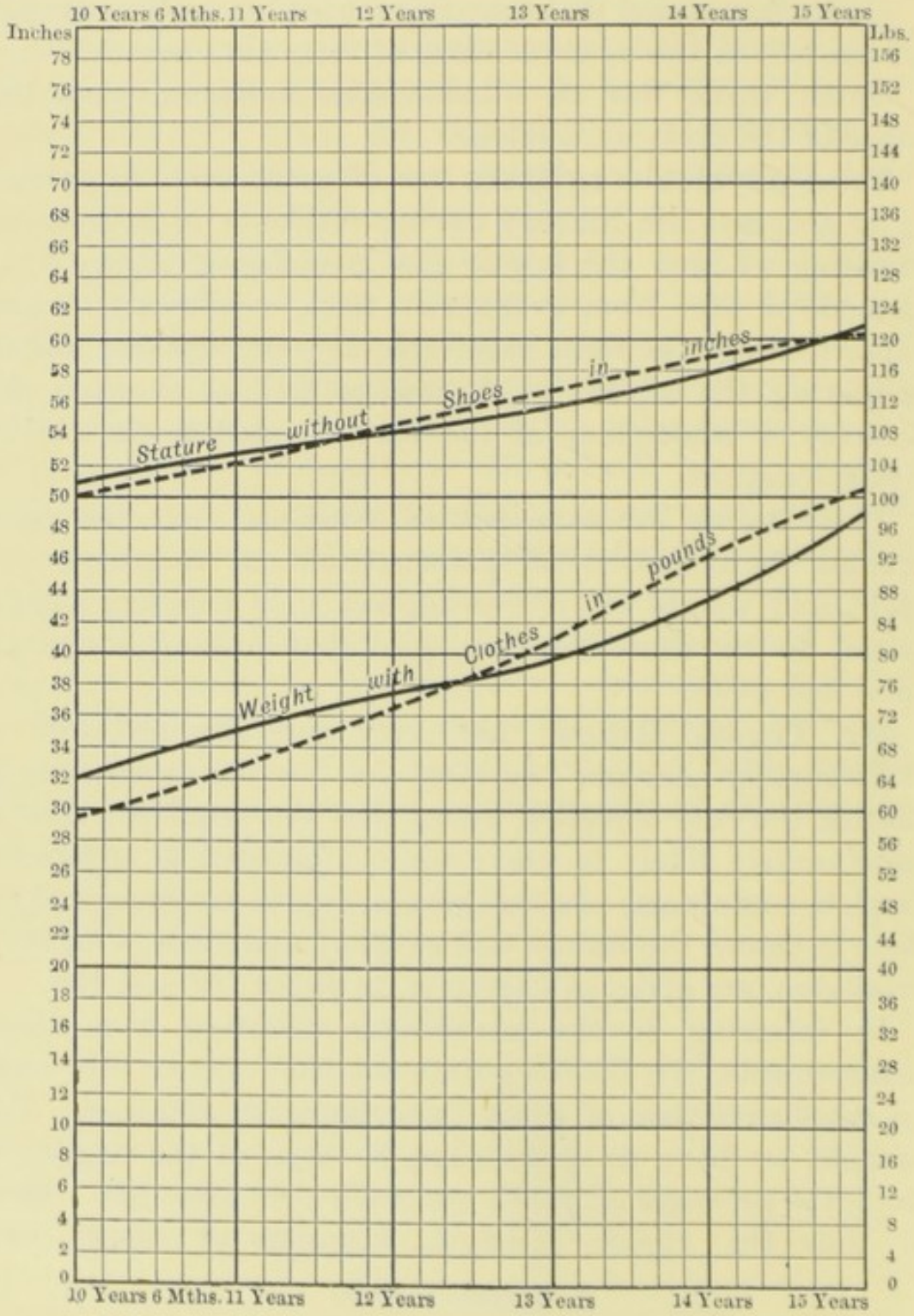
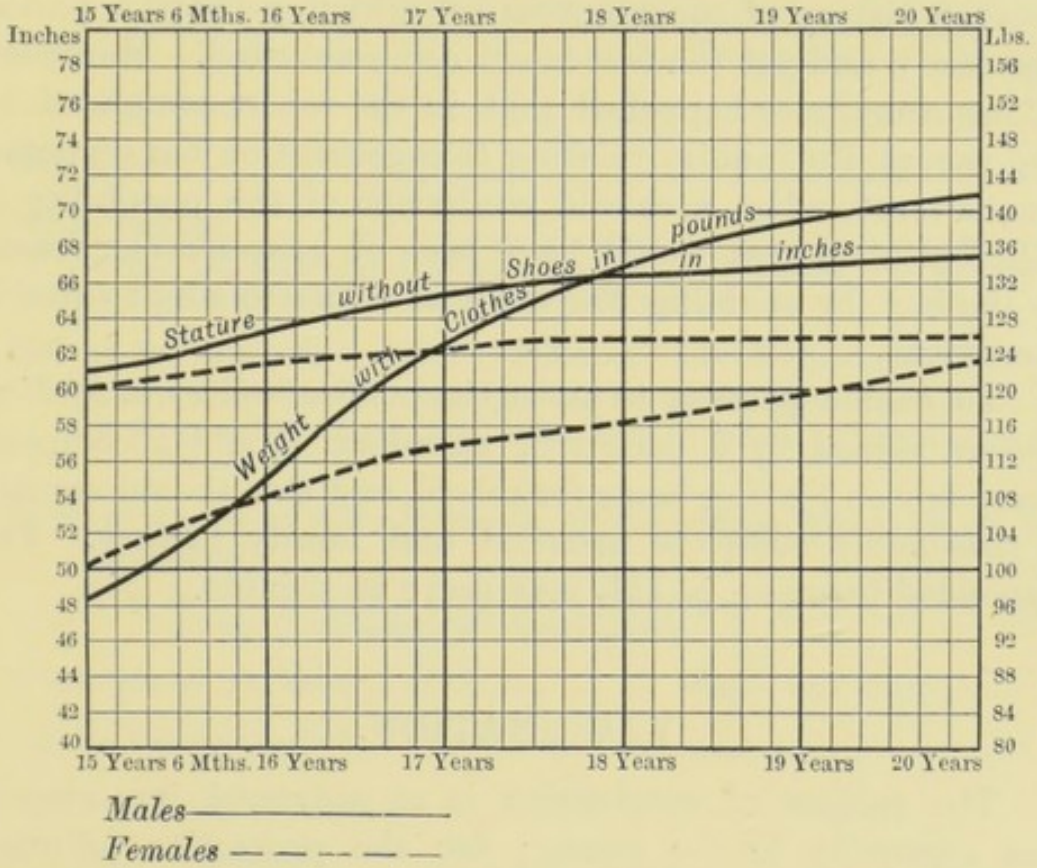


CHART XV.—ON WHICH TO RECORD THE STATURE AND WEIGHT FROM 15 TO 20 YEARS OF AGE.

The printed curves show the average Stature and Weight of the Male and Female population during this stated period of life.



superiority in other respects at the various ages of childhood and boyhood, be accepted as true indications of the future efficiency of the man? The answer to this question has a direct bearing on the value of examinations at different ages as a mode of selecting capable candidates for employment.

The record of these physical states of development is of the greatest interest to children of all ages: they are keen to observe them, and to understand their interpretation.

MEDICAL REPORT.

The medical officer should be further aided by as much information as can be given of the boy's past life and family

history, so that an essential guide to his future treatment may be available. Reticence in any particular on the part of a parent in a matter of such moment is most unjustifiable. For example, many a boy is sent to school with a decided history of consumption (of which perhaps a parent has died), and yet the fact is not communicated. Moreover, it has sometimes happened that, in the report completed by the parent, the inquiry relating to consumption has remained unanswered, when a candid confession of the possibility of inherent weakness would have been of unspeakable benefit to the boy, by enabling the medical officer to adopt suitable measures.

To enable parents to assist the medical officer, a *Medical Report*, signed by a parent or guardian, should accompany every boy on leaving home for school, and this should contain a reasonably complete personal and family history. The appended form, on p. 111, may serve as a guide.

VACCINATION.

The subject of vaccination is of universal importance, but especially to the young; for the protection afforded against small-pox is indisputable, and a definite obligation accordingly devolves upon parents to defend their children, by this method, against the terrible ravages of this disease, and possibly premature death. The epidemics of small-pox, like those of all other zymotic diseases, vary from year to year in their incidence and mortality, according to the severity of the type of the disease. Now that calf vaccine alone is used, all legitimate objection to vaccination is removed.

For a full valuation of the benefit of vaccination, it must be borne in mind that the protective effect of *one* vaccination is limited in duration. For instance, of 734 nurses and attendants employed by the Metropolitan Asylums Board,

XVI.—Medical Report.

To be sent to the House-Master on the Admission of a "New Boy," for the guidance of the Medical Officer.

1. Name.....

2. Date of birth.....

3. Where born.....

4. Where resided.....

(These two latter particulars are sometimes very important: *e.g.*, whether a boy has come from a hot or malarial climate.)

5. Has he any ailment, or defect, rendering "school games," or any of them, undesirable?.....

(The answer should state every known *personal* defect: *e.g.*, Rupture, Heart Disease.)

6. Is there any peculiarity in health or constitution which should be mentioned?.....

(The reply should express every known *family* defect likely to influence the boy: *e.g.*, Consumption, Rheumatism, Gout.)

7. When was he last vaccinated?..... Was it successful?.....

8. Has he had Small-pox?.....

„ „ Chicken-pox?.....

„ „ Measles?.....

„ „ Rose-rash?.....

(Often called Rubella or German Measles.)

„ „ Scarlet-fever?.....

„ „ Fourth disease?.....

„ „ Mumps?.....

„ „ Whooping-cough?.....

(If "Yes," add the date.)

9. What other illnesses has he had?.....

(*e.g.* Pleurisy.)

Signature of Parent or Guardian.....

Date.....

79 had had small-pox before being engaged, and not one of that number took the disease. Of the remaining 655, 645 had been vaccinated in infancy and re-vaccinated on appointment, and none of these became affected. The whole of the residue of 10 had been vaccinated in infancy, but none had been re-vaccinated, and every one contracted small-pox during their term of office.

Some very remarkable facts have also been presented by Mr. Marson, formerly medical officer to the Small-pox hospital, which are of interest as indicating in unmistakable form the efficiency of the different degrees of vaccination. They are the result of personal and continuous observation, over twenty-five years, upon nearly 6000 cases of small-pox occurring after vaccination.

TABLE XVII.

Cases of small-pox, classified according to the vaccination marks borne by each patient respectively.	Number of deaths per cent. in each class respectively.
1. Having *no* vaccine mark, although stated to have been vaccinated	21¾
2. Having *one* vaccine mark	7½
3. Having *two* vaccine marks	4⅛
4. Having *three* vaccine marks	1¾
5. Having *four* or more vaccine marks	¾
6. Unvaccinated	35½

If we could only ensure that every infant soon after birth shall be so efficiently vaccinated as to show four good vaccine marks, and be re-vaccinated at the age of puberty in four other places, small-pox would become as extinct throughout Great Britain as has proved to be the case under similar circumstances in our small-pox hospitals.

Dr. Herbert Goude showed from a continuous record of forty-eight years at the Small-pox hospital, where every nurse and servant are required to be re-vaccinated prior to

entry upon duty, that not one contracted small-pox even in a modified form. During this period, however, an assistant gardener was engaged who, refusing to be re-vaccinated, caught small-pox, and died.

In analyzing the epidemic in Sheffield, in 1891–92, Dr. Thresh, the medical officer of health for Essex, thus summarized the figures:—

"*Number of persons attacked.*—Out of every 1000 unvaccinated children (under ten years of age) 101 were attacked. Out of every 1000 vaccinated children, five only were attacked. Unvaccinated children are, therefore, twenty times more liable to attack than vaccinated. Out of every 1000 unvaccinated persons (over ten years of age), ninety-four were attacked. Out of every 1000 vaccinated, only nineteen were attacked. Over ten years of age, therefore, unvaccinated persons are five times more liable to attack.

"*Death-rate amongst those attacked.*—Out of every 100 unvaccinated children attacked, forty-four died. Out of every 100 vaccinated children attacked, only two died. A child under ten, who has not been vaccinated, therefore, is not only twenty times more liable to be attacked, but the attack is twenty-two times more likely to end fatally. The danger of an unvaccinated child dying from small-pox during an epidemic is more than 440 times as great as that of a vaccinated child. Out of every 100 unvaccinated persons over ten years of age attacked, fifty-four died. Out of every 100 vaccinated over ten years of age attacked, only five died. Therefore, unvaccinated persons over ten years of age are not only five times more liable to attack by small-pox, but eleven times more likely to die if attacked. The danger of such a person, if unvaccinated, dying from small-pox during an epidemic is fifty-five times greater than that of a vaccinated person. To sum up, during the prevalence of small-pox an unvaccinated child under ten years of age is 440 times more likely to die of the disease than a

vaccinated child. An unvaccinated person over ten years of age is fifty-five times more likely to die than a vaccinated person."

In the debate in the House of Commons in 1893, on compulsory vaccination, Sir Walter Foster said:—"I would ask the attention of the House to a few figures in connection with this contention. We have means of obtaining a fair and approximate knowledge of the ravages of small-pox before vaccination was invented and practised. It is calculated that before the use of vaccine, small-pox killed in London about 3000 per 1,000,000 of living people, and the rate had fallen between 1872 and 1890 to 178 per 1,000,000 In England generally, putting the estimate much lower than many statisticians put it, it is calculated that the deaths from small-pox were 2000 per 1,000,000 before the days of vaccination, whilst between 1872 and 1890 they had fallen to 90 per 1,000,000. These comparisons are open to the objection that the death-rate before 1838, when the registration of deaths was taken up, may be wrong. I will, therefore, go to a country where there has been registration of deaths both before and after vaccination came into use, namely, Sweden. Registration has been in force in Sweden since 1774. In the prevaccination days the Swedish death-rate from small-pox was 2008 per 1,000,000 of living persons, whilst since vaccination the average during the last seventy years has been 173 per 1,000,000. In Copenhagen, where they have known the number of the population and the deaths from small-pox since 1750, the death-rate from small-pox was 3567 per 1,000,000 before vaccination was used, whilst during the last seventy-three years it has been on the average 130 per 1,000,000. You may read these figures in another fashion. In London one person dies now for every seventeen who died before the use of vaccination; in England one dies for every twenty-two who died formerly, in Sweden one for every twelve, and in Copenhagen one for every

twenty-seven. The figures I have also refer to epidemics of small-pox at different periods. Epidemics have been defined by a very high medical authority as a condition of things in which ten per cent. of all the deaths are due to a particular disease. Taking that as the definition, during forty-eight years of the seventeenth century there were ten such epidemics; in the eighteenth century there were thirty-two such epidemics; whilst in the nineteenth century there has not been one. I think that is a complete answer to the allegations respecting the epidemic diffusion of small-pox in the present day. The decline in the death-rate has had a curious relation to the progress of vaccination. The more completely vaccination has been enforced, the greater has been the decline in the death-rate."

The following facts, extracted from the Registrar-General's returns, are instructive from another aspect:—

TABLE XVIII.

State of the law in relation to vaccination.	Years recorded.	Mortality per 1,000,000.
Permissive	1847–53	305
Compulsory, but not enforced by penalties	1854–71	223
Compulsory, and enforced by penalties	1872–91	89

A progressive decline of small-pox is thus exhibited as vaccination is more stringently enforced.

The *incidence* of small-pox, again, after efficient vaccination is very small in early life; but, as shown by Dr. J. E. Sandilands,* Medical Officer of the Small-pox Ships, Dartford, from an analysis of the epidemics of 1901 and 1902, the incidence increases annually until it attains a maximum in the third decade, while the *mortality* is augmented with each decade, and reaches its maximum about the fifth decade. Tables XIX. and XX. display these facts.

* *Loc. cit.*

TABLE XIX.—SHOWING THE AGE INCIDENCE OF THE SCAR-BEARING VACCINATED CASES; CASES IN WHICH THE SCARS WERE NOT SEEN BUT MAY HAVE BEEN OBSCURED ARE INCLUDED.

—	All ages.	Under 10 years.	10–	20–	30–	40–	50–	60–	70 and upwards.
Scar-bearing cases ...	7057	140	1170	2547	1781	914	334	131	40

TABLE XX.—SHOWING THE PERCENTAGE MORTALITY AT SEVERAL AGE PERIODS AMONG THE SAME SCAR-BEARING VACCINATED CASES FURNISHED IN TABLE XIX.

Age periods.	Under 10 years.	10–	20–	30–	40–	50–	60–	70 and upwards.
Mortality ...	3	2	7	15	22	21	24	20

In Table XXI. the age incidence is exhibited, with the character of the scars.

TABLE XXI.—SHOWING THE AGE INCIDENCE OF VACCINATED CASES CLASSIFIED ACCORDING TO THE CHARACTER AND NUMBER OF THE SCARS; EACH CLASS IS REPRESENTED AS COMPRISING A TOTAL OF 1000 CASES.

Character of scar.	Under 10 years.	10–	20–	30–	40–	50 and upwards.
Large (A 1) ...	15	187	411	253	98	36
Medium (A 2) ...	22	109	248	268	222	131
Small (A 3) ...	45	112	199	241	211	192
Four or more ...	23	217	441	207	77	35
Three	11	148	350	309	127	55
Two	15	114	273	292	190	116
One	31	129	270	236	203	131

The preceding table expresses that the incidence in later life is greatly increased when the scars are inferior.

In Table XXII. the *mortality* for the age periods in each class is furnished.

TABLE XXII.—SHOWING THE PERCENTAGE MORTALITY OF SCAR-BEARING CASES ARRANGED ACCORDING TO AGE PERIODS AND THE CHARACTER OF THE SCARS.

Character of scar.	Percentage mortality for age periods.			
	Under 20 years.	20–	30–	40 and upwards.
Large (A 1)	2	5	11	18
Medium (A 2)	0	10	20	22
Small (A 3)	4	15	27	22
Four or more	1	4	10	12
Three	2	5	12	19
Two	3	6	17	21
One	3	14	24	27

The necessity of **re-vaccination** in the young between the ages of twelve and sixteen years is undoubted. The following table of cases where I have re-vaccinated (and of which I have kept a record) between those ages during nineteen years affords sufficient testimony to this necessity, by showing that no case of small-pox occurred, although a severe epidemic raged in the town for a season.

TABLE XXIII.—STATISTICS OF RE-VACCINATION.

Nature of vesicles produced.'	Number of cases.	Per cent. of the total cases.
Good vesicles	914	65·10
Poor vesicles	440	31·20
No result: all these cases were re-vaccinated a second time without effect	53	3·70
Total number of cases	1407	100·00

Included among these cases were some patients who showed such excellent marks from the primary vaccination of infancy, that I thought it almost absurd to anticipate any result from re-vaccination; yet I found, on the contrary, that they often produced the finest vesicles. Between the highest in the "good vesicle series," and the lowest in the "poor vesicle series," a marked difference existed—the highest being as good as the best vesicles in primary vaccination, the lowest being a diffused redness simply, without an actual vesicle, but lasting, red and sore, for about ten days. In one instance, the patient had suffered from small-pox five years previously, and was fouud susceptible on re-vaccination, though exhibiting poor vesicles only as the result.

This evidence proves the importance of re-vaccination in schools: every boy, therefore, above twelve years of age should be *re-vaccinated* prior to entry, or immediately afterwards, both for his own protection and the safety of the school. And if a parent object to the vaccination being performed at school, it should at once be done at home. It would, perhaps, be even a better plan to print a notice on the school prospectus to this effect:—"Every 'new boy' will be re-vaccinated on his entrance, unless he has previously been successfully re-vaccinated." The appearance of small-pox at school should be regarded as a disgrace.

The problem of vaccination possesses obviously a twofold aspect: (1) its relation to the health of the community, the reality of which has been amply established; and (2) the profounder aspect of forming a portion of the general question whether anarchy shall prevail or general constitutional obligations be enforced upon citizens accepting, by virtue of their citizenship, the dominion of law. Individual action must evidently be construed and limited in relation to the vital interests of the mass.

The inference from the present progress of medical science is, that infectious diseases other than small-pox will

also ultimately be prevented by similar measures. When this period arrives the gain to schools, and to the country at large, will be incalculable: not only will this advantage conduce to the boy's permanent health, but other beneficial results will ensue. For the pupil will not waste, through illness, the time that should be devoted to work: the masters will not be hampered by having pupils in their forms who have lagged behind the rest, and have thus become a hindrance and anxiety to all; and parents will be saved from paying highly for a twelve weeks' education, one half of which has been lost in consequence of infectious disease.

VI.

THE MASTER'S BOARDING-HOUSE.

In preparatory schools the boys all live together in one house, which is dwelling-house and school-house combined.

In some of the great public schools a large proportion of the boys live *en masse* in the main building, which is supplemented, as the school grows, by boarding-houses. This massing of boys together by the hundred too closely resembles barrack-life, and is not to be commended as a feature in the administration of a school.

But in most of the public schools, the boys live with different masters in separate houses, and meet together at other times—at chapel, at school, and in the playground; though in some schools there is a common dining-hall, where all assemble at dinner, or even at every meal—neither plan being one to be advocated except under conditions I shall presently name.

These boarding-houses accordingly are a distinct element in a large school, and vary much in different schools, and even in the same school. A parent, therefore, in choosing the most suitable circumstances for the education of his boy should not only carefully select the school, but also the boarding-house and boarding-house master, as already suggested.

THE MATRON.

When a house-master has succeeded to a house, his first thought should be to set the house, before its occupation, in efficient sanitary order during the vacation. And, if still wiser, he will obtain a certificate to this effect from the Medical Officer of Health of the county.

His next consideration, and one of great importance, should be the appointment of a suitable **matron**; for on this choice most of the efficient working of the house will depend, and an appreciable portion also of the happiness and welfare of the boys under his care.

I have known a matron, simply by her personal character, and the absence of fear or favour in her conduct, maintain a remarkable control over a large house, and beneficially influence the boys individually in an extraordinary degree; for boys will open their hearts to the matron when they will refrain from doing so to any other individual—school-fellow, master, or master's wife—at school.

There are men without number in the world who will confess that they owed much of their happiness at school to the matron, in whom they found a sympathizing friend, and to whom they could confide their school troubles—trivial, perhaps, to men, but real, and of no small burden sometimes, to boys, especially "new boys," who have been tenderly nurtured at home, and now miss the individual attention to which they have been accustomed.

On the other hand, I have known matrons appointed to this important post who were quite unsuited. If the masters had endeavoured to find the most unfit woman, they could not have been more successful in their quest.

A comparatively young matron has much more sympathy with boys, and a more pervasive influence than an older

one, who is apt to have crotchets, and to become irritable even under slight provocation—though I am bound to confess that one of the best, if not *the* best matron I ever knew, was, comparatively, an elderly woman.

A **dress parade** should be instituted in all schools, for girls as well as boys, which should be held at odd times when least expected.

It is notorious how slovenly and unkempt are many children of both sexes at the school age. This is owing partly to inherent untidiness, and partly to home neglect, where the virtues of cleanliness and order too often fail to be inculcated. It is a discredit to schools, which form the training-ground for adequate occupation in all respects of future positions in life, to see the large number of pupils, well-to-do, and presumed to be well-cared-for, who slouch along the streets with their heads down: hands in their pockets: clothes unbrushed, and absent buttons: boots half cleaned, and down at the heels. If a closer inspection be made the high-water mark of silt on their neck speaks significantly: the dirt in the depressions of the ears is in evidence: the hands begrimed: the nails, surmounted by a black edge: the hair unparted, unbrushed, and uncut; and in the case of elder boys, chins unshaved. In fact, in many of these children an entire absence of smartness and cleanliness is apparent, simply because it is nobody's express duty to attend to these elements of training—markedly indicative though they be of lasting habits.

All the details necessary for **Boarding-house Construction** will be found on pp. 145 and 209.*

* If minuter information be desired, it is available in the work of Mr. Felix Clay on "Modern School Buildings," and in "School Hygiene," by Mr. E. R. Shaw.

STUDIES.

When boys are not in school, or in the playground, it is imperative that there should be some suitable place to which they can resort, and arrangements of various kinds are made in all schools for this purpose.

In preparatory schools the boys generally have no separate "studies," but live and work together in a **"common school-room."** This is an excellent scheme, and, provided the school-room be sufficiently capacious, and well ventilated, a very healthy one. For small boys it is the best arrangement.

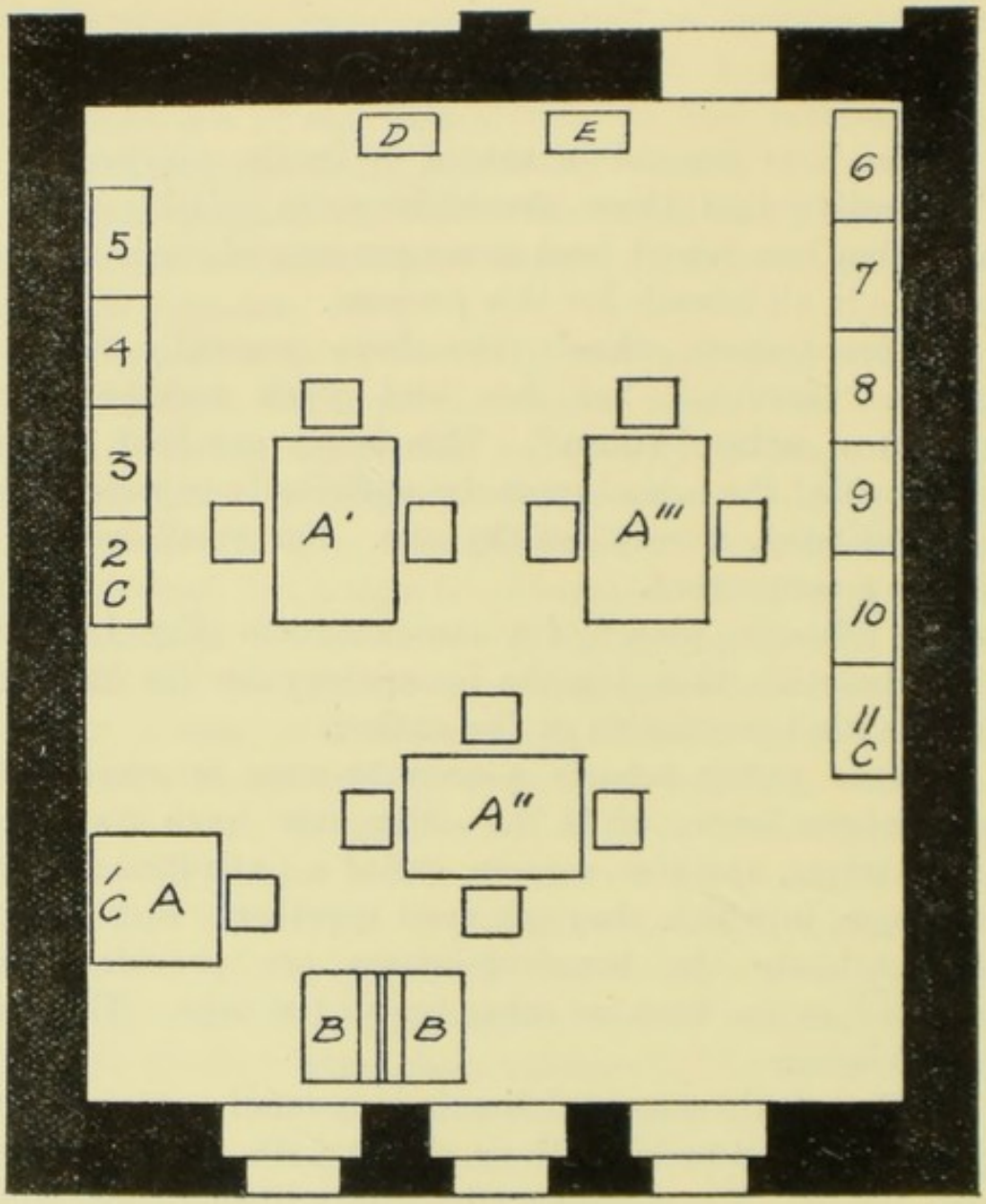
The following plan * of a common-room (Fig. 1, p. 124) is so admirable that I make no apology for its inclusion, with the kind permission of the author.

In *some* public schools a common-room is provided for the younger boys; while the elder ones have "studies" to themselves, and also a room, called a sixth-form or fifth-form room, in which they can meet together. But in most public schools the boarding-houses are provided with "studies" in one form or other for all the boys. These are of two kinds :—

1. The **study** pure and simple is a small room, which a boy has reserved to himself, or shares with a brother or a school-fellow. These are excellent, cosy little rooms, where a boy can work well, either alone or with his fellow; and if a master be discriminating in choosing the boys who are to occupy the same study, being guided chiefly by their *characters*, no harm results; when the requisite care is not bestowed, bullying and immorality may ensue.

In such a study the boy feels, amid all the publicity of school life, that he has some small place in the school-world that he can call his own, where he can be sometimes alone;

* "Modern School Buildings." Felix Clay.



A. Head Boy's Place . A', A'', A'''. First, Second & Third Table . B. Desk near Window for short-sighted boy. C 1-11 Lockers for each boy. D. basket for Paper. E. Waste basket

FIG. 1.—A COMMON-ROOM. FELIX CLAY.

nor are these studies too private; their size is usually about 6 ft. × 8 ft. They often might be larger with advantage;

though even the traditional 6 ft. × 4 ft. study I do not condemn, since a boy rarely occupies it long enough to receive harm through insufficiency of air. Even if he occupy it for any length of time, the door is usually open all the year round; while in summer the window is often also open, and in winter a large fire is kept up. In some cases, however, fire-places are not provided, but the studies are warmed by hot-water pipes, or by hot-air flues, or simply by a fire in the passage. With few exceptions, these studies might be, and should be, better ventilated, and arranged with some practical recognition of sanitary science. If fires in studies were abolished, and the warming were effected by hot-water pipes over which fresh air from the outside continually passed, endless expense would be saved, and a continuous supply of warm fresh air would be supplied to each room.

An objection, however—worthy of some consideration—against the abolition of study fires is, that boys would be thus deprived of much real happiness in their small domestic cooking arrangements: a privation to be avoided as much as possible, especially during the long winter evenings, as any act affording innocent occupation and pleasure at such times should be encouraged.

That these studies, however, do at times occasion harm under the present system is beyond doubt. For example, the study becomes over-heated by the hot-water pipes, which are not always easy to regulate; still more by the want of regulation of the heat forced in by hot-air flues; or a boy often makes up so huge a fire that the heat prevents his remaining in the closed room, and he consequently either opens the door and window and sits in a direct draught, or goes out-of-doors to cool himself. I have known cases in which a severe illness has followed an acute chill caught in this way.

In some schools, while all boys have these studies, the

smaller boys are not allowed to use them in the evening, but are assembled together in a common room, to prepare their work for the morning, in the presence of a master. This plan is excellent for the boys, though a tax, perhaps, on the masters; for more and better work is done, and there is less scope for that rowdyism and bullying in the studies and passages during the long winter evenings which used to prevail to a grave extent in days gone by.

It is a question of the first importance whether the *whole* of the work of every boy at school, except the seniors, should not be prepared under the immediate superintendence of a master, instead of being left to such time and mode of preparation as the boy himself may decide. The former plan alone will ensure honesty in work and the abolition of "cribs," and will directly conduce to mental and moral health and happiness, and that essential in education—*thoroughness*.

In arranging the **study furniture**, a carpet should be prohibited; for the daily sweeping of carpets is undoubtedly a source of mischief by reason of the dust, laden with germs of disease, which is raised thereby and swallowed. The use of varnished boards, or a covering of corticine, or linoleum without a pattern, is much more healthy. Unnecessary furniture in these very small rooms should never be *permitted*, as it not only occupies too much floor-space, but also displaces air, of which already too limited a supply exists.

Another feature in the furnishing of studies calls for incidental remark: the evidence, namely, of effeminacy, which is imprinted on many of them. Frequently the furniture, the hangings, the china, and the photographs, belie the notion that the rooms are those of manly public-school boys: they often rather suggest the abode of some æsthetic young lady recluse!

2. Another arrangement comprises the **study and sleeping-room** in one room, the door of which opens out of a

passage which leads to several similar rooms: a day and night room being thus combined (Fig. 2). Each boy, usually, has one set to himself: sometimes brothers share a larger one between them, but not invariably so. When I was shown over one of our most important public schools, I came upon these rooms with two beds to hold two boys. On remonstrating against the system, I was informed that the beds were only occupied by two boys when they were brothers. Some year or two afterwards, I became acquainted with the case of a little boy in that school who was utterly miserable and heart-broken when he arrived home for the holidays.

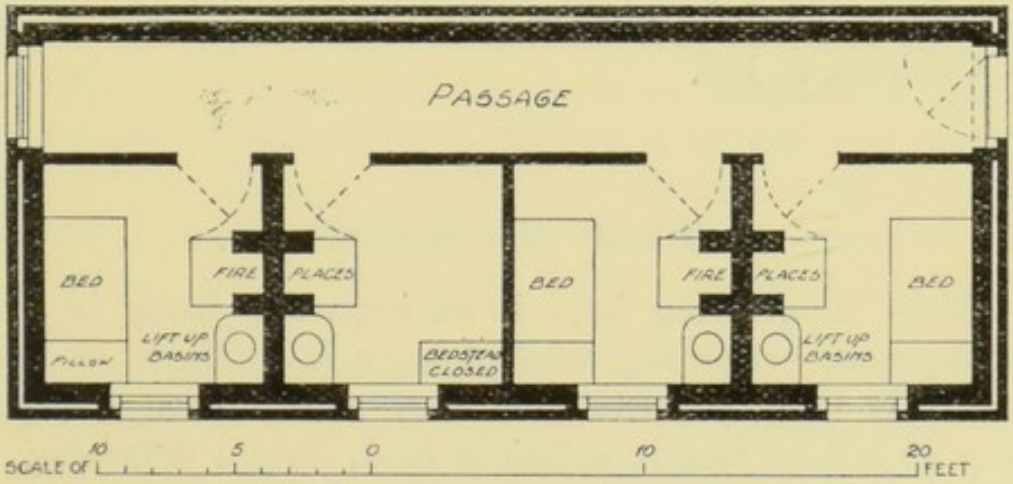


FIG. 2.—THE STUDY AND SLEEPING-ROOM.

For some weeks nothing could be elicited, until at last, in his distress, and to assuage the manifest anxiety of his parents, he divulged the ghastly truth. He had been placed in one of these rooms, which resemble the continental bedrooms with their two little beds for husband and wife, and there—a pure lad—he had been doomed to undergo heart-rending misery for thirteen weeks with an impure big boy! Most emphatically then I condemn this system, which is still unhappily in existence, as distinctly conducing, without the need of my entering into further details, to a flagrant species of immorality and depravation of character.

The size of these single dormitory-studies varies; but the usual area is about $8 \times 8 \times 10 = 640$ cubic feet. I have seen them larger, and smaller. I have also seen them so dark as to resemble a prisoner's cell rather than the abodes of boys who must occupy them night and day during eight months in the year, both in illness (incredible though it seem ! !) and in health. In such a den with inadequate air-space, the same air being breathed day and night, with insufficient light and ventilation, and with every facility for secret vice, the boy is expected to thrive mentally, morally, and physically !

I regard this arrangement as most unhealthy, unwise, and unjust. I dwell further upon the subject when treating on Cubicles, p. 132.

SLEEP AT SCHOOL.

Sleep for growing boys is an important factor in their development—especially while doing a full amount of brain work. It is as essential that they should have plenty of sleep as it is to receive sufficient food, since a deficiency in either causes ill-health, or a want of vigour with lowered vitality.

It does not seem to be recognized that to stint sleep is to stunt the growth of body and brain; and that the highest realization of school life is the production of the best condition of brain development for service in after years.

The tendency in schools is rather towards too little sleep than too much: in fact, in public schools generally, I think that boys are rarely allowed sufficient sleep, especially the younger ones; and were it not for the holidays every twelve or thirteen weeks, they could not do their full share of work and continue in health. It must be remembered that they have not only to repair waste—the ordinary wear and tear—

like adults, but also to provide for growth: on all their organs consequently the performance of extra work is entailed, and additional rest is accordingly required for the recovery of strength. Moreover, boys are more active in mind and body than adults, and hence results an augmented wear and tear, which needs a further increased period of repose for restoration.

It is well-established that more sleep is required for the formative than for the intellectual functional activity of the nerve-centres. During the years of formation and development, consequently, adequate sleep for this provision must not only be permitted but enforced. Let it not, however, be imagined that the deleterious effects of overwork during youth can be compensated by an extra amount of sleep, since Nature repudiates the attempt, and will not permit a forced brain to rest. In the over-exercise of the animal functions, however, she does not resent the payment of the balance due; for the more the muscles are used, the more the brain will rest.

All scholars suffer from this deficiency more or less, and unfortunately, as a general rule, the only persons who fail to recognize the fact, are those who should perceive it first—the masters and mistresses themselves.

Parents are only too cognizant of the fact during the first few days of the vacation, and are apt to infer that their children are becoming sluggards; while in reality they are merely endeavouring to make up time for sleep which nevertheless can never be retrieved.

Girls also suffer considerably from this cause during their early progress into womanhood, when they are growing rapidly, developing in their proportions, and establishing new functions: they need then a very large amount of bodily and mental rest and sleep, if strong bodies and good brains are to be produced.

I remark further, that insufficient sleep for growing

children practically amounts to overwork; and overwork renders the child an easy prey to disease.

The necessity of adequate sleep at the school age is indisputable, and teachers should not only permit, but vigilantly enforce, it, by prohibiting sitting up at night after hours, or rising early in the morning for completion of work at the expense of sleep. The following Table expresses the **amount of sleep** required at school.

TABLE XXIV.—The Amount of Sleep required at various School Ages.

Age.	Number of hours.	Time.
Under 6 years of age	13 hours	6 p.m. to 7 a.m.
„ 7 „	12½ „	6.30 „ 7 „
„ 8 „	12 „	7 „ 7 „
„ 9 „	11½ „	7.30 „ 7 „
„ 10 „	11 „	8 „ 7 „
„ 13 „	10½ „	8.30 „ 7 „
„ 15 „	10 „	9 „ 7 „
„ 17 „	9½ „	9.30 „ 7 „
„ 19 „	9 „	10 „ 7 „

From the beginning of November to the end of February the time should be extended to 7.30 a.m.

For boys *under thirteen* years of age breakfast should take place at 7.45 a.m., followed by play from 8.15, and school at 9 a.m.

Under existing arrangements, the eight and a half or nine hours usually permitted, but never obtained, for boys *above thirteen* (*i.e.* at the public-school age), are not sufficient, considering the active character of the growth at this period, and the amount of mental and bodily exercise which is undergone. In bed at 10 p.m., which means sleep not much before 11 p.m., and called at 6.30 a.m. for chapel at 7 or

7.30 a.m., is, I believe, the rule in most public schools. With this amount of sleep only, some boys seem weary, and show signs of insufficient rest, and brain-fatigue. Moreover, all the organs of the child at this stage are immature, and require special repose and care for their normal development.

During cold weather, and while the body is undergoing rapid growth, a greater amount of sleep is necessary, as has been already stated.

There is one error which should be rectified in individual cases as need arises. I have constantly noticed that children are quite satisfied with the preceding amount of sleep until the advent of puberty. For some time before and after that date, perhaps a year—when the growth is enormous, and the development of new organs entails a severe strain

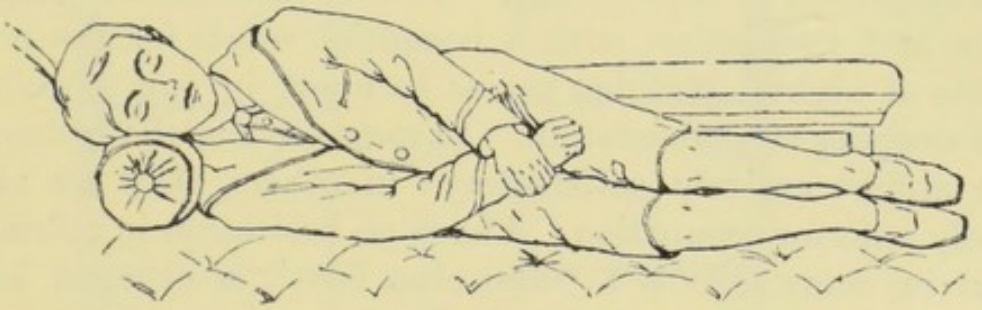


FIG. 3.—THE POSITION OF THE HEAD FOR SLEEP.

upon the system—this amount is entirely insufficient. It is the failure to recognize this fact that produces injurious results, especially in the case of girls, whose growth is more rapid and less prolonged. For much more sleep is required for growth than for functional activity of the brain, and much more for the nerve-centres of animal life than for those of intellectual life.

I lay great stress on insufficiency of sleep; since the formation of healthy brain tissue, which should be the teacher's constant aim, is impossible, if rest, adequate for both growth and repair, be not provided.

Another point connected with sleep, especially as concerns the young and growing, is that the head only should be placed on the pillow (Fig. 3). Sleep is better obtained when the head lies low, and in a line with the spine, the pillow fitting, when the sleeper is lying on his side, into the space between the head and shoulder; by this means the shoulders are prevented from being rounded and the spine curved in consequence of the prolonged unnatural position.

THE PLACE FOR SLEEP AT SCHOOL.

I hold very decidedly that the sleeping place at schools should be for *sleep only*, and that the bedrooms should be always closed to boys by day. This is essential for cleanliness and ventilation, with a beneficial result for the occupants at night. Nothing varies so much in our schools as the sleeping accommodation. In some schools, the bedrooms are almost entirely satisfactory: in others, they are absolutely unfit for occupation. I have no hesitation in affirming that in many schools a "first-class fare" is charged for a "third-class accommodation." The importance of this question is obvious from the fact that the physical and moral health of the scholars very largely depends upon the nature of the sleeping accommodation provided.

Of all school arrangements **cubicles** are undoubtedly the worst. I cannot conceive the slightest rational argument, or experimental fact, in their favour, whether we view them in relation to physical, mental, or moral health.

I have already described the **Cubicle and Study combined** on p. 127 (Fig. 2).

The **Cubicles in Large Dormitories** are constructed in a very large room, which is partitioned off into small rooms, or cubicles (Fig. 4), on each side of a passage down

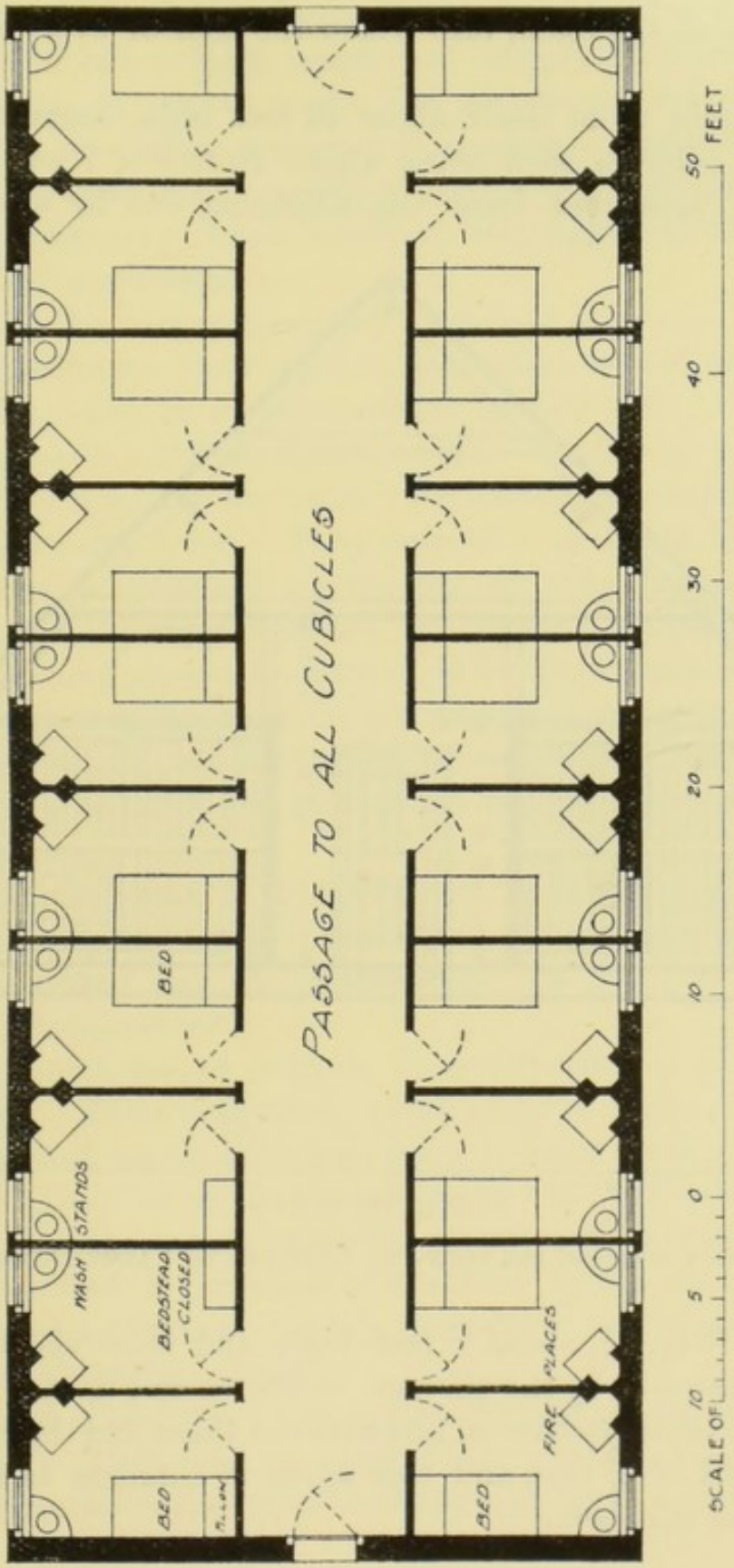


FIG. 4.—THE CUBICLES IN LARGE DORMITORIES.

the centre of the room, into which the door of every cubicle opens.

The main room itself, about 12 feet high, contains from 20 to 40 cubicles, each being about 10 feet × 7 superficial feet, and separated from the adjoining one by a wooden

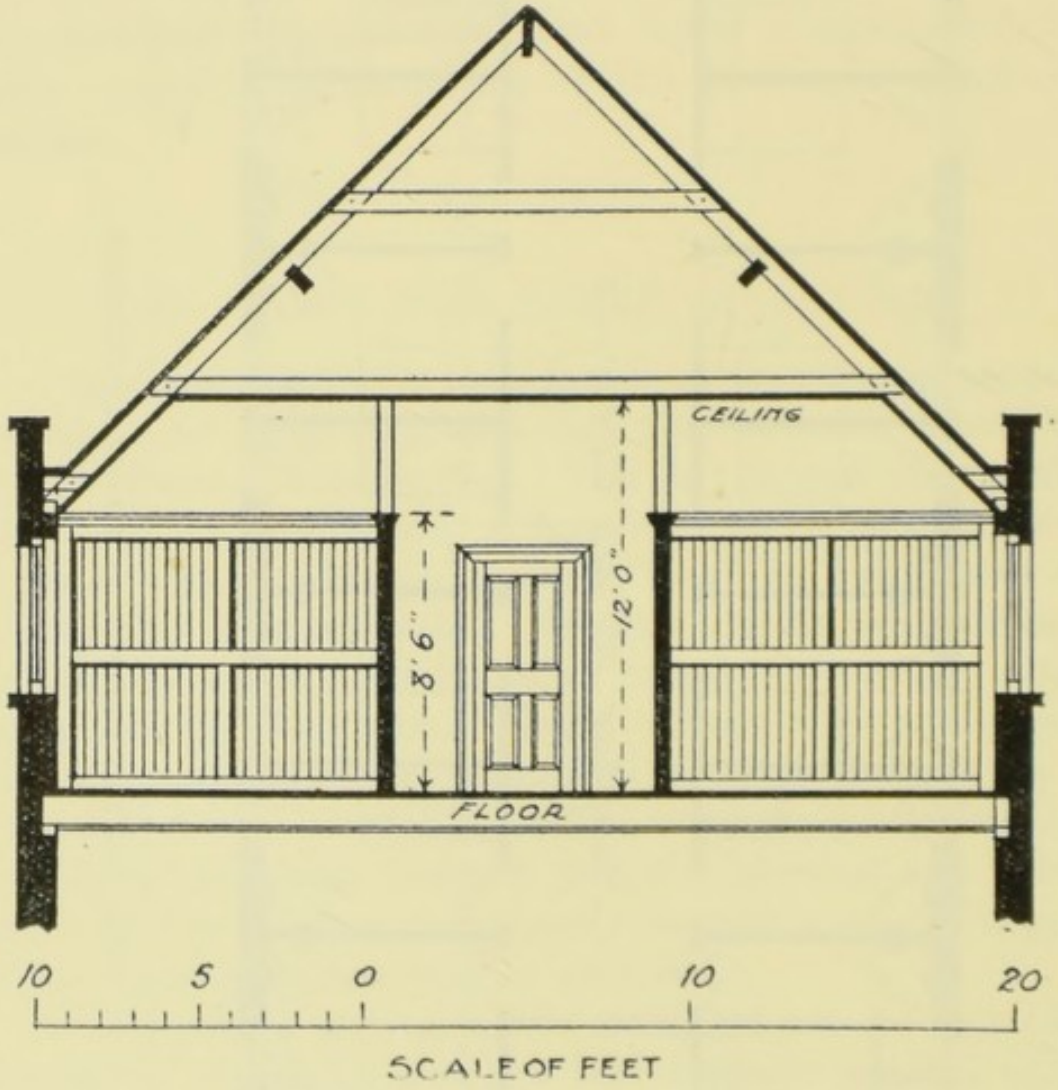


FIG. 5.—THE PARTITION BETWEEN THE CUBICLES IN LARGE DORMITORIES.

partition (Fig. 5), about 8 feet high, and from the one on the opposite side by the passage, as shown in Fig. 4.

Above these partitions, and between them and the ceiling, is a height of 4 feet, and this space is common to all the cubicles in the room.

A good supply of air consequently exists for the day *or* the night, but a most insufficient supply for work by day, for candles or gas by night, and for sleep. For the rooms being so constantly occupied, it is always impossible to get the windows open sufficiently to render the apartments sweet and wholesome; while artificial ventilation is inadequate under the circumstances.

Take the winter time, for instance: boys are in and out all day between their lessons, and when school and tea are over, they will be in the cubicles by 6.30 p.m.; there they remain (with candles, lamps, or gas burning up to 10 p.m.) until 6.50 a.m., the air being very scantily changed throughout the twelve hours. *These* defects of artificial light, however, can be removed by the use of incandescent electric lamps for lighting purposes, at present adopted in some schools; and gradually, I trust, to be introduced into all.

These cubicles may be warmed by hot-water radiators; or warmed air, pumped in and extracted by slowly revolving fans, may be employed as a means of providing warmth and ventilation.

The inclosing of the bed and bedding in a wardrobe immediately the room is vacated in the morning is filthy in the extreme; and the practice on the score of health is utterly indefensible.

The evil, too, of cubicles is serious from a moral point of view. Their defenders, whose name is legion, deny their defects, and assert that boys keep to their own cubicles by night. Only let an impartial inquiry be instituted on this point, and the result will often startle and shame! Indeed, the assertion is practically confuted by the devices which are arranged in some schools to prevent secret communication between the cubicles.

These cubicles are also contrary to the needs of "human nature." They tend to dwarf, if not destroy, the legitimate and essential instincts of the human being as a social animal,

—the boy being destined hereafter to become a *social* influence, whether in a wide or a narrow sphere; and provision for adequate equipment in this respect should attach to every stage of development, and particularly to the impressionable and formative period of school probation. With a few isolated exceptions, neither animal nor human being likes to be, or is content to be, alone. A solitary animal confined in its shed pines and fails to thrive; while if set at liberty in a field it will endeavour to overcome, and frequently will succeed in escaping, its barriers, in order to join its neighbours. The same tendency to gregariousness exists in human beings, especially in the young. Boys will not be confined in solitary cells, but will, day and night, seek each other's company, frequently, unless thoughtful provision be made based upon a sympathetic knowledge of human nature, with results to be deplored.

To summarize my objections to cubicles, I would state:—

1. They militate against "*human nature:*" and such opposition is useless and injurious.

2. They allow full scope of action to a *bad boy* without detection.

3. They prevent, by their privacy, a boy who would beneficially control others, from exercising this power.

4. They allow boys to get together for immoral purposes, unseen and undiscovered.

5. Any boy, while in his cubicle, can, though unseen, call out an obscene remark which the whole room may hear, and be disposed to laugh at, while he himself remains undetected.

6. It is most unhealthy to live and sleep in the same room, as it can never be properly ventilated.

7. It is a filthy practice for a bed, immediately it is vacated, to be folded up in a cupboard, saturated with decomposing sweat.

8. It is subversive of cleanliness that boys should be in and out of their cubicles all day in muddy boots in wet

weather, and then be compelled to sleep in the same room at night.

9. Where a boy is accustomed to study by day, no break occurring in his work, he will continue to study at night when he ought to be asleep; and the pernicious habit of reading in bed is fostered to the curtailment of his necessary rest.

10. And finally, it is a well-known fact that cubicles, by the privacy they afford, encourage a boy's lazy habit of lying in bed until the last minute, so that no time remains for the cleanly duty of a good morning wash.

Against these objections there is not a single favourable point to be urged. It is a question for parents to decide whether cubicles shall be provided in schools. The law of demand and supply is absolute: if parents refuse to place boys where cubicles are in vogue, they will be abolished forthwith. It is, therefore, a parents', and not a school, question.

But for parents who are unable to approve of the *complete* openness of the large dormitory system, such as I am about to advocate and describe, I would recommend such an arrangement as I find already in force at a school in Cambridge, and elsewhere, which ensures the openness I desire with the privacy which parents seek.

The drawing (Fig. 6) represents the arrangement to which I refer. Each dormitory contains twenty beds; the space intervening between the side of each bed is 2 feet 6 inches, and between the feet of opposite beds 4 feet 3 inches. Behind the head of each bed is a "recess" without a door, 5 feet wide, 3 feet deep, and 5 feet high, containing a cupboard, shelf, washstand, towel-rail, folding-stool, and looking-glass. The height of the dormitory is 14 feet, length 54 feet, and width 23 feet, thus providing nearly 870 cubic feet per boy. It is heated by hot-water pipes encircling the room, and ventilated by inlets behind these

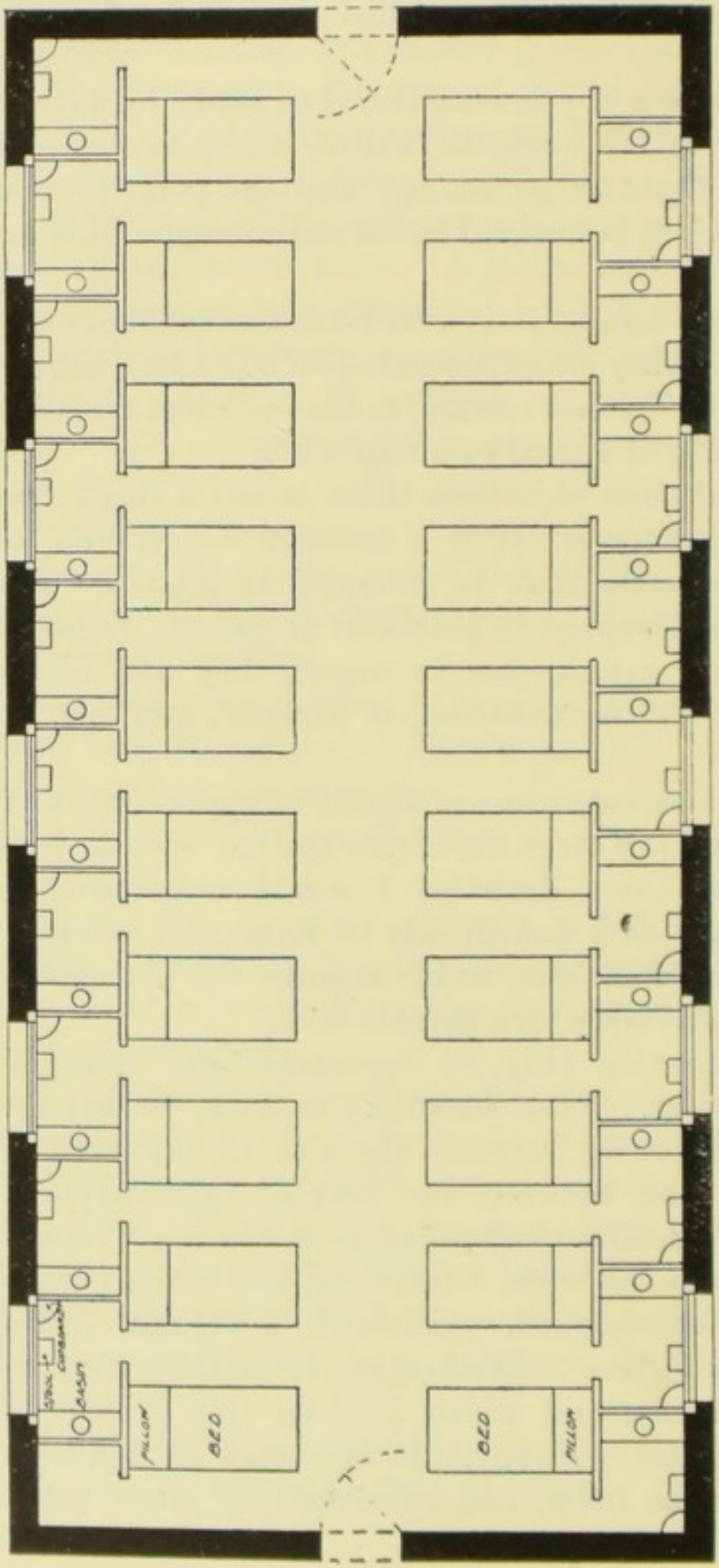


FIG. 6.—THE DORMITORY SYSTEM AT LEY'S SCHOOL, CAMBRIDGE.

pipes, with outlets in the ceilings, which communicate with shafts opening outside the roof. The lighting is by gas-burners, over which are ventilators; and a small jet is left burning all night. The walls are match-boarded and varnished halfway up, and the upper part is coloured, which is renewed annually. The bedsteads are furnished with horsehair mattresses, and cotton sheets. In a room adjoining each dormitory a master sleeps.

I have been minutely careful in this description because in nearly all respects the features which I have advocated in the subsequent pages as essential for healthy dormitories (which were written years before I saw this particular plan) are already in existence in this school; and what one school can accomplish in such admirable sanitary details others are able to imitate.

I would repeat that **dormitories** at schools should be used for sleep, and for sleep only. They should consist of large rooms, open to the view of every occupant, and each should contain from ten to sixteen beds.

Where dormitories are too large, a tendency to "bear-play" is encouraged, and the larger the number of occupants the greater scope is afforded for the despotism of a rough set of boys. The most suitable number of occupants is twelve: a number not too few to permit undue privacy, and not too many to render the boys uncontrollable by the præpostors; while at the same time the influence of public opinion in the dormitory can, under such conditions, be wielded effectively.

The **size of dormitories** requires close consideration.

Dr. Parkes has conclusively shown that every adult requires 800 cubic feet of breathing space, and that this space should be efficiently ventilated, in order to render the air sufficiently pure for purposes of respiration without draught.

A pure air, fit for *inspiration*, consists, on the average, per 100 parts of atmospheric air, of oxygen 20·9 parts;

nitrogen, 78·95 ; carbonic acid gas, ·04 : some aqueous vapour, with traces of nitric acid, ammonia, and other hydrogen gases. Every *expiration* is charged with 4·0 per 1000 volumes of carbonic acid. Dr. Parkes showed that air containing more carbonic acid than ·6 per 1000 volumes is poisonous ; though it is the foul organic matter and excess of moisture that are the most perceptible to the senses, and give to rooms their "stuffy" character.

It was found by Voit that during waking hours more carbonic acid in proportion is given off ; while during sleep more oxygen is absorbed than carbonic acid eliminated. Hence the necessity of a plentiful supply of oxygen during sleep.

In his Lectures on Respiration,* Dr. Marcet argued, "that it is not the oxygen in the atmosphere which, by offering itself to the tissues, brings about the tissue changes, but because the tissues are undergoing change they require and resort to the oxygen of the atmosphere: hence the more active the change, the more oxygen required, and *vice versâ*."

It was further shown by Brown-Séquard that the air exhaled by human beings, even in a healthy condition, contains a very powerful toxic element—a ptomaine—to which must be attributed the injurious effects produced by breathing a close atmosphere.

To prevent this deleterious result, 3000 cubic feet of fresh air are required to be replenished every hour. If this air be changed more frequently than three or four times an hour by ventilation (unless it be warmed) an excessive draught is occasioned, which in our climate cannot comfortably be endured either by night *or* day. Consequently, 800 cubic feet of space should be supplied for each boy.

Huxley says that a healthy man of eleven stones' weight ought to have at least 800 cubic feet of well-ventilated space.

* *Lancet*, 1895.

John Howard, the far-seeing philanthropist, wrote a century ago:—"It may be asked of what size I would wish prisoners' solitary night rooms to be? I answer, 10 feet long, 10 feet high, and 8 feet wide;" *i.e.* 800 cubic feet. If such a space be requisite—as it undoubtedly is—for prisoners, how much more is it needed for growing girls and boys?

Masters will naturally retort, "But I have provided efficient ventilation." This may be so; but if cubic space per head be so restricted that, to ensure adequate ventilation, the cold air must enter with a rush, no boy will endure it. Consequently all the ventilators are stopped by the boys with various articles of clothing, from a sock to a dressing-gown, according to the size of the ventilator.

In warm weather, of course, air may enter very rapidly without perceptible draught, and thus less cubic space may suffice; or if the incoming air be artificially warmed, it can be admitted much more freely without the sensation of draught, and in this case, again, a smaller cubic space will be adequate; but, as a rule, for our climate, 800 cubic feet of space ought to be allotted in the dormitories for each boy.

It should be accepted as a sanitary axiom that those who are growing cannot thrive without the purest air: they are peculiarly sensitive, like the young of all animals, to impure or pre-breathed air.

Many will urge that if 800 cubic feet of space be required by day, half that amount is sufficient for bedrooms, since respiration, during night, is slower, and all the tissue changes are less active. Let those who hold this comfortable theory seek a little *practical* experience, and enter a dormitory immediately after it has been vacated, after eight hours' occupation, with 400 cubic feet per head alone supplied: the impression made upon their sense of smell will summarily banish their *theoretical* notions.

In this treatise I am only concerned with the sleeping

accommodation at *school*, but in describing the provisions that should be arranged in schools, it is almost superfluous to state that similar accommodation is as important at *home*. Yet parents, while sometimes exacting in their demands for school, will often be content with the worst possible accommodation at home, and will crowd children together to a most injurious extent. I have seen in *homes* the entire floor space of a night-nursery covered with bedsteads, with

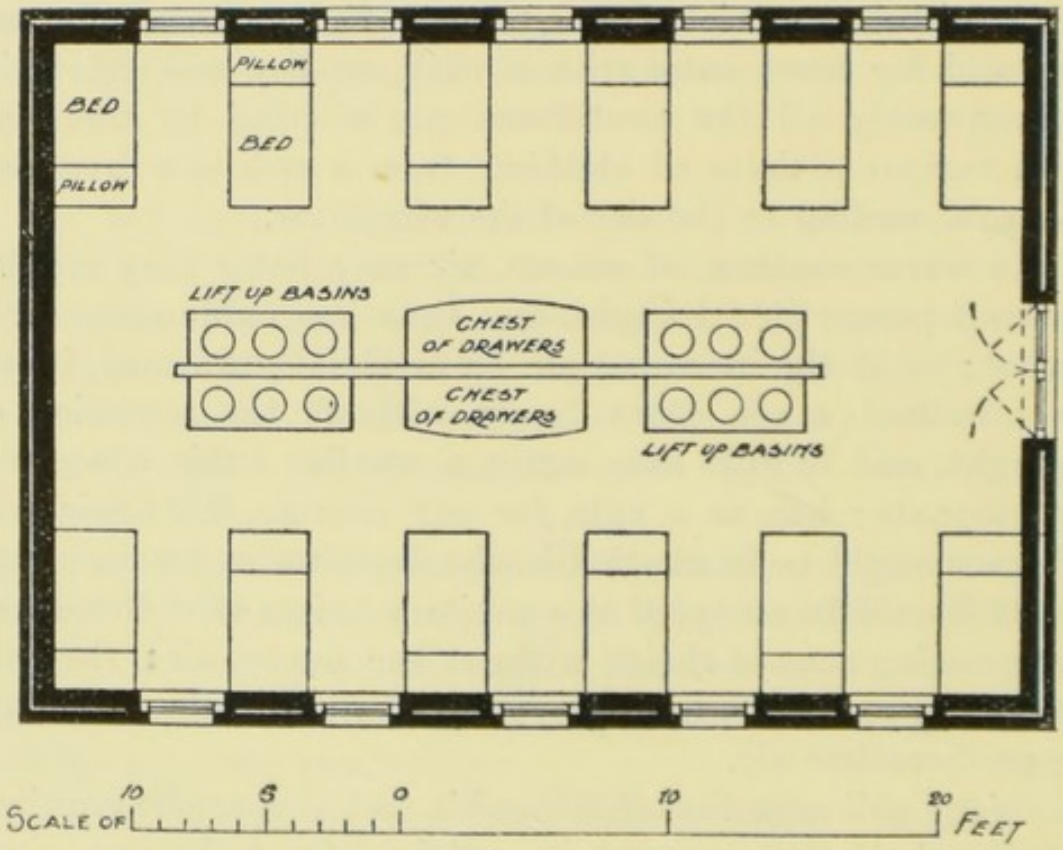


FIG. 7.—A MODEL DORMITORY.

barely sufficient room to reach each bed. In some of our schools the dormitory arrangements, while inferior enough in others, are happily far in advance of the sleeping-room provided at home.

It is, on many grounds, a point of great importance in the construction of dormitories at schools, that sufficient **superficial area** should be provided for each scholar, and

that beds should not be placed so close together that scarcely room is left to get between them. They are sometimes so nearly touching each other that they form almost one bed, and thus virtually entail the evil practice of boys sleeping together.

Another disadvantage of close packing is, that if an infectious illness attack a pupil in one bed, the occupants of the adjoining beds are almost sure to be infected.

Superficial area, therefore, is of great consequence: and taking a school-bed at 3 × 6 feet, the superficial area should be quite four times that dimension, or 6 × 12 feet, and the room 12 feet high (Fig. 7). This gives 864 cubic feet per head, which will allow for the air displaced by the furniture of the room and the body of the boy, and yet provide the full requirement of 800 cubic feet per head. A friend of mine has increased the distance between the *breath* of each boy, so as to minimize infection, by placing the beds in the fashion shown in Fig. 7. The distance can be still further enlarged by the method exemplified in a Rugby dormitory, and depicted in Fig. 8.

It is sometimes stated that boys do not require this suggested amount of air, because they are not fully grown. I should, on the contrary, assert that a growing boy, in whom all changes are much more active than in an adult, needs even more air than the latter, since his respiration is more energetic, and his expired air is more highly charged with carbonic acid gas than that of an adult, in consequence of the greater rapidity of the change of tissue.

In addition to the preceding reasons, I assert that the young throughout the animal creation are more acutely sensitive to impure air than adults; and in them, consequently, pre-breathed air is much more poisonous. I find, in confirmation, that, in his eighth report to the Privy Council, 1865, Sir John Simon stated "that even healthy children, in proportion to their respective bodily weights,

are about twice as powerful as adults in deteriorating the air which they breathe." Moreover, in a large school there

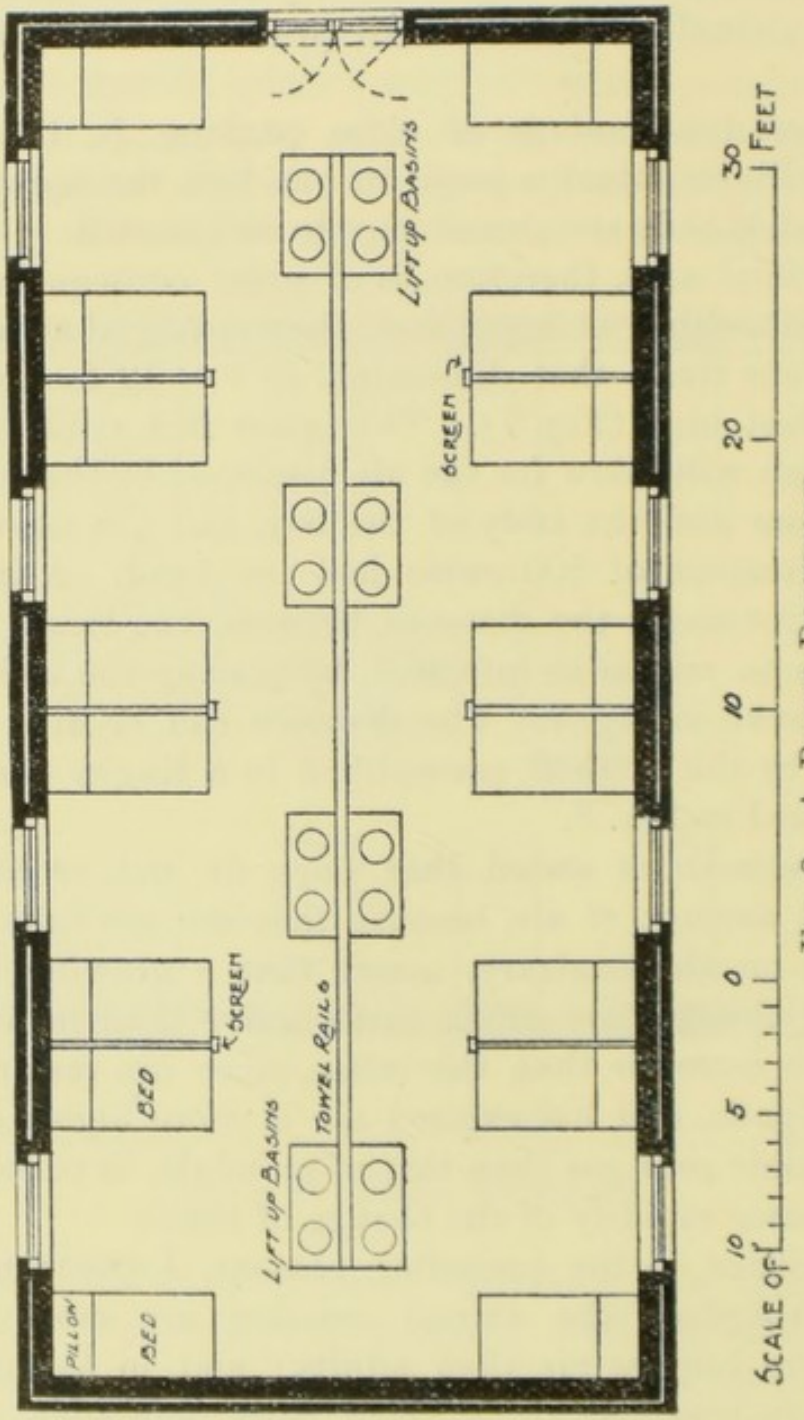


FIG. 8.—A RUGBY DORMITORY.

are boys of every type of constitution and every degree of stamina, including many who are descended from a tubercular stock. Who can gainsay the vast difference it will

make to an unfortunate boy of the latter class during the years of development, whether he have plenty of fresh and pure air, or be compelled to re-breathe unchanged air? It may cause this difference to him—whether he become a tubercular or non-tubercular individual, whether he die early or live to maturity. So convinced of the advantage of pure air for his pupils is a friend of mine, a schoolmaster, that, both in his schoolrooms and his dormitories, he keeps the windows wide open day and night, and his pupils thus live and sleep in the open air with infinite gain, he asserts, to their health and physique, and without any injurious effect. He accustoms his "New Boys" to the principle by degrees, and the plan thus operates with uninterrupted benefit.

My advice upon the **construction of dormitories** is necessarily somewhat detailed, having regard to the special importance of the subject.

My propositions are:—

1. That the *walls* should be of the type termed "hollow walls" (Fig. 7). These are warmer in winter and cooler in summer than walls built in the ordinary way; and if ventilating bricks be placed in the outside wall below, and in the inside wall near the upper part of the dormitory, a continual current of fresh air will be produced which enters the dormitory indirectly, and therefore without a rush.

A "damp course" of slate, asphalte, or blue brick, should be included in the construction of every wall close to the level of the ground.

The walls should be either lined on the inside with white tiles, varnished match-boarding, or plastered, and the surface of the plaster coloured with "silicate," or with paint, which should be washed annually, or, still better, every vacation.

2. That the *floor* should be so laid as to secure a level and smooth surface, with an absence of cracks and bad joints: the joints should all be tongued: the skirting-boards should be let into a groove in the boards of the floor, and all

the corners rounded in order to prevent an accumulation of dirt. The space under the floors may become literally "middens," when a gap occurs between adjoining boards. The whole floor should be stained and varnished, and thus be capable of being beeswaxed from time to time instead of being washed. Parquet flooring and the prepared paraffined flooring are excellent; but carpets should never be used.

3. That the *ceiling* should be of plaster, whitewashed, or, better still, of match-boards stained and varnished, which can be annually washed.

In speaking of the **sanitary condition of dormitories,** the following considerations must be studied:—

I attach importance to the **aspect** of the dormitory. The sun is always invaluable, even in dormitories which may be unoccupied during the time when the sun is on them.

"Dove non va il sole va il medico."

The southern aspect is the best. A dormitory thus facing is far more healthy than one devoid of sun, for it is warmer and drier: the air is purer: the organic matter given off from the inmates is burnt up more completely; and mildew is unable to exist.

Natural light is obtained by means of windows, which should be ample in size, and comprise at least one-tenth of the floor area. They should reach the ceiling, so that when open at the top they may clear the upper stratum of air; but should not extend too low down, in order to be quite clear of the heads of the beds, and thus avoid draught there. They should be fully opened by day, and in winter closed before sunset, when closed at all. Where possible, they should be placed on opposite sides of the dormitories (Fig. 7).

Artificial light should be obtained by the electric light, or by "sun-light ventilators," or Benham's "ventilating globe" light; and if a light be slightly maintained all night, as is already done in some schools, and should be the rule in

all, the rooms will be more healthy in consequence of a better ventilation, and a check upon any evil practices meditated by bad boys will be secured.

The **Ventilation** of dormitories should be effected from the open chimney; by means of ventilators over the doors into passages, which in their turn should be well ventilated; by "conical brick" ventilators fitted into an outer wall: by Tobin's system; or by Bird's method (Fig. 20, p. 223), which consists of a two-inch piece of wood inserted under the lower edge of the window-frame to prevent it from quite closing, and allowing the admission of fresh air between the two sashes in the middle of the window. Of Bird's plan I cannot speak too highly, for it is efficient in action, cheap in cost, and within the reach of all. Or, further, by Boyle's air-pump ventilator; or Sheringham's and Arnott's valves; or by the Plenum system (see p. 221).

The **warming** of dormitories can be supplied by the open fire, or, better, by hot-water pipes.

Warming and ventilation combined can be provided for dormitories by hot-air flues, the fresh air being forced in and extracted by revolving fans; or by one of the patent ventilating grates; and if *warmth* be supplied to the dormitories, which is not usually required, it should be that which is produced by the means above mentioned, but combined with ventilation. Another efficient plan is to warm well the corridors and passages. If, however, the school be placed in a cold and damp situation, the provision of warmth in the dormitories is a necessity; but no school should be built in such a situation.

At a school with which I am acquainted, a fire is lighted in each dormitory at 5 p.m. when the nights are very cold, and so regulated as to be just burning itself out when the boys go to bed. The rooms are thus made comfortable. The **temperature** should not be artificially raised above 56° Fahr.

The plan of warming dormitories by freely lighting the gas for an hour or two in the evening before bedtime should never be adopted: it is utterly bad: no warming whatever is better than warming of this kind, which burns up all the fresh air, and poisons the rest with deleterious gases. This plan, however, may be rightly used to assist in warming and airing the dormitories for the last few days of the vacation, before the boys return to school, *provided* the windows be left open about an inch at the top.

The **washing arrangements** can be contrived in various modes in the dormitory and cubicle as shown in the several drawings; or in a separate lavatory adjoining the dormitory. The latter plan, while advantageous in many ways, involves the disadvantage that many boys will evade washing altogether when they can thus escape the scrutiny of public opinion.

These arrangements should be carefully devised, with a view to obtaining the use of plenty of water with as little trouble as possible. I have had Jennings's tip-up basins fixed in a boarding-house, arranged as represented in Fig. 8: the pipes from them terminate below in the open air. Each basin is supplied with a tap, so that an abundance of water is always secured.

The **bedsteads**, which should be made of iron, having a wire mattress, are in most schools about 3 × 6 feet in size, and, as I have already stated, there should be allotted to every boy four times this size of floor-space, so that an interval of upwards of three feet will separate each bed from the one adjoining, and between the beds on the opposite sides of the room a space of twelve feet will be interposed (Fig. 7, p. 142).

If, however, partitions be used, as represented in the drawing (Fig. 8, p. 144), the floor-space between each bed is very much increased, and if the partitions be not too large, an advantage is gained by the plan, since they do not

serve as screens; though on the whole, all things considered, I think dormitories without partitions are preferable, as shown in the drawing (Fig. 7).

While the bedstead (3 × 6 ft.) is of sufficient size for the average boys in our public schools, yet, as some few boys exceed six feet in height, it is advisable to have a few bedsteads 6 ft. 6 in. in length, so that no cramping or constraint may be produced in any instance. This could easily be arranged by having the *corner* bedsteads in a dormitory of this size, and in this position they would not form an obstruction in the room.

The kind and quantity of **bedding** require consideration.

It is always desirable in schools, whether for boys or girls, that *mattresses* should be used to sleep on, a horsehair mattress being the best and cheapest.

The most suitable *sheets* for those who are growing are cotton: they are preferable to linen, on account of their greater warmth. Besides being the most expedient generally, they are especially so for those who suffer from cold and moist feet; while for those who are liable to chilblains they are essential to comfort.

It is better for sanatory as well as moral reasons that the warmth in bed should not be very great. All bed-clothing should be short of producing moisture of the skin. This condition is more cleanly and less debilitating, and conduces to a more vigorous feeling on rising in the morning. All the coverings to the bed should be freely pervious to air, and act as good absorbers of moisture,—the insensible moisture exuding always from the skin: *blankets* accordingly are the proper bed coverings, better far than eider-down *quilts*.

The requisite number of blankets must, of course, depend upon the situation of the school, the season of the year, and the characteristics of each boy; since some require much

more warmth than others. During cold weather at least four plies of blankets and a quilt may be required; and school authorities should supply sufficient coverings for the night, and not allow boys to resort to their own overcoats and rugs.

The bedding, blankets, pillows, and other coverings, should be allowed time to air and dry, in order that the moisture and organic matter with which they are saturated from daily use may be entirely removed. Yet, even in dormitories which are used for sleep only—still more in cubicles, where the room must be ready for use immediately after first lesson—it is rarely the practice to allow any ventilation whatever of this kind; for as soon as the occupants have vacated them the beds are re-made. It is essential, on the contrary, to leave the beds open, so that the mattress, blankets, and other coverings, can be ventilated *all day*, the re-making being deferred until the windows are closed in the evening.

Moreover, the same plan should be followed in the vacation, and all beds and bedding should be well spread out on the day the scholars leave school, and so remain until their return; as a matter of practice they are usually packed in a heap, which thus prevents their airing and drying.

There are some schools to which the well-known advertisement, which occurs in our homely country inns—"well-air'd beds"—would be ludicrously misapplied.

Unaired beds are a frequent source of ill-health: beds generally become damp when unused, and it is consequently requisite that, before the re-assembling of the school at the commencement of each term, every mattress, and other bed covering, should be carefully aired. This should be systematically carried out under the superintendence of a responsible person.

I do not propose to discuss the question of **dormitory morality** in its entirety, though its momentous character

forbids complete silence.* The importance of the subject *must* be distinctly recognized by school authorities, and the duty *must* be manfully undertaken of avoiding in their schools any arrangement that can in the slightest way conduce to this evil.

To ignore the evil, to speak of it with "bated breath," is *not* the way to overcome it. It must be plainly and firmly attacked. Virtue does not consist in being too pure, or too ignorant, for temptation to assail; but in possessing that strength of character which is able to resist temptation, however great in power or insidious in form. Few boys, in their early school-days, possess this moral vigour. It develops with their bodies and brains, and if assailed too roughly at first it is weakened rather than confirmed. Boys, therefore, should never leave home without being warned of the instinct which will assail them sooner or later, with more or less force: an instinct which, when uncontrolled, may become a demon which will insidiously and fatally mar the entire usefulness and beauty of life. They should not only be taught, before leaving home, the virtue of self-control, but the dignity and manliness also of self-respect, which will prove a powerful means of defence. *Which* parent shall be the boy's adviser, must vary in every family. Some time since a clergyman, in a sermon preached in one of our cathedrals, testified: "I owe most of my own character to my mother. My father spoke to me continually of everything relating to my life and conduct but one: my mother never spoke to me at all of anything but one, and of that she never ceased speaking to me." It is personal, preparatory advice and help that boys require: lamentations over the evils of youthful human nature will not remove them.

* In a Prize Essay (now out of print) on "The Preservation of Health as it is affected by Personal Habits, such as Cleanliness, Temperance, etc.," I fully and freely considered the topic. (Longmans, Paternoster Row, London.)

The question is not restricted to a *school* aspect: its significance is *national*. What efforts are being attempted to remove this blot from our school escutcheon? At present worse than none. Our schoolboys are still too frequently sent to bed with a drug in their stomachs—beer—which makes it difficult for all, impossible for some, to curb their animal instinct. It may be demanded, "I thought our English schools were well-nigh perfect. What is it you desire to alter?" In answering this inquiry I ask the question: How many parents, when parting with their children for school, warn them of the animal instinct that will arise, of its power, of the necessity of control, and of the consequences to themselves and others if it be not curbed? How many schoolmasters have striven to prevent this evil before its commission, instead of simply and impotently punishing it after the fact? In how many schools do the boys go to bed without a glass of beer, which only serves as a stimulus to this instinct, too imperious already?

In boys' schools, at the head of the *Dormitories* should be placed the best senior boys, or præpostors, that the house possesses. Each of these boys should be responsible for the conduct of the dormitory under his supervision. He should be the trusted friend of the master, and of every upright and pure boy; but the enemy of every boy capable of impure hint, word, or act. By his personal influence alone, he may, as I have known, retain the whole tone of a house, especially of a dormitory, in a pure and healthy state.

If in a school *small dormitories* of two or three beds be already in existence, and must be used for a time, the responsibility of the master in the selection of the boys to whom they are allotted is serious; and so serious, that it furnishes a conclusive reason for the abolition of such dormitories, since on the wisdom of the choice exercised may depend the whole character and future of a boy.

I also regard *cubicles*, for sanitary and moral reasons, as the worst invention ever planned for schools. For evils are *possible* in cubicles and small rooms which are unlikely, or almost impracticable, in large open dormitories, unless the house or school be corrupt to the core. Cubicles, as I have stated, involve a direct invitation to a boy to practise and teach secret acts, which he dare not, and would not, commit before a whole room, particularly where the senior boy or præpostor at its head is selected preferably for *character* than for ability. Where the test of character determines the appointment of præpostors, this system has worked admirably. The most rudimentary sense of justice enforces that no gratuitous temptation, however slight, much more when powerful, should, through want of thought or negligence, be presented to even a vigorous moral nature. Doubly impressive is this doctrine in view of the nascent moral condition of a boy.

> "How oft the sight of means to do ill deeds
> Makes ill deeds done."

To the thoughtless parent these cubicles no doubt look cosy, home-like, and private; but it is this very privacy, as I have shown, that constitues their evil.

With parents, then, really rests the responsibility of continuing these cubicles or of abolishing them; and the onus consequently is theirs—not the master's nor the boy's school-fellows'—if their sons become corrupt. Cubicles in themselves may not be objectionable where a healthy tone and conduct exist throughout the entire school; but where the least unhealthiness in tone or desire prevails, as usually occurs amongst numbers, cubicles foster its development, and invite to its commission by the secrecy they afford.

In the large open dormitory the prefect can see all in the room, and *for this purpose sufficient light should be provided*; but the privacy of the cubicle at once increases the power

of the bad boy, and removes from the prefect the possibility of supervision.

The argument of those who advocate cubicles is, that the open dormitory tends to vulgarity or coarseness of manners, through its lack of privacy. Even if this were inevitable, I would yet urge that it is preferable to have open coarseness of manners, rather than that secret vice which undermines the character and constitution, and is the primary cause of a large proportion of evil in "Society." But I insist that this coarseness of manners is not inevitable; and I maintain that with a properly constituted prefectorial system, based on *character* as well as on *position* in school, the tone of the dormitory could be raised to as high a pitch as is possible to be obtained amongst human beings.

Parents themselves, I repeat, are mainly at fault in this delicate moral question, for they generally fail in thought for the prevention of evil in the case of their own boys; and, to the serious and permanent detriment, frequently, of their children, leave everything to chance.

> "Not to know vice at all, and keep true state,
> Is virtue and not fate;
> Next to that virtue, is to know vice well,
> And her black spite expel."

Above all I would insist that in the young the capacity for governing the emotions is in abeyance, and requires, therefore, judicious and circumspect training from the earliest practicable stage.

I urge, therefore, that every parent should quietly and kindly warn his boy, before he first parts with him at the beginning of school life, that in every position he will meet with depraved companions, who will seek to teach him bad thoughts, bad words, and bad habits; and the parent might well tell his son, as Tom Brown's father did, "never to listen to, or say, anything you wouldn't have your mother

or sister hear, and you'll never feel ashamed to come home or we to see you." By this means most of the evil referred to would fail to be accomplished, for the boy would be on his guard from the outset.

Parents hitherto, with few exceptions, have, as I have said, failed in this important duty, either from thoughtlessness, or on account of its delicate character; and have trusted to their boy's honour, or to the master or the doctor advising him, with the result that many a boy has unwittingly gone astray. I would, therefore, again insist that, *It is the parent's duty, and his alone.* But if the parent fails in this solemn duty, the master in self-defence (to place the question upon the lowest ground) must watch his opportunity to speak out openly, and not by hints.

It should be the master's aim, instead of closing his eyes to this evil, until it is forced upon his attention in so disastrous a way that it cannot be ignored, to ensure, by every judicious means, that no boy shall leave the school-world inferior in character to that which he bore at entry.

The greatest vigilance is required during the spring and early summer months, when the animal propensities are the strongest and most difficult to suppress.

Boys, again, universally love to imitate other boys, especially young boys in relation to their elder schoolfellows. If the latter are wrong-doers, disgust may be felt at first by the younger; but sooner or later the evil speech and act are unhappily regarded with diminishing repugnance: temptation is dallied with, and ultimately the evil acquires the aspect of custom; and the purity, which might have been preserved by timely warning, finally lapses into vice.

In an essay which all should study, Sir James Paget, speaking upon this subject, describes the vice as "an uncleanness, a filthiness forbidden by God, an unmanliness despised by man."

When a boy has committed a wrong at school, his appeal is usually for personal punishment and the concealment of the offence from those at home. The feeling at the root of this appeal is one that should never have been possible. The relationship between father and son should be much more intimate and sympathetic than this sentiment discloses, and if parents acted towards their children in the proper spirit, it could not arise. A father should teach the son to feel that he is his best and most helpful friend on earth, whose experience and sympathy are intended to be used for the boy's development into a manly self-reliance and self-control. If this course were consistently and considerately pursued, concealment from the father, even on the most intimate subjects, would become impossible; and implicit and cordial trust would pass into a habit of life.

The *remedy* for this widespread evil, so far as boys are concerned, involves therefore:—

1. A timely word of warning from the parent.

2. A more reasonable prefectorial system, in which *character* ranks *above*, but *not without*, ability.

3. The provision of large open dormitories only.

It is obvious, from my remarks on this vice, that I hold the deep conviction, that it is the imperative obligation of the physician to speak plainly of the conditions which foster it; and the question is so interwoven with that of school dormitories, that I should have failed in my duty—however much I may regret the necessity for its introduction—had I avoided its discussion.

It is a fact, only too true, that many people are much more easily shocked by the mere mention of an evil, than by the commission of the evil itself. The idea of seeking to lessen or prevent it rarely enters their head; and their intervention is limited to the punishment of the offender when discovery occurs.

My firm opinion is, that when school authorities

recognize the possibility of the existence of this evil in *their own* schools more seriously: when they face it rather than ignore it: when they endeavour to prevent it rather than cure it—then, and not till then, will it be successfully met; and in its *prevention*, I can only repeat, no instrument is more effectual than a carefully-chosen prefectorial authority in large open dormitories, after the boy has been put on his guard by his parent before leaving home.

At the present time, literally no trouble, as I have stated, is taken to check the origin and growth of this evil. Boys are neither warned nor taught by parents or masters upon the subject. The only manner in which it is dealt with is, to my mind, unwise and unjust, and utterly useless for producing any real good. A young boy is turned adrift into the school-world absolutely ignorant that there is an evil to be encountered, and without a helping hand. He falls! Does he usually find a good Samaritan in a schoolfellow or in his house-master? No! Without sympathy, pity, help, or advice, he is ignominiously returned to his father, and his whole life and prospects blighted.

Hence a terrible burden is imposed upon the boy, possibly of permanent nature, as the result, not of the deliberate choice of wrong, but of the sudden and novel accession of a form of temptation of whose existence even he has been left in unprotected ignorance.

But whose was the chief fault in his fall? Why do parents refrain directly from preventing it? Drastic school measures, such as dismissing the offender, have never been successful in the eradication of the evil, and the only sure method of remedy consists in the elevation of the tone of the whole school.

The boy has been the victim of an unnatural system of education. If punishment be more due than pity, let some severe punishment be prescribed, so that the boy may at

least have a chance of redeeming his character, and in this way also helping his school-fellows.

Let the words of one of the ablest of schoolmasters be pondered by every other schoolmaster * :—"A strong house-master knows that he must sometimes get rid of a bad boy, and Dr. Arnold used rightly to weed out very severely. But, on the other hand, the stronger a house-master the more able should he be to work a house as a family, where a father knows that his sons must always be treated as *necessaries*. That grand old Roman word conveys a standing rebuke to those who forget that the claims of a boy who has once entered a house are almost infinite on his master. It is a weak man who can only keep his house pure and good by constant rejection of the strong characters." If those concerned with the rearing of children, and the training of the young, would constantly bear in mind the fatal facility of wrong-doing, especially in youth, and the difficulty of right action, we should get within a measurable distance of preventing this calamitous evil. There is no doubt that if a boy, by the influence of a mother's love and advice, be taught, before he leaves home, *to respect himself and his own body*, he will be as *safe* at school as anywhere else. It is the absence of this necessary safeguard—self-respect—which entails the downfall. Respecting his own body as the casket of his soul, he will respect those of others, and the thought even of defilement will not enter the mind, or if it enter will be indignantly repelled.

It is an undoubted fact that children are frequently punished too severely. They have never received a warning of the evil; and hence, in a multitude of instances, I can justly plead—

"They know not what they do."

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* *Loc. cit.*

I hold with increasing conviction, that the most ineffective punishments in life are the punishments for ignorance.

Those who have had much to do with boys must often have felt the most compassionate sympathy with them in the degradation which has overtaken them: bitter often are their reproaches, too, against those in authority for the absence of faithful and kindly premonition. Their cry is

"Save us from being tempted,—lest we fall."

Well expressed by an author are these earnest words of advice to parents:—"In all the wide world there is not a spot where you can do as much good, good that will count for all time, as at home, planting beautiful thoughts in the gardens of the hearts God has given to you. Don't let false modesty or anything else keep you from warning your sons and daughters of the pitfalls that lie all along the pathway of life. Not only tell them to beware, but tell them of just what to beware. Teach them how they will be assailed, in order that they may know how to guard themselves. Be the first to reveal to your boy or girl the so-called secrets of life. Don't let one of your children's foul-mouthed companions get the start of you. Finally, don't shirk your parental duties. Don't let your children bring themselves up. Don't let anybody else bring them up. Bring them up yourselves."

The late eminent surgeon, Mr. Le Gros Clark, in speaking on this subject, said:—"I am now speaking of our own sex, and I do not venture to extend this admonition to mothers. Yet, even they may exercise a wise discretion in warning their daughters, under similar circumstances, to shun, as they would a deadly poison, indelicacy of conversation or in person, in mingling with their school-fellows. The bloom is soon brushed from the ripening fruit; and even *their* schools are not exempt from the danger of infection. As of old, the tree is pleasant to the eyes, and is represented as desirable to make wise; and if the Tempter be listened to, can the daughters of Eve expect to escape when she fell?"

I close this subject in the words of Archbishop Temple:—"There is no stain so black as that which a man put upon his own soul for life when he parted with his innocency, and there is no sin which more surely lives and lingers in his conscience than that of an impure life."

Secondary Schools, whether Day or Boarding, are usually provided with a separate and sumptuous-looking **Dining Hall**, placed, for facility in serving, in contiguity to the kitchen.

Where the land cannot be spared for this purpose the dining hall should be on the top floor of the building, together with the kitchen, in order to avoid the smell of cooking food in the class-rooms.

The necessary dimensions of the room, based upon the space required per head, can be readily estimated from the measurements afforded by Mr. Felix Clay.*

	ft.	in.
Width of table	2	8
Width of each boy's place	1	9
Depth of each boy's place	1	4
Distance between the backs of seats of two adjacent tables ...	2	6
Distance from wall to back of seat	3	0
Distance between the ends of two adjacent tables	2	0

SANITARY ARRANGEMENTS OF THE BOARDING-HOUSE OR SCHOOL.

Next to providing a plentiful supply of fresh air in the boarding-house, by means of proper cubic space and sufficient draughtless ventilation by day and night, a good **water supply** for drinking and cleansing purposes is a most important factor of health. About twenty-five gallons per head per day are necessary for all purposes, excluding, however, the water required for the swimming-bath.

* "Modern School Buildings."

Schools in *towns* should always be supplied with water from the local water company, and this supply should be constant, and on no account intermittent. Resort should never be made to a town "well," for, with the ramification of drains which always exists, it is utterly impossible to exclude the surface water, and prevent the contamination of the "well" from the usual leaking of drains.

In the country, where no public service of water exists, other sources of supply have to be obtained. These sources I mention in their order of purity.

1. Deep well water.
2. Rain water, properly collected and efficiently filtered.
3. Permanent, or rock-spring water.
4. Intermittent, or land-spring water.
5. Upland shallow well water.
6. River water.

Schools of any size in the *country* should undoubtedly possess, where it is feasible, a private "Artesian well" to supply the whole school. Where this is impracticable, and yet a "well" must be used, the sides and top should be bricked, carefully puddled with clay, or cemented, to keep out as much of the surface water as possible. These wells are usually sunk about twenty feet deep, when a good supply of water is forthcoming. The "well" should always be on a higher level than the cesspool, and at a distance from it, and clear of all surrounding drains. The reverse of this requirement is frequently found, so that when floods or excessive rain occur, or the cesspool is omitted to be emptied, and consequently from either cause overflows, its contents find their way naturally into the "well," and thus poison the water. I have know diphtheria and typhoid fever to result at a school from this cause. The "well" should, therefore, be inspected regularly before the school re-assembles after the vacations; and the water analyzed from time to time.

Cisterns should always be provided at schools; for, unless this be done, and the water be furnished directly from the main without the intervention of a cistern, whenever repairs are required in that section of the town, the water on each occasion is turned off for the purpose, and the school is without water for several hours.

The cisterns should be made of glazed porcelain, slate, or galvanized iron, and be placed at the highest convenient part of the house, so as to ensure water being readily available throughout; for if the water has to be carried upstairs by servants, the supply will invariably be inadequate. The cisterns should be efficiently protected from the entrance of extraneous matter, and should be thoroughly cleansed every vacation before the re-assembling of the school. This plan causes very little trouble where the Self-cleansing cistern is adopted. The overflow pipe should either be carried through the wall on to a subjacent roof, or simply pierce the wall and be cut off, so that any overflow may at once be visible: it should never communicate directly with a drain.

From the main cistern at the top of the house the water should be conveyed to other small cisterns for the purpose of supplying the water-closets; and the pipe carrying water from the main cistern which is to be used for drinking purposes should not be attached *directly* to any water-closet. A still better plan is the conveyance of the water direct from the main into the filters. Where filters are not in use, a draw-off tap may be affixed to the rising main for the supply of water for dietetic purposes. If the supply be river water, it should always be filtered for the young; since during floods, and even after the first rain subsequent to prolonged dry weather, river water is neither wholesome in appearance, nor fit for consumption.

In *towns* the water companies impound the water in **reservoirs,** both for storage and purifying purposes, and the supply then passes through the **filter beds** before it

leaves their premises. This is absolutely necessary; but it is also desirable that every householder should filter his own potable water: the filtering may have been imperfectly effected by the companies, or the water may have become contaminated in its transit, or in the cistern.

Every school and boarding-house should, therefore, have its own filter, and this should be efficient. Several excellent household filters have been designed. The best of these are the Pasteur-Chamberland, and the Berkefeld filters.

But where water is known to be deleterious, no filter is competent to purify it; and the only process which will render it safe for use is boiling, after which it should be allowed to stand, in order that any suspended matter may be deposited, or, what is preferable, should be filtered.

Even when this course has been adopted, it is still, unfortunately, a question whether all "bacteria" have been destroyed. This result can only be surely obtained, as Tyndall suggests, by repeated boiling. But nothing can make the drinking of impure water other than an inexpressibly nasty habit, even when not a fatal one.

I have always advocated the propriety of a plentiful supply of pure filtered water being placed in as accessible a position as possible in schools, boarding-houses, and playgrounds. For it is during childhood, more than at any other period of life, that a frequent *drink of water* is imperative. Moreover, the facility with which it is obtained would prevent the very obnoxious and dangerous proceeding, which is very prevalent, of boys playing until they are parched with thirst, and then resorting to the pastry-cook's to obtain iced lemonade, nectar, ginger-beer, soda-water, and I must add cherry brandy; or obtaining elsewhere beer or shandy-gaff.

But masters do not yet sufficiently recognize the paramount importance of a good supply of filtered water for boys. Not only is it one of the greatest preservatives from

illness of all kinds, but it contributes to a moral gain besides. Where an ample supply of pure water is provided, which is always easily available, boys will not be imbibing so continually, after every exertion, the various drinks I have named.

In order to obviate this tendency, I would suggest that a suitable filter should be placed, protected from frost, in the cricket pavilion, boat-house, racquet-court, gymnasium, workshops, and library, as well as in the passages of the boarding-house and the class-rooms.

In dwelling-houses, but especially in schools where many young people are congregated for several months in the year, the **removal of waste products** should be effected in such a way that they neither offend the eyes or nose, nor cause illness by their decomposition.

The appalling extent to which disease and death were occasioned in past ages through the neglect of this wholesome rule is well known; but even at the present day we must not boast, for an excessive mortality (produced by *filth* causes) still prevails from unprevented preventable diseases. Of towns this statement is perhaps especially true; but even in the country, and in isolated schools, filth diseases are only too common, owing to the slovenly and unscientific way in which refuse is removed. In fact, refuse, in a considerable proportion of cases, is not removed at all, but is allowed to stagnate about the premises, and poison the "well" water; or, being received into a tank or cesspool, is carefully covered over, and allowed to decompose and generate gases which return up the conveying pipes to the house. This poisonous gas is thus supplied in a similar way to that in which coal gas is "laid on" to houses, the gasometer being the hermetically-sealed cesspool, and the drain-pipes *from* the house acting as the conveying gas-pipes *to* the house. Sewer gas has in this mode been conveyed to all parts of houses from various inlets, such as

the cellar and scullery drains, the water-closets, housemaids' sinks, baths, and cistern overflow, and has even been "laid on" to bedrooms.

For the preservation of health at school, the provision of means for the removal of *dirty water* from the premises is as essential as a constant and plentiful supply of clean water. It is also necessary that the solid and fluid *excreta* from the body should be quickly and safely removed.

The **most primitive method** of dealing with excrement, as well as the most natural and the best adapted for schools where practicable, is that adopted by wild animals of covering it with earth (loam) as soon as it leaves the body. It is thus instantly rendered innocuous, and fulfils its function in nature by refunding to the earth what has been extracted from it in the process of animal life, for the purpose of nourishing the vegetable kingdom. In country districts with abundance of space, and a sparse population, various methods have been contrived in imitation of nature, in this respect, to the incalculable benefit of the land itself through the nitrification of the soil, and concurrently to the healthiness of the human residents through the prevention of filth disease, culminating in the construction of the **earth closet,** suggested and devised by the Rev. Henry Moule.

This contrivance consists of what is technically termed the *closet seat*, beneath which is a *galvanized bucket*, of various designs, with handles. Above and behind the seat is a *hopper* containing the *dry earth* which, by varied artifices, is caused to descend in sufficient quantity to cover the ordure after every service. The *construction of the building* for adaptation to earth closets, and the number of them, should be similar to that described on page 172 for water-closets, with this difference, that in the wall behind the bucket should be an *air-tight door* through which the bucket can be removed for emptying.

An admirable arrangement for the disposal of the sewage of schools in country districts where land is available, and space for the purpose, is **the Biological System,** originated by Mr. Dibdin, at Sutton in Surrey. It consists of *two tanks*, varying in size according to the amount of the sewage to be treated (allowing about twenty gallons of sewage per head per day), the one filled with *coarse coke-breeze* for the entrance of the sewage; and a second tank containing *finer coke-breeze* into which the contents of the first tank flow. The surfaces and the interstices become coated and lined with a dark gelatinous slime containing myriads of bacteria, which, in feeding on the sewage, destroy it. Slates, horizontally placed, and filled in with small blocks of slate, form a good filter bed. The effluent liquid can then safely enter a river without polluting it, provided it flow over the land at a maximum rate of 30,000 gallons per acre.

An extension and improvement of Dibdin's is the **Septic Tank System.** The relentless predatory instincts of bacteria are constantly presented in terrifying forms to the exclusion of their beneficent functions; and yet it is mainly their influence which secures the destruction of the residuum of animal life. It has been found that two distinct classes of bacteria are concerned in the process of destroying refuse: the one class termed anaërobic bacteria, which revel in the absence of light and air; and the other aërobic bacteria, which thrive best in the presence of air. The septic tank system utilizes the functions of both classes. This system consists of a completely closed tank varying in size according to the requirements of service in which the anaërobic bacteria liquefy the solids of the sewage; and of two or more large-surface open filter beds of coke-breeze, slag, slate, or stone, which are used alternately. The dissolved sewage, in filtering through these beds, is so completely destroyed by employment of this simple natural agency that the out-flowing water is freed from all organic matter.

The following diagram (Fig. 9) is a section showing the plant required:—

In schools situated in the *country* unprovided by a system of sewers, and with a limited land space, an underground water-tight tank, commonly known as a **cesspool,** should be constructed of sufficient size to serve for the whole "term" without the necessity of emptying, and connected with the house in the same manner as that described for water-closets on page 169. It should not be less than fifty feet from the school buildings, and eighty feet from the well; and should be built on a lower level than the well, so

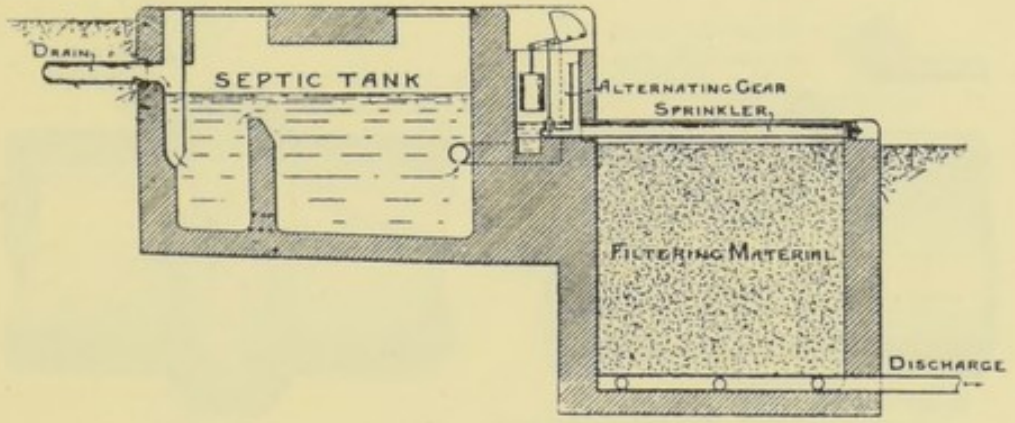


Fig. 9.—The Septic Tank System.

that its contents may under no circumstances of leakage, or overflow, percolate into the water.

The cesspool should be thoroughly ventilated, disconnected from the house-drains as completely as though it were a town-sewer, in order that no generated sewer-gas may by any possibility enter the house. An overflow on to the land is necessary, and this is best effected through an automatic flushing tank of about forty gallons, from which radiate several courses of agricultural drainpipes having a downward slope. In this way the ground does not become water-logged from the constant trickling of sewage.

In *towns*, where land is scarce, and the water-supply plentiful, the local treatment of excrement is impracticable,

and a system of conduits,—termed **Drains,**—for conducting it to a distance, becomes a necessity.

In some towns, especially where **sewage-farms** exist, two sets of drains are in use—the one to carry off the solid and liquid excreta: the other to remove the dirty water, rain water, and the whole of the **surface drainage** of the town, in accordance with the famous saying of Ward, "the rain to the river, the sewage to the soil." This *surface* scheme, wherever it has been provided, as at Eton, Rugby, and other places, has worked efficiently. The arrangement also renders the sewage of greater value; for, under systems

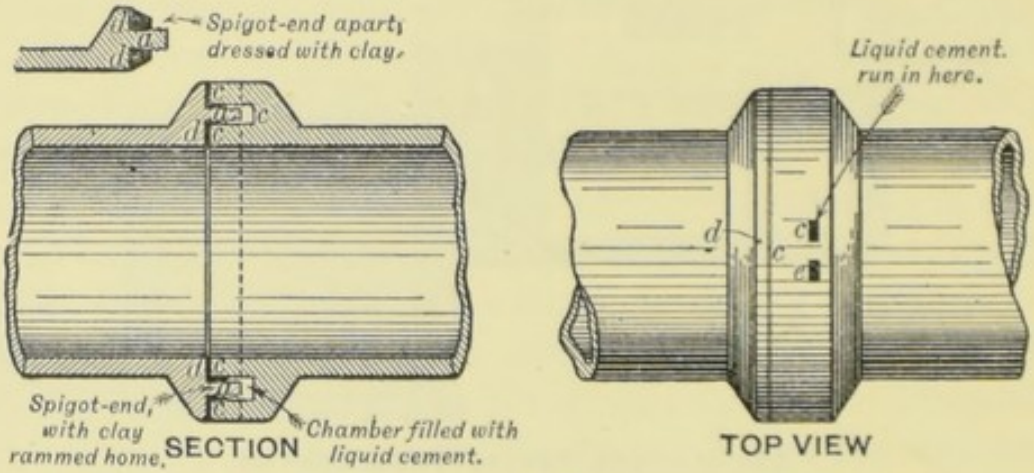


FIG. 10.—ARCHER'S AIR AND WATER-TIGHT SEWER PIPE.

previously adopted, the sewage was so diluted as to contain from two to three pounds only of solid matter per ton.

The *pipes* most suitable for drains are those made of glazed earthenware, having Archer's air and water-tight joints (Fig. 10). They are placed underground in a straight course resting on concrete, and should terminate in a disconnecting chamber before joining the town sewer. The pipe which conveys the sewage from the water-closets in the upper storeys, called the *soil pipe* and made of iron or lead, is four inches in diameter, and passing from the trap of the highest water-closet direct through the wall, and running perpendicularly down outside, receives in its course the

soil-pipes from other water-closets, and enters the *house-drain* at the ground level. The upper end of this vertical pipe is conveyed upwards above the eaves of the roof, and above the chimney stacks, as a *ventilating shaft* of the same diameter, where it is guarded by wire netting.

All house-drains should be cut off absolutely from the street-drain, which is termed the **sewer,** by an open-air trap. There are several excellent traps for this purpose,

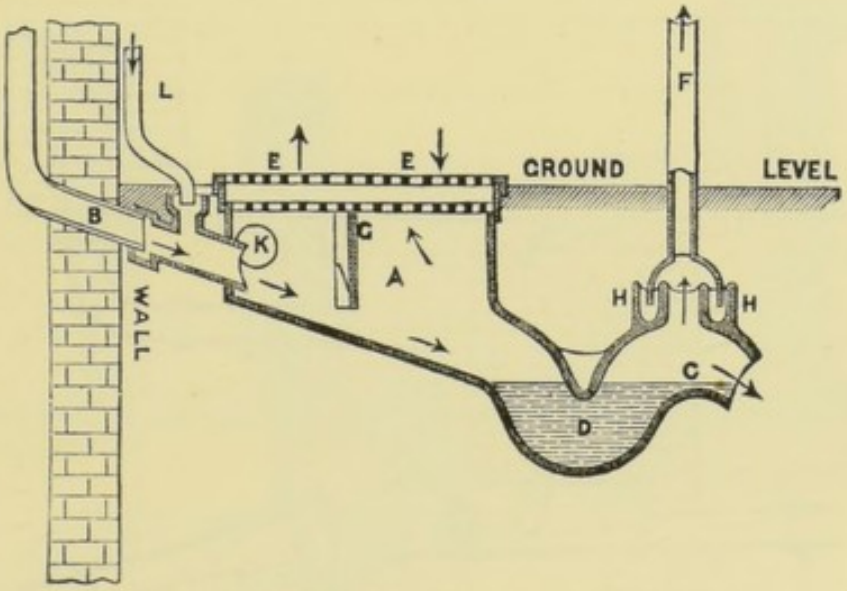


FIG. 11.—THE "EDINBURGH" TRAP.

K, junction for one or more closets, etc.; E and E, iron grids for ventilation. A socket, H, is provided for a ventilating pipe, F, to be carried above the windows; next is a syphon or water-trap, D; then an air-chamber, A, to carry off the residue of sewer gases (if any) escaping through the trap. B, soil-pipe; L, rain-water, sink, or other house waste water-pipes.

and one or other of them should be employed: most of them answer their purpose with effect. The first **disconnecting chamber** ever made was invented by an intimate friend of mine, a schoolmaster, the Rev. C. W. Darnell, who, having had the misfortune to lose a child from diphtheria, which spread also among his pupils, devised a means of excluding foul gas from his premises. His first method was simply to cut a drain pipe in half longitudinally and thus severed the

connection between the house-drain and the street-sewer by an open air-space. This method culminated in his invention of the ingenious trap called the "Edinburgh Air-chambered Sewer Trap" (Fig. 11). Every pipe for drainage purposes in and about the house opens into the air-chamber, and should never be attached directly to the sewer-pipes.

I am not an advocate for any particular trap, so long as the one in use be scientific in principle and simple in action. I merely mention this one as the original design, which has

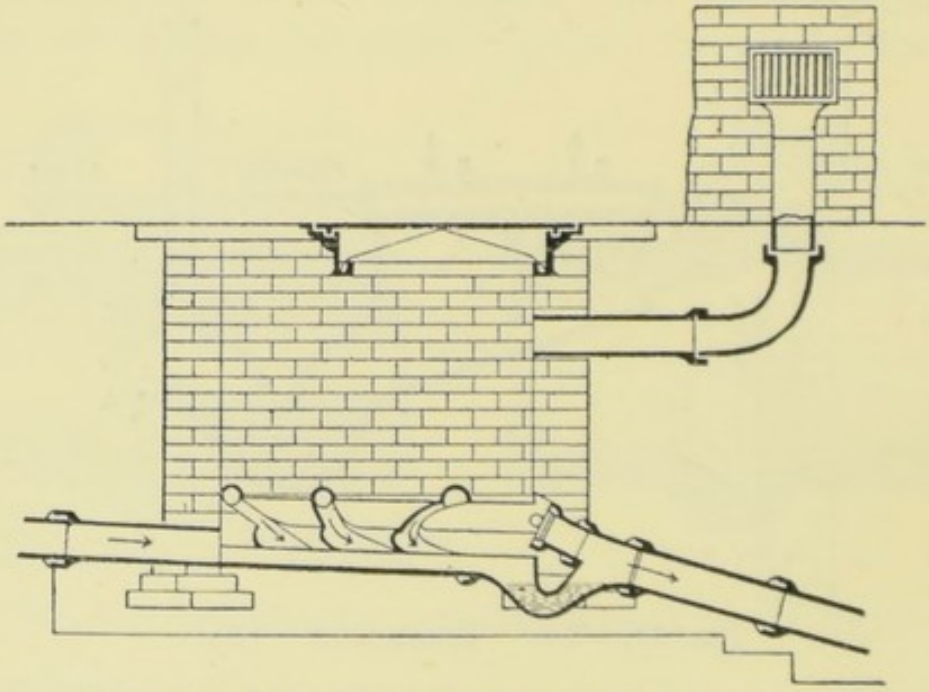


FIG. 12.—A MODERN DISCONNECTING CHAMBER.

also been approved by experience. There are now many traps in the market, under different names, but all based on this excellent type. The most modern development of the disconnecting chamber is shown in Fig. 12.

By means of **automatic flushing** the house-drains can be kept perfectly free from refuse: Field's self-acting flushing chamber (Fig. 13) is a very simple and ingenious arrangement. This chamber is emptied by means of a *self-acting syphon*, while the latter is set in action by an extremely small flow of water, or by the accumulation of

dirty or slop water, which may take some days to fill the chamber; though, as soon as the tank is full, it empties itself automatically in the course of a few minutes. The advantage of the scheme lies in the concurrent flushing of the house-drains and the main sewer. The working of this apparatus is very simple, and almost impossible to become deranged. The syphon (A) is built into a tank (B). The longer limb of the syphon just dips about one-eighth of an

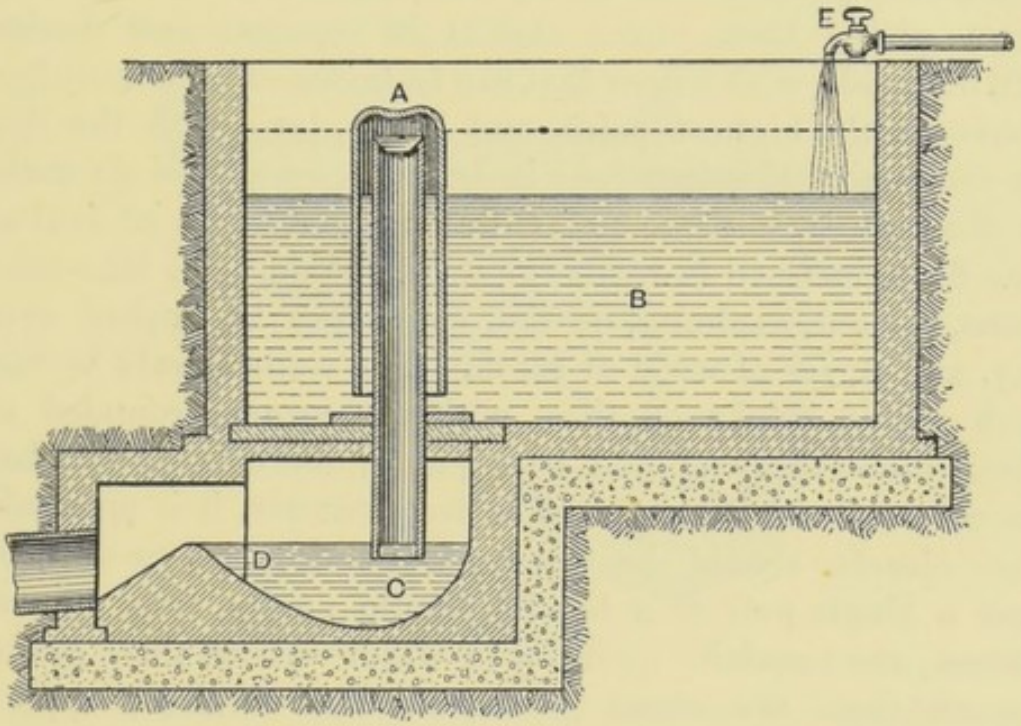


FIG. 13.—FIELD'S SELF-ACTING FLUSHING CHAMBER.

inch into the water below the tank at C, which is kept at its proper level by a weir (D). The action is as follows: When the water fed from the inlet or tap (E) rises to the top of the longer limb of the syphon shown by the dotted line, it is prevented from running down the sides by a guiding lip, and thus descends clear of the sides. By this means a quantity of air is displaced, gradually forming a vacuum in the discharging limb, and thereby starting the syphon, which empties the tank with enormous rapidity.

All the **water-closets** in schools that are in use by *day* should be placed out-of-doors, and occupy a *detached* building; but they may be so contrived as to be readily available in the evening by opening another door, locked by day, without the necessity of going into the open air after dark. They should be well lighted, as this is the only way in which they can be kept clean and sweet. The use of deodorizers is a sure sign of some defect. There should be one closet provided for every ten boys, and one for every seven girls. Each closet should be separate and distinct, 2 ft. 3 in. wide, with a door that can be fastened, well-ventilated above at the highest point, and below, level with the floor, by shortening the door four inches at the top, and six inches at the bottom, so as to prevent all accumulation of foul air. The floor, inclined towards the door, should be of blue-brick, stone, cement, asphalte, or tile, which can be flushed every day, and never of wood or earth. The walls should be lined with glazed bricks or tiles, with all corners rounded off. The water-supply should be copious; moreover, since boys are careless and the closet is in frequent use, it is preferable that closets should be always self-acting, or so designed that a single pull of a handle should empty, from its own cistern, the requisite quantity of water—about three gallons—each time the closet is used. The valveless syphon-cistern is the most efficacious, and the pipe leading from it should have a diameter of one and a half inches.

So many excellent arrangements have been devised for *closet-basins*, that there is an ample choice. It should, however, be a *sine quâ non* that the basin should be made of glazed porcelain, with a pedestal seat, and not surrounded with woodwork, but so contrived that no opportunity is given for the accumulation of refuse on its sides, or beneath it: such a one, for instance, is the "Wash-out" Basin (Fig. 14).

Another system, called the "Trough system" (Fig. 15), supplies an excellent arrangement for schools, where boys

visit the closet quickly one after another, and are always careless about allowing the water to run. And seeing that the closet is, *or should be*, used daily by every boy immediately after breakfast, one flushing of the trough after this general use—say, at 10 a.m.—under the control of the boys' butler, would suffice for the day, and with another flushing immediately after "locking up," there need be no accumulation in the trough, and no waste of water; or the closet can be so arranged as to flush itself automatically, as shown in the drawing (Fig. 15).

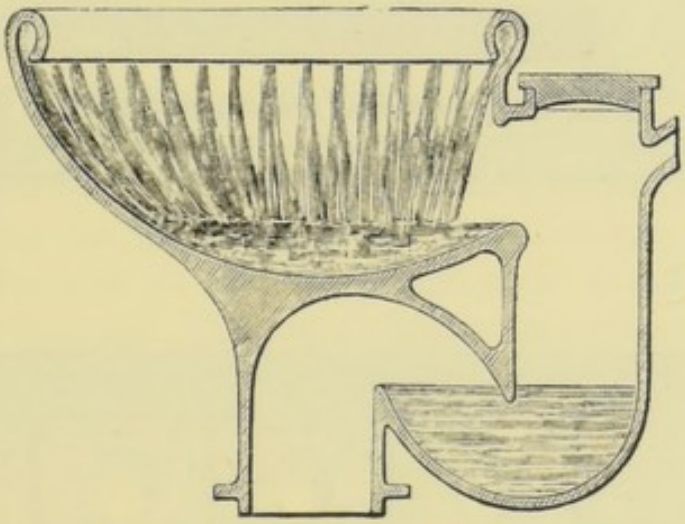


FIG. 14.—THE WASH-OUT BASIN.

It is a cleanly habit, which should be encouraged at schools, to wash the hands after visiting the closet: the lavatories should therefore be in close contiguity.

A good *water-closet* should be within easy reach of each of the dormitories, for use in the *night* if required; and if the street sewer or cesspool has been cut off from the house-drain (as should be universally the case) by an open air-chamber, and if the closet itself is well ventilated, no harm can possibly ensue. To connect any house-drain or soil-pipe directly with the main-sewer of a town, or even with a cesspool, is deliberately to lay on sewer-gas to the house just as coal-gas is laid on for lighting purposes.

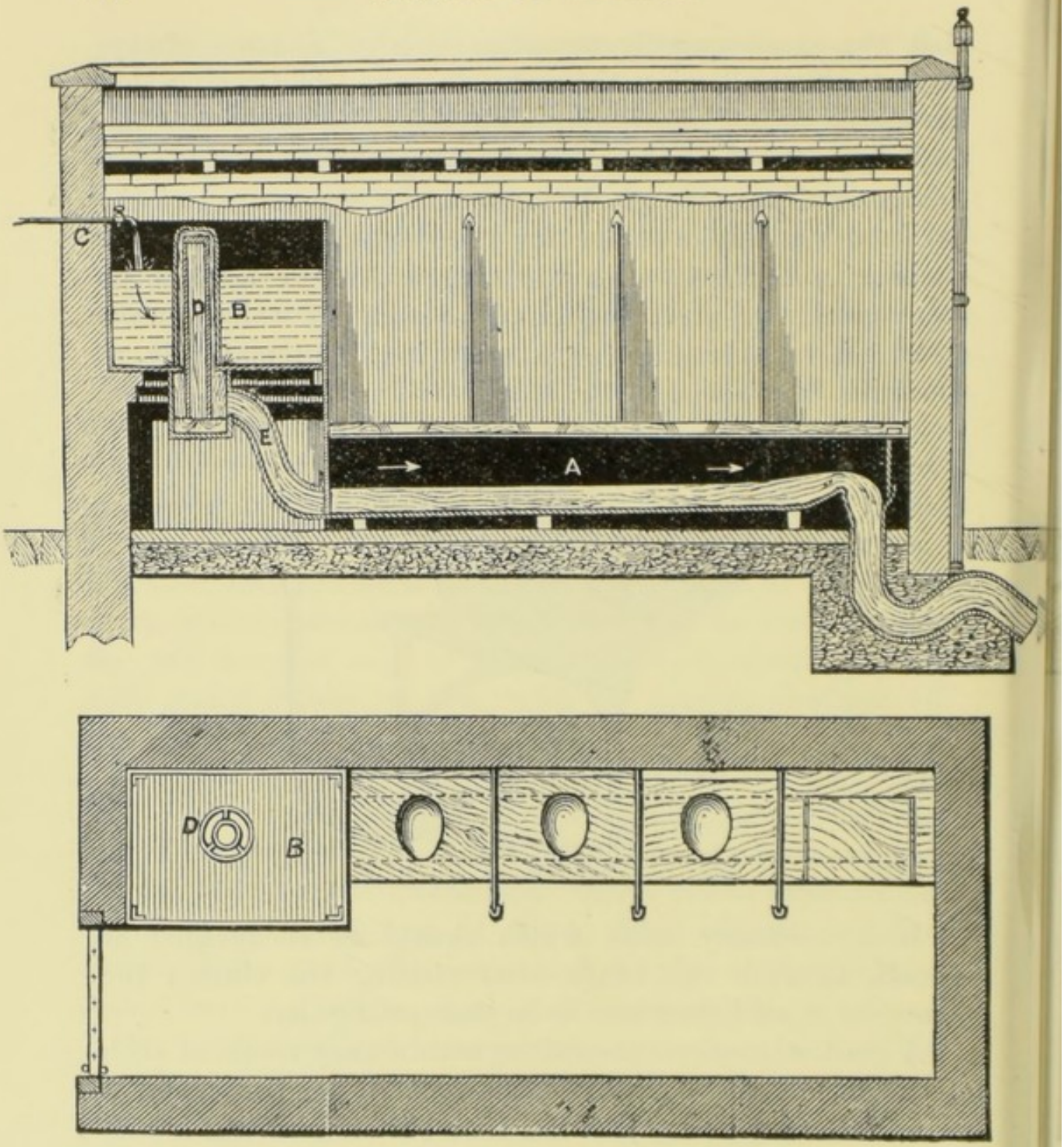


FIG. 15.—THE TROUGH SYSTEM.

A, the trough; B, flushing cistern; C, the feed-pipe; D, Field's automatic syphon flusher; E, the waste-pipe.

In addition to these precautions, masters should regularly inspect water-closets at odd times, or servants will rarely be found to keep them clean. All constructive attention to

drains should take place, if possible, during the vacation; but a grave fault detected during term should be rectified at once.

Latrines, out-of-doors, should always be provided for boys' schools in the ratio of one for every twelve boys. The only really satisfactory latrines are those which are constructed of thick plate glass. The urine should fall into a glass trough, nine inches wide and six inches deep, kept full of water, and fitted with a self-acting outlet. The back and sides of the trough, as well as the ground on which the user stands, should be of plate glass, and should be cleaned every morning and evening. Such a latrine—and specimens are now in existence—is devoid of smell. The next best are those which have white china or glazed earthenware pans, as these are cleaner than the ordinary latrine, and in them no sediment can be deposited, or if this occur, the sediment is so slight, and so little adherent, that it can be removed without difficulty. The slate slab urinals may be used where there is a constant free flushing by water; but they invariably possess the disadvantage that the somewhat rough surface will allow a deposit of sediment, which in warm weather is neither wholesome nor agreeable to smell; where they are employed, the sediment should never be allowed to accumulate, but whenever it makes its appearance, should be immediately scraped off, or dissolved by a mineral acid.

Stone and cement slabs should not be permitted, owing to their exceedingly rough surface facilitating a constant deposit of sediment, which it is almost impossible to remove. The pipe carrying off the fluid from all latrines, whatever their construction, should open into an air-chamber, instead of being directly attached to the drain leading to the sewer.

Lavatories, in the proportion of one to every ten boys, should be provided in schools for washing by day, in order that the dormitories may not be visited except for sleep. The basins should have under-troughs of white enamel pipes

to carry off the dirty water, and the pipes should not directly communicate with the soil-pipe or sewer, but should discharge either into the air-chamber of a suitable trap, or on to an open iron grating outside the house, placed over either the ordinary syphon gully-trap (Fig. 16), or over a ventilating trap, the pipe from which again should not be attached directly to the sewer, but open into a disconnecting chamber. By this means no sewer-gas can enter the house through this channel. An assigned day, once a week, should be fixed for the cleansing of all gullies.

Where a *surface drainage* scheme is in existence, it may

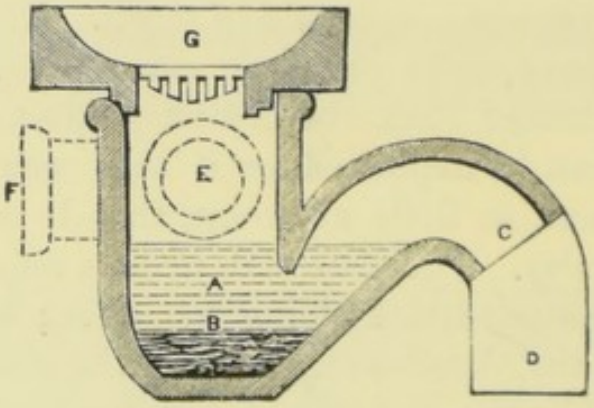


FIG. 16.—THE GULLY TRAP.

A, the trapping-water; B, the silt collected; C, the junction of syphon with the drain-pipe, D; E and F, flanged side entries; G, the iron cover of the gully.

be feasible to utilize it for carrying away the dirty water from lavatories and baths, instead of emptying into the sewer: this is already done at Eton.

A **Housemaid's Sink,** or slop-receiver, should, for the convenience of the servants, be provided upstairs in all schools where many slops have to be emptied. The most suitable material is white china, glazed earthenware, or glass, the latter being cleaner and sweeter than any other substance, and not liable to the accumulation of deposits. The perforated hole should be at least three inches in diameter, and be protected by a wire cradle or sieve, with a mesh of

three-quarters of an inch. The pipe from the sink should be syphoned immediately beneath it, in order to prevent an inflow of air: below, the pipe should terminate in the manner described for Lavatories.

There has been adopted an excellent arrangement, called the *Unitas*, combining a closet-basin, urinal, and slop-sink in one construction: it is cleanly and efficacious, and slops may be emptied without causing a deposit of filth under the

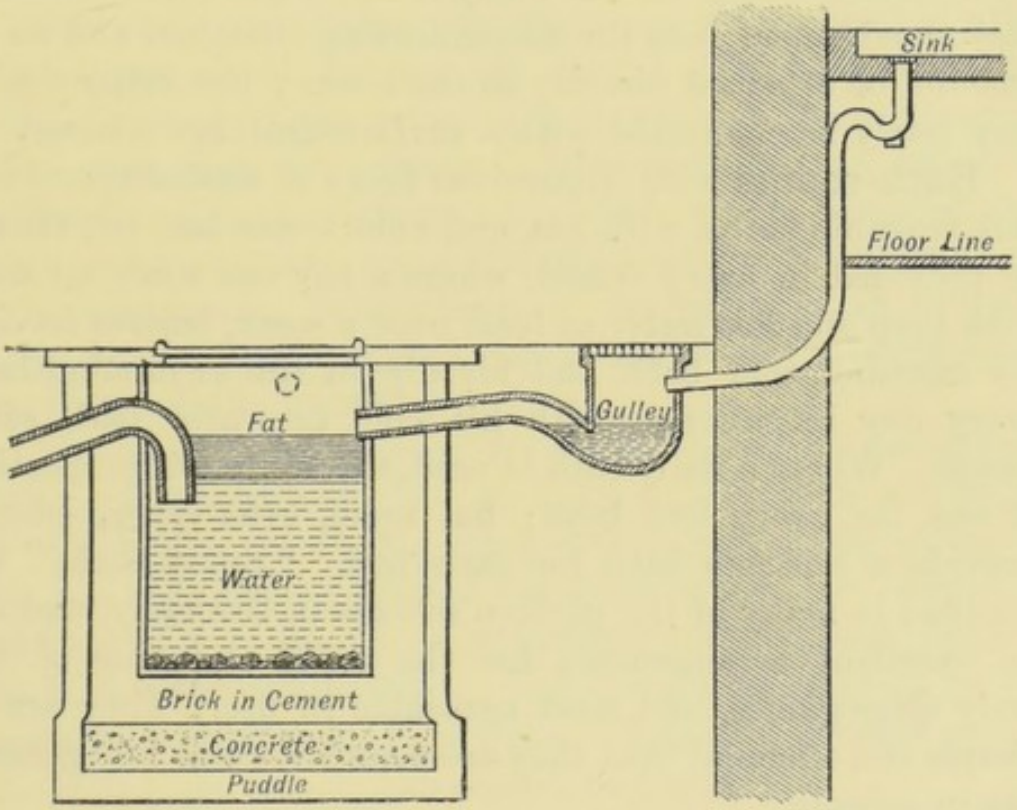


FIG. 17.—GREASE TRAP.

seat, and with gain to the soil-pipe, from the flushing it will thus receive.

It is equally important that the kitchen should be protected from sewer-gas, which may not only contaminate the food, but spread throughout the house. The pipe, therefore, from the **kitchen-sink** should open on to an iron grating outside the house, and this should cover a good **grease trap** (Fig. 17), for collection of the grease from the kitchen, and

thus save the drain from obstruction: the pipe from the drain should be arranged as described under Lavatories. All grease traps require regular cleansing once a week.

The **Butler's Pantry-sink** should also be drained as described under Lavatories.

The **Boys' Butlers' Pantry-sink** should be arranged in the same way.

Since the **cellar** and **basement drains** are among the most certain means for the entry of sewer-gas into the house, they should open into the disconnecting chamber, and on no account be attached directly to the sewer; but cellar drains may safely be connected with a surface-drainage scheme.

Bath-rooms with impervious floors of asphalte, or lead; and movable baths, with hot and cold water laid on, should be provided in every school, where a boy can wash all over with soap and hot water at least once a week, besides having his morning cold bath, and his dip in the swimming-bath every day in summer, with his cold or warm bath after games. Where a daily bath is used, the minimum proportion is one for every five boys; but some, even large, schools provide a separate bath for each boy. "Spray baths" are adopted in many of the modern schools in Germany, and are an excellent arrangement for the rapid cleansing of the body after games, and most agreeable in use. They are so simple and effectual that they are bound to come into general use in schools.

The waste and overflow pipe from the bath should not communicate directly with the drains, but should be syphoned underneath, and open below on an outside iron grating, as in the case of lavatories.

The **disposal of house-dust and kitchen-refuse** is always a source of difficulty and anxiety in every school, especially in towns.

In the *country*, the dry ignitable material, such as waste-paper, of which there is always a considerable quantity at

schools, should be burnt daily. The refuse-heap for all the remaining household waste-products should be situated as far as possible from the house, and be placed at the remote end of the premises where the boys do not play; and the stuff can be utilized for fertilizing purposes. The ashes and cinders from fire grates are available for various purposes in the garden, and even for path construction. The "bones" can be "ground," and utilized as a valuable manure for the garden.

But even with these precautions a refuse-heap is often a great source of danger. It should, therefore, when not daily disposed of, be removed and utilized every vacation, when the boys are absent. One of the most extensive epidemics of typhoid fever on record, which occurred at a large orphan asylum, was distinctly traced to the disturbance of a decomposing refuse-heap on the premises, in utilizing it for the land, although it was situated at the distance of one or two fields from the asylum.

In *towns*, no dust-bin or dust-heap should be permitted; but a galvanized iron box, as large as two men can carry, or still better, on wheels, fitted with a wire cinder-sifter on the top, should be provided for every house. It should be placed under cover, on an asphalte, or brick floor, close to the house, but not within it, and should be emptied by the sanitary authorities twice a week. Vegetable matter should not be thrown into it, but should be burnt.

Further, the refuse should be removed from the boarding-house at a time when the boys are in school, and not when they are continually passing in and out of the premises.

All the sanitary arrangements in a school demand a systematic supervision by the school authorities.

Wherever it can be arranged, all dirty linen should be washed on the premises, or at the school's own laundry, under the inspection, and upon the responsibility, of the school authorities: the risk of infection being brought into

the house from a common laundry is thereby obviated. Where this plan cannot be carried out, the entire washing of a school should be done in one large laundry in the country, which should wash for that school alone. When each boarding-house arranges for its own washing, the greatest care and supervision are necessary, as the laundry is a well-known channel for the entrance of infectious illness into school.

I repeat a word of warning concerning the importance of **airing linen** before it is worn. This injunction cannot be too strongly impressed, for its neglect—the wearing of damp linen or sleeping on damp sheets—is the cause of much illness every year, and of many deaths. This point is too often considered to be an affair of the laundress, and consequently no trouble is taken at home: the laundress, again, is too much employed, or the weather is too wet, to enable the rule to be observed effectively, and hence it tends to be totally neglected.

The **linen cupboard** in which all the clean linen is kept should be provided with hot-water pipes in order to keep it aired, and with sufficient ventilation to ensure a current of air.

The consideration of boarding-house arrangements would not be complete without touching on the question of providing **means of escape in case of "Fire."** With households varying in numbers from fifty to a hundred and fifty, and upwards, there are, generally speaking, no means provided in most schools: even where precautions have been taken they are, as a rule, wholly inadequate. As a house on "Fire" is usually seen first from outside, before it is detected within, the first essential is that there should be some *means of communication* between persons without, and those asleep within. Yet large households retire to bed night after night where the only available bell rings, for instance, in the neighbourhood of the kitchen, and beyond

the hearing of every member of the sleeping household; whereas, by the simplest contrivance, a bell can be arranged to hook on every night to the one at the front entrance so as to ring in the principal's room. In a large number of schools, not only is this the case, but the boys are actually *locked in their bedrooms* at night, and have literally no facilities of escape, except by ringing a bell for some one to unlock the doors—generally a matron or boys' butler, who, together with the boys themselves, would be so panic-stricken as to be entirely helpless. Should a fire occur under such conditions the disaster would be appalling; and those responsible for such a state of affairs, concerning which they have been frequently warned, would be heart-broken by the neglect against which they should have provided.

Since this was written in 1884, twenty-six boys have been suffocated to death owing to a fire under the dormitory in the Forest Gate Industrial Schools, on January 1, 1890, in consequence of the door of the staircase leading from the dormitory being locked, and no one inside possessing a key. Such calamities are liable to recur, unless school authorities either cease to bar and lock boys in their dormitories, or else provide them with a bolt, or a key, in a glass cover which can be broken in case of emergency. Unless the arrangement be exceedingly simple, it is always found wanting when tried by the test of a fire.

Again, since the edition of this book in 1894, two boys unfortunately have lost their lives in a fire at a public school in June 1903: the one through suffocation while asleep in his cubicle, and no one to rouse him; the other, also suffocated, in consequence of inability to break through or sever the bars of his cubicle window, and thus secure his escape. It would be well to teach all children at school, that they can avoid **suffocation, in case of fire**, by tying a wet handkerchief over their mouth and nose, since air is

thus allowed to pass through for purposes of respiration, while the ingress of suffocating smoke is obstructed.

Outside staircases are in some cases a necessity owing to the construction of the dormitories. Knotted ropes outside remote windows are also of great service.

Another reason for providing a glimmer of light in the dormitory at night, in addition to that which I have already assigned, is that suggested by Counsel in the former case just referred to—"if it could possibly have been arranged that there should be a slight glimmer left, these boys might have been saved from the utter confusion, and might have been able to see where they were. There might be a lantern so fixed that the boys could not tamper with it."

An **annual sanitary inspection** of all great schools should be conducted by a competent inspector, who should not be interested in the school, or in any way connected with it. It is essential that he should be a man of practical experience in school construction, arrangements, and requirements, and well versed in sanitary science.

Some governing bodies have already instituted a medical inspection of the schools under their control. But, in order that this course should prove effectual, it is requisite that the medical inspector should be permitted—indeed, invited—to visit the schools whenever he thinks fit, and without sending prior notice; so that, while his report should be annual, his inspections should take place at unfixed times. To intimate the date of his survey would be, in plain English, equivalent to saying, "As I am about to pay my official visit to your school, perhaps you will be kind enough to see that everything is arranged in order before I arrive." Such an examination is valueless, a waste of money, and no guarantee to the governing body, or the public.

DIET.

The subject of **School Diet** is one of so much importance in the rearing of the young, that I have treated it more fully than is possible in this treatise, in a separate volume,* to which I refer those who require more detail than can now be presented.

The primary fact to remember in the feeding of children is, that the food consumed has not only to nourish the existing tissues, but to provide for their further growth. Abundance of food is therefore necessary. The amount which children can eat, though astounding, can safely be allowed, provided it be plain, wholesome, and appropriate for the nourishment of the tissues. Yet adults continually wonder that children eat more than they themselves do. Naturally they do, or ought to do: and if they fail to do so, the prospect of vigorous growth is seriously impaired. For in children, compared with adults, much more constructive work has to be accomplished by food: and indeed so imperative is Nature's demand for food at this stage of physical development, that growth of a kind will even be effected at the expense of the repair of tissue. But even thus, where food is scanty in supply, or innutritious in quality, note the difference in height and weight which I have recorded in a preceding chapter, on page 103.

So urgent is the demand for food in the young that, where starvation arises, as is sometimes seen on the ocean in case of shipwreck, the younger are the first to succumb. The experience, again, in famines in India has too often shown that a bare subsistence-diet without work, especially in the case of the young, becomes a starvation-diet when work

* "The Essentials of School Diet; or, the Diet Suitable for the Growth and Development of Youth." (Second edition. London: Rivingtons. 6*s.* net.)

is added, and this observation applies equally to mental and physical work.

While it is only too easy to overfeed the adult, super-abundant nourishment is almost impossible in those still growing, provided the food be not rich in quality—the latter element more rapidly producing physical disturbance in the young than in the adult. Those who genuinely attend to the welfare of children should accept as an axiom that a healthy child's appetite (not the teacher's own appetite or desires) is the surest guide to the requisite amount of food, so long as it is plain and wholesome. The parents, however, as I have stated, may readily surfeit the child by too many delicacies, or their equivalent in the shape of pocket-money.

In feeding generally, **variety in the kind of diet,** and in the mode of cooking should be paramount. This is especially true in the case of the young; for to them monotony in feeding, equally as in play and in work, is entirely unsuitable. The provision at school (far from uncommon) of veal three times a week, because a calf has been killed at the time, or of a similar allowance of pork on account of the recent sacrifice of a pig, subordinates the comfort and health of the scholars to the blamable ignorance and convenience of those in charge.

The natural likes and dislikes of the young in the matter of food are very powerful, and while they should not be encouraged, allowance should be wisely made to satisfy them. The greatest cruelty is still ignorantly practised by parents and teachers in forcing on children that to which they have an inveterate dislike, and with which their system cannot agree, and, on the other hand, refusing them what their natural tastes desire, and their system really requires.

The "**natural appetites**" of the human being are a physical function of the age and constitution, and vary accordingly with the stages of life—a craving at one time being converted into a loathing at another.

There are children who mentally cannot digest classics, and physically cannot digest fats or starches; even the sight of fat, in any form, will prevent them eating. Yet they are forced to partake of both. If they were only allowed to digest science mentally, and sugar physically, these incompatibilities would cease. Nature is not allowed a voice in the matter, but injurious and ignorant meddling prevents and thwarts her at every turn. **Natural cravings** should be watched for and gratified, so that Nature, in her most reasonable demands, may work at her best. I have even known children steal money in order to purchase sweets, simply to satisfy Nature's demands which had been thwarted by stinting, and even denying, sugar at the table at home. Thackeray observed that "all people who have natural healthy appetites love sweets." When will it be learnt that in the training of the young Nature's laws must be studied, and obeyed?

On the other hand, the young are frequently whimsical in their habits or fancies. For instance, a convalescent boy once complained to me that he could not eat his egg for breakfast, because it was a stale shop-egg. Now, this egg was from my own poultry yard; it had been laid the day before, and I showed him the date written on the eggshell. He could not even appreciate the pale, delicate taste of a new-laid egg. Such caprice can only be laughed out of boys, and it is wise to remove it in this kindly way.

After a long and varied experience in the feeding of children at school, and a patient and analyzed consideration of the complaints from parents and children, I have come to the general conclusion that fault is far more justly found with the careless and improper **cooking** than with the food itself. Where the food has been merely unappetizingly cooked the food itself may be wrongly censured as coarse and inferior.

Another valid ground of complaint is the persistent

sameness of food; and yet variety in the commissariat costs no more than a little exercise of forethought, and painstaking—a true test of genuine capacity for housekeeping.

The cooking of food for a large number is a matter that requires careful attention; and while the food may be cooked and served as satisfactorily as is possible, there is always one ground on which a comparison will be raised in every boy's mind between home and school: that element is the question of *gravy*. When a joint is carved away from the skin to the bone, there cannot be sufficient natural gravy for every one; and, consequently, if any is to be supplied at all, it must be a "made" gravy, which is less palatable. This is, therefore, one cause of complaint which cannot well be obviated.

The complaint, both by parents and boys, in the *cooking* of the food, meat and vegetables, but especially the latter, is, I am convinced, often well-founded and fair, and furnishes a reason why boys so frequently refuse to eat vegetables. The food may be the best that can be bought, but if it be badly cooked, especially if the meat be so under-done as to be a blue-red; or if the green vegetables be imperfectly washed, and contain grit, insects, or slugs; or, from insufficient straining, be swimming in the water in which they have been boiled, no one, however hungry, can eat with satisfaction. It is, no doubt, difficult to cook efficiently for a large number; but the difficulty can be overcome by a careful master, or, still better, by his more watchful wife, themselves supervising; and, by dining with their boys, making sure that the food is well and nicely cooked and properly served on hot plates.

In all schools, public and private, boys vary in ages, the elder being about five years older than the younger boys. In serving dinner, therefore, the master should insist on the *younger* boys, who cannot eat so fast as the elder, being

served first. In this way the "little fellows" would have time to masticate what they eat, and be able (which they now fail to do) to obtain sufficient food.

The master should also encourage just and reasonable complaints being made by the boys to himself, instead of leaving them to grumble to their parents, as the former practice tends to make servants do their duty.

Besides good food, efficient cooking, and skilful carving, it is essential that boys should be allowed sufficient **time to eat,** and thus **avoid bolting.** The non-observance of this rule is so frequently the cause of indigestion that the boy gradually acquires a natural loathing for what he should eat, because it generally disagrees with him.

There would be less rapidity in eating were pupils not only allowed, but encouraged to **talk during meal times;** whereas a pernicious plan exists in schools of encouraging them to *read* at meal times. This implies that when a pupil has an interesting work, the book is more devoured than the food; so that dawdling in eating occurs, the food becomes cold, and when every one is ready to leave the table the meal is either bolted, or only half finished, and thus the pupil obtains insufficient food, with injury to health and growth.

Many a child at school is unable to eat a good meal because the **teeth** are decayed and tender. If parents, during the vacations, would insist on a careful inspection and rectification of their children's teeth by the dentist, as already advised, they would thrive better by reason of more efficient mastication, considerable pain would be avoided from the formation of alveolar abscess, and they would not be deprived of sleep, or lose time at work from wholly unnecessary suffering. There can be no doubt that the main cause of the deterioration of the teeth in civilized races arises from their diminished use, owing to the employment of the knife and fork in their stead, and the artificial

preparation of the food consumed. A cogent indication, significant of the truth of this, is the gradual shortening of the jaws, and the stunted character of the wisdom teeth, in civilized races.

It is most unwise and unhealthy to detain boys in school after the appointed time for work, as it interferes with their meals, and they have then either to bolt their food or practically fast. For there are unwritten customs in most schools, needing repression with a strong hand, which prevent a boy, if he wish to avoid opprobrious names from his school-fellows, remaining in the dining-hall after others have finished. Yet if a master does not conscientiously see that the boy has time to eat his meals, he must either go short of food, or rely on the pastry-cook, or his parents' hamper, to the serious detriment of health. The practice of detaining boys in school—either because the master is ambitious, or is slow, or because his boys misconduct themselves, or have failed to learn their lesson—during part of breakfast-time or dinner-time is exceedingly rife, and is absolutely indefensible. The parent in this way pays for what his son does not receive: the pupil is deprived of the material necessary for growth, and for accomplishing the work the master requires of him—in fact, it is the old Egyptian story of being compelled to make bricks without straw. And the innumerable petty misdemeanours of boys may, in consequence, be really and frequently due to deficiency of nutriment, or to indigestion, occasioned by this injudicious practice, with its proverbial perversity and ill-temper.

In most schools, public and private, boys have their meals with the masters with whom they reside; but, unfortunately, in some of our great schools all the boys, numbering from 400 to 800, still assemble in a common dining-hall. This plan cannot be commended; for obviously the cooking and serving of meals cannot thus be carried out so efficiently

as is possible by a careful and generous master's wife who provides for only thirty to fifty boys.

The hours to be assigned to **meal times** are of the first importance for scholars, and especially for growing girls. The prime fact to remember in the feeding of the young is the necessity of **short intervals between the meals,** in consequence of their quicker digestion, and their naturally greater demand for food. One would have imagined that this essential question would, at the present day, have been finally settled on a scientific basis. Yet in many of our schools these hours could hardly have been more unwisely apportioned. For instance, to make the evening meal—supper—a meat meal with beer, or even a bread and cheese and beer meal, for growing boys with ardent passions, is more than unwise—it is unjust and injurious; still, it is largely in force in some of our high-class public schools.

In one of the largest schools in this country one of the chief meals of the day is eaten at 9 p.m., when boys are supplied with meat, tarts, cheese, and beer. Could any system be more indefensible? Under such inconsiderate conditions can any boy, of a certain age, keep himself pure? Is it a wonder that immorality is so rife? Is not every boy by such a practice too heavily handicapped by *physical conditions*, over which, however well-intentioned, he has practically no control? Even a prelate, Cardinal Vaughan, counsels his young priests, concerning alcohol, in the following terms: "Its moral effects are to diminish the strength of the will, to cloud the reason, and to lead to the commission of innumerable sins."

How, under such adverse circumstances, can a boy be *justly* punished for immorality? For in many boys at the school age the physical state engendered by such unwise practices almost necessitates that "the evil that I would not, that I do."

If (to pursue this subject for a moment) school authorities

would recognize that the major part of the immorality in schools is really caused by the conditions of life they themselves have imposed, rather than by the nature of their pupils: the injudicious arrangements of the meals, in conjunction with the other contributory causes which I have already described; there would result less sermonizing upon the subject on Sundays, less heart-rending at home, and more real endeavours, directly and indirectly, to remove the scourge, instead of weakly lamentations in whispers. Evils, like enemies, to be conquered must be faced with courage; and the more clearly and deliberately they are noted the less opportunity is afforded for their baneful success.

In other schools, boys breakfast at 7 a.m., have another breakfast at 11.30 a.m., and dine at 2.15 p.m., with tea, and supper in the evening. Could any arrangement be more preposterous?

I am not an opponent of early "first lesson" at 7 or 7.30 a.m., before breakfast, for public school-boys, throughout the spring and summer months. But from the 1st of November until the 1st of April, when the weather is cold and the mornings usually so dark that artificial light has to be employed, and the body is more lethargic, I think some arrangement should be adopted which causes less exposure. At Rugby the head-master devised the following admirable plan during the month of January and onwards during the cold mornings. Every boy answered to his name in the seat reserved for him at meal times at 7.15 a.m., and while in his place morning prayers were held, followed by a cup of milk or coffee, and biscuit or bread and butter, and then each boy entered school at 7.30 a.m. and returned to breakfast at 8.30 a.m. The advantage of this arrangement was that every boy was practically obliged to take food before early school, with the consequence that the sickness of the school arising from colds,

sore throats, and coughs, through unnecessary exposure, was greatly lessened.

While, however, I do not oppose the early first lesson, as it teaches boys to rise early, allows more time for work, and an extra hour for play, I am a decided opponent of first lesson at 7 a.m. on an empty stomach, not only for growing boys, but for masters also, at all times of the year; and I would therefore urge the importance, not only of every master providing, but also of every matron seeing, that every boy takes hot milk or hot coffee, with a piece of bread or a biscuit, before proceeding to school. I fear, however, that this plan can never be carried out unless some such arrangement as that adopted at Rugby is in force *all the year round;* for boys usually remain in bed until the last minute, leave themselves no time even to drink a cup of coffee, and even finish their toilet on the way to school.

For the very strong boy, perhaps, the point is not so important; but for the delicate boy, and even for the average boy, the course of commencing work without prior sustenance involves an injurious and needless strain upon his strength. School arrangements should always regard, not the exceptionally hardy boy, but essentially the average boy, and, with still more circumspection, the delicate boy.

For preparatory schools, where the boys are younger, I should insist on breakfast at 7.45 or 8 a.m., to be followed by school at 9 a.m., in order to allow sufficient time for sleep.

In considering the hours of meals seriatim, I would suggest the following routine:—

1. While the present organization of our public schools continues, with a chapel service and an hour's work before breakfast, I advise that hot milk, or hot coffee with plenty of milk, should be on the table at 6.45 or 7.15 a.m., **before chapel and first lesson,** as this nutriment forms a gentle stimulant to the nervous system, invigorating without depressing.

On the whole, I am inclined to think that gain, without loss, would accrue to the mental and physical well-being of the young, if they had breakfast all the year round at 7.30 a.m., followed by first lesson at 8.30 a.m. They would then obtain more needed sleep, start with a good meat breakfast before going out, and thus avoid unnecessary exposure. But until schools are ripe for this reform the modified first lesson, such as I have suggested, would be a desirable change.

There can be no doubt, however, that we are within a measurable distance of a more reasonable system still, when boys will be allowed more sleep, and will not commence work until 9 a.m. So that, with fewer hours of work, and more time allotted to sleep, superior work will be obtained. I shall be interested to see which of our great public boarding-schools will earn the honour of initiating this system.

2. After first lesson, **breakfast**—the most important and health-giving meal of the day—can be taken at leisure, and with appetite, at 8.30 a.m. This should be a hearty meat meal, provided by the school authorities, the heartiest meal of the day, with plenty of time to masticate and enjoy it, without hindrance from the boy's butler or his school-fellows, and with the possibility of eating it while it is warm. The habitual addition of porridge to the breakfast would be a great gain. I would further urge that it is time the **school authorities themselves should provide all the meals to boys**; such relics of the past as boys purchasing their own breakfasts and teas, or even supplementing those meals, should be absolutely prohibited. After breakfast, as much time as possible should be spared, in order that each boy may be able to get his "natural relief" without hurry; and masters should enforce stringent rules for this purpose, since on its regular performance the health and temper of the pupils greatly depend.

In many schools milk and biscuits are provided during one of the breaks in the morning's work, at about 11 a.m.

3. **Dinner** should be a good meat and pudding meal, varied as much as possible, at 1.30 p.m. School should not cease later than 1.15, in order to allow every boy a few moments' breathing time, to obtain a wash, and be in his place at the dinner-table as the bell rings at 1.30 p.m.

4. **Tea,** which is sometimes a movable feast, should be provided at 6 p.m., or even later. It might be a more varied and substantial meal than at present. The following articles of food are appropriate: bread and butter, eggs, fresh and dried fish, potted meat, or fish, plain cake, scones, jam, marmalade, honey, treacle, radishes, lettuces, and, best of all, porridge and milk.

5. **Supper,** in most instances, should not be supplied, so that the boy may go to bed without food in the stomach. If any be requisite, it should consist of bread and butter, bread and milk, a glass of milk, a cup of cocoa, or a glass of effervescing water and milk: never cheese, beer, meat, or pastry.

It will thus be seen that I advocate, after midday dinner, that all the food taken should be light and easily digestible, in order that the boy may do the maximum of work, sleep most easily and soundly at night, and rise at 6.30 or 7 a.m. with vigour and vivacity.

In discussing the question of **food** at school in detail, I propose to consider briefly the various **types of diet** required for adolescents.

Growing boys would be greatly benefited if masters would use their influence to induce them to eat "whole-meal" **bread** occasionally: I mean "whole-meal," and not simply bran bread. But I have doubts whether this will ever be carried out at school, unless the taste has been already formed during the early years at home.

As much bread as a boy can eat should always be provided by the house-master. The crust is twenty-five per

cent. more nourishing than the crumb; and sufficient butter should be given with it when eaten alone, for the purpose of making it a staple food, as bread itself contains but little fat. I would also urge on masters the constant necessity of seeing that the bread be wholesome; for while one batch may be sound in every respect, the next may be either sour or musty, and not only uneatable—except under the stern necessity of hunger—but positively harmful.

It would be a great gain to the young, as I have stated, if **porridge** were provided at least three times a week for breakfast; and if the oatmeal be put to soak in cold water over night, it only requires about twenty minutes' boiling in the morning.

No growing boy should be stinted in **sugar,** or sugar-forming food, such as starch. This is essential, as being his chief heat-forming food, and, being more digestible, is preferable to fat, though he cannot retain health without some fat in the diet. It is also the most important food for muscular tissue, increasing the capacity for work, as well as developing physical growth.

Food is used for two purposes—to restore force lost through wear and tear of body, and, in the young, to provide for growth. As wear and tear take place in daily life, so fresh material has to be supplied to the digestive organs and assimilated, while the detritus must be removed by the excreting organs, which act as scavengers. The amount of food required depends, therefore, not only upon the waste that occurs through the daily working of the several functions, but also upon the growth and development that are proceeding.

It is often astonishing to notice the vast amount of nourishment required by the young to cover wear and tear, and assist growth. Yet they are constantly stinted in one or other essential ingredient, such as sugar or meat, or even

in all substances, to the frustration of Nature's efforts. To stint is often to stunt.

This need of appropriate and sufficient nourishment is still more marked in the case of girls, who, from the age of eleven to fifteen, or even sixteen, grow and broaden to an astonishing extent, passing boys in the race by several inches for a year or two; here the stinting of food amounts to positive cruelty, and many girls suffer throughout life from this serious defect. They are told it is *unladylike* to eat much. Schoolmistresses should instil into their pupils that it is not only ladylike, but an imperative duty, to eat as much, and as varied, wholesome food as they possibly can, so that they may develop as Nature intended: it is hard work, with insufficient or improper food, which tends to the deterioration of the individual as well as the race.

In the growth of the young, a diet containing carbonaceous, or fat-forming, material, such as sugar, and farinaceous foods, together with **fat** itself, in its various forms, is an absolute necessity. To dispense with such articles of diet for more than a very short period entails ill-health, and arrests development. Children, as a rule, dislike the fat of butcher's meat, and consequently the fat they require should be supplied in the form of butter, suet puddings, and fat bacon, all of which they enjoy. Yet how rarely do children at school receive sufficient butter!

Milk is the grand type of all diets, consisting as it does of albuminous, oily, saccharine, saline, and watery principles. A standard diet contains some or all of these constituents in varying proportions. Aristotle urged that the character of the diet of children largely affects their bodily strength, which is best attained by the adoption mainly of milk.

Milk should always be bountifully supplied for all adolescents as an essential part of their staple diet. It should be unboiled fresh milk, at all events in the *country*;

for the nutritive value of milk is very largely diminished by boiling, as is testified by the fact that when infants are fed upon boiled milk, rickets and infantile scurvy are apt to be produced. It is simply the result of bad management that the morning milk is consumed in the evening, and the evening milk in the morning. In *towns*, where the milk is often brought from a distance, this defect cannot be obviated. But there is no justification for giving children at school **sour milk**, as is frequently the case. It is most injurious, and indefensible; for it can always be boiled at its source, or on arrival when the weather requires it.

As milk has been shown to be a fertile cause and mode of communication of disease in all communities, the greatest care should be exercised in the selection of the supply for schools; and while one scarcely likes to give any advice that may seem to interfere with the freedom of the master in the choice of his purveyors, I cannot but think that greater safety would be secured if the supply of milk were obtained exclusively from the school's private dairy, or from one large farmer, whose farmyard, cattle, and dairy, should be under the supervision of the medical adviser of the school. By this practice greater care would be exercised by the farmer, not only by reason of the medical supervision, but also by reason of the fact that the propagation of disease from his dairy would mean, at all events, temporary financial ruin, thus making him scrupulously solicitous to reduce the risk to a minimum. I am aware of the argument that, where the milk supply is obtained from several sources, only part of the school would be affected in the event of milk poisoning; nevertheless, I maintain that the risk is more than proportionately increased where there are several possible centres of poison.

It has been repeatedly proved that, in its passage from the cow's udder to the human stomach, milk may become so poisoned as to cause death to the recipient. It is now

also definitely ascertained, that disease in the cow itself is propagated in this way to the consumer.

So great has been the mortality produced from these causes, that it appears to be the imperative duty of Government to inspect thoroughly and systematically the cattle, their byres, the milkers, and the dairies, and to visit criminal neglect and fraud with severity. This inspection of dairies was undertaken by the Government in 1887.

Mr. Ernest Hart, in a paper read before the Social Science Congress in the autumn of 1883, furnished a record of eighty-three **milk epidemics,** representing 5000 *cases of disease*, and 580 *deaths*, in about ten *years*.

In unhealthy seasons, and whenever infectious illness is epidemic, milk should always be boiled at its source before being consumed. So frequent is the illness arising from the consumption of milk, that some authorities proceed a step further, and suggest that inasmuch as tuberculosis, scarlet fever, diphtheria, typhoid fever, without mentioning other possible diseases which may be disseminated by means of the milk of cows, are known to arise from milk-drinking, it should become an established rule in schools that milk should invariably be boiled before it is drunk. It is difficult to conceive a more complete solution for the development of germs than is provided by milk—one germ falling into such a fluid producing millions of its kind. But I would earnestly urge that the diminished food-value of boiled milk to the young is not compensated by the diminished risk of infection from micro-organisms in unboiled milk.

If the time should ever arrive when milk must be invariably boiled, the boiling should take place as soon as the milk leaves the cow's udder, and before its distribution; though this course will not prevent its subsequent contamination on cooling. But, at present, the defective nutritive value of boiled milk is certain; while the possibilities of danger in unboiled milk are comparatively remote. I would

point out, however, that the remedy for the disadvantages, or risks, of "new milk" is not wasteful destruction of its nutritive quality by boiling; but the enforcement of efficient inspection of dairy cows, dairies, milkers, and dairy-keepers who supply it wholesale: the freedom of the modes of transmission from contamination; and the ensuring of cleanliness on the part of the retailer. Even in addition, however, to these dairy regulations, **all milk should be rapidly cooled to 40° Fahr. as soon as it leaves the udder,** since at this temperature it can be kept for twenty-four hours with very little bacterial growth.

There are some masters, physicians, and moralists, who hold that a boy should be allowed **meat** only once a day. To this I agree, to a certain extent, in the case of young boys; but for the average public-school boy the regulation is quite inadequate. He requires meat twice a day during his actively growing years, or, in other words, during the time he lives at a public school. It will be admitted that for the production of the highest state of health in the adult, meat once a day is at all events essential to provide his wear and tear. If that be true, then I maintain that a boy needs meat *once* a day also to make restoration for *his* wear and tear, which is far more active than in the adult; and, I would add, that he requires meat a *second* time to supply the material for growth. The meat should be given at breakfast and at midday dinner; but I cannot approve of an evening meat meal as urged by many parents, and granted at some schools.

If we will only observe Nature, we shall see that she provides in milk—which is the natural food for rapid growth—an excess of nitrogenous matter, which is, consequently, unsuitable, as a staple diet, for the adult. But the young animal cannot prosper without this excess, as he has also to provide for growing, which means that he must pile up the excess of nitrogenous matter in the form of a daily addition

to the body. In fact, the growing boy needs a large "income" in the shape of food, part of which he expends as "current cash," but a large proportion he lays by as "capital," to invest in growing; whereas the adult can spend all his income as "current cash." The latter may, perhaps, wisely keep a small reserve on "deposit" in case of a sudden demand for increased expenditure of force; but, after making this prudent provision, he should on no account capitalize a further sum in the form of corpulence or gout.

By meat, I do not mean butchers' meat only, but I include all that class of nitrogenous food—meat food, as distinguished from farinaceous food—which comprises also fish, bacon, sausages, eggs, and other articles with which a boy's breakfast is sometimes varied.

The **quantity of meat** or nitrogenous food supplied in the twenty-four hours at breakfast and dinner should be one pound of uncooked meat, including fat, which involves 20 per cent. of weight of bone, and 20 per cent. of weight lost in cooking, giving, therefore, 60 per cent. of fat and lean cooked meat, or 9·6 oz.

I have allowed the full amount of meat food that is wholesome for the strongest and biggest boys, or those who are growing rapidly. I have done this purposely, though I am aware that younger and less robust boys could not consume the amount I have specified; for them, three-quarters of a pound of uncooked meat is the usual amount required.

There are, however, some highly bred delicate boys, who, with very spare appetites, are unable to take sufficient nitrogenous food at breakfast and dinner to provide for daily growth and daily wear and tear; such boys, few in number, should be allowed a cutlet at tea-time, or some beef-tea at lunch-time, if their school life is to be a period of health and progressive growth, and of effective preparation for subsequent work in the world.

If ever we islanders remove our national disgrace, and obtain our **fish** at a fair price—it could not be much dearer were we without a coast-line, mainly arising from the unreasonable land transit rates—I trust our schools will introduce it more constantly as an article of diet for adolescents than is at present feasible; but it must not be unvaryingly the same fish, cooked and served in identical ways. It is an excellent food, containing about 95 per cent. of fibrine and 5 per cent. of fat; that is to say, it includes more fibrine and less fat than meat itself, with the exception of salmon, which contains 78 per cent. of fibrine to 22 per cent. of fat, and of eels, where the percentages are respectively 44 and 56.

Vegetables, especially green vegetables, are a necessary for ensuring health, but, as a rule, boys will not eat them in the autumn and winter, when cabbage is the prevailing green vegetable; consequently, in every autumn and winter eczema tends to prevail. This autumnal eczema arises not only from deficiency of vegetables, but is also occasioned to a great extent by the clogging of all the secretions, especially from constipation, which always occurs, more or less in all persons, on the advent of cold weather.

On one occasion, when some boys were allowed as much meat as they could possibly eat, I saw a serious amount of eczema, so that, to ensure its removal, the supply had to be checked; while in other houses, where this custom had not been allowed, the meat being carved for the boys, and the quantity being therefore limited, the eczema did not appear. I do not believe the complaint arose so much from excess of animal food as from too great a ratio between the animal and vegetable food: the cause was the relative excess. The boys did not eat sufficient vegetable food to counteract the excess; and thus, on a large scale, I saw what I observe every winter when boys refuse to eat vegetables. **Vegetable salts** are essential to health: they are absent from none of the tissues. They occur in the form of carbonates, lactates,

phosphates, etc., of lime, magnesia, potash, soda, iron, etc. Without them, malnutrition arises in the form of general ill-health and scurvy.

To obviate this result, plenty of soup with vegetables should be given in the winter once or twice a week; beet-root, too, can generally be obtained, is liked, and is wholesome.

Fruits are the greatest delights of all children, indicating a constitutional necessity for them as an article of diet. Parents and teachers should encourage children to resort to the fruiterer, rather than to the pastry-cook, for their *bonnes bouches*. Fruit should be eaten in the morning or afternoon, and not in the evening. It is apt to disagree in the young when taken at this period of the day.

I often hear and read of complaints about the food at schools, especially dinner, being bad. In all schools I believe the feeding is vastly better than it was even a few years ago, though the cooking has not improved to the same extent. One of the chief grievances in the feeding of boys and girls at school is the sameness, and the insipidity of school **puddings.** It is averred that they do not like and will not eat puddings. Let them be offered reasonable puddings, and they will want two helpings every day, as a friend of mine has found to his cost.

Some boys—generally those who have most money—complain of the quality of their dinner, and fail to eat: the real reason being want of appetite, for they visit the **pastry-cook's** not long before the dinner-hour, and there regale themselves, so that the eating of their staple meal becomes physically impossible, and they unjustly attribute the fault to the food provided by the master. Is there any reasonable being—even a boy—who thinks it possible, after enjoying all the tit-bits at a pastry-cook's, that he can sit down to a meal of meat and potatoes without finding fault, though attributing it to the wrong cause? This practice ought to be stopped, as utterly injurious to health. Masters

should induce the boys to spend their pocket-money only after dinner. Failing in this inducement masters should proceed further, and request the pastry-cook to refuse to serve boys before dinner-time. I think the shops might well be "out of bounds" say between 11 a.m. and 2 p.m.—so that the boys should be enabled to eat their staple diet of meat and vegetables before the delicacies—by no means to be despised or forbidden—of the pastry-cook are allowed.

I would lay it down as a certainty, that a boy who cannot eat his dinner has either a hamper, or has visited the pastry-cook's, or that the food is too rough for a delicate stomach, or that he is ill and should be sent to the doctor.

But if school authorities would supply, or even encourage the use of, *jam* or marmalade at tea-time, instead of trying to check the boys' visits to the pastry-cook's, I believe the desire for the delicacies of the confectioner between meals would be less acute—much to the gain of the boys' health. It seems to me, on this subject as on many others, that most of those in authority fail to appreciate the first principles of government. They strive too often to thwart movements and practices which are absolutely uncontrollable, instead of recognizing the inevitable laws imposed by Nature and endeavouring to guide aright what they cannot counteract. The good horseman, having lost such control over his horse that he cannot stop him, tries only so to direct him that he shall not hurt himself or others. Many are the appetites and passions, many the communities, many the individuals, who, treated thus, might be kept under perfect control.

Cheese is an excellent food for boys and girls, when eaten at the midday meal.

Salt is requisite for the young, and yet little trouble is taken to encourage its use.

The question of allowing or supplying **alcohol**, in any form, at schools, is one that demands most earnest thought in considering the training, from every aspect, of the young

This subject, however, is too large for discussion in this book. I have already considered it fully elsewhere.*

Alcohol I believe to be unnecessary for boys, and I should like to see it, as is gradually coming to pass, less and less used as an ordinary article of their diet.

The animal propensities of boys are quite sufficiently active without the *stimulating* effect of alcohol, and they are always ready enough for sleep without its *sedative* action. There is, roughly, only one other property of alcohol: that is, its *heat-producing* power in the system; but for adolescents the best heat-producer is sugar, which far exceeds in efficacy either fat or alcohol.

To enable boys to abandon this needless drink, it is essential that parents and physicians should co-operate with masters.

Beer is usually provided for boys at school, and, if drunk at all, should be taken at dinner only. It is, happily, less used than formerly, and the milk, which is generally substituted, is, on the other hand, a very important item in a growing boy's diet.

But while one parent informs a master that "the doctor says my boy will never be reared unless he has two glasses of port wine a day;" and another, "my doctor says that my son requires a bottle of Guinness's stout every day," all efforts to teach and persuade boys that alcohol is not a necessity are seriously foiled.

I fear there are many members of my own profession, who, when parents state, "I want my boy to have wine, or stout, at school, instead of small beer," immediately furnish a certificate to that effect, and thus unhappily confirm parents in the belief that "the boy will not thrive, and cannot be reared without it." When such cases have been referred to me, as they continually are, though I have always carefully considered each one on its merits, I

* "On the Impropriety of the Use of Alcohol in Schools." C.E.T.S. Publication Depôt, 9, Bridge Street, London, S.W.

have never yet found cause to sanction the use of alcohol as an article of diet for boys in health: the boys, without it, manage, not only to exist, but to thrive, to improve in condition, and on leaving school to exhibit a more robust condition of health than that with which they entered. I sincerely wish, as far as the health and morality of schools are concerned, that we had more physicians like an eminent Scotch physician, not long since deceased. A certain parent insisted, when placing his boy at a very large preparatory school, that his son should habitually have beer; this instruction the master disapproved, and resisted. Both being inexorable, the master said, "If you bring me a certificate from Dr. —— to say that it is a real necessity for your boy, I will not further object." The parent, appeased, went to the physician to obtain the required certificate, with this effect; that instead of granting his request, "he prohibited alcohol both for father and son, to the enormous benefit of the father."

As a remedy in sickness I use alcohol whenever I deem it requisite; and this, in my opinion, is the only form in which it should be introduced into schools.

By some boys, and parents too, drinking is lightly regarded. They should, therefore, be made clearly to understand that *drinking, and* smoking *also* (usually begun at home), *are injurious for growing boys, owing to their effect upon the nervous system*, quite apart from the moral reasons for abstaining, and loyal adherence to the prohibitory rules of the school. The master's position in enforcing such salutary rules should be strengthened by both the parent and the physician.

Neither parents nor masters can for one moment sanction smoking or drinking for boys. Even on the grounds of expediency the practice should be forbidden. Parents, too, must surely see that, if practised, it must be always carried on *sub rosâ*, and thus dissimulation is engendered, and

openness of character, which is so specially attractive in youth, tends to be frustrated, with unhappy effects throughout life. It is the repetition of acts, whether covert or open, that leads to habits; and habits make character.

Hampers from home, generally injudicious in their contents, are a constant source of illness. It is very pleasant for a boy at school to receive presents from home; but parents should be careful to send nothing which, either from quantity or quality, can injure health.

In his excellent little book on "Boys and Masters," Mr. Gilkes has briefly expressed the evils of hampers, thus: "Appleton has a hamper twice a term, and gets sick in twelve hours after it has come; and so do many of his friends." In some schools hampers are already forbidden on this ground; and this will require to become the general rule, unless parents show more wisdom. But, on the other hand, masters must see that their boys are provided with sufficient food at every meal. It is a mediæval arrangement which permits supplementary food and hampers to be supplied by parents, because the school supply is recognized to be inadequate. There must, also, be no detention in school at meal times, so that either the meal is cold, or insufficient time is allowed for eating.

Masters, like all good workmen, should know their trade in all its branches; and hygiene is one of its most important and least-studied elements, especially in relation to the subject of food.

VII.

SCHOOL.

HAVING fully investigated all matters relating to *boarding* at school, the consideration of the *occupation* at school naturally follows, and we shall hence discuss Work, Play, and Illness, in their order. I first of all, however, submit a few references to chapel arrangements.

CHAPEL.

Some preparatory schools have a chapel of their own; others worship in the parish church. Most public schools have their own private chapel, which is used either once a week, or every day of the week, for morning prayers at 7 or 7.30 a.m., and sometimes also for evening prayers.

For some time during the year these chapels need artificial **warming.** There are two ways of warming: the *right* way is to light the fire on Monday morning, and let it out—if at all—on Saturday night: the *wrong* way is to light it on Saturday night, and let it out on Sunday night.

It would be bad enough to use a chapel once a week without any warming, but even in such a case the walls, floor, and seats would alone be cold. The case is infinitely worse when the fire is not lighted until Saturday night, for the moisture from the warmed air simply condenses on the cold walls, floor, and seats, and makes them reeking wet,

producing far more colds and discomfort than would result from the absence of a fire, besides causing mildew, which is deleterious to health. In all cases, whether the chapel be used only once a week or every day of the week, the warming should be continuous: sending boys to chapel once a week with reeking walls, and to chapel every morning at 7 a.m., when the place is not thoroughly warm, is both a disagreeable and a dangerous practice. But while the warming should be efficient, it should not be excessive: the chapel should not be converted into a hothouse.

Under the arrangements that generally prevail, and even in the absence of this excessive heat, colds are caught, and serious chills occasioned, in consequence of imperfect ventilation not allowing the air,—which has become injurious on account of the large numbers present, and the exhaustion of oxygen by the gas, where the electric light is not installed,—to be sufficiently purified: the bodily system consequently becomes depressed, and much more susceptible to a chill on leaving the chapel.

The **method of warming** is one that should receive particular consideration on the part of architects, so that the warmth may be skilfully diffused without being concentrated on certain points, and thus rendering some seats oppressively hot, others too cold. The system so commonly employed of placing hot-water pipes on each side of the aisles beneath the floor, with open iron grids for the transmission of air and warmth, needs only to be mentioned to be deprecated. For when the aisle is swept, all the refuse carried in on boots, which comprises manure as well as mud, is swept down the grids as the most convenient receptacle for its removal; and when the aisles are washed the water also finds its way there, and thus damps the filth. These underground channels, impossible to clean out effectually, become, consequently, a hot-bed of bacilli and impurities which are evaporated into the chapel by the heat.

The **ventilation** of chapels should engage greater attention than it does. By aid of the constant circulation of the warm air with which they are usually warmed, a scheme of ventilation should not be difficult; in fact, Boyle's air-pump ventilators in the roof of all churches and chapels would effectually provide it for the hour during which the chapel is occupied.

A very large proportion of colds are distinctly traceable to chapels and churches, not so much, I think, from imperfect warming—though this is defective enough—as from the depression caused by the respiration of pre-breathed air, and the poisoning occasioned by the respiration of the burnt fumes of gas. As evidence of the fact, I would point to the number of boys who leave chapel during service on account of faintness or bleeding of the nose, and to the general somnolence induced in those who remain. Were more care devoted to the ventilation of churches and chapels the clergy would find more attentive audiences, and their hearers would not so often give the preacher the credit of possessing soporific powers. But, at present, architects scarcely deign to consider that, in the exercise of their art, the question of ventilation, or even the science of acoustics, is within the range of their department in the construction of ecclesiastical edifices.

With reference to the **acoustics** of a school-chapel, hardly any condition can be more prejudicial to the value which a boy sets upon his Sunday—which should be a hallowed day to him—than to attend chapel constantly during the most impressionable period of his life, without ever distinctly *hearing* the "Lessons" read, or the "Sermon" preached by the head-master, who has usually been selected for the post on account of the special influence he is assumed to exert from the pulpit.

As far as possible, when using **artificial light** the system of electric lighting should be extended to the school-chapel.

SCHOOL ARRANGEMENTS.

In previous sections I have dealt only with the arrangements for *living* at boarding schools. I now propose to discuss the arrangements necessary for *occupation* at school, with reference both to day and boarding schools.

Our first question must naturally relate to the place where the school work is to be done. This is usually performed in what are termed "**class-rooms,**" the best form for which I shall now proceed to describe; for on their suitable adaptation in respect of size, light, ventilation, and warming, the comfort and the efficient teaching of the pupil largely depend.

On the subject **of situation,** the section should be consulted in which I have specified the conditions required in selecting the *site* for a school (page 20).

In the **construction** of class-rooms, where the subsoil is insufficiently firm to support a building, the wall-trenches must be filled in with concrete one foot thick, and extending six inches beyond the lowest course of footings on each side, so that a firm *solid foundation* may be secured.

All school-rooms should be *built* with at least 14-inch *walls*, increased according to the height of the building: these walls should be hollow, and ventilated below on the outside, and above on the inside, in order to allow a continuous current of air between the inner and outer walls, and thus avoid damp and mildew. There should further be a *damp course* above the level of the ground, which prevents moisture being carried up the bricks from the soil on which the wall stands. All class-rooms on the ground-floor should be properly under-ventilated: by this means a dry basement is ensured. The whole of the ground within the building must be covered with six inches of concrete. The *floor* should always be of wood, and not quarries, except

in passages. And where there is more than one story the intervening floor should be fireproof. The *roof* must be underboarded, with tar felt interposed between the boards and slates.

The class-rooms in the primary schools, both of England and Germany far exceed those of the public and preparatory schools of England. Many of the class-rooms in some of our highest schools require *razing* to the ground, while others need *raising* to the ground, for some of our boys are at the present time educated in underground cellars. It is, unfortunately, still necessary to insist that all school-rooms should be built above the level of the ground, and those at present in existence which are below ground should be abandoned.

The **size** of class-rooms for secondary schools should be arranged for the accommodation of not more than thirty boys and their master. This number should never be exceeded, as it is as many as any one master can control and teach effectively. It is sometimes well to have adjacent class-rooms separated by a folding and sliding partition, so that a larger room may be feasible in case of necessity. This plan is also occasionally of service for purposes of discipline, where one master on one side of the partition cannot maintain order, while the other can. In the section on "Dormitories" (page 139) I have strenuously insisted that each pupil should be allowed at least 800 cubic feet, together with efficient ventilation. I have urged this on the ground that a boy occupies his room continuously for eight or nine hours.

But in a class-room, where a boy is never more than one hour continuously—or, at all events, should not be—this full extent of **air-space** is not so important.

In the building rules, issued by the Board of Education in 1903, for the planning and equipment of New Secondary Schools, it is directed that 18 square feet of **floor area** shall be the minimum accommodation provided for every scholar.

A typical room, therefore, which would supply the requisite cubic space for thirty boys and one master, would measure

27 feet in length,
20 feet in width,
13 feet in height,

with a floor area of 540 superficial feet, or 18 square feet per head; and a cubic space of 7020, or 234 cubic feet per head. The minimum of the Board of Education should be increased wherever it is possible, as that ratio of air is undoubtedly insufficient.

In the more modern schools in Germany the dimensions of each class-room, and the number of pupils which it is constructed to hold, are painted in large type on the wall in order to comply with the cubic and floor space prescribed by the Government standard.

In Fig. 18 (page 212) I have allowed for a breadth of a single desk of 18 inches, and a depth of 2 feet 6 inches, with intermediate gangways of about 18 inches, and on each side of the room 2 feet. The fireplace is placed in the corner at the right hand of the teacher's platform (Fig. 18).

It is a salutary rule that all class-rooms should be vacated every hour or every hour and a half, if only for five minutes, in order to secure a thorough flushing by fresh air, besides the constant current during their occupation. In this way children can exercise their unnaturally restrained muscles, and fill their lungs by running and shouting, while the teacher secures the same benefit by gaping.

No master should vacate his class-room without seeing that it is left neat and tidy, and without first opening the windows, so that the next comers may find the place sweet and fresh.

The **height of class-rooms** should be 12 feet when the superficial area is under 360 square feet; 13 feet

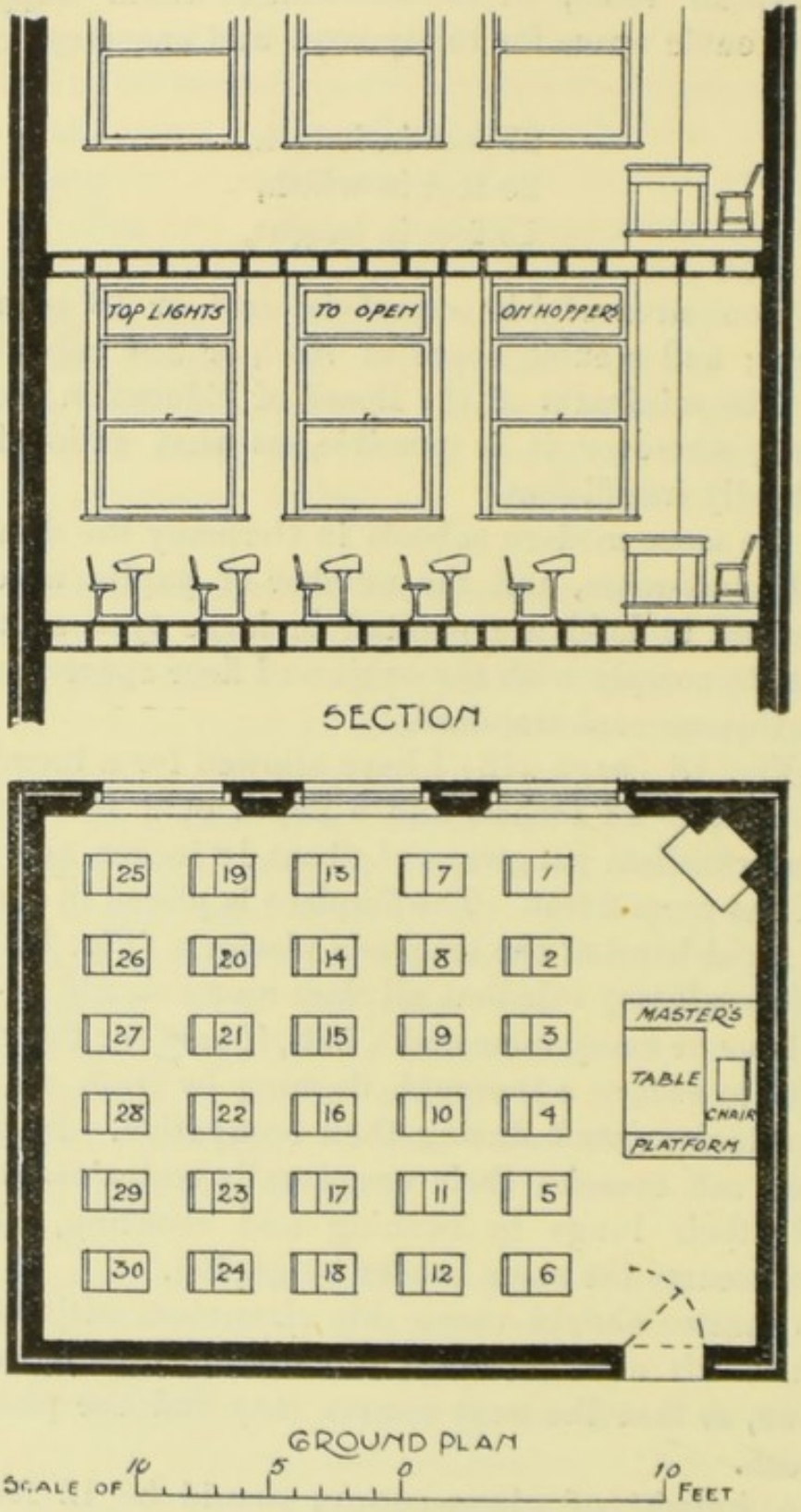


FIG. 18.—A CLASS-ROOM.

when under 600 square feet; 14 feet when this space is exceeded; and so on proportionately.

It is a common observation, on entering a room, to say, "What a fine lofty room!" Now, fine *lofty rooms* are valueless for health purposes: it is *floor space*—breathing-room—that is most required. The atmosphere is many miles in height; yet, when human beings are crowded on the earth, even in the open air, there disease and death reign supreme. It is an unfortunate fact that the atmosphere a very few feet above us is useless for immediate respiration, unless it be in very active motion. The height of a class-room should really be governed by the consideration of light. For rooms under 20 feet wide a height of 12 feet is sufficient: a width of 25 feet requires a height of 14 feet for the effectual lighting of the sides of the room opposite to the windows.

It is impossible to arrange the **natural light** of a class-room too carefully, provided there is no glare in the eyes of those who have to work in them. The sole accurate test of the lighting is the quantity that falls on a dull day upon the desk farthest removed from the source of light.

The windows should be arranged on the left-hand side of the pupils as they sit at their desks, in order to avoid a shadow being thrown upon the books. The walls should be distempered a light colour, which thus reflects a maximum of light.

The *window area* should be one-fifth of the floor area; so that in a class-room of the size I have described, with a floor area of 540 square feet, three windows of 4 feet × 8 feet 6 inches should be formed. In the neighbourhood of buildings, and in a north aspect, even a fourth window may be necessary for ensuring light sufficient to avoid any strain upon the eyesight.

The *sills* of the windows should be at least four feet above the floor, so that the light may enter above the pupils'

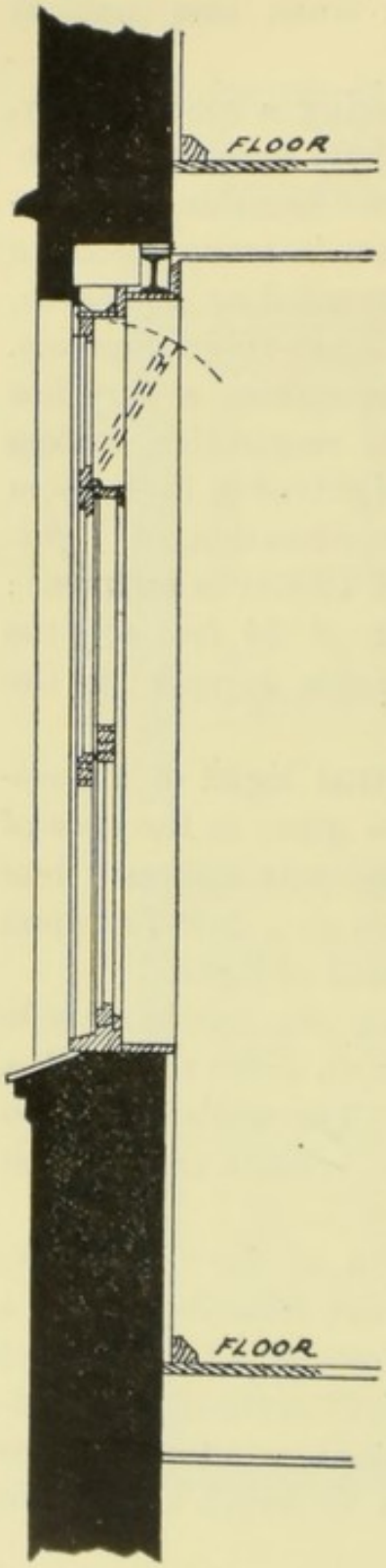


FIG. 19.—A CLASS-ROOM WINDOW (SECTION). FELIX CLAY.

heads, and the pupils may not be continually looking out. And if the height of the window be 8 feet 6 inches, and the room 13 feet, the windows will reach within six inches of the ceiling.

The most favourable light is that from the south or south-east. When these aspects cannot be obtained, or neighbouring buildings obstruct light, supplementary light may be obtained from the right of the pupil or from behind, or prismatic glass may be used in the windows, which greatly increases the amount of light. In rooms for *drawing*, the light should always enter from the north.

In his important work on Modern School Buildings, Mr. Felix Clay advocates the form of window best adapted for class-rooms as a well-made, easy-working sash window, with the upper part made to open in the form of hoppers (Fig. 19) for purposes of ventilation, and provided with cheeks to prevent down-draughts.

Liebreich urges that the **artificial lighting** of the rooms in the evening ought to be as similar as possible to that by day—with the light on the left of the pupil. The aim should, therefore, be to arrange sufficient illumination and steadiness of light, with the least vitiation of atmosphere. In

the country, where gas, or the electric light, is not obtainable, *mineral oil* lamps have now displaced colza oil lamps and candles — the latter having been discontinued only within the last few years. The regenerative petroleum lamp and the Welsbach incandescent mantle petroleum lamp are now chiefly in use. *Gas* is the illuminant mainly adopted at the present time, but it is gradually becoming superseded by the electric light. Gas-lights should be protected by a glass cylinder, to produce a steady light, but should not be covered by ground-glass shades, which obstruct about 50 per cent. of the light; and reflectors should be used. The incandescent lamp has now taken the place of nearly all other burners, though the Wenham, Siemens, and the Argand continue still to be the most suitable in certain places. As far as possible, the incandescent lamps should be placed on the left of the pupils, and about eight feet from the floor. One gas-burner at least is required for every four pupils. Every flat-flame gas-burner consumes about five times as much oxygen as an adult, and produces about three times as much carbonic acid. The class-rooms would be more healthy were there placed in every room the means for carrying off the fumes of the burnt gas, as well as the products of respiration. The fumes from artificial light should always be effectively removed; but the outcry against the deleterious effects of gas-fumes has, nevertheless, failed to be confirmed by fact, since Dr. Odling found, for equal illuminating power, that candles introduced more impurity into the air than gas. Again, Dr. Meymott Tidy conclusively disposed of the question by the following excellent and convincing table, showing the oxygen consumed, the carbonic acid produced, and the extent of air vitiated, by the combustion of certain bodies so burnt as to give the light of twelve standard sperm candles, each candle burning at the rate of 120 grains per hour:—

TABLE XXV.—A COMPARISON OF THE VARIOUS FORMS OF ARTIFICIAL LIGHT.

Burnt to give light of 12 candles, equal to 120 grains per hour.	Cubic feet of oxygen consumed.	Cubic feet of air consumed.	Cubic feet of carbonic acid produced.	Cubic feet of air vitiated.	Heat produced in lbs. of water raised to 10° Fahr.
Cannel gas... ...	3·30	16·50	2·01	217·50	195·0
Common gas ...	5·45	17·25	3·21	348·25	278·6
Sperm oil	4·75	23·75	3·33	356·75	233·5
Benzole	4·46	22·30	3·54	376·30	232·6
Paraffin	6·81	34·05	4·50	484·05	361·9
Camphine	6·65	33·25	4·77	510·25	325·1
Sperm candles ...	7·57	37·85	5·77	614·85	351·7
Wax	8·41	42·05	5·90	632·25	383·1
Stearic	8·82	44·10	6·25	669·10	374·7
Tallow	12·00	60·00	8·73	933·00	505·4
Electric light (Hammond)	None.	None.	None.	None.	13·8

The preceding figures prove the necessity of resorting to the electric light for class-rooms and sleeping-rooms as soon as it can be utilized at a reasonable cost. This course has been effected in some schools—Rugby, for instance—and I trust that, as opportunity offers, it will be introduced generally.

The superior qualities of the *electric light* are so decided that, wherever feasible, it has displaced all other forms of artificial light, not only by reason of its higher illuminative power, but also on account of the freedom from fire-risk, the absence of heat, and the non-vitiation of the atmosphere.

As in all modes of illumination, the main requisition is the installation of a sufficient *number of lamps* for easy and steady reading. Nothing more ridiculous can be imagined than the system of obtaining a powerful light and then reducing its quantity by the various means now in vogue, such as ground glass, frosted glass, coloured glass, and various forms of screens, which diminish the light by 50 per cent. Shades

which reflect the light downwards on the desks, without obstruction, are most serviceable, as they increase the illumination by 20 to 60 per cent. As all artificial light is computed at candle-power, the rule for illuminating class-rooms prescribes one candle-power for every three square feet of floor space. And as the best lamp for the purpose is a 16 candle-power, the practical application of the rule allots one candle-power for every 50 square feet of floor space.

The question of **eyesight** is so intimately involved in the construction of class-rooms, their lighting arrangements, and the appropriate form and situation of desks and seats, that the subject demands specific reference. The defects of eyesight, as occasioned by education, are, as Professor Cohn has shown, becoming a very serious national concern. It is a fact, that boys working under unfavourable conditions, and with insufficient light during school life, are sustaining serious injury by the production of short-sight. Sooner or later this result must frustrate our desires of appointing only the best men to all posts in the "services," government offices, and professions. For the eyes are tested for most appointments, cases of short-sight being excluded, so that when applicants with this defect are refused, appointments will have to be allotted to those whose sight is good, without special reference to mental ability and acquirements. At the present moment 10 per cent. of those who have passed for the Indian Civil Service appointments alone are inadmissible on account of this defect. It is, therefore, as I have stated, becoming a national question, and not one limited to schools.

In a paper discussing the effects of electric light upon the eyes, Mr. Hartridge,* Surgeon to the Royal Westminster Ophthalmic Hospital, urges that, in the present state of our knowledge, it may be assumed that sufficient sunlight is the illuminant best suited to the eyes, and that sunlight

* *British Medical Journal*, February 20, 1892.

accordingly should form our standard by which to compare artificial forms of illumination.

TABLE XXVI.—A COMPARISON OF THE RAY-CONSTITUENTS OF SOME OF THE DIFFERENT FORMS OF LIGHT.

	Red.	Green.	Blue.	Violet.
Sunlight	1·4	1·6	0·5	0·1
Electric light	2·0	1·0	0·8	1·0
Paraffin	3·0	0·06	0·2	0·1
Gas	4·0	0·04	0·2	0·1

It will be seen that the electric light contains a smaller number of those rays which belong to the red end of the solar spectrum, and in this respect most nearly resembles sunlight; next to the electric light comes paraffin, and last of all gas. And it has been proved that the rays which belong to the red end of the spectrum, *i.e.* those of the greatest wave-length, are those which are most liable to irritate the retina. In this respect, therefore, the electric light is superior to its competitors.

The electric light, moreover, evolves no products of combustion, and emits a minimum of heat which is so irritating to many eyes.

The incandescent electric light, when carefully shaded and judiciously placed, is the best form of artificial illumination; and no well-authenticated case of injury to the eyes has yet been recorded.

On the efficient **ventilation** of school-rooms depends the health and vigour of the pupils, and freedom also from diseases attendant upon the presence of micro-organisms. With deficiency of ventilation, pallor and apathy are paramount, and micro-organisms act unchecked. Improved ventilation invariably removes from school life frequent

colds and coughs. That open windows, night and day, promote the health of school children is now proved by their adoption in several schools. No difference of opinion can possibly exist respecting the harmful effect of breathing vitiated air. The injurious nature of prebreathed air is assigned to the emission of organic matter from the breath and the skin, which is also supposed to be the cause of the smell, so palpable to the sense, of **stale air**. But searching investigations, and endless experiments, have proved that the most trustworthy index of the condition of the atmosphere in dwelling-rooms is the percentage of carbon dioxide (CO_2) which it contains. It is agreed that the pure outdoor atmosphere contains four parts of CO_2 in 10,000. When the proportion indoors reaches seven parts per 10,000 the sense of smell is at once affected, and the odour becomes unbearable when ten parts are attained. Yet, in some schools, after the children have been indoors for two and a half hours, thirty parts per 10,000 have been detected on examination! Seven parts* of CO_2 have, therefore, been fixed upon as the amount permissible in air suited to healthy respiration. This means that an addition of three parts per 10,000 of CO_2 to pure air requires the air to be renewed, and thus necessitates the supply of thirty cubic feet per minute of fresh air for each child in the class-room. Without this admission of fresh air the sense of mental and physical depression arises, and children are unfit for the school work required when carried on in what may be branded as **school-room air.**

In a discussion on "Standards of Ventilation" before the British Medical Association at Oxford, in July, 1904, Professor I. S. Haldane pointed out that in elementary schools the air is more vitiated by respiration than in any other class of building occupied by human beings during a large portion of each day—the proportion of carbonic acid

* Eyre, "School Hygiene."

being found to be 17·5 volumes per 10,000, but attaining a maximum of 38 volumes. But he asserted that even this proportion did not produce the deleterious effects that would, *à priori*, be expected, for this reason: "At ordinary atmospheric pressure there is about 6 per cent. of carbonic acid in the alveolar air. If the air inspired contains, say, 3 per cent. of carbonic acid, the alveolar will still contain about 6 per cent., as the lung ventilation is immediately so increased by the action of the respiratory centre as to bring the percentage to six, and the person breathing will scarcely notice the change."

The question of ventilation is the most difficult problem, apart from open windows, incidental to civilized life. Hence the deterioration of a race, and the diminution in size and vigour of those whose mode of life, or occupation, entails an indoor life in large towns. Children, therefore, as far as possible, should pass their years of growth in the country. An open-air life is universally beneficial, but it is imperative for the young.

The proportions of the constituents of fresh country air are approximately—

Oxygen	...	21 per cent.
Nitrogen	...	79 per cent.
Carbon dioxide		0·04 per cent.

There are also varying proportions of ammonia, ozone, watery vapour, sulphur dioxide, sulphuretted hydrogen, dust, and bacteria in fresh or town atmospheres, the excess occurring in the latter.

A class-room having a cubic capacity of 540 square feet is contaminated in half an hour without ventilation. Each class-room requires individual treatment by an intelligent master, according to its size, its relation to the direction and force of the wind, the number of occupants, and the aspect.

It is clear that there is only one mode in which the external air should enter; for as cold air is specifically heavier than warm air, if its ingress be near the floor, it will remain there, and exist as a stratum of air many degrees colder than that above it. It should, therefore, enter about six feet above the floor, so that as it naturally descends—being heavier—it may mix with the warm upper air of the room, and thus become somewhat warmed in its descent. This action, however, often causes a draught, the fault resting, not in the principle, but in the method adopted for carrying it out. For instance, if much air be required in a room, which is well warmed inside and the air very impure, it is palpable that with only one ventilator provided, 9 in. × 3 in., as is frequently the case, the rate of entrance will be exceedingly rapid, and the stream of cold air will consequently pour down in a rushing continuous current, resembling a ray of light through a small hole: a sufficient number of inlets should accordingly be established.

The smaller the inlets and outlets provided for ventilation the greater the "draught"—a draught being caused by the rapid passage of air through too small an opening. The Board of Education directs that the inlets, which are to be arranged in corners, or in positions as far as practicable removed from doors and fireplaces, should provide a minimum of 2½ square inches per head. But this is quite insufficient for avoiding stuffiness in a school-room. Here six square inches at least per head are required for each inlet and each outlet.

For efficient **artificial ventilation** *inlets*, *outlets*, and a *motive power*, which shall ensure the entrance and exit of the air are essential. Additional and secondary conditions should aim at providing that the air shall be fresh, clean, and warm if draughts are to be prevented. Artificial ventilation may be employed as in the *plenum method*,—the air being forced into the room under pressure nine feet above the floor, and escaping outwards to the atmosphere one foot

above the floor on the same side as that of entry. The inlet and the outlet should be about four square feet, and the velocity of the incoming air should not exceed 400 feet per minute. The fan propeller should be about ten feet in diameter, and should not revolve at a greater speed than ninety times per minute. The air conducted in flues should be warmed, but not heated: the temperature to be maintained should be about 56° Fahr. for each class-room. To insure equable heat in all class-rooms, the air should not be heated near the propeller, as is usually the case, but should be propelled and filtered in its natural state, and warmed by passing over a radiator near each class-room. Without the adoption of this plan, some class-rooms are over-heated, while others are insufficiently warmed. The ventilation is much improved where the air is not only forced in by the propeller, but where also another fan is arranged to effect the extraction of the spent air. To equalize the warmth of the air in all parts of a large room, radiators should be provided in the room itself in addition to the arrangement just described.

Natural ventilation is produced by diffusion, convection, and perflation, or cross-ventilation. The principles in question may be effectively carried out by means of Sherringham's ventilators; or Ellison's conical bricks inserted a slight distance from the ceiling, or utilized behind hot-water pipes provided for the influx of air warmed in its transit over the pipes; or by Tobin's inlets; but every class-room should be supplied with Hinckes Bird's inlets (Fig. 20) between the two sashes of the window, by means of which the air enters with a rush, about halfway up the height of the room, and gradually falls, warmed by the upper stratum of air in the room.

None of these methods, however, is effectual in itself, and thus the effects of *heating* are brought to the aid of natural ventilation, and the vitiated air finds its way out through outlets at the upper part of the rooms.

As the natural ventilation of rooms depends largely upon the heating arrangements, the question of **warmth** is one of vital importance.

It is imperative that class-rooms should be artificially warmed in cold weather, whether the cold occur in summer or winter, if growing children are to be saved from shivering

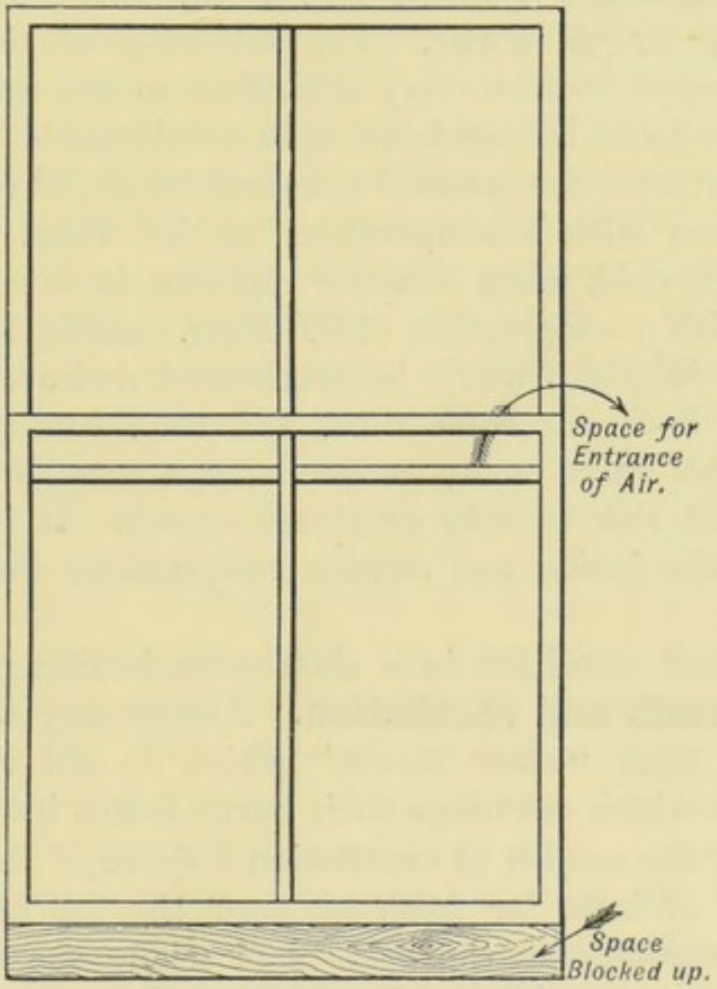


FIG. 20.—BIRD'S INLETS BETWEEN THE WINDOW SASHES.

and able comfortably to work. To begin the warming of rooms at school according to the *date*, instead of the temperature of the atmosphere, is a most unreasonable and ignorant proceeding, and yet the practice is still largely pursued.

To permit the young to sit in cold rooms is frequently the cause of a low general state of health, or delicacy, even

when no actual immediate illness is occasioned. It behoves school authorities also to see that the chapel and class-rooms shall be at the required temperature in time for first chapel and first lesson.

No class-room should have a temperature below 50° Fahr., or above 60° Fahr., where practicable. It is safe to say that the **temperature should never be artificially raised above 55° or 56° Fahr.** The intensity of the artificial warmth supplied must vary according to the season of the year, and should be regulated with considerable care. Thus in summer, with the external temperature at 75° to 80° Fahr., a class-room with a temperature at 50° Fahr. would feel exceedingly cold, when summer clothing is worn; while in winter, with a temperature of 30° Fahr. outside, a class-room heated to 60° Fahr. would be overheated, and every one who remained in it for some time, and then ventured outside without an extra coat, as schoolboys usually do, would incur great risk of cold or severe illness. It is the ratio between the inside and outside temperature that must be observed.

The best condition in a class-room is that which combines **warmth and ventilation.** Almost any arrangement is better than "close stoves" which do not ventilate, or gas-stoves which discharge their burnt fumes into the room.

Under the subject of ventilation I spoke of the provision of means of inlet for fresh air near the top of the room. This is undoubtedly the best plan, where the fresh air is obtained from outside and is cold; but if the fresh air enters warm, the place of entrance should be below and not above, since it then rises, after entrance, to the upper part of the room; if the air, however, enter above, little circulation will take place, as the warmed air, being specifically lighter, will remain near the ceiling.

The open **fireplace** is an excellent arrangement for warmth and ventilation combined—in small rooms especially.

For larger rooms, **hot-water pipes,** with radiators, heated by hot water or steam, form an admirable system, especially if means be provided for passing fresh air over them, which becomes warmed in the transit. The **pipes carrying hot water** afford a more equable heat, inasmuch as, while they take longer to heat, they cool much more slowly; and thus when the furnace dulls down in the early hours of the morning, the pipes circulating hot water continue to emit heat, and the rooms consequently are not so cold at "first lesson." The degree of heat can also be better regulated when hot water is used, since where steam is utilized the temperature in the pipes can never be less than 212° Fahr.; consequently the amount of steam passing through the radiators requires considerable regulation. Where this system of warmth is in operation, outlets for the spent air must always be provided in addition to the inlets of fresh air behind the radiators. These outlets may be constructed by the sides of the smoke-flue, and thus ensure a continuous current for the vitiated air.

In this method of heating the air is too dry, and thus tends to absorb moisture from the occupants of the room. Means must, therefore, be devised for rendering the air sufficiently moist. This can only be regulated by the readings of the wet and dry bulb thermometer. As the relative humidity should never be below 55 per cent., it will be seen from Newsholme's table,* on page 226, that the dry bulb should never register more that 9° Fahr. above the wet bulb in a school-room of the regulation temperature.

Hot-air flues, also, supplied with a revolving fan, as already described, or an exhaust shaft or extraction flue carried up alongside the smoke flue (from which it is separated by iron plates), may be utilized—the inlet to the flue being at the ceiling level, arranged either to extract foul air from the atmosphere or to propel fresh air into it.

* "School Hygiene." Newsholme and Pakes.

TABLE XXVII.—A TABLE SHOWING THE WARMTH AND HUMIDITY IN CLASS-ROOMS (*Newsholme*).

Reading of dry bulb.	Reading of wet bulb.	Relative humidity.
Degrees F.	Degrees F.	Per cent.
56	51·8	75
	50·8	70
	48·8	65
	48·7	60
	47·7	55
	46·1	50
57	52·7	75
	51·7	70
	50·3	65
	49·6	60
	48·6	55
	47·7	50
58	53·7	75
	52·7	70
	51·6	65
	50·6	60
	49·5	55
	48·2	50
59	54·7	75
	53·7	70
	52·2	65
	51·5	60
	50·5	55
	48·9	50
60	55·7	75
	54·6	70
	53·6	65
	52·5	60
	51·4	55
	49·8	50

Besides the preceding arrangements, there are Galton's Grate, George's Calorigen, and Bond's Euthermic—all admirable plans for warmth and ventilation in small rooms.

It is scarcely to be believed that "traditions" in some

of our older public schools only allow artificial warmth to commence and terminate on a certain day in a certain month, quite irrespective of the weather, and of the discomfort and illness thus occasioned to masters and boys. Is it necessary to state that fires should be lighted and extinguished according to the weather alone? Moreover, it is essential to health and comfort that masters should insist upon **class-rooms being opened, aired, and warmed** several days before the commencement of each term, so that boys are not placed in rooms little better than ice-houses, where any warmth is only obtained from their own bodies.

In all school buildings, whether for residence or for class-rooms, the **passages** and **corridors** should be capacious, well lighted, and well ventilated.

In school buildings where the pupils reside, two **staircases** should always be constructed, where practicable, one being outside in case of fire. In those school buildings which are built for teaching purposes only, the staircase should be at least six feet side, so that a handrail may divide the passage into two paths, in order to avoid a great rush from or to school. The tread should be ten to twelve inches in width, and the risers five to six inches in height. At every fifteen steps a capacious landing should be interposed, and thus reduce the length of the flights. Doors of class-rooms should never open on to the head of a staircase. Spiral staircases should be absolutely prohibited.

In all day-schools **cloak-rooms**, with arrangements for hanging, and for drying overcoats and boots in wet weather, should be provided. Without this precaution much unnecessary ill-health must be occasioned, which may cause the pupil lifelong suffering, or possibly a fatal illness.

In a large school these cloak-rooms should vary in number, according to the size of the school, and should be conveniently placed for the pupils in close propinquity to the several class-rooms.

An excellent plan (Fig. 21) for a cloak-room with drying apparatus was devised by the Rev. E. F. M. McCarthy, and is in use at King Edward's School, Birmingham.* Arranged round the room is a series of partitions, each boy having his separate compartment, which is numbered. In each compartment are two hooks, one in the centre for hanging up outdoor clothes, and another at the side for the umbrella. Below is a narrow ledge for gaiters, etc., and underneath this are the hot-water pipes, running round the room; while on the floor, to catch the drippings from

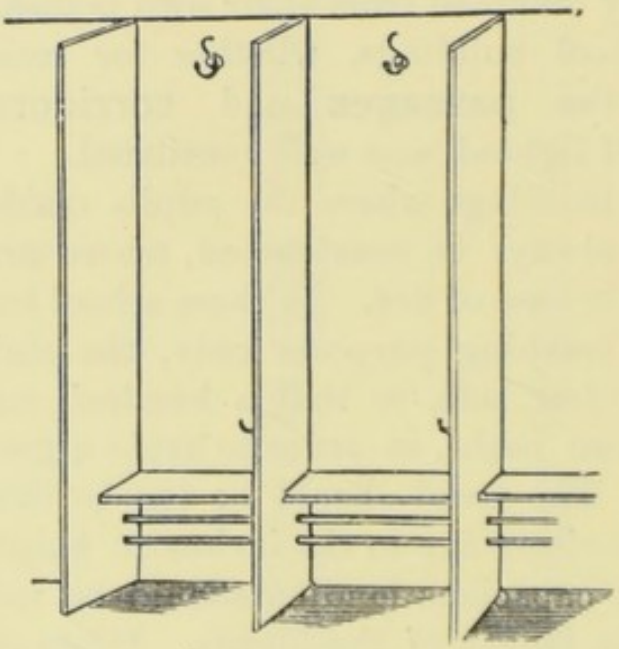


FIG. 21.—THE CLOAK-ROOM FOR DAY SCHOOLS.

the umbrellas, is a drainage-trough in connection with the drain outside. A current of air enters through the lower perforated panels of the door, and passes out by the window at the top: the damp and disagreeable vapours arising from the clothes, etc., while drying, are thus effectually removed. The accompanying sketch will give a notion of the arrangements, the following being the detailed dimensions: Height of partition, 5 ft. 4 in.; width, 1 ft. 2 in.; depth, 8 in.;

* *British Medical Journal*, November, 1884.

height of ledge, 1 ft.; height of hook for umbrellas, 2 ft. 6 in.; width of drainage-trough, 3 in.; length of hot-water pipes for 120 partitions, 142 feet.

Lavatories should be constructed, as already described on page 175, near, or in the cloak-rooms.

Water-closets, in like manner, should be provided in the same vicinity, but outside the main building, and designed as described on page 172, one for every twenty-five boys, and one for every fifteen girls. For boys' schools, **latrines**, one for every fifteen boys, are also essential.

The question of **seats** in class-rooms is one of great moment, both as to their arrangement with regard to the light, and their height for the comfort and health of the pupil. It is important for the boy, but trebly material for the girl. For while superfluous ease is to be avoided, unnecessary discomfort causes fatigue, and consequently sluggishness of mental movement, and, after long continuance, in many instances, physical deformity.

The subject of school **desks**, too, while receiving some attention, has not uniformly obtained, in practice, the consideration which its importance demands. The light should fall, as already described, on the left of the pupil as he sits at his desk, by which arrangement alone the best light is gained, without shadow. In many of the older schools the light is insufficient, so that boys are compelled to stoop and damage their sight through this serious defect, which could generally be easily remedied. Many years ago Liebreich showed that **short-sightedness** is produced almost exclusively during school-life, in many cases by developing a pre-existing tendency, but in others, where no predisposition exists, by actually generating the defect; and Professor Cohn, of Breslau, after thirty years of recent research, has emphasized the fact. Short-sightedness is not only in itself a direct inconvenience to the individual, but the efforts of the child during growing years to assume a posture favourable

to seeing, cause stooping and **curvature of the spine,** so that deformity and consequent ill-health are the frequent results. Besides this, insufficient light and its inappropriate situation entail a diminution of acuteness and of endurance of vision, and work in consequence has to be abandoned or diminished.

The appropriate shape of a school-room is oblong, of which I have already furnished a description and sketch (Fig. 18, page 212), with the windows high up on one of its long sides. The seats, which should have properly regulated backs with desks close to them, should be arranged parallel with the short sides, having the windows on the left as the boys sit; while the master, on a raised seat, should be at the end facing the class. No boy should read with the book nearer to the eye than 10 to 12 inches; and the desk should be raised as an inclined plane, 20° for writing, and 40° for reading.

The edge of the desk or table should be in the same perpendicular line with that of the seat; and the top of the back of the seat should be one inch lower than the edge of the table for boys, and one inch higher than the edge for girls.

The ideal position for the growing child at work is to sit with the body erect for writing, and leaning backwards for reading. Lounging over the desk, the usual posture at school, is injurious both to the eyes and spine.

The *height of the seat* should equal the length of the pupil's leg from the knee to the sole of the foot, and should slope slightly backwards. The *height of the desk* should permit the under part of the forearm to rest comfortably on the writing slope, and this will furnish the most suitable distance from the eye to the book.

As children of the same age, and of the same standard in school-work, vary greatly in height, it is necessary that seats of different heights, or adjustable desks, should be placed in each class-room.

The pioneer in the construction of school desks and seats, with a view to obviate short-sightedness and deformity of spine, was the famous oculist Liebreich. He devised a seat and desk of three sizes, adapted to the several heights of the children. Although his seats and desks satisfied every condition for their intended purpose, they failed to come into general use on account of the multiform size and expense.

Various forms of seats and desks have been invented from time to time, such as the "Modern Adjustable Desk," the Cologne seat and desk, each one an improvement on previous arrangements. Prolonged experience has now proved that the single desk, with adequate gangways, is the best, where sufficient space is available, on account of the varying heights of children of the same age, and their standards of attainment. In the process of development, these inventions have now culminated in a desk which comprises all the desiderata required, and yet is simplicity itself. It is the product of the life-work of a member of my profession, the late Dr. Felix Schenk, who, zealously devoting his inventive genius to the welfare of school children, derived no recompense from the patent or the sale.

The case for solution in this problem was the provision of suitable desks and seats adapted to the diverse heights of children in the same class, by means of a self-acting mechanism of adjustment.

In Figs. 22, 23, and 24 the advantages of these desks and seats are manifest. They are here depicted in pairs, but with equal facility can be constructed as single desks.

In Fig. 23 the tall and short pupil are seated side by side.

In Fig. 24 it will be perceived with what ease one pupil can be seated, and another stand, by means of the seat turning up vertically and automatically when not in use.

The daily sweeping, dusting, and **cleansing of class-rooms,** and their contents, do not receive the necessary attention, considering the detrimental nature to health of

dust. In the use of Schenk's seats and desks, the floor can be readily cleansed without moving them. Other descriptions of seats and desks, whose name is legion, are attached on one side to the floor by a hinge, to enable them to be overturned on their side for the purpose of cleansing the floor underneath.

Where "forms" and ordinary chairs are still in use,

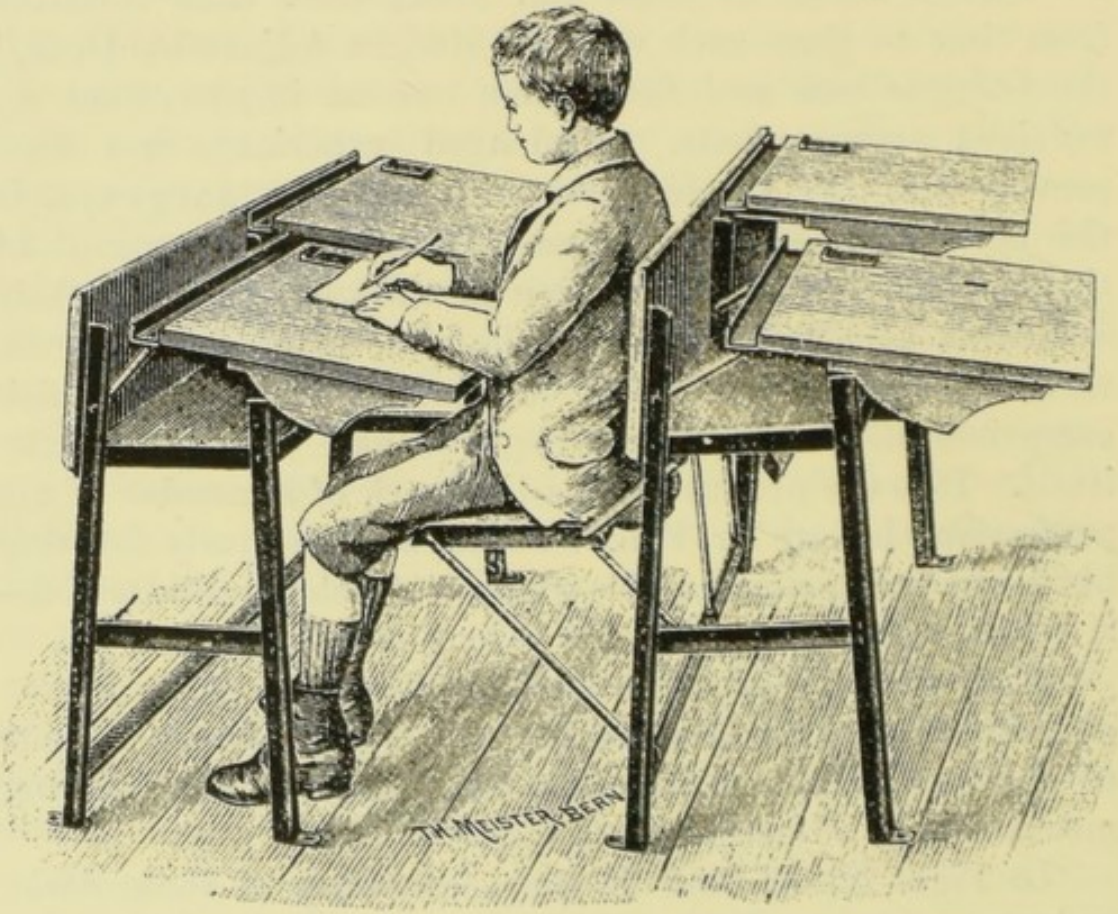


FIG. 22.—DR. FELIX SCHENK'S SEAT AND DESK.

the nearer they are placed to the desk the less scope is afforded for lounging, and for inducing deformity of the spine, and a narrow flat chest which is liable to be the precursor of consumption.

The **teacher's seat** is usually raised upon a platform a foot above the floor; but the great authority of Mr. E. R. Shaw is opposed to this as unsanitary, as well as inconvenient.

One or more **lecture-rooms** are necessary according to the size of the school. They should be of larger dimensions than the class-rooms in order to accommodate a greater number, and their arrangement also should be different. A good **laboratory,** and **physical science schools,** fitted with every convenience for physical as well as chemical

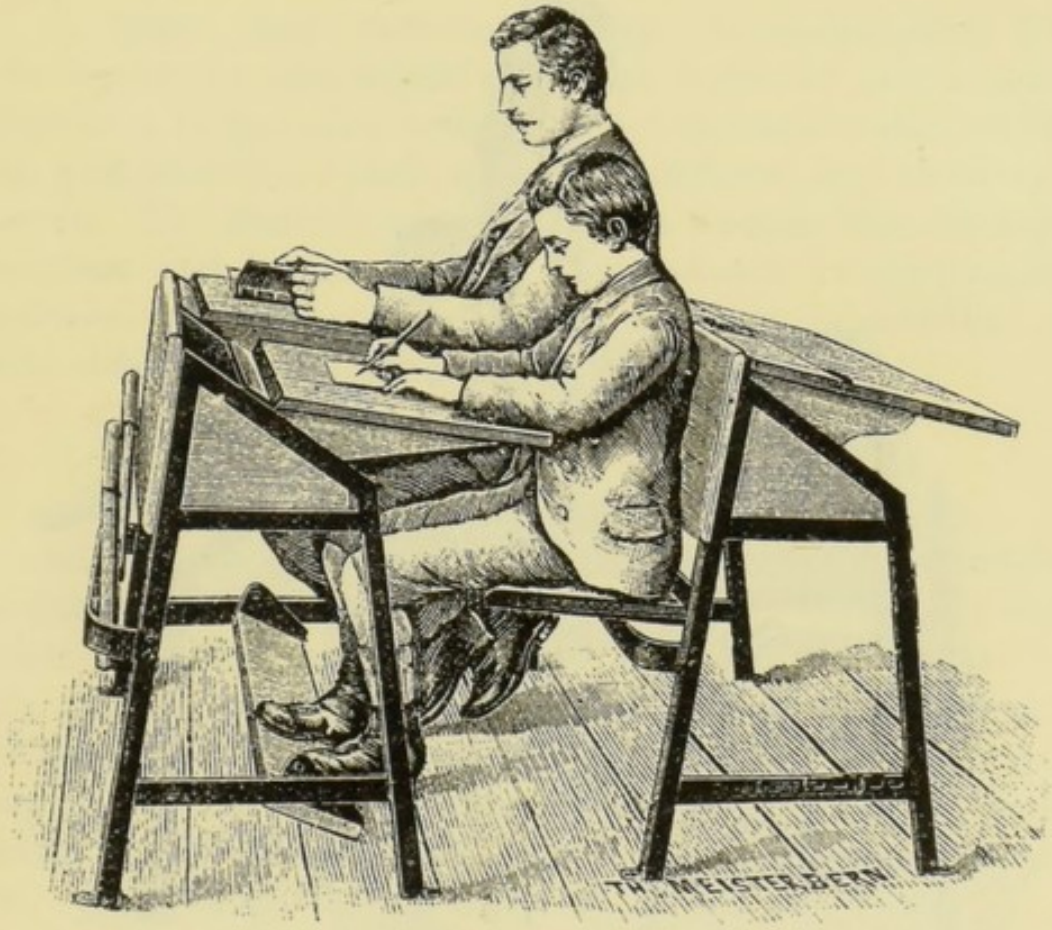


FIG. 23.—DR. SCHENK'S SEAT AND DESK.

experiments, specially ventilated, and connected with the lecture-rooms, are an absolute necessity in modern education. **Drawing** and **art rooms** should also be provided.

With reference to the construction of lecture-rooms, Mr. Murgatroyd, from whose paper I have already quoted, says—

"A physical science lecture-room will also probably be

required to hold two classes; it must have its lecturer's table and an apparatus-room, in which a small gas-engine may be placed to work a dynamo-machine for magnetic electricity.

"I prefer to set out the seats in these lecture theatres, rather than to assume that a certain area will accommodate



FIG. 24.—DR. SCHENK'S SEAT AND DESK.

a certain number of pupils, though, as a general rule, six square feet each should provide the necessary accommodation, including space for the lecturer and his apparatus. The pupils require bench seats, and a narrow ledge in front of them on which to write memoranda; and I have found it best to adopt the Isacoustic curve for arranging

the setting-up of the rows of seats, *i.e.* to draw a line (on the vertical section of the room) from the lecturer's table over the head of one pupil, seated, to give the place of the eye of the pupil next behind him. We thus get steps gradually increasing in height as they recede from the lecturer, and the advantage is that every one can see."

A great hall sufficiently large to accommodate the whole school is also requisite; for at times the school must meet in a body, and a room of this dimension is also needed for examinations, speeches, evening lectures, and entertainments. The seats should be raised in tiers, so that all boys may see and be seen. The room should be thoroughly warmed, and efficient ventilation provided in addition to that obtained from open windows.

WORK.

In discussing the question of **work** at school, it must be understood that I refer to the intellectual education which takes place during school-hours, and the time occupied in the preparation of work. I do not include the important education of the senses which is continually going on, especially during the hours of play and freedom from restraint, which is often the most valuable education of all, and should be encouraged by every legitimate means.

In considering the subject of school work, the delicate organization of the child, who is placed under the teacher's influence, must studiously be borne in mind; for if even the border-line of overwork is reached, lasting injury to the nascent brain may result: the very essence of teaching being to develop the brain by a graduated process, and educe its faculties. In the performance of work energy is expended, and finally exhausted; and this goal is attained more surely in the young than in those whose tissues are matured.

Moreover, the young have to tread, to them, unbeaten tracks—a course which requires a larger expenditure of vital force than in those who, from experience and custom, pursue their way on more or less established paths. The true object of all training and of all education is the development of the best type of manhood, and this ideal end should dominate all our methods of instruction.

The **amount of work** is a matter of paramount importance to the growing boy, if the stunting of the brain is to be avoided from early overwork; for it is one of the most obvious physical laws of nature, holding throughout the entire animal creation, that immature organs are incapacitated and deteriorated by excessive work, while they are developed, and rendered vigorous and active for adult life, by sufficient healthy and graduated exercise. But the exercise should be progressive, not stationary; for mental and physical exercise fit for a child is not sufficient for a boy, and exercise suitable for a boy is not adequate for a man. The converse is also true: that the exercise which is adapted to a man is too severe for a boy, and that which is suitable for a boy is abnormal for a child.

Not long since I saw a boy who was suffering intolerably from neuralgia in various parts of the body, caused by unsuitable work: he was seven years old, and passed five hours a day in school—from 9.30 a.m. to 1 p.m., with a quarter of an hour's freedom at 11 a.m., and then again at work from 2.30 p.m. to 4 p.m. This is slave-driving. Had the child been assigned a moderate period of work, and then an interval of play, greater and superior results would have been produced, and his health would not have failed.

It is an established fact, that the best work is not obtained at schools where the hours are longest and the pressure severest. Some time since, Mr. Charles Paget, M.P.,* tried in the village school on his estate at Ruddington a very

* "Overwork in Schools," by R. Brudenell Carter, F.R.C.S.

interesting experiment. He was not satisfied with the general progress made by the boys, and accordingly provided them with a large garden. The school was then divided into two similar sections, one of which was kept to the ordinary school work for the usual number of hours; the other for half of those hours only, the rest of the school-time being devoted to garden work. At the end of the term, the half-time, or gardening, boys had excelled the others in every respect, in conduct, in diligence, and in proficiency of study.

This fact has been proved also by Sir Edwin Chadwick,* from the experience of half-time schools, where the children actually surpassed those in the Board School. He gave a prize to those who first passed through the fourth standard, and it was found that the prize children gained it at seven years of age, the average age of attainment of the whole school being nine years and a half; whilst in the Board Schools, and all the long-time schools, the period was ten years! Mr. Mundella, M.P., originally hoped that he would pass the children through the fourth standard at ten years of age, but this generally occurred at eleven and twelve.

In fact, Sir Edwin Chadwick has shown, from careful and direct observation, the length of time during which children, at various ages, can successfully devote continuous attention to a single lesson: thus—

TABLE XXVIII.

Age of the child.	Duration of effective attention to one subject.
5 to 7 years	15 minutes.
7 „ 10 „	20 „
10 „ 12 „	25 „
12 „ 18 „	30 „

* "Overpressure in Elementary Schools:" The Health Exhibition Literature, vol. xi. p. 389.

Burgerstein,* in testing children in another mode, elicited the following facts. He gave boys and girls between the years of eleven and thirteen ten minutes' work in simple addition at the first school lesson, followed by a rest of five minutes. During the first ten minutes the mistakes were 3 per cent.; during the second ten minutes 4 per cent.; and during the third 5·7 per cent.

A great schoolmaster has said, concerning the education of little boys, "Great care is taken that no boy shall, at any moment of the day, be obliged to sit in idleness, under any pretext whatever; when the stated quantity of labour is performed he goes to play; but while he remains in the school-room he has no right to be an instant unemployed. The reward of industry, a short cessation from labour, is immediate; so that a lively boy is not doomed to 'count the slow clock, and *play* at noon.' On the contrary, instead of watching with feverish impatience to see both the hands *culminate*, he employs himself ardently at his task: the instant he has accomplished it, constraint ceases, and he breathes empyreal air."

For elder boys a longer period of work is expedient, in order that they may be taught by degrees the vital lesson of continuous application, which is essential in after life.

The appropriate amount of work varies, of course, with individuals, and should be proportioned to their stamina and mental ability. What is hard work for one is scarcely work at all for another. But whatever subject is being taught, the only way to ensure progress and happiness in its acquisition, and secure an absence of overwork, is, very early in life, to let the pupil frequently taste the pleasure of success. Especially let him learn that which he can learn readily, and then gradually induce him to face that which is difficult or distasteful; and with each step of success will come an eager desire to advance.

* "The Working Curve of an Hour: an Experiment concerning Over-pressure of Brain." Burgerstein.

The converse of this method is, unhappily, too often attempted. A pupil who has no taste for a certain subject, and makes no progress, is urged, driven, and punished for his failure, to the serious detriment of his temper, and the production of dulness of intellect and want of mental interest. Whereas, if he had first been taught that which he could attain, he would then have realized his own power to attempt unexplored, and even repugnant, tasks. The Hills, from whom I have already quoted, said:* "The only effect of showing some indulgence to the predilection of youth will be, that, in place of uniform listlessness, every task will be performed with spirit, and every branch of learning will be, in its turn, the object of intense avidity. There is always a natural facility for making one acquirement rather than another, and with that the pupil's ardour will commence; but, except in a few instances, the difference of capacity for one study in preference to another is but slight, and will gradually waste away before the influence of circumstances. Nor, on the other hand, should it be forgotten by those who, in their eagerness for one acquisition despise every other, that in the web of knowledge no thread can be traced without pointing out something of the course of others."

Mere task work is obviously harder to achieve than that which is undertaken with enthusiasm; and this enthusiasm springs from interest in the work. What is sheer drudgery to one is a delight to another. Hence the importance of permitting some power of choice to natural inclination and capacity. When the individuality of each pupil is more closely considered by parents and teachers, our boys and girls will be better educated, and thus rendered more fitted for their future sphere in the world.

The question which teachers naturally ask, and expect to have answered in a practical way for their guidance in

* "Public Education." Hill. 1822.

the management of pupils is, "What *is* the amount of work that should be done?" The only answer is one of *scale*, for what is suitable for the age of nineteen is most inappropriate and detrimental for the age of seven. The following is the best scale I can furnish as indicating the ordinary amount of work for the average boy, including Sundays, but exclusive of the perfect mental rest during the periodical holidays, which, as a rule, comprise from two to four months in the year :—

TABLE XXIX.—TABLE OF SCALE OF WORK FOR SCHOOLS.

Ages.	Hours of work per week.
From 5 to 6 years of age	6 hours per week.
„ 6 „ 7 „	9 „
„ 7 „ 8 „	12 „
„ 8 „ 9 „	15 „
„ 9 „ 10 „	18 „
„ 10 „ 11 „	21 „
„ 11 „ 12 „	25 „
„ 12 „ 14 „	30 „
„ 14 „ 15 „	35 „
„ 15 „ 16 „	40 „
„ 16 „ 17 „	45 „
„ 17 „ 19 „	50 „

It is said that this amount of work is insufficient; but it must not be forgotten, as is sometimes the case, that children have also to provide for physical growth and development while at school, and this necessity, if we follow Nature, must obviously limit the quantity of mental work to be required of them. When a boy is growing very rapidly, exceeding the normal 2½ inches annually—as he often does from the age of thirteen to sixteen, but especially during his sixteenth year, the corresponding rapidity of growth of the girl occurring between eleven and thirteen, though pre-eminently during the thirteenth year—his work should be still further reduced, for his brain power is then simply inadequate for

its performance. All the nourishment he takes at this period is absorbed in the production of quantity, not quality, and all his tissues, the nervous tissues included, are like the rapidly growing immature green stick, not the mature and sturdy oak.

A large share of strength being thus expended in growth at the school age, the allotted task and the excessive hours tell doubly. The greatest drawback to the human being at school is, that this growth and development necessarily proceed *pari passu* with education. This cannot be obviated. For education must take place while the tissues are in a nascent and plastic state, since in this way only can they be developed into the highest state of perfection, whether they be nervous or muscular.

Now, using the word "supposed" advisedly—because the answer to the question is often merely a supposition—what is the supposed meaning of work at school? It is, apart from the attendant moral discipline, the development of the nervous tissue in the head—the brain—to the completest condition, exactly as the gymnasium instructor endeavours to develop the muscular system. And as the latter sometimes forgets the proper aim of his instruction, and teaches his squads a mere series of tricks for the purpose of exhibition, so teaching often, nay, usually, degenerates into similar artifices for the purposes of examinations, and the brain is impoverished and damaged in the attempt. Examinations too frequently are solely regarded as the goal, and the sound and permanent culture of nervous tissue is ignored.

It is one of the chief functions of the competent educator to graduate the training of the brain from short and easy tasks to more difficult and strenuous exercise. But, under the present system, it is constantly overlooked that the young are necessarily without the power of sustained endurance, which is only educed towards the end of the period of education.

The muscular tissue is soft, flabby, and powerless without

use. The gymnast gradually brings it, by appropriate daily exercise, to a condition of vigour fitted for any legitimate exertion that may be required. If he exact too much from it before this state has been reached, enervation ensues.

In like manner, the nervous tissue of the brain can be brought to comparative perfection, step by step, by appropriate use; and he is the typical educator who can thus develop the brain-structure to the completest degree, and render it capable of any reasonable effort. If, on the other hand, he educate unwisely, harm—sometimes fatal, often permanent—results.

"It has often occurred to me," says Sir Crichton Browne,* "that if educationalists could peep through a little hole in the skull, and see the living, throbbing brain, and realize that it is a pulpy organ of about the consistence of calf's-foot jelly; and if they could look at the minutest shred of it under the microscope, and admire one little galaxy out of the millions of starry cells that it contains, lying scattered amongst the strands and sources of its fibres, 'like a swarm of fireflies tangled in a silver braid,'—if they could, as physiologists can, picture to themselves the functional activity of the brain—now, as at times of ease and abandonment, *shimmering* over its surface from point to point; now, as at periods of calm and connected thought, localized into a steady *glow* in certain regions; and now, again, as in moments of intense mental application, concentrated on one spot into a *spark* of surpassing brightness—if our educators could do all this, and if they could become practically acquainted with the brain, they would, I think, be more careful in the handling of it than they sometimes are, and be a little less ready to deny that there is any danger of exerting over-pressure on this delicate structure."

There is so much for the teacher to consider in the

* "Education and the Nervous System," by Sir Crichton Browne, M.D.

process of education in each individual pupil, that thought must be spent if he desires to aim high. Each child possesses its own proportionate stamina and mental ability. The ability may exist potentially in abundance; but of what avail is it unless the stamina be sufficient to provide a plentiful supply of good red blood to nourish the brain? And whence is this derived, except as the result of efficient digestion, which can only be obtained by appropriate food, fresh air and exercise, and ample sleep? Yet we see how little care is bestowed in teaching children to masticate, instead of bolting, their food; and how little sleep is permitted, especially to the younger children at school, for supplying the loss by wear and tear, and for the formation of new tissue. Such matters are regarded by the majority of educators as beyond the pale of their duties, while I maintain that they constitute their essence.

In assigning a limited scale of work I do not wish to imply that a boy should never exceed it. There are times when the elder boys may, and must, do more work, even double the amount, as, for example, in working for scholarships, exhibitions, and in competitive examinations. Moreover, they may work thus hard for a season with impunity, provided they have been working with continuous steadiness, and not simply as a spurt to make up for wasted time; provided they work with sufficient light and air; provided they do not live in the same air day and night; and provided they do not neglect their daily exercise. Where harm, and death, have resulted, the cause has been that these first principles of sanatory science have been wholly neglected. Nature's laws are inexorable, their infringement entailing inevitable punishment; and unfortunately, in these instances, the punishment falls on the innocent victim who is compelled to work under abnormal conditions.

But, as a guide to the average daily work of the average schoolboy, the preceding scale is justified. Some teachers

consider the scale to be impracticable while the present system of examinations prevails, for the work demanded cannot be accomplished if the scale be enforced. This objection only brings us back to my former contention, that the number of subjects should be diminished, and quality of work in a few subjects substituted. In this way *thoroughness* in the case of *all* boys would be aimed at, instead of being confined, as at present, to a few.

I doubt whether in some schools, when the whole-holidays and half-holidays are counted, even this moderate scale of work is secured in the case of the elder boys, though it is always exceeded in the case of the younger ones, when measured according to age.

In public schools, from twenty-four to twenty-eight hours a week *in* school is about the average—*not* including the time spent in the preparation of work; while in preparatory schools they average—and more frequently exceed—about thirty-six hours per week, including preparation of work, but excluding Sunday work. This for boys from nine to fourteen years of age is excessive.

Yet many boys at school, from fourteen to eighteen years of age, who conscientiously strive to do their tasks thoroughly, will average nine to eleven hours of work per day, and even occasionally fourteen hours where a master does not realize the extent of the task he has prescribed. They necessarily become so dazed in consequence as to be unjustly regarded as stupid boys.

It is absolutely certain that the boy whose strength is not overtaxed will perform more effective work in five or six hours than the over-taxed boy can accomplish in nine or ten. It is also an indisputable fact that the work of the pupil at the commencement of the term, after the *vacation rest*, is immeasurably the best work of the term. By *mid-term* he is considered slack and inattentive; and by the *end of term* lazy. Whereas the real fact is, that his brain—some

children becoming easily tired—is fatigued by the excessive toil. A Berlin head-master has advanced a step further, and shown that the most effective working days of the *week* are Mondays and Tuesdays, the first two days after a holiday; and that the best working *hours* are the first two in the morning after the night's rest.

For the younger children in all schools I think I may safely say, that the work invariably errs from excess. For instance, although I know that these ages often overlap, yet, roughly speaking, we may assume that there are schools where children are educated from the age of five to nine years; others adapted for the ages from nine to thirteen; and the last class arranged for those between thirteen to nineteen years of age. With possibly rare exceptions, the children of the ages five, nine, and thirteen have to work respectively the same number of hours as those of nine, thirteen, and nineteen.

Is this reasonable, and in accordance with the teaching of Nature? I know perfectly well that the answer will be, not a justification of the practice but, the difficulty of any other plan. I can only reply that difficulties are meant to be faced, and not shunned; especially when a grave wrong is otherwise perpetrated upon those who cannot help themselves.

I do not say that the work *can* be curtailed, but I insist that the hours *must* be shortened if the children are successfully to accomplish the work of which they are capable, without permanent harm.

There are many ways of meeting the difficulty. The younger children at school should go to bed earlier; they should have no evening work to prepare, and no lessons before breakfast; and their morning and afternoon hours of work could be shortened, without interfering with the work of their elder, and more advanced, school-fellows. Such arrangements would prove of lasting value in the growth and development of body and brain, and would

consequently minister to the future prospects of the pupils in the world. The only real difficulty seems to me to lie in the *will* and not in the *way*.

But school work frequently lacks the aim of all education —by which I intend the culture of the brain—through sacrificing quality of work to quantity of subjects. These studies should be diminished in number, in order that some reasonable attempt may be made to ensure *thoroughness*, in place of teaching a smattering of innumerable subjects, no one of which can be really approximately mastered. *Multum, non multa!* This end could be readily attained, without inducing monotony of work, if the plan I have mentioned were pursued.

The specific intellectual aim of the teacher's work being the development of the brain of the pupil, the tissue of which consists of cells and fibres of nerve-matter, which are as capable of increased growth under exercise as the muscles, it follows that, if work be unwisely assigned, the growth of the brain is stunted; for it is an infallible law that immature tissues are incapacitated and deteriorated by excessive strain. What *can* happen when brain substance is consumed more rapidly than it is restored? During the activity of the brain certain elements become used up which must again be revitalized. It has been demonstrated by the microscope that *active cells* look essentially different from those which have *rested;* and further that the *fibre* participates in the change. If an abnormal mental effort be made with merely normal rest; or an ordinary effort, with abnormally low restorative power (as in the weak, from illness, anæmia, or excessive, or even deficient, growth), we can infallibly discover signs of degeneration equivalent to the excess of effort attempted. The work trenches upon the time required for rest, recuperation, and exercise, with the result that the whole nervous energy is uselessly dissipated.

The younger the child, the more disastrous is the effect

of pressure. Moreover, a certain indefinable flavour is usually wanting in fruit ripened by the forcing process. Some call it folly to force the mind during childhood and adolescence: it should rather be termed wickedness. For by this action a sure foundation is laid for the development of neuroses, which mar not only the entire life of the individual, but also that of those hereafter dependent upon him.

Yet what are the arrangements in vogue in schools at the present day? In some, the pupils are only in school for an hour at a time: in others for two hours, and then a break of fifteen minutes; while in others custom prescribes the period of 9 a.m. to 1 p.m., and then again 2.30 p.m. to 5 p.m. With what result? Can efficient teaching continue for four hours without harm to teacher and taught? Both tend to become torpid and flaccid, quite irrespective of the work performed, owing to the poisoned condition of the atmosphere; for unhappily we are not sufficiently advanced in sanitary science to regard it as loathsome, no less than noxious, to rebreathe pre-breathed air. Until this perception becomes a habit, let teachers learn the unprized value to themselves and their pupils of a periodical break in school at every change of lesson. This break should be frequent in order to avoid satiety—say, three minutes—to enable the teacher to yawn unobserved, and the taught to run and shout and inflate the lungs to their full extent, and thus avoid that inattention and restlessness which are nature's cravings in the young for healthful change. The windows and doors could be mean time set wide open for the purification of the air.

Even at the age of sixteen, children are actually permitted by school rules to continue at work until 11 p.m. In other cases the work exacted is so laborious that pupils, *sub rosâ*, I grant, resume their work in bed—certainly not from love of lessons—and persevere with it until twelve o'clock and after, in order that they may complete their allotted task. I feel confident the answer will be that, in

so doing, they are disobeying stringent rules. But let it be remembered, that it is the severity of the ill-judged tasks assigned which necessitates such a course, and that the teacher is more in fault than the taught.

Excessive hours of work are not confined to primary or secondary education; or to one grade of schools for boys or girls; or to one country: they are world-wide in their prevalence. Referring to overwork in Italian schools, Signor Martini, the Minister of Public Instruction, in a debate in the Chamber of Deputies on the Estimates for public instruction, very pithily remarked that—"We are forgetting division of labour. In our schools we are swallowing much and digesting little. The secondary school ought to stir the intellect and inspire the soul with the love of culture. We have enlarged our programmes, but the cerebral convolutions have not enlarged *pari passu*. Whilst the able-bodied artisan demands the restriction of his labour to eight hours, we extract from our boys of ten a labour at once more prolonged and more severe."

The hardship entailed on children through the enthusiasm of the teacher, or the severity of the examinations for which they are prepared, is sometimes so oppressive as almost, in my judgment, to demand the attention of the Society for the Prevention of Cruelty to Children. I know of children of seven years of age spending five hours a day in school; and others of fifteen to eighteen having so much regular and adventitious work prescribed, that their working day is prolonged to eleven and twelve hours, with incalculable evil consequences.

This practice of overpressure dulls the energy and hopefulness; checks independence of character; prohibits the exhibition of individuality; and retards health and growth.

No one will gainsay the truth, that the teacher is too apt to attempt to pass all his pupils through the same mill, totally regardless of individual capacity, with the result, that many lag behind, practically uncared for, and are regarded

as clay scarcely worth the moulding by the potter's art; while apter pupils are fostered and frequently forced beyond their powers, where less personal attention and a larger dependence upon the native individual force of character would prove the truer method. The teacher has not grasped the fact that in the long run the slow-developing brains often outstrip those of quicker growth, and achieve better results, eventually, under the genuine test of the battle of life. Were the individual *pupil* more considered by the teacher, rather than the *éclat* of the *school*, both child and teacher would more fully benefit.

But the whole tendency in schools, especially pronounced in "secondary" schools, is the superfine polish of a few diamonds for glorification of the *school*, to the serious detriment of the rank and file, who, from the nature of the case, are entitled to receive the greater care of the teacher, with consequent gain, I am convinced, in the highest degree, to both the bright and the dull. I would urge the teacher to give the slowest ample time and chance, with a hopeful heart for the most unpromising, and the confident belief that, if genius does not exist, steadiness of character and fidelity to duty may be developed. I regretted to hear a teacher once remark that he ought not to be required to teach dull pupils. There is only one reply to make—that the teacher had mistaken his calling, and no child should be entrusted to his care. We are, unfortunately, all apt to look for "quick returns" from our labour or our money; but this is not always the most paying or durable form of business. "Quick come, quick go," finds realization even in the rearing of the young.

The training of the child, if the teacher's duty and aim be rightly applied towards its development as a whole, must include the culture of the brain, the culture of the body, and the culture of the character, using the word "culture" in its appropriate sense as signifying the process of securing,

by the use of suitable means, the attainment of a general complete end, and not in the restricted sense of obtaining a partial result, especially the acquirement of mere literary knowledge.

The teacher, on the contrary, too often imagines, that his exclusive concern is the pupil's brain; and when that is attended to, the physical and moral aspects are left largely to chance.

In *all* schools, "the culture of the mind" is almost solely sought, and frequently by methods which are as little appropriate as they are altogether unscientific.

In *most* schools care is bestowed upon the "culture of the character," but often with crude rules of discipline, and the most unwise systems of punishments—such as increased work at the expense of physical exercise—for their enforcement.

In *few* schools is the "culture of the body" sufficiently regarded: notably is this attempt conspicuous by its absence in day schools and girls' schools amongst secondary schools.

The child is a *whole*, and, if its welfare is worth consideration, disaster can only attend a one-sided development, from whatever point of view it may be essayed. And, unhappily, this question will never secure adequate attention, until the teacher receives an appropriate technical instruction in the Science and Art of Education.

The teacher must be taught, and understand, that the brain is only capable of exercising a limited amount of energy, and if excessive demands be made on the intellectual side, the result is obtained at the expense of moral asymmetry; while on the other hand too rigorous a moral discipline is apt to be accompanied by intellectual deficiency. And not only so, but the development of the body is ignored, with the result of an inferior physique as an instrument of mind. Even the culture of the brain under existing methods, consists usually in the mere learning of lessons,

rather than in the educing of faculties, and consequent intelligence.

A "lower depth," again, appears in the grant of "scholarships," not for the general cultivation of the child, but solely for the reputation of the school. Where a scholarship might prove financially a boon to a child, it frequently fails to come within his grasp, for his parents may be unable to afford the requisite tuition which would enable him to compete.

But apart from this question, I have no hesitation in saying, after a long experience, mature consideration, and with the requisite knowledge for gauging results, that in a large proportion of instances an early scholarship is positively harmful to the individual child, especially scholarships which are assigned on entering a secondary school at fourteen years of age, rather than those which are granted at a maturer age on leaving school at the age of nineteen for the University.

In the working for scholarships, some of the competitors have to concentrate their whole intellectual energy, day by day, for many consecutive months, and in the end suffer from mental exhaustion; while others will not require to exercise one-fifth of their mental power to accomplish identically the same task. In the former case, while the scholarship may be attained, the competitor is damaged for life in the attempt. In the latter he emerges unscathed. How is it known when undue strain is occurring? When the usual rest fails to efface all the effects of the work and restore complete renovation.

At one time the child is pressed from an early age in order to obtain a scholarship: having gained it, he is placed at work in excess of his unforced capacity, and constant pressure is thus maintained throughout his school career. If scholarships, when won, are to be retained without harm, the recipient should be placed at least two forms below the standard of work he had only reached

through pressure, and thus be enabled to work at his normal or uncoerced capacity, with the opportunity, perhaps, of sometimes resting on his oars, and thus mitigating, to some extent, early forcing. With this absence of compulsion to maintain an exaggerated standard of work for the reputation of the school (which is the form of return-payment the pupil is expected to make), we should less frequently be depressed by specimens of stunted physical, intellectual, and moral growth.

At another time, as soon as the scholarship is obtained, the recipient's brain becomes stale from premature pressure, and no further work of value, if even more lamentable consequences do not ensue, is ever produced. The result is that the scholar is blamed and deemed lazy, whereas it is the school methods which are entirely at fault. Forced work levied upon the immature brain tissue is not only valueless in the long run, but positively and permanently injurious to the nascent nerve tissue of the brain.

I have hitherto pointed out that the schools themselves are mainly at fault; but I am bound to add that I cannot exonerate parents. For they will move heaven and earth, however wealthy they be, to gain a scholarship for their child, and the schools, unfortunately and unwisely, pander to the parental desire. Were scholarships honourably assigned as a pecuniary aid to a poor but deserving pupil, their real value would be displayed. And unless a speedy change in the system occur, abolishing the present necessary pressure, schools, instead of advertising scholarships, will require to advertise "No scholarships awarded to pupils at this school."

It was the testimony of that great trainer of boys, the late head-master of Loretto, the Rev. H. H. Almond, that competition for scholarships at the age of thirteen involves too severe a strain upon the energies and nerves of boys!

It is almost inconceivable that it neither occurs to parents

nor teachers, where a child consists largely of brains without physique, that the primary object in his education should be the development of the body, at the only stage when it is plastic, and the concurrent resting of the brain as supplementary to this effort. For, unless this course be pursued, the whole of the nervous energy required in the process of physical growth is consumed by the excessive activity of the brain. I continually see children whose mental faculties are abnormally acute, but housed in the puniest and most delicate frame: such a partially developed child, however, is constantly pressed on in the one direction, to the increasing atrophy of his body, and the ultimate degeneration of the whole system. The usual popular eulogy on his premature death that those "whom the gods love die young," should rather take the form of a solemn verdict of condemnation upon the vicious system of education of which he has been the victim.

The appropriate training should, on the contrary, distinctly point to ample outdoor exercise and sport. There are a few bright instances on record where a child's poor physique has been seriously measured, and he has been "turned out to grass" on the farm, on the mountain, or on the ocean for a couple of years, and has consequently returned to school-life with a well-developed body, not only able to hold his own, but even to excel his former compeers.

Thus we revert to my earnest contention, addressed especially to head-masters and head-mistresses, that the *individual* is rarely considered; and that all pupils are subjected to the same undiscriminating process, and worked, if they possess wits, to the very verge of mental destruction as the "**showboys**" of the school, with total disregard to the adequate fulfilment of their ultimate destiny.

We are now led to discuss more minutely the subject of **overwork.** For an adequate presentation of the case, it must be borne in mind that intellect is simply brain function,

and that for every brain a high-water mark of effort naturally exists, which it is unsafe to exceed.

Sometimes it is the brightest and most promising scholar who is worked at too high a pressure, and, if not checked in time, his health, or even his life, may be the forfeit demanded. But it is not always the bright, clever pupil who is capable of being overtaxed. Sometimes it is the dull, slow, but conscientious pupil whom one is apt to term the stupid boy. Alas! how often one misjudges the boy concerning whom the teacher is prone to think that he, at all events, however harassed, cannot be overstrained, as he apparently learns nothing! Yet this is the one who may suffer the most severely from overwork, since he labours beyond his feeble mental capacity. The anxiety attending such work, when the boy realizes that he cannot remain at school, is sometimes most pathetic, and a complete breakdown ensues. He works thus, either for his own advancement, or from love of his parents, or because he is pressed by his tutor or parents, or by reason of the rule of superannuation. It is this type of boy, with his imperfectly formed embryonic nervous system, who succumbs most readily. Such a child is apt to be damaged the most seriously, because his nervous tissue is more easily overtaxed, showing itself, in the early stage, in the form of hysteria—that sure sign of over-tension—and nervous exhaustion, whether proceeding from overwork or disease.

When I speak of overwork, I do not simply mean that form of overwork through which a boy or girl completely "breaks down." Although I know of many individual cases, occasion for such an event should never exist. Those responsible should detect the overstrain long before this disaster is reached, and work should be absolutely prohibited until recovery is beyond doubt. These instances, sad as they are, are eclipsed by a far graver form of overwork—graver by reason of its frequency and of the multitude whom it

affects — which passes unobserved, because through the natural elasticity of youth the immediate effects soon subside, and the remote results are never witnessed by the teachers whose ill-judged practice occasioned the evil. Its results, however, are detected by the medical profession (which is sometimes thought incapable of forming an accurate opinion upon the subject), whose whole life is spent in the study of the human being under every phase of its history.

I do not wish to imply that *all* schools overwork their pupils. I venture to say, however, that a large proportion of schools not only commit this error, but the still more serious one of excessive number of hours of work, and of unreasonable restraint, which are especially injurious to the younger members of a school.

Nor do I desire the implication to be inferred that pupils frequently suffer from a complete breakdown—that is, comparatively, a small part of the general question; for, were this to occur, parents would soon enforce the reformation of such schools by the never-failing remedy of avoiding them.

There is sufficient scope, however, for overwork short of this result, as I shall show presently when I record the symptoms which indicate its existence. Looking to the regularity and discipline of life at school, children should return home at each vacation in vigour and vivacity; and where this condition is absent some defect exists in the school system in respect of excessive work; play of too severe a nature; insufficient sleep; inadequacy and impurity of air; or inappropriate and deficient food. It is, generally, a significant mark of defective organization that children, as not infrequently occurs, should be sent home prior to the end of the term, because further work cannot be extracted from them. And, again, it is indicative of some real error of practice or method that they should leave school at

the end of term worse in health instead of better. Yet it is quite common for boys and girls not only to look ill at the end of term, but, even in the case of robust children, to lose weight, although having concurrently increased in height. Weight should have advanced in a corresponding ratio. **Loss of weight**—and even stationary weight—during the years of growth invariably mean overwork, underfeeding, incipient disease, or recent illness.

I even hear of children who, while suffering from illnesses, and well-marked functional disturbances, are kept fully at work exactly as if they were in perfect health. Surely the strain of these ailments upon the constitution is sufficient without lessons being super-added!

It should, therefore, be the master's aim to produce *quality* of brain substance, and this can only be effected by rendering all the tissues of the body healthy, and then carefully teaching a few subjects thoroughly. Mental overpressure is always followed by impaired physical energy.

But schools and schoolmasters are unable to protect their pupils from excessive pressure while examinations, for which the pupils are prepared, continue to be encyclopædic in scope.

The schoolmaster's material is brain substance; all his power over the pupil rests on quality and growth of brain: growth of brain is dependent on growth of body; and growth of body is based on a suitable and sufficient supply of good food, fresh air, and exercise. Those engaged in education should strive to elicit the naturally good hereditary tendencies of each pupil, and develop them; and endeavour to evoke and encourage new (or, rather, latent) faculties, with a view to completeness of education and character.

And the natural principle must be borne steadily in mind, especially under a system of compulsory education, that underfed children cannot sustain strenuous mental work. Whatever is taken out of the brain in the form of work must

be replaced in the form of sleep and food. This is true for all, but much more for the young where, in addition, the brain has to strive to attain its maximum development.

It is cruel, too, for even well-fed children of seven years of age to be kept in school for five hours daily. They must become absolutely dazed and stupid, apart from the permanent damage inflicted on the brain tissue itself, without any description of compensating gain. At the present time the hours of work have been shortened for the adult, and for factory children whose work is physical, but the mental toil of school children remains without remission.

At Bradford, Dr. Rabagliati stated that the Registrar-General's returns showed, that since the Education Act of 1870 came into force, the deaths from "water on the brain" amongst children of school age had increased by 20 per cent.; and from inflammation of the brain by 50 per cent.—the latter, however, not solely amongst children. And of all causes of insanity and neuroses, those connected with excessive brain function in the young are the most prolific.

In *high-class* schools, "payment by results"—represented in the form of Scholarships—induces the clever pupils to strain their brains; whereas in *elementary schools*, although the system of payment is now based upon general results, and not upon individual examination, the teacher is still compelled to overpress the dull and stupid children, and in this effort he himself is frequently the greater sufferer.

Mr. Cotterill quotes the following extract from a weekly journal for June, 1885* :—

"SCHOLARSHIP FOR SMALL BOYS.—Mr. —— offers for competition at the end of July, a scholarship for five years—*i.e.* he will take a pupil who shows decided ability, and is between the ages of seven and nine, for half his usual terms (£100 a-year). Preparation for the Public Schools."

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* Blackwood, "Suggested Reforms in Public Schools."

Can anything be more disastrous than such an advertisement to the poor unfortunate boy—or rather, *child!*—who obtains the scholarship? And what judgment, in the interests of the children themselves and of competent education, should be passed on the advertiser?

Generally speaking, it is the boy that is growing too rapidly who suffers from overwork. The boy who takes no exercise may be said to suffer from relative, rather than from absolute, overwork: with proper exercise healthy blood would be formed, and healthy blood would be attended by a vigorous brain.

Headaches, restlessness, irritability, inability to fix the attention, are the finger-posts which usually point to the commencement of the symptoms of overwork: their warning should be heeded in time, and the work stopped or reduced.

Overwork, however, is so frequently asserted where none exists, that great caution and much judgment require to be exercised, lest an error be committed and a boy be spoilt and made lazy by a diminution of work where no necessity exists. Thus, headaches are sometimes caused by working or sleeping in impure or pre-breathed air: often through a failure in sight, which could be rectified at once by appropriate spectacles; and most frequently these headaches are toxæmic, arising from imperfect action of some of the secretions, such as constipation, but especially from albuminuria. On several occasions I have seen boys, who presented all the signs of overwork, and from whom no further work could be obtained, cured of all head symptoms, as soon as the albuminuria was discovered, by an aperient and a milk diet only for twenty-four hours.

So far, however, from all schools being tainted with overwork, it is a well-known fact that schools exist where the pupils are practically taught nothing. It is difficult to discover this fact at first, except when several pupils are

transferred to a higher school, or from a higher school to the university, all of whom prove to be ignoramuses; for if only one pupil be transferred, he may be regarded as merely a dull or backward boy. The pupils from these schools usually return home happy, cheerful, and sleek in skin; and parents pay their cheque with pleasure, and recommend the schools to friends, little realizing the true state of the case.

There are other schools—all honour to them—where the principal not only recognizes, but performs, his duty to those placed under his care during this most critical period of life.

There are other head-masters who, in their desire to excel—and I believe there are no schools in the world equal to our English schools of all grades, though many faults still require rectifying—fail to assess the nature of the material which they have to mould, and hence do harm. Incalculable harm, I mean—not physical only—for such masters frustrate their own aims by piling on work *ad nauseam*, until a general intellectual distaste is engendered which lasts with life. And what total advantage has been gained? Perhaps two per cent. of the boys secure scholarships at the university, while ninety-eight per cent. have been taxed beyond their powers without any alleviating benefit.

I maintain that if schools were to continue their work for a whole year, except for the month's holiday which usually appertains to most workers, both teachers and taught would palpably break down. Yet, if the present *régime* were healthy and appropriate, this result could not occur. To employ a rough illustration, the process of education at present in vogue resembles, in a large number of instances, a game of skittles: parents stand their children up in health, and in three months teachers bowl them down: the parents set them up again, and again they fall.

If I were requested to inspect a school for the purpose

of ascertaining whether overwork prevailed, I should make my survey at the commencement and at the end of term. I should then compare the pupils at these epochs. I should not select isolated cases; for in all schools there are individuals who, under all conditions, look ruddy and healthy, while others, however well cared for, always resemble ghosts. These extreme cases are not to be accepted as types of underwork or overwork. But I should gauge the average. After an inspection of twenty schools, I believe I could tell the number of hours the pupils were worked, especially if I could ascertain their hours of sleep, and be present at their meals.

I fear that there must always be a certain amount of overwork in schools so long as teachers are inadequately equipped with the necessary professional skill of disciplinarians and trainers of children; for they cannot but lack the requisite judgment unless they possess sympathy with children, and an acquired acquaintance with their feelings and ways.

Some masters resort to this excess of pressure of work with the very laudable desire of restraining the animal instincts of youth. But it is a fact that over-pressure and brain irritation, on the one hand, are as likely as idleness and want of occupation, on the other, to increase physical and moral dangers amongst youth—dangers little regarded by the public, but always existent where the young are massed together. This is a well-known and frequently witnessed fact in the irritable brain of early insanity, but is not so easily observed under school-boy conditions. Intellectual pressure in the young seems to exert so decisive an influence upon the moral side of brain development, that all nurture and strength of character appear for a time to be in abeyance, and the boy tends to grow up without a moral backbone. One sees this only too frequently in overworked "scholars."

The symptoms of overwork in the young are many and various. Some are palpable enough on the surface: others equally so on search. I shall now classify these symptoms, as I desire the evidence to be unmistakable.

1. *The Character and Disposition* can be best gauged by comparing the individual at any given stage with his former self. In this way even trivial symptoms form a valuable index. Under this head I would include restlessness, inertness, mechanical obedience to orders, absence of power of origination, spirit and pluck vanished, answering in monosyllables, learning lessons as automata without intelligent interest, and returning home perfectly apathetic, even if they escape a breakdown.

2. *The General Appearance* is sallow, aspect unhealthy, a dark tinge under the eyes, dull-eyed, eruptions frequently on the skin; and arrest of development.

3. *The Muscular System.*—A diminution in muscular energy, indicated by the position of the extended hand, and the balance of the head. Muscles flabby and wasted, without elasticity; and gait, consequently, without the spring and vigour of youth.

4. *The Nervous System.*—Headaches, stammering, sleeplessness, restlessness, irritability, talking and walking in sleep, inability to fix the attention, hysteria, St. Vitus' dance, neurasthenia, shirking society, neuralgia, earache, brain-fever, and mania. Looking to the number of hours some children, especially girls, are compelled to work, their brains must of necessity be pretty well addled; and this condition is quite sufficient to account for the curiously muddled answers they give to school questions, which are often quoted as amusing, but which, on the contrary, to my mind are appalling in significance.

5. *The Circulatory System.*—The pallor of countenance, arising from deficiency of the red corpuscles of the blood, is one of the most marked symptoms, and, as I have already

pointed out, prevents the effective nourishment of the brain. Feebleness of pulse, too, is apparent.

6. *The Respiratory System.*—Shallow breathing, imperfectly inflated lungs, poor health, wasting, and subsequent death.

7. *The Digestive System.*—One of the commonest results of overwork is constipation, the *fons et origo* of endless evils in the young: fœtid breath, loss of appetite, and, in consequence, fastidiousness in the matter of food.

8. *The Urinary System.*—An exceedingly frequent effect of over-pressure is albuminuria, which entails many discomforts. This is a common cause of rejection at the medical examinations for the various Government services, as many as ten per cent. of the applicants failing from this defect alone.

9. *The Generative System.*—These functions become disordered in girls, entailing, in consequence, marked ill health, and their general condition prevents work of any value.

10. *Loss of Weight.*—Of all the symptoms of overwork, the most characteristic is **loss of weight,** showing that a crime is being committed against the body—a crime which leaves its permanent stamp upon the constitution.

But there are some who, while recognizing the fact, satisfy their consciences with the assertion that loss of weight during term arises from the greater amount of exercise taken at school, so that in reality it is a healthy sign. They seem to forget, however, that exercise to the point of loss of weight during the years of growth constitutes an additional and serious infringement upon health. But, were this the accurate interpretation, these weight-losers would concurrently improve in healthy appearance; while the contrary is true. Besides, if the proportionate height-and-weight tables be consulted, it will be found that the "vacation" weight is the normal, and the "term" weight abnormal.

Further, loss of weight also occurs in day-scholars, who eat from the same table throughout the year; so that it does not always arise from deficiency of food, as others assert.

I do not affirm that overwork is the sole cause of loss of weight at school; for improper feeding doubtless claims its share, as well as excessive physical exercise, insufficient sleep, and, finally, illness, which still largely consists of unprevented preventable diseases. But it is impossible to speak now of these causes separately. Suffice it to say, from whatever cause this condition arises, so grave a wrong is committed, that I must be pardoned if I use strong expressions, for serious evils demand vigorous language.

If too continuous a demand have been made upon the vital powers of the young, his capacity for resistance becomes inevitably enfeebled, whatever may have been its inherent strength; and, even if life itself be not shortened, diminution of weight ensues, with stunted body and premature age.

Thoughtfully consider the question! A child is placed at school during the formative stage of all development. If it be justly cared for in all respects, its height and weight should annually increase—not, it is true, with steady regularity. For spring and early summer are the periods of maximum increase in height, and minimum increase in weight; while during autumn the maximum growth in weight and minimum increase in height occur. In winter the growth in height and weight are diminished; and in certain years the height is augmented more rapidly than in others. But the weight always bears a certain ratio to the height, as is seen in the tables, carefully and laboriously worked out by various authors, and given on pages 100 to 105.

Is it not justifiable to employ forcible language when we see that, while under the teacher's care, and as the result

of overwork, over-exercise, or under-feeding, a child, though increasing in height (which, moreover, from the same causes, is below the normal rate), either remains stationary in weight, or, as is actually the case, during every term year after year—I could record endless instances—finishes the term many pounds lighter than at its commencement, regaining weight during the holidays, to be once more reduced on the return to school? I venture to state, after the maturest consideration, that this fact is an unpardonable injury to the constitution of the adolescent. And, moreover, whenever this loss of weight in body takes place, there is also, in exact proportion, a diminution of weight in brain, so that the teacher frustrates his own endeavours. And it cannot be controverted that, owing to the enlarged care at present bestowed upon the young in all schools, special consideration is demanded by reason of the fact, that many children now pass into school, who in former years would have been quite unfit for entry, owing to deficient physique, and to the hardships and trials which school life entailed.

If I assert that a teacher should make allowance in work for a pupil who for a season fails to grow, or for one who has grown abnormally—so that insufficient material has been left for brain growth—I may be thought pedantic. Yet this natural concession ought to be permitted by the real educator, who thinks more of his pupils' future than of his own apparent repute. Brain-growth always proceeds *pari passu* with body-growth. The intellect and mind act only through the brain, and it is this organ, in the highest state of efficiency, which the teacher requires as the basis of his work. Mental and bodily exercise alone can produce a symmetrical development of the mental faculties.

The **symptoms of overwork among girls** are more pronounced than those among boys, because in the latter case the long hours of work are compensated to some degree

by exercise; while this counteracting influence is more deficient with girls in consequence of the imperfectly organized system for their physical education. In girls' schools the various "systems" should not take the place of games; girls require the recreation of games, not "systems of exercise." If, at present, there be really no place suitable for play out-of-doors, then a bear-garden should be made of the schoolroom during play-time, so that the children may have their romp.

It may be asked, then, what I regard as the **functions of a school.** Candidly I reply, that I hold the highest ideal—and an ideal not beyond compass—of the school life of a nation; for, in that stage, it is mainly that a nation is created in physical development, in nobility of character, and in mental power of achievement. On teachers the serious, but happy, duty rests of realizing this possible ideal. And it is in the hope of stimulating all to look duties and responsibilities fairly in the face, and review their position, that I am now discussing the subject.

From my point of view, a school, in its ideal form, is a place where the young are sent for the purposes of a liberal and humanizing education, from about the ages of seven to nineteen: sometimes earlier, sometimes not so late, the rule being altered rather from necessity than choice. It is a place where regulation is so nicely devised and correlated, that the most **perfect health** possible is attained in mind, body, and character, since no effort is relaxed to render the mode of life accordant with the realization of the highest ends: where *work* is sufficient, but not excessive: where the natural bent of the individual mind is to some extent consulted, without the lassitude of persistent monotony: where *sleep* is ample, sufficient for the restoration of wearied, as well as the daily growth of fresh, brain-tissue: where *exercise*, while compulsory, is adapted to the several ages, sizes, and strength of the pupils, and varied as much as

possible, with some reference to the personal choice of the individual, and sufficient time is permitted for recreation and recuperation: where none are *detained in school*, under any pretext, after a meal has commenced, so that no pupil is compelled to "put up with" a cold, uncomfortable, and, too frequently, uneaten meal; but where all sit down punctually and together to well-served meals; and where also the *food* is adequate, plain, varied, and well-cooked, with sufficient time allowed for mastication. In this way only will the wholesome food *necessary* for work be enjoyed, and the delicacies of the pastry-cook eschewed. The cooking of food at school seems to be one of the chief grievances, the complaints in this respect being incessant and reasonable. The answer of those who cater will be, I fear, the difficulty of obtaining suitable cooks. "When I asked an ironmaster," says Emerson, "concerning the slag and cinder in railroad iron, his answer was, 'There is always good iron to be had. If there was cinder in the iron, it was because there was cinder in the pay.'" My view also requires the provision of ample *cubic space* in bedrooms and class-rooms; and finally, that earnest regard be devoted to *character*, so that no child may err through lack of the supervision which is his right during school life, while the character is unformed. For strength of character is a process of development quite as much as that of muscles and brains, and the two proceed *pari passu*. And liberty should never mean licence. Here it is that the personal character of the teacher holds so potent a sway over the pupil for good or evil—an influence which, when of the right kind, has engendered, too, a life-long esteem.

I fear that few schools attain this ideal, because few teachers realize *all* their responsibilities.

An ideal trainer of boys, the late Rev. H. H. Almond, gave the following hours as his estimate of **a day's life at school.**

TABLE XXX.

	Hours.
School and preparation	6
Drawing and singing	1
Bedroom	10
Meals	1½
Rest after meals	1
Prayers and school assemblies	½
Gymnasium	½
Games and fresh air	2½
Leisure	1
Life at school	24

Of the average school, the following description is, I am afraid, the more accurate account:—

In them *work* and school life mean that all brains are ground in the same mill, irrespective of individual capacity and strength: that *overwork* is prevalent in the form of excessive hours of study, which affect severely the younger pupils: that *sleep* is curtailed to a minimum, the younger pupils being allotted the same number of hours as the seniors, and the nascent brain, which demands a maximum of rest, becoming thus impoverished: that *exercise* is too much dependent upon the random decision of the pupils themselves, who, lacking the necessary knowledge, and the judgment of experience, become consequently hard task-masters: that small boys are frequently compelled to participate in the same games with big boys: that the delicate are left to rough it with the strong: that the boys themselves regulate the kind and extent of clothing which shall be worn at games, although they are devoid of the very rudiments of physiological knowledge: that the monotony of recreation is too oppressive and constant; and that this monotony consists of about thirteen weeks of running and fives, thirteen weeks of rowing and cricket, and thirteen weeks of football, interspersed with racquets and fives for the few, and cycling

and the gymnasium for the many: that *girls* are expected to show straight backs and good limbs, when exercise and recreation are only just beginning to receive systematic attention: that, while the *food* may be sufficient, plain, and wholesome, little regard is paid to the cooking; where the sameness is so assured that the food of each day of the week, and of every week of the term, is known beforehand, whereas it could be easily varied by the application of a little more forethought, without extra expense: that the *cubic space* of dormitories, cubicles, studies, and class-rooms, will scarcely bear investigation, and rarely commendation; and that children are left too much to follow the devices and desires of their own hearts before their force of character has been sufficiently cultivated to ensure right action.

The teacher has sometimes a grave problem before him in deciding between *weariness* and *laziness:* the one term meaning *getting tired:* the other, *unwillingness to stir.* Sir Michael Foster has shown that weariness of muscle arises in part from too rapid expenditure, and in part from the accumulation in the muscle of the deleterious products of the muscle's own activity. The material changes on which the activity of the nervous system depends are analogous, the weariness depending upon the expenditure of capital disproportionate to the accumulation, and on the other hand upon the clogging of the machinery with the products of energy.

Not only are children overworked, but I have noticed **the effects of overwork on teachers,** as well as pupil-teachers in the primary schools, and teachers in private families, who are utterly broken down, from causes due, in some instances, to payment by results, and in others, to sheer hard work in the superintendence of too many pupils.

So that if overwork exist amongst the taught, it also extends to the teacher. Let a teacher of fairly average vigour try to bear the strain of work for a year without

the long holidays. If he cannot, his work is unreasonably excessive. And if severe upon him, whose tissues have attained their maturity, how much more so upon the immature brain of his pupils!

Perhaps the strongest argument I can use to induce the abandonment of the present course is this: that an overworked teacher cannot teach with the intelligence, spirit, and evenness of temper that are absolutely essential in dealing with the formation of character in the young. Excessive toil entails apathy, and touchiness of temper: brings out the teacher's weak points, and keeps him on the borderline of ill health, where, should illness supervene, the interval between recovery and death is approximately insignificant.

I have not, however, the same sympathy with the overworked teacher that I have with the taught, for the former can usually lighten his labour; and in addition, he has completed his growth and development, so that the brain is more capable of sustaining strain.

I must add, however, that some of the saddest cases I have had to deal with, in the course of my professional career, have been those of breakdown from overwork in teachers, male and female; especially amongst pupil-teachers, who have to toil all day long with their children, and far into the night for themselves in preparing for their own examinations.

Of the teachers in *primary* schools, Sir Edwin Chadwick says, it has been found by statistics that the death-rate is twenty per cent., whilst in the army it is six per cent., in the navy four and a half per cent., and in prisons not more than three per cent.

In respect of teachers who, being strong and healthy, fail to appreciate, as many do, the value of good health: who are negligent about taking regular exercise; and who continue work into the small hours of the morning, night

after night, it only requires a slight acquaintance with their general state of health to predict, with almost mathematical certainty, when the breakdown will occur, preceded as a rule by a period of indifferent health, or a series of trivial ailments which are either disregarded, or assigned to other causes. And what is still more certain is, that work is never resumed with the former taste, care, and enthusiasm.

And, further, the schoolmistress will succumb long before the schoolmaster is affected by this unwise mode of life.

There are some parents who say—I have heard them myself—"I don't want my boy to work; and I don't care if he never does a stroke of work more than is necessary to enable him to remain at the school: I only want him to get the *tone* of the place." I need scarcely say that, in a large proportion of cases, a boy who lives a life of **underwork** is nearly sure to acquire the bad tone of the school, and miss all that is of greater value; and such a boy, while gaining no good for himself, soon becomes a source of harm to others. For, having learnt the art of doing a minimum of work, with the least possible trouble, he ends by losing self-respect and straightforwardness of character.

The **arrangement of work** is little less important than its quantity, if the greatest amount of sound work is to be obtained with benefit, instead of detriment, to the boy. An hour or an hour and a half at a time is ample; for the younger boys, three-quarters of an hour at a stretch would be preferable; and more is never easily endured. Even a few moments' respite will enable another hour's work to be satisfactorily accomplished.

In preparatory schools, where the boys mostly range from nine to fourteen years of age—and in most public schools which are conducted as day-schools—the long school hours—9 a.m. to 1 p.m., and 2.30 p.m. to 5 p.m., and then "preparation" of work at home in the evening—are still adopted.

No system could be more unwise and injurious: it is not only physically harmful alike to masters and boys, but forms also a severe trial to their temper and patience.

Even an adult is overstrained who sits at work for three hours at a time without rest; how much more unreasonable is it to expect a young active boy or girl to undergo the same spell, as is so often required?

I append here a "time-table" of the daily occupation at one of the best preparatory schools in existence in this country (Table XXXI., p. 272). I think the hours too long, but the master, a wise and experienced man, states that the work required for examinations cannot be completed in a shorter time. His arrangements otherwise require no alteration; the times for cessation of work and for play; and the sanitary arrangements, leave absolutely nothing to be desired.

An hour in and out of school alternately is an excellent plan, and is in force in some public schools. Where this course is not feasible, frequent "**breaks**" of a few minutes at **change of lessons** should always be arranged. This change of subject, too, prevents fatigue to a great extent, especially where the most difficult subjects are assigned, as they should always be, to the early part of the day.

I append a "time-table" of the work and play in public schools, which, with some minor alterations, roughly represents the daily work in these institutions (Table XXXII., p. 273).

I also append a "time-table" of the work as it is arranged in "*Public Day-Schools*" (Table XXXIII., p. 274).

As the evening preparation of lessons is at present the rule at nearly all schools, with a few excellent exceptions (such as the one whose time-table I have exhibited at p. 272), I purpose, first, discussing the whole question of **preparation of work,** and will then adduce *objections* to the exaction of this large amount of labour in the evening after school hours.

TABLE XXXI.—TIME-TABLE OF A PREPARATORY SCHOOL (AGES 9–14).

Day.	7.0	7.30	7.45 8.15	8.15 8.50	8.50 9.45	9.45 9.50	9.50 10.50	10.50 11.5	11.5 12.0	12.0 12.5	12.5 12.35	12.35 1.5	1.5 1.20	1.20	2.0 4.15	4.0	4.15 4.45	4.45 5.45	5.45 5.50	5.50 6.10	6.10 6.15	6.15 6.45	6.45 7.0	7.0 7.30	7.30 8.15	8.15	8.30 7.0
Monday.	Out of bed.	Prayers.	Breakfast.	Play.	School.	Play.	School.	Play and Lunch of Bread-and-butter.	School.	Play.	School.	School.	Play and Wash.	Dinner.	Play.	Bread-and-butter and Milk.	School.	School.	Play.	School.	Play.	School.	Play and Wash.	Tea.	Play.	Prayers.	Bed.
Tu.	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,
Wed.	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,
Th.	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,
Fri.	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,
Sat.	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	,,	2.0 8.15 Play.	Half-holiday.								,,	,,	,,	,,
Sunday.	7.30 Out of bed.	8.15 Prayers.	8.25 9.0 Break-fast.	9.0 10.15 Free-dom.	10.15 Start for Church.	1.40 Dinner.	2.15 4.0 Free-dom.	4.0 5.0 Lecture.	5.0 6.0 Hymn Practice.	6.0 6.30 Tea.	6.30 7.30 Reading.	7.30 Evening Service.	8.30 7.0 Bed.														

	h.	m.		h.	m.	
Work . .	6	10	per day;	33	40	per week.
Play . .	4	30	,,	28	45	,,
Sleep . .	10	30	,,			

Ages, 9–14.

There is no Evening Work. The boys have frequent intervals for Play, so that the rooms are often ventilated. With each change of hour there is change of lesson. Care is thus taken to prevent monotony of work, and equal care is used to provide against monotony of food.

TABLE XXXII.—TIME-TABLE OF PUBLIC BOARDING SCHOOLS (AGES 13–19).

Day.																		
Monday. Wednesday. Friday.	6.30	Out of bed.	,,	8.15 8.45	Breakfast.	9.15 10.15	School 2nd Lesson.	11.15 12.15	School 3rd Lesson.	1.30 2.0	Dinner.	2.15 3.0	Drawing, Music, or Play.	3.0 4.0	Play, or Preparation 4th Lesson.	4.0 5.0	School 4th Lesson.	5.0 6.0	School [*Never* Prepared Work]	6.0 6.30	Tea.	6.30 7.30	Freedom.	7.30 9.0	Preparation 1st Lesson.	9.0 9.30	Freedom.	9.30	Prayers.	9.45 6.30	Bed.
Tuesday. Thursday. Saturday.	7.0 7.15	Chapel.	,,	8.45 9.15	Preparation 2nd Lesson.	10.15 11.15	Preparation 3rd Lesson.	12.15 1.15	Play, or Preparation 4th Lesson.	1.15 1.30	Wash.	Play.																		
Sunday.	8.0	Out of bed.		10.30 11.15	Bible Lesson.	11.30 12.30	Chapel.	1.0 1.30	Dinner.	1.30 4.0	Freedom.	4.0 5.0	Chapel with Sermon.	5.15 5.45	Tea.	5.45 7.30	Freedom.	7.30 8.0	Lecture in winter.	8.0 9.30	Freedom.	9.30	Prayers.	9.45 6.30	Bed.						
	8.30	Litany.		9.0	Breakfast.																									

The scope of this arrangement of work provides an hour's preparation for an hour's, or sometimes two hours' work; and this varies every hour, every day, and in every form. The average work is from 24 to 28 hours per week, and every other day is a half-holiday.
The scheme might be greatly improved by having Prayers at 9 p.m., and Bed at 9.15 p.m.

TABLE XXXIII.—TIME-TABLE OF PUBLIC DAY-SCHOOLS (AGES 13–19).

Day.	9.30 to 11.15	11.15 11.30	11.30 1.0	1.0 2.0	2 to 4 or 3 to 5	Evening.
Monday. Tuesday. Wednesday. Thursday. Friday.	1st Lesson.	Freedom for Play.	2nd Lesson.	Time for Lunch and Play.	3rd Lesson.	Home Lessons take from 2 to 4 hours to prepare.
Saturday.	Whole Holiday.					
Sunday.	No School.					

It will be seen that the "Home Lessons," the hardest work of all, occupy from 2 to 4 hours in the evening, when the pupil is most unfit to learn.

It will also be noticed that when the time for "Travelling" to and fro is deducted, the balance left for "School Games" is most insufficient.

Were the whole holiday on Saturday abolished, and the period from 2 to 4 p.m. allotted every day to games, when the whole school is assembled, a distinct advantage would be gained.

I hold very strongly that the preparation of all school-work, except among the elder boys, should take place under the personal superintendence of a master, instead of the method of preparation being practically left exclusively to the decision of the boy. By this means alone will the abolition of **cribs** be secured. At present they are freely used, without shame, and the existing system of preparation of work prevents their abandonment. This dishonesty in work, mostly undetected, tends to undermine the character of a boy, with abiding injurious effects. The punishment of an occasional detected instance is not the way to eradicate the evil. The practice must be prevented; and the only mode of amelioration is an alteration of the existing system. Many a dull boy in a form who will not use the "crib" is thus left behind by school-fellows who are not so scrupulous. Not long ago I heard of a boy who was twenty-sixth in his form work; but at "unseen" lessons mounted to the third place. This was strong evidence, to my mind, that he honestly prepared his work without "cribs," but was beaten "in form" by his school-fellows who depended upon them.

I know that it is all but impossible, however earnest the master may be upon the subject, to abrogate the use of "cribs" altogether. But parents themselves can effectively aid in this reform if they will only impress upon their sons that it is better to be at the bottom of the form by honest, than at the top by dishonest, work. It should be remembered that genuine work at school, by engendering a conscientious habit, tends to ensure honourable work through life, while the contrary course is equally likely to produce the opposite result.

The reasons for the use of "cribs" are many and various. A boy is too lazy to devote sufficient time and attention to the preparation of his work; or the task prescribed is excessive and oppressive; and the dread of "superannuation"

may thus unfortunately almost compel a resort to these adventitious aids in the case of a boy who is not clever at classics, especially if he be very sensitive.

Another reason exists to a degree not sufficiently estimated, namely, that where the house-master is a mathematical, science, or modern-language master, and the boy, in obscure passages, may find difficulty in appealing to his form and classical master, as too much time, or too much trouble, may be involved in searching for him, the only ready way out of the difficulty is the "crib." This could easily be obviated by such work being prepared in the daytime, as well as in the evening, in the common-room, with the tutor present and superintending, but helping as little as possible—a hint or a question being often sufficient. By this means the existing and fair arrangement, which is in force in most public schools, might be continued of senior masters, whether for classics, mathematics, modern languages, or science, taking in rotation according to seniority the houses that become vacant. It would even be wise for mathematical and modern-language masters to insist on some alteration, even though the one I have suggested should not be adopted. The preceding remarks apply to the *day* preparation of work.

For *evening* preparation, it is customary in preparatory schools for the boys to work together, under the superintendence of the master, in their class-rooms. These boys are usually young, and require gentle handling. My convictions about "*Preparation*" for young boys are so well expressed by a friend in a note to me upon the subject, that I quote his words. He writes:—"I do not find it good to put the hardest work (the preparation of 'new work') at the end of the day, when boys are tired; nor do I think it good to let boys go to bed straight from exhausting or exciting work. We have no evening work after 6.45 p.m. In summer they go out-of-doors until 8.45 or 9 p.m.; in winter, the last hour is devoted to reading, writing letters, small carpentering,

cutting out, or games, which, from bagatelle to boxes of bricks, are provided in the dining-hall, kept for that purpose. I don't remember a single case of disturbed night's rest or sleep-walking since we did away with evening preparation." This is the statement of a most successful master of a large private school, which is a model from a sanatory point of view, and is morally all that can be desired.

In public day-schools, the large amount of work to be prepared at home in the evening (see Table XXXIII., p. 274) often compels a parent to provide a private tutor—who thus undertakes the work of teaching which really appertains to the masters in school.

In public schools the best plan is that senior boys should prepare their work in their own studies: the younger boys should not be allowed this liberty, but should assemble together for work in the evening in a common room under the superintendence and judicious help of a master. Where this plan has been tried it has worked admirably, and should become general. It produces a larger amount of work, and of a superior nature, from the boy, gives him plenty of fresh air during evening working hours in a large room in place of the vitiated air of a small study, and allows the elders the necessary quiet for their preparation. It is a great gain to the boys at the expense of a small portion of the freedom of the masters.

The surprising fact is that, when it is a common occurrence for boys and girls to fall asleep over the evening preparation of lessons—a clear indication of nature's own revolt—teachers have not themselves perceived and rectified the evil. It constantly happens that the most difficult and most novel work has to be prepared in the evening, when the energy of body and brain is exhausted, and when leisure for recuperation should be the sole duty. It is a serious question whether the educational profession should be *permitted* to enforce these prolonged hours of labour upon those whose

physical and mental growth is yet unfinished? They are *roused from sleep* at 6.30 a.m., and are imprisoned at work more or less until bedtime.

This question of the preparation of work in the evening demands immediate and adequate attention from masters and Governing Bodies. Sir Crichton Browne has truly said:—"The most arduous mental work required of a child ought to be imposed on it when its mind and body are in their prime vigour, between 9 a.m. and noon, and nothing but the lightest work should devolve upon it after 5 p.m. To the medical eye, 'preparation' seems to be peculiarly the work which should be carried on in school, with the constant assistance of the master, whose special mission it is to explain difficulties, to remove obstacles, evoke interest, and stimulate endeavour. It is, perhaps, because some masters do not take this view of their office, but fancy that their duty is performed when they prescribe tasks, listen to the repetition of them, scatter over them a few critical remarks, and diffuse around them that magnificent moral influence—which is not, after all, a good substitute for hard work—that tutors and evening governesses have so often to help boys and girls with their preparation, and that parents have to take upon themselves the real drudgery of teaching." This distinct flaw in our school system was never more completely or more justly described. He adds:—"Is any argument required to prove that that part of the day's work which involves most brain effort and brain exhaustion should not fall on these evening hours, when the nervous system is already fatigued, and when by the laws of its constitution it is least capable of exertion? This question is now ripe for alteration, and it is to be hoped, especially in our public day-schools, that the solution of it may be forthcoming."

The subject of **school examinations** is a wide one, and can only be briefly discussed in this treatise, and only so far, indeed, as it affects the mental and physical health of the

scholars. At present it is beyond question too frequently true, that whatever does not mean success in examinations is not regarded as education. In fact, examination is becoming, if it has not already become, the master of education instead of its handmaid and test. The disciplined attainment of knowledge, and the education of faculties and of character, often occupy a secondary place, the primary position being assigned to **success in examinations.** And in pursuing this course injury to health and bodily vigour is ignored. Moreover, the overpressure to which I have called attention arises mainly from examinations, rather than from ordinary study.

The element of examinations is a very important item in the school curriculum, and is not counted in estimating the amount of work at school. Yet it is largely to the influence of internal and external examinations that overwork is due. Examinations not only impose additional labour upon the regular school course, but also increase the standard of the normal school work. Examinations have various objects in view; and while necessary and excellent in their aim, they require constant scrutiny so that their tendency may not err on the side of excess and the degradation of the dignity of learning. Where the hours of regular school routine are justly prescribed, the extra application involved is incapable of harm; in fact, allowance for it is implied. But where this additional toil seriously tells is, when the regular routine is so hard, and the hours so long, that the pupils are always on the **borderline of overwork**; so that the entire strength of the growing child is fruitlessly consumed, and either impaired health or a complete breakdown ensues.

No one will contest the propriety of testing at school, from time to time, the solidity and progress of the individual's knowledge; since this process reveals not only the ability and advance of the pupil, but no less the capacity of the teacher.

School examinations are of two kinds—**test examinations,** and **competitive examinations.** These may be kept distinct, but the former too frequently merge into the latter.

The knowledge of a child requires "testing" when he goes to school by an **entrance examination,** in order to ascertain the nature and extent of the education he has already received. In this way the teacher is enabled to place him with school-fellows of equal attainments, and in a suitable class where the lessons will be accordant with his capacity.

In a school which is "popular" with parents, the entrance test-examination may prove a severe competitive trial, if the applications greatly exceed the vacancies; and this keen contest of able pupils with their equals, who have only attained their position by study which necessitated strain, continues at the examination at the end of every term throughout the school, and tends to a continual raising of the standard in every class. If this tendency be not watched by an able head-master, all the pupils may be unwittingly pushed at work in advance of their years and ability, and the strain may cause permanent damage to the immature brain-tissue.

It is necessary that an examination should be held at the end of "term," in order to gauge the periodical progress of each pupil. The teacher is thus enabled to estimate the expediency of advancing the pupil to a higher form, or keeping him where he is. Such a **term examination** both engenders a wholesome spirit of emulation in the class, and facilitates the teacher's work.

Some approximate equality of attainment must be preserved between boys of the same "form," and these examinations indicate removal to a higher "form," or retention in the lower. The boys are thus periodically enabled to compare their abilities and progress with those of the same age, and doing the same work as themselves. Without this

stimulus, many boys would be content with a dead level of mediocrity, and even able boys might be satisfied with the mere reputation of superiority, while, unconsciously, they were working below their powers.

The progress of a student, however, should not be judged entirely by the result of such an examination : the quality of the work and the industry displayed during the whole term should also enter into the judgment. Otherwise, a brilliant but lazy boy may, by **cram**, obtain an unfair advantage over a less able school-fellow, who has worked harder, and secured a more real scholarship.

It is an advantage of school examinations, when wisely arranged, that they prevent overwork by classifying pupils according to ability, rather than mere age or size. They also disclose the advance of the pupil, and teach him to do his best in the examination room; so that they fit him, not only for examinations which may hereafter determine his career in life, but also for using his knowledge at any time in the most effective way.

Wisely conducted **competitive examinations**—when the regular school work has not attained its limit, when they are unaccompanied by excessive mental anxiety and worry, and when the examiners are not too young—are no more injurious than reasonable competition in games. For individual to compete with individual, and school with school, in games, has no other than a salutary effect, provided the competitors are well trained and in vigorous health. But where insufficient and irregular exercise has preceded, an attempt at any feat of strength is dangerous. For a pupil, again, who has worked steadily through a term, or through his school-life, to compete with his equals at the end, stimulates ambition, as I have remarked, and produces other results of a beneficial character. If however, the pupil has been idle during a term, or during school-life, and attempts, in this undisciplined state, to make up lost time by dint of

sitting up at night, and doubling his hours of work, the result must be detrimental to mind and body, and, if frequently repeated, permanently disastrous. Unused brain-tissue becomes as limp as unused muscles.

Where a pupil has not sufficient ability to compete, and his tutor, failing to recognize the fact, enters him for the examination; or where a parent, in his ambition, greed, or penury, urges an incompetent child to this mental trial, a necessarily harmful issue can readily be foretold.

To demand, again, hard mental labour from a starved brain —a starvation arising from overgrowth, no less than from actual deficiency of food—is cruelty to children, and fraught with permanent damage to the nervous system.

In speaking of the injury resulting from the **excess of competitive examinations,** Smiles, in his work on "Life and Labour; or, Characteristics of Men of Industry, Culture, and Genius," remarks: "The waste of life, health, and sanity involved by the blood and brain tax of competitive examinations is terrible to contemplate. Instead of education fortifying the mind and body for the world's work, strengthening the character by habit and discipline, filling the mind with useful and practical knowledge, developing courage, patience, tenacity of purpose, and physical endurance as the foundation of the practical exercise of these great moral qualities, education, as now conducted, seems rather to be cramming, and forcing into the mind of certain descriptions of knowledge, calculated merely to enable one to 'pass' in a competitive examination, but of comparatively little use in the business of actual life."

The questions set by **examiners** for school examinations should obviously be appropriate to the age and ability of the pupil. I have seen, however, questions placed before *children* to which, I feel confident, many examiners themselves could not have given adequate answers. This is not an encouragement to the pupil, as examinations should be; and many an

intelligent, industrious, and sensitive child, galled at his incapacity to answer well, is thus rendered miserable, downhearted, and sick of work. The examination, instead of realizing its true function as a healthy stimulus to faculty, is thus converted into a moral scourge to character. Let it be realized by teachers that school troubles leave an indelible impression for life, and that a judicious ability to examine is as essential as the capacity to teach! It is not the men, but the system, that is in fault. Too often examiners are young men, who are not acquainted with the peculiar difficulties and wants of the student, and who are apt to set mere puzzles and ingenuities, which only perplex and fail to incite ability into exercise and expression.

Examiners should be men of experience in *teaching*, who, recognizing what a pupil ought to know at the stage he has reached, set real and serviceable questions, and not intellectual conundrums. The teacher, and the examiner, should remember that some of the dullest boys develop into the ablest men. Isaac Newton and Charles Darwin were both dull boys at school!

The harm occasioned by examinations is sometimes grave. This arises in most cases—

1. Where a pupil is urged beyond his capacity.

2. Where a boy is pushed on for examinations when he has outgrown his physical strength, and has really no surplus brain-power with which to work. The period of greatest growth in the boy, it should be remembered, is from thirteen to sixteen, but especially during the sixteenth year. This remark is doubly true of the girl, whose growth—with consequent immaturity of brain-tissue and diminished bodily strength—is far in excess of the boy's growth during the school age. The girl's growth is largest during the years from eleven to thirteen, but mainly during the thirteenth year.

3. An ambitious, but not a clever boy, or one who is

poor, and to whom a scholarship or exhibition is imperative for the continuance of his studies, works beyond his strength: the worry lest he should fail, the entailed sleeplessness at night, the prolonged toil during the day, and the frequent excess of the work beyond capacity, cause a complete, and in some cases a final, breakdown.

4. The excellent rule of **superannuation**, so essential in the wise conduct of schools, may be too rigidly enforced, and the examination of each "form" at the end of a term may then become a veritable competitive examination; since it means that the pupil who is not progressing up the school, form by form, according to age, is compelled to leave.

Mr. Pridgin Teale * has so well expressed himself on this point that I cannot resist the temptation to quote: "Every term the boy's position depends greatly upon the examination, and every boy is struggling hard to secure his 'remove,' with the fear of 'superannuation' staring him in the face. 'Superannuation,' as now carried out in many of our public schools, is a very serious, and is likely to become a very injurious and unjust, factor in education. When first introduced its object was good. It was intended to weed out boys hopelessly backward, who as big elder boys among younger ones were doing no good to themselves, and harm to their class-fellows. The effect, however, is insidious and progressive. At first none but idle and exceptionally dull boys fall under the rule; then, boys dull but not idle; and when all the exceptionally idle and dull boys have been cleared out, the rule still goes on closing in upon industrious and average boys, like an elastic band, ever acting, ever tightening, ever eating more deeply. Such a rule, when once it reaches industrious boys of good character, becomes unjustifiable and a positive wrong. Boys are dismissed from the

* "The Effects of Modern Systems of Compulsory Education and Competitive Examinations on the Mental and Physical Health of the Community." By Pridgin Teale, M.B., M.A., Oxon.

lower forms of public schools, not for any fault of their own, but because other boys more clever, or more skilfully coached, or less honest than themselves, manage to win more marks, and secure a 'remove.' Boys of sixteen are turned adrift, after going through the trials and drudgery of their freshmen's years, just as they reach the happiest, the most profitable period of public-school life, and being too old to be admitted into another public school, have to run the terrible risks of a private tutor's small community. This is cruel to the boys, cruel to the parents, and unjust to the school, which loses many of the steady though not brilliant boys; such boys are the backbone of the school and of the nation, and turn out some of the best workers in after-life, often, like the tortoise in the fable, proving winners in the long run. But the effect is far-reaching. It induces a constantly increasing competition in the lower forms of the school itself, and it compels more early pressure in the preparatory school in order to secure a boy against the dreaded 'superannuation.' The immense popularity of our public schools at the present time is not an unmixed good for the community, as it compels them to make a selection from their too numerous applicants, tempts them to resort to competition as an easy means of selection, and enables them by means of 'superannuation' to ride roughshod over the interests of dull and backward boys, who, above all, have need of the careful teaching and training for which such schools exist. Surely, in so doing, our great schools repudiate some of their most solemn obligations as national educational institutions, and whilst scrambling for the hares reject as worthless the not less valuable tortoises."

So closely connected with school examinations—of which, indeed, they form, or ought to form, a part—are the **examinations from schools** to the "**Universities,**" the "**professions,**" and "**public services,**" that I am unable to pass them over in silence. I would insist upon the justice and wisdom of the course that, after school examinations

have terminated, the knowledge of the young should still be tested by examinations, not only for "degrees," but also for the "government services." It would be simply insufferable to resort to the days of nepotism, and bestow these offices by patronage rather than by merit. For there can be no reasonable doubt that competitive examinations do, on the whole, bring the ablest, the most intelligent, the most industrious, and, as a rule, the strongest and healthiest to the front. Macaulay, in a speech which Sir George Trevelyan * declares to be the most masterly vindication of the principle of *Appointment by Competition* that was ever left unanswered, urged, "that men who distinguished themselves in their youth above their contemporaries, almost always keep to the end of their lives the start which they have gained."

Still, the testimony of a late head-master of Harrow, the Rev. Dr. Welldon, is very weighty. He says: "As I look backward upon the past, when I was a boy at school, there are two facts which strike me. One is, that a number of clever, brilliant boys I knew then have absolutely disappeared. I am, also, struck with the fact that a number—and, I might say, a large number—of the boys who were not remarkable are filling, with singular credit, distinguished positions in all parts of the world."

The purpose of examinations, however, should be the discovery of a boy's knowledge, and not the extent of his ignorance. Yet examiners too often merely strive to show the examinee how little he knows, by setting him catch questions, or intellectual puzzles. If examiners would simply set sound straightforward questions, so as to ascertain the real knowledge and attainments of the candidates, the whole race of **crammers**, so necessary at the present time, would be exterminated, greatly to the mental, moral, and physical welfare of the nation; and boys would be enabled to pass the examinations, far more than is now the case, for the

* "Life and Letters of Lord Macaulay," by Trevelyan, p. 341.

Public Services direct from school, and without this undesirable assistance of a new, and highly specialized, professional class.

In one word, it is most important for a youth who has been educated at a school, or university, that by means of an appropriate examination, his brain material should be assayed and stamped with a recognized die to show that it is a genuine article of a certain fineness and weight.

SCHOOL DISCIPLINE.

The subject of **School Discipline** stands first in importance in the welfare of a school. If discipline be maintained efficiently, the school will be happy and healthy throughout: if the discipline be lax, neither mental, moral, nor physical soundness is possible. School discipline is not synonymous with severity. The highest state of discipline is compatible with the greatest gentleness. It means only that wrong-doing and right-doing will uniformly receive their appropriate reward; and that rules for guidance must be implicitly complied with for the sake of the whole community. It means, too, that might shall not overrule right, and thus protects the weak from the strong. For it should be accepted as an axiom of rule that they who govern are placed in power largely for the defence of the weaker.

Under the head of the evening preparation of work I have described the excellence of the plan, for all but the elder boys, that work should be prepared under a master's eye, as an aid, amongst other objects, towards maintaining school discipline. This course provides for the care of the younger boys during the evenings, and prevents much of that rowdyism and **bullying** which are most rife during the long winter evenings, and which, I suppose, will always exist to some extent; but a salutary step will be gained when a master

can by any means reduce these evils, whether his mode be by occupying every spare moment of the boys' time, by his own personal influence and kindness of heart, or by showing his contempt for the bully. The forward insolent boy is not hurt by bullying, sometimes he is even benefited; while many a gentle and retiring boy, during the time he remains at school, is made seriously ill in consequence: his growth is arrested, his health undermined, and his spirit often crushed for the rest of his life. It is this boy who needs the protection of his master and of his elder school-fellows, which he frequently fails to receive.

It is said that bullying is all but extinct. In fact, I am told repeatedly that there is no such thing as bullying in our schools nowadays. I cheerfully admit that school games have eradicated bullying to a large degree. I state, however, without fear of contradiction, that there is no such bullying anywhere as still exists in boys' schools, and even also in girls' schools. Perhaps those who possess an unenviable ignorance of human nature believe the flattering tale. But they must have forgotten the revelations brought to light a few years ago, where a little boy was killed by the blows he received on the back from "*the big boys belonging to the upper form*," the blows causing concussion of the spine and death. It is said that "*boys will be boys;*" but I say that *boys ought to be boys*, and not brutes.

I would the tale were true. Probably those who know least about it are often the masters themselves, as it is most carefully concealed from them. The case of bullying at a day-school where the unfortunate victim lost his life is not an isolated one. The same bullying had continued at that school probably for years, and had it not been for the boy's death the baneful practice would have persisted unchecked because unknown, masters often believing that they have fulfilled all that was required of them with the termination of their class. I have heard of equally flagrant cases,

fortunately not resulting in death, where the præpostors were neither flogged nor dismissed from school. Bullying of all kinds is, unhappily, still exceedingly rife in all schools, and must remain so until masters take more care of boys out of school, and until the præpostor system is remodelled.

There are **two kinds of bullying**: the one, where a big or strong boy gives play to his vengeance, for innumerable reasons, upon a certain small or weak boy, whom he "goes for" at every opportunity, and without mercy; the other, where a "set" of boys, sometimes those of his own age and standing, sometimes even the whole house or school, make a mark of a lad, on various accounts, and render his school life literally unbearable. This may be done thoughtlessly, or purposely, as in placing a school-fellow in "coventry." How easy to inflict such torture; and yet how still more easy to prevent it! I knew an admirable instance of this, where a lad, who was neither big nor clever, but merely by his straightforward courage, befriended such an outcast, although warned by his chums that he himself would lose caste in his house; and who answered, that he cared not what he lost, so long as he did not assist in crushing the life and spirit out of a school-fellow!

As to the actual treatment of the bully, there is nothing to compare with corporal punishment. The boy who is brute and coward enough to inflict pain on a smaller school-fellow, is only sensible to such a mode of punishment from some one bigger or stronger than himself.

This leads me to refer to the subject of **præpostors** and *fagging*, in so far as they affect the health of individuals or schools. That the health—indeed, the whole life—of a boy is thus affected is beyond question; and the subject, therefore, is one for very grave consideration. I am aware of the danger of saying a word about old institutions—and this prefectorial system has endured for upwards of five hundred years—but the question should be resolutely faced, in order

that the maximum of good of which the system is capable may be secured with the minimum of evil.

There can be no shadow of doubt that "**sixth power**" is an excellent element for good in a school when held by the right boy, with the right master over him. It is really a protection of the little boy from the bully (who is often one about his own size), over whom no one but the sixth-form boy has any authority or power. It teaches the owner of the power manliness, self-reliance, responsibility, kindness of heart, and that mercy which "blesseth him that gives and him that takes." But when this power is possessed by a bad boy—and is there a master who has not had at one time or another such a sixth-form bully in his house?—it is a disastrous agency of evil, and can become, I believe, one of the worst instruments of oppression that can be devised.

The power, if it exist—*as I think it should*—ought to be the reward of *character* rather than of ability and strength, and not of ability or place alone. In this way the muscular brute would not only be prevented from exercising tyranny over a physically weaker school-fellow, thus marring the happiness of his school-life, but would also be hindered from creating the misery and ill-health which the depression of spirits resulting from tyranny inevitably produces.

I trust that the *present* system of "sixth power" may soon be abolished, and that a power so decisive for good or evil may only be conferred upon "sixth fellows" whose character and ability deserve it. We should then also get rid of the *weak* sixth fellows, who are often worse than *bad* fellows, since they become simply the tools of bad boys, and are often made to do what the bad boys would not venture upon themselves, or are compelled to "wink at" evil deeds through fear.

At present the **prefectorial system**, or "sixth-form power," includes—

1. Boys who use their power simply for their own

comfort and convenience, who do no good, and comparatively little direct, though a large amount of indirect, harm.

2. Boys who, while trying to act justly, yet in their administration are unreasonable and tyrannical through ignorance, or immature judgment, or want of thought.

3. Boys who possess no qualification but brute strength and their position in the school, and are the terror of all boys less strong than themselves.

4. Boys who, on account of high character, are a real guarantee for resistance to immorality, disorder, and tyranny, and who are thoughtful for others—boys who form the moral backbone of their school, and without whose aid a master would find it exceedingly difficult to govern his house in many of its important details; for such details would never come within his cognizance. Such a boy is an invaluable assistant to his master; and no small protection to his younger school-fellows, to whom he is a genuine friend.

Many will ask, Why should præpostors' power exist at all? Præpostors are appointed to maintain order when masters are not present, and where the scheme is properly organized they constitute the surest guarantee for the good government of a school. For there are times when masters must be absent from the boys; and it is during these hours, when masters know literally nothing of what occurs, that the worst offences are committed and the greatest bullying prevails.

Where the elder boys support the masters, and the masters support the elder boys, this evil is minimized. But under the present system these benefits are not fully secured. It should be an axiom, as I have stated, that **school government**, like all other governments, should defend the weak against the strong, and exalt *right* above *might*. Until the existing system is reorganized this principle will not be reduced to practice, but will remain inoperative. There is another valid reason why the institution of præpostors' power is excellent, not only in relation to the wellbeing of the

school, but also in respect of the individual who is selected to exercise it. For he is called upon to wield power while still under the guidance and control of others, and this is an invaluable lesson to learn while young. A great schoolmaster has said, "Præpostors are appointed not only for keeping order amongst the smaller boys, but to promote manliness, thoughtfulness, and a sense of responsibility among the elder." Arnold thought that the system would benefit the rulers even more than the ruled. And this happy effect would be produced were the system properly organized and the grant of the power determined by the character of the recipient.

No doubt, the reason why "sixth power" is not taken from a boy who is unfit to wield it is that the stamp inflicted upon the boy would be so serious that it would practically necessitate his removal from the school—a penalty too invidious to be enforced; but this is where the essence of the evil lies. "Sixth power," as the reward for being in the sixth, should not exist—the rule is wrong in principle, and is occasionally the cause of untold evil where it is in force—but the prefect or præpostor system should be substituted, and the conferment of power should be the reward of character in the first place, and of ability as a secondary consideration. The position should be tenable only from term to term, or during efficiency and good behaviour. At the end of each term the boy should give an account of his stewardship. If he has shown himself weak, incapable, or unfit, his tenure of office should naturally terminate, without the opprobrium of dismissal; whereas, if his duty has been righteously and judiciously fulfilled, the office would be again bestowed next term.

Such a prefectorial system would render the power a really beneficial influence, and prove an incalculable blessing to a school, by putting the right boys only in authority: the reward, too, would be as great as well deserved, and would produce splendid fellows.

It is said by some very able masters that the present system of all the "sixth" being præpostors is the best, on the ground that so few men are sufficient judges of character, or are so unbiased as to select only the most competent fellows —out of the sixth only—as præpostors; and that to select them on account of fitness for the post would be to return to the old days when choice of candidates held the place of competitive examinations, and with great abuse. In answer I would say, Let a council be formed each term, consisting of the head-master and house-masters, for the purpose of appointing the præpostors for the *term*, and let no master select the præpostors in his own house. Let the council be judge and jury, and let the house-master be the barrister who pleads for those of his own boys whom he thinks entitled to the post. Let him state their good points, and let every one in the council press the objections which show that they are unfit either from vice, or weakness of character. This plan would avoid the possibility of favouritism. Further, let no boy receive præpostor's power unless he be in the "sixth form," but add the condition that he be really capable of beneficially wielding it. If his fitness be doubtful, let him be placed on trial for a term, and if he prove a failure, let his re-election fail. By this means some of the muscular Christians, who are heads of "elevens," or of "fifteens," or of "the boats," would strive to become intellectual Christians as well. At the present time præpostor's power is too cheap to be adequately valued.

Circumstances, however, may arise in which it may be prudent to bestow præpostor's power upon one or more senior boys who have a high character, and have also sufficient physical strength, in order to prevent immorality and bullying, or to maintain the high tone of the boarding-house or school during a term when the "sixth form" are insufficient in number, in character, or in strength.

While the present system of "sixth power" is in force,

I think an additional protection to the boy should be instituted. For example, where an offence against the properly constituted authority of one of the sixth occurs, instead of the præpostor having the right to punish the offender forthwith, there should be a consultation with his colleagues in his house, not only to investigate the misdemeanour, but to punish it, and "minute" the punishment, and thus avoid the possibility of personal spleen and petty tyranny. These "minutes" should be presented to the house-master once a week.

I would recommend to the perusal of every lover of schools and scholars the "Life of Sir Rowland Hill." There, or in their work on "Public Education," * will be found a record of the work done by the Hill family for their school, and for education generally. Then followed Dr. Arnold, always regarded as the pioneer of the "sixth system;" as he was indeed really, though not literally. This system, however, though ably organized, instead of undergoing progressive development, is fifty per cent. less efficacious than it was when left in embryo by him half a century ago.

At the present time the work of **fagging** is more nominal than real. The old days of boot-cleaning and other menial services are over; and fagging chiefly consists now in running errands, fetching articles from the "tuck-shop," toasting, carrying hot water, cleaning out the study, and fagging at games, especially cricket. I look upon it as a wholesome system, as at present practised, for it teaches well-to-do little boys, who are often upstarts, to be obedient to others, and may make them more considerate to those beneath them in position. It also prevents little boys being at the mercy of every boy taller or stronger than himself, since no one has a right to fag him but a præpostor. The system also, when void of harshness and despotism, enforces the valuable teaching, in a concrete form, of the interdependence in service of

* Published by Whittaker, 1822.

the members of a community, and thus cultivates practically the sense of unity of associated life.

There is one point in which fagging may be simply intolerable, and a cause of ill-health. This occurs when the fag is kept employed at meal-times—for example, at breakfast, toasting—and thus is either prevented from obtaining his own breakfast, or is obliged to bolt it, on account of the allotted time for the meal having almost elapsed. The supervision of the master should guard against this evil.

It is a fundamental law of Nature that wrong-doing of whatever kind is followed by punishment: sometimes immediately, sometimes remotely, but always certainly and appropriately. Yet masters too often assign **punishments** which are the easiest for themselves to bestow, instead of endeavouring so to adjust the punishment to the offence as to exercise a benign influence on the character of the boy. Arbitrary punishments degrade rather than elevate; render the boy sullen, and create feelings of resentment; and irritate rather than make the transgressor admit their righteousness.

Punishments at school need serious thought and judgment, for, as at present administered, they certainly do not improve the mind or character. On the contrary, they frequently cause distinct harm to the body by depriving the delinquent of fresh air and exercise, and are, therefore, unless judiciously adapted, a hindrance to the legitimate work of school. It seems to be forgotten that the troublesome and lazy pupil requires as much fresh air and exercise as the tractable and industrious one, and the deprivation simply renders him still more unfit for his duties.

The proper education of the young for their position in the world is a serious matter; but I would state, with all the force of which I am capable, that the suitable punishments for their offences form an equally serious consideration; for by the judicious exercise of punishment the entire character may be made or marred. Further, I would urge, that to

allow a wrong, especially the first wrong, to go unpunished at the moment is often both unwise and unkind to the wrong-doer.

It is true that if we "train up a child in the way he should go, when he is old he will not depart from it;" it is also true that if we "spare the rod we spoil the child." Not that it is always necessary to *use* the rod, provided the child knows that it *will be* used on the occurrence of wrong conduct. It has been well said, that it is the **certainty of punishment** which alone produces a wholesome influence. And here it is that the qualities of the teacher come into play. For in no aspect is the character of a school exhibited more clearly than in its system of levying impositions. The greatest nicety of adjustment, perfect patience, judgment, and knowledge of a pupil are necessary in according the just penalty for transgression. The strong and capable head-master knows that when the majority of the pupils abide by school rules and lead upright lives, he can afford to be less severe, than he otherwise would be, towards the few who offend. The rise of a nation in culture and refinement is essentially accompanied by a mitigation of its punishments. The same law is true of schools, where a teacher can so elevate the general tone, that personal influence and persuasion will supersede most forms of penalty, and render the wholesale employment of such crude discipline as line-writing unnecessary.

In those schools where "discipline is (said to be) maintained without fear of punishment," I am at a loss to conceive the system by which it is secured: if there be not open wrong-doing, there must, I fear, be secret wrong-doing to a great extent. No boy should be sent to such a school.

That the brutal, indiscriminate, and incessant caning of former years—the expression rather of the master's spleen than the measure of the boy's deserts—has practically ceased is beyond question: it was exercised without any regard to the disposition of the boy, to his intellectual capacity, or to

the measurement of his offence, and was unseasoned by mercy. It engendered terror and hatred in the sensitive boy, the "don't care" spirit in the average boy, and a dogged determination to do nothing in the bad boy; while at the same time it afforded scope to his love of revenge, excluded all sympathy between the pupil and the teacher, and tended to degrade the character of both.

The Hills said, "Severity produces fear; an habitual state of fear becomes cowardice; and a coward is a liar."

On the other hand, I do not believe that boys can be controlled without occasional punishment. I do not think it well that boys who need punishment should have a large proportion of their play-time abstracted for the purpose of writing (and spoiling their hand-writing), or learning, lines, when they should be seeking exercise out-of-doors, and thus gaining and retaining health. Nor should the calling of boys by **opprobrious names** be tolerated, however stupid or annoying they may be.

School impositions are of various kinds; but the one which concerns us most, as principally adopted, is that senseless plan, unworthy of teachers, of **writing lines.** It does not improve the mind or elevate the character. It certainly spoils the handwriting; and is physically harmful to the body, in that it deprives the culprit of requisite fresh air and mental rest. I earnestly trust that some punishment will be devised more worthy of the intelligent and noble scholastic profession, and more in harmony with common sense. The regular school routine is already, by its frequent excess, detrimental to the brain, without this senseless addition, whose ignoble feature is its thoughtless ease of application.

School punishments are necessary; but the taught have a right to claim that the already overworked brain should not have its power of application injured in this fashion. Would it not be beneficial if the penalty assumed the form of some distasteful exercise in the open air, in place of the

more genial recreation of games? In this way the delinquents would not be deprived of the air and exercise necessary for work, and this adventitious imposition would not then interfere with the performance of the regular routine essential to education. The one plan would improve the health, and therefore the work; while the other entails ill-health, impedes growth, and prevents efficient work. I would, further, point out that it is not always the pupil who is at fault: the teacher sometimes errs. How else shall we account for the fact that some can teach, and maintain discipline, without punishments; while others can neither teach, nor keep order, without continual resort to this pernicious support of incompetence? Why is it, again, that the same pupil with one teacher will work well without punishment, while with another his impositions never fail? Is the pupil or the teacher at fault? Is it a question of tact, sympathy, and affection? Is it compatibility or incompatibility of temperament? I do not hesitate to say that the teacher is sometimes more blameworthy than the taught. And it seems to me to be the duty of a head-master or mistress, however inconvenient it may be, to remove a pupil from such an unhappy influence wherever it exists, and thus obviate a great wrong.

The very facility of giving "lines" encourages the practice. It would be interesting to analyze the hours when these "lines" are most frequently set. I have not a doubt that they are administered chiefly in that hungry hour before breakfast, and during that still more hungry hour before dinner, when reflection is in abeyance.

I am so convinced of the evils of this system of accessory work, that I would suggest that no "lines" should be set without a "minute" being entered in a public **punishment-book**, with the name of the teacher, the name of the pupil, the number of lines assigned, the day and hour on which they are to be shown, and the reason for their imposition.

And, further, that no pupil should be called upon to write his "lines" until the entry had been made. How strange some of these reasons would subsequently appear when deliberately expressed in writing! In this way the teacher who is always punishing would be known; the pupil who is frequently in disgrace would be detected, and perhaps some other means might be devised for attaining the desired end. It might be found, for instance, that if a name were reasonably entered more than three times in a term, a little corporal punishment, which would not entail extra mental work, or forfeit exercise, would have a salutary effect. And if this corporal punishment were suitably administered, by a teacher who was neither angry nor hungry, the maintenance of school discipline would be aided.

Not long since I heard of a master who set 4000 lines to his pupils before his breakfast! I also know of a case where a boy had lines given to write which occupied every moment of his play-time for ten days. I will admit that this boy richly deserved a severe punishment; but I am sure every one will also admit that, in allotting this form and extent of punishment, the punisher was worse than the offender, and showed himself unfit to be an educator of the young.

It is never wise to punish young boys for *restlessness and fidgeting* in school, since it is unnatural for them to sit still; but when they become so restless that work cannot be done, a few moments' run in the open air is the remedy. This condition usually arises from the nervous temperament of the boy, who, while undergoing the restraint of school hours, coupled with the impure air of class-rooms, becomes the more restless the more needful it is for him to fix his attention. It is the muscular sense asserting its need of activity.

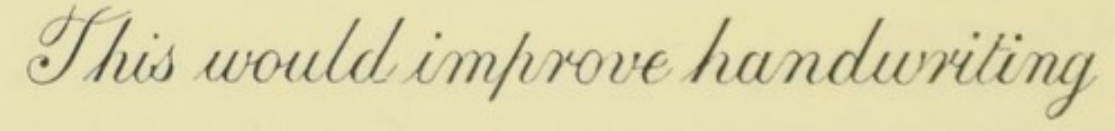
I would also urge that it is unwise and impolitic to give a boy, already usually overworked, extra work at all

as a punishment; whereas such work is, as a rule, so prescribed that he really learns nothing from it whatever, and the result, in addition to the moral disadvantages I have named, is simply a ruined handwriting.

The present mode of setting "lines" is pure senseless drudgery. It is just as sensible as putting prisoners on the treadmill, instead of making them work at some useful and profitable occupation. No one can gainsay that such a form of punishment, co-extensive, I fear, with all our English schools, is utterly unworthy of the able men who resort to it as an aid to school discipline.

If play-hours are really regarded as too long for necessary recreation, let them be legitimately curtailed by additional legitimate work, and not abridged by unreasonable punishments.

But if "lines" must still be written, then I recommend that, instead of the present mode of setting 300 lines of Latin or Greek, which are written as hastily, and, consequently, as badly, as can possibly be done, boys should be made to write copies in copy-books like "The Public-School Series of Copy Books." Thus—



By way of further improving the handwriting, which is often notoriously bad, I would suggest that the quantity might be reduced in proportion to the quality of the writing —*e.g.* if a boy had ten copies to write, and did them badly, he should write the whole; if moderately well, half might be excused; while if they were carefully finished so as to resemble the copperplate, one copy might suffice. They would thus learn the maxim, and have it impressed by the punishment, that *quality* of work is better than *quantity* in all the affairs of life.

Sometimes, I think, a good **birching,** when really necessary, would do far more good than "lines" to a little boy, while it would allow him legitimate time for exercise, secure his freedom from restraint, and keep him healthy; for it must be remembered that the naughty boy needs time for recreation just as much as the good boy, if health and strength are to be preserved.

A boy, too, often continues troublesome from day to day, simply because physical exercise has been debarred, so that he is really out of health. To obviate this, and yet provide a plan of punishment other than the birch, Mr. C. E. Paget says: "It follows, moreover, on these grounds that the plan of 'keeping in' boys for breaches of school discipline is objectionable, and that it is infinitely better to require some loss of recreation-time in more healthy ways. In large schools where **the drill-sergeant** is an institution, there will probably be found no more efficacious mode of dealing with forgetfulness and petty turbulences than by calling in the aid of this functionary; and if experience goes for anything, there is nothing in the whole course of school-life more horrible, detestable, or heartrending, than the having to give up engagements in school sports, social pursuits, or other school delights, to be, for the period of one hour, in the tender and merciful hands of the sergeant for the purposes of drill. He is the *bête noire* of unruly schoolboys' half holidays, and especially so when he parades his squad in full view of the, so far, virtuous brethren of the school; but in spite of the mental regrets of his recruits, he at least exercises a wholesome influence over them, and inflicts untold punishments for the infraction of school discipline without impairing their physical condition in any way, while at the same time lending 'tone' to their bodily exercises."

The days of punishing pupils with the **cane** for ignorance of lessons still, I regret to say, continue; and still is the

barbarous, not to say brutal, custom retained of administering this punishment upon the hand. If lessons are not learnt at the proper time, it is the master's duty patiently to see that they are learnt, even if they have to be done under his own supervision. Surely no one will maintain that the writing of a hundred lines, as at present practised, is a suitable punishment for a boy who is ignorant of his lesson: it seems almost ludicrous to say that the appropriate punishment is that he should be made to learn it, or even be *taught* it. The boy who plays when he should work must be made to work when he ought to play. When he thoroughly realizes that his lesson must be learnt sooner or later, he will generally prefer "sooner" to "later:" he is far too shrewd to attempt to play a losing game, although acute enough to attempt it when there is a doubt upon the subject. Since I wrote the above, I have read the following words of that able teacher, Dr. Farrar: "I would say that, in ordinary teaching, the more you punish in any way the worse master you are; that he is the best master who needs to punish least; and that, if such a thing should exist as a perfect master, it is probable that, so far as mere teaching is concerned, he would never have to punish at all. 'Impositions,' 'lessons to write out,' 'lines,' 'abstracts,' whatever they are called, are, in the essence of them, confessions of weakness. They are in many respects injurious; there is very little to be said for them. 'Write me out five hundred lines of Homer, with all the accents.' I have known masters say that, perhaps in a moment of anger, perhaps for no moral fault; but what a bad punishment! Scarcely ever will the good master have to resort to such a method. When a form sees that he is in earnest, that lessons *must* be learnt, that if they are neglected from idleness they will have to be said again; where the master is endowed with such gifts that he can encourage, help, sympathize, inspire, he will either find punishments all but

extinct, or he will measure by their frequency his own incapacity and his own failure."

Punishments are unquestionably required in the management of schools for misbehaviour of all kinds. But it is essential that they should be appropriate; be adjusted to the fault; be judiciously administered; and that they should affect the offender only, without falling on his school-fellows or his parents. The sense of equity in boys is wounded by unjust punishments.

If masters could realize how an injudicious, unwise, and needless punishment, administered in the heat of the moment, weakens their authority, and lowers them in the estimation of pupils, punishments would be at once reduced by at least one half, and made more reasonable in their imposition. **Rational punishments,** levied by rational human beings, are imperative in the training of the young; but the prevalent school system in this respect is devoid of reason, and simply degrades. The intent of all punishment is, or, perhaps I should rather say, should be, the culprit's reformation. Where is this end involved in existing methods?

Mr. Sidgwick has well said,* "It has always seemed to me that the most important principle of school discipline is to keep wholly apart, in two quite distinct classes, what I may call **school offences** and **moral offences.** Inattention, talking in school, unpunctuality, and even idleness in work, and, I may add, smoking and bound-breaking, on the one hand; and cheating, lying, dishonesty of any kind—whether in the work or otherwise—objectionable language, drunkenness, or vice of any kind, on the other. The boy should see without possibility of mistake—both by the kind of punishments, the loss of his master's respect, and even the man's tone and manner and look in dealing with the offenders—the vast difference between the two. From experience, I should say that there is a real danger of even

* "General Aims of the Teacher."

a good master making too much of small things, and so blurring this distinction; and note that, if he does so, he not merely demoralizes the average boy by lessening his respect for the school law, but he also lays a heavy burden on the conscientious boy, and tends to make him either morbid or a prig. It is a common mistake for writers, and private individuals who cannot write, to make—namely, to imply that there are no such things as highly conscientious boys. It is not true. You will be sure to find in a form of thirty boys, now and again, the fine-natured boy, with a high standard and an acute sensibility to blame, or, better still, to blameworthiness—a boy to whom not only lying or fraud or vice would be as impossible as stealing or murder, but who feels no temptation to idleness or deliberate law-breaking of any sort, but yet who, from constitution, may be unpunctual; from high spirits, may be talkative or inattentive; from accident, may neglect his lessons. Such a boy, if the master is pedantic or solemn about minor offences, will follow his bad lead only too surely, will lose the sense of proportion and become morbid. Therefore, I say, for all sakes, keep strongly before you the common-sense distinction. About the minor things be careful to make no fuss; even be cheerful and friendly in dealing with them. Don't act the stern lawgiver, but rather the companionable policeman —or, to use a better metaphor, the reluctant instrument of a law of nature."

The plan of quietly **requesting a parent to remove his boy** for some indiscretion, or even for various indiscretions, often wrongs the parents, and injures the boy for life, when he has, perhaps, only shown a boy's waywardness and wilfulness, and should simply and more effectively have been admonished by a severe whipping with a birch.

For grave evils, however—such as would, away from school, fall under the jurisdiction of the law—it may be necessary to hand a boy summarily back to his parents; in

fact, **expel** him, as being beyond the scope of school punishment to deal with. But expulsion, and the request to the parent to remove his boy, are too frequently resorted to, when the appropriate punishment, as I have said, would have been the employment of the *birch*.

The public investigation of a recent case where a boy was taxed with a serious crime, and where insufficient evidence was forthcoming to bear the sifting of a formal trial, must have made it clear to all school authorities that a moral certainty is an inadequate reason for action. A boy should not be condemned and expelled because in the mere *opinion* of his masters he is guilty. He must be proved guilty beyond reasonable doubt, or school management becomes impossible, and serious and permanent wrong is perpetrated.

The plan, again, of **putting a boy down from a higher to a lower form** punishes his school-fellows more than the offender. It disgraces the form into which he is placed, and is bad for the boy himself, since it makes him lazy, owing to the easier work, and thus affords him time and opportunity for exerting a bad influence on the boys among whom he is transferred. Moreover, it is only an occasional sensitive boy who feels the punishment at all.

When a big boy cannot accomplish his work and cannot be managed without **constant punishing**, some gross fault somewhere exists ; and if a change of masters cannot produce a better state of affairs, the boy should be removed from school for the sake of others.

I would further urge, that when the whip or spur is continually required in teaching, there is either some defect in the system of teaching, or the master has not the power to interest his pupil, or the boy is being taught what he has not, at his present stage, the power to grasp; whereas, if another system, or another master, be tried, or fresh work be given, there are few pupils who would not reward the master by necessitating the use of the curb rather than of

the whip or spur. Is not the constant complaint one hears about the "modern side" of our public schools being a refuge for the idle boys, owing rather to the incapacity of the masters than to any other cause? Is any trouble taken really to interest them?

But though I advise the use of the *birch* as the most suitable mode of punishment for some school offences, I would impress the importance of its being inflicted with great judgment and after patient trial and persuasion, so that in its exercise wrong may not be permanently inflicted on a boy who may be really unaccountable. I can call to mind a boy at school, who, generally, was a fairly good boy, did his work, and gave little trouble; but every now and then a period of insubordination would intervene: he would irritate, annoy, and commit every act of irregularity that he could conceive: this would last for days, until something prompted him to "let off" the steam by a long ride on his bicycle, or other energetic means, when he would return at once to his former docile habits. During his morbid intervals, the question of whipping him more than once arose—and he richly deserved it, apparently—but I felt it my duty, knowing his freaks, to use my influence to prevent it, since at those periods he was quite irresponsible for his acts; and I maintained that he should be either removed from school as unmanageable amongst a number, or be handed over to my care at the sick-house, to be treated as a diseased, instead of a naughty, boy. For several days he would remain with me, doing everything that was irrational, when he would return to school in his right mind and go through his duty as usual. To thrash such a boy would be utterly wrong. This, no doubt, is an extreme case, but minor instances occur of a similar character, in which great discrimination should be exercised, and conscientious judgment brought to bear before using such punishments, lest a great wrong, never to be obliterated, may be committed. It is *sometimes* wrong so to

punish; *often* wrong to withhold the punishment when deserved.

And to ensure this conscientious treatment, I would ask, ought not the major school offences to be dealt with by the head-master and some of his senior colleagues, and not by the head-master alone? And ought not a **code of rules,** such as the Hill brothers devised, to be in force in schools, in order that parents may be protected, and boys may know that just and uniform action will be adopted for each offence, so that all possibility of momentary temper or caprice may be removed? Further, ought not every offence, and every **punishment, to be entered in a "minute" book** kept by the head-master? We should not then hear of the same offence, committed by different individuals, being punished in diametrically opposite and irrational modes.

In punishing boys at school, it must not be forgotten that the issues at stake are great. They are the keenest critics in the world; and a whole life may be, and is frequently, blighted by an unjust sentence at school—to say nothing of the wrong inflicted on parents and friends.

I repeat that in the relation of offences to punishments at school, a greater and more enduring detriment may be involved in unwise and unjust treatment than is entailed by the offence itself.

But while I have insisted on the importance of retaining the birch in the punishment of offences by the young, it should obviously be used with circumspection and discrimination, and not be employed "wholesale." It is, further, evident that every delinquent should know clearly beforehand for **what offence he is to receive this corporal punishment.** Yet this reasonable course is not always pursued; for it is on record that a head-master once read out a list of boys who were to "stay down" to be whipped. When it came to the turn of one of them, he remonstrated, as he was unacquainted with the wrong for which he was about to be

punished. The answer he received was, "Yes, he must be whipped, as his name was down on the list." After undergoing the ordeal, the boy still pressed to know the reason of his punishment. It was eventually ascertained, on investigation, that the head-master had picked up the wrong list from his study-table: the list of boys whom he whipped was a list of names furnished to him of boys who wished to be "confirmed." What a preparation for Confirmation! What feelings of hatred and malice must have mingled with the religious tuition which those boys underwent at that important epoch in their lives!

There is another system of controlling boys, involving neither corporal punishment, nor writing and learning lines. I refer to the use of wholesome "chaff" by the master, which, when exercised with judgment and true sympathy, is of untold value in keeping boys under control. It must, however, be borne in mind that it is the *fault* which should be ridiculed, and not the boy who has committed it. At the same time, it cannot be too carefully remembered, that in unskilful or unsympathetic hands even this method may become an instrument of torture. It should, therefore, never be used unless the master who employs it is quite sure that he is entirely in sympathy with his boys, and has also the power of making them appreciate this fact. It is capable of proving so sharp a weapon that it should be carefully and tenderly brought into play; and especially should the user recollect that, since the boy cannot retaliate, a misjudged employment of the method, efficacious in general though it is, may induce simply a tendency to cringe, with hidden hatred, and without a particle of reforming or refining power.

One of the best school disciplinarians I ever knew, who loved boys and was beloved, could keep them under control almost by this means alone. Where a master is honoured and respected by his boys, who feel that his sympathies are

with them, they will strive to do right rather than arouse his indignation by wrong-doing.

It may, perhaps, not be amiss to append what I consider to be a **rational scale of punishment** for schools :—

1. *Expulsion*, when the nature of the offence, clearly proved, is such as to come within the law of the land rather than within the narrower scope of school discipline.

2. *Private removal*, when the boy gains no good for himself, and proves a source of evil to others: sometimes it may even be necessary to remove a "set" of boys to prevent insubordination.

3. *Corporal punishment* for the graver school misdemeanours. This plan should be tried, if possible, even before removal, and thus allow the boy every chance of redeeming his character and remaining at school.

4. *The drill-sergeant* for the lesser misdemeanours, varying the time according to the degree of the offence. The names of delinquents should be entered in a register kept for this purpose, and the sergeant should receive "orders" to drill those only whose names are previously recorded.

5. *Copper-plate copies* for minor faults, such as unpunctuality, and manifest laziness. Where lessons, however, are not known, the boy should be compelled to learn them until he has succeeded, and this should form the only punishment.

6. *Wholesome chaff*, which is often preventively effective.

As I have recommended the proper use of **corporal punishment,** I should like to state more explicitly the scope of my approval and disapproval in this respect.

1. *I approve* of the use of this punishment rather than expulsion, for some of the graver school offences; and for the continual repetition of lesser faults, which other punishments have failed to control.

I approve of the use of the "*birch*" only, for it simply temporarily stings, and neither damages the skin nor the subjacent structures. It should be administered only on the

place suggested by Nature; and thus applied I continue to advocate it, as one of the kindest, most impressive, and least injurious punishments. Further, it should be invariably administered by the head-master, or in his presence, after a written report of the offence, and never by the "form master."

2. *I entirely disapprove* of the use of the *cane*, for it can act as an instrument of torture, severely bruising the skin and subjacent tissues for days and weeks. Moreover, a vindictive cut with the cane on the hand, by a "form master," can be too easily given in the moment of exasperation. This could not occur where the birch was employed: the use of the birch, too, allows time for the temper to subside before its application.

I altogether disapprove of corporal punishment for elder boys, except for the "bully." The knowledge that the birch is always ready would be quite sufficient to act as a deterrent, and would render its employment seldom necessary. The use of the "cat" was only required a very few times to put an end to "garrotting." The brutal bully, whether man or boy, is always a coward, and dreads nothing so much as the personal application of the treatment he himself employs.

The **ears should never be boxed.** This vicious practice—entailing inflammation of the ear, meningitis, and sometimes death—is still, I regret to observe, in force at some of even the best schools. The **back should never be thumped,** nor should a child be held by the shoulders and shaken—a very common practice, and one which I have known to produce spine disease and death. I need scarcely add that **rulers and sticks** should never be used.

I have written strongly about corporal punishment, not because I desire to see it frequently repeated, nor because I think it necessary to be constantly resorted to; but because I hear continually of far greater wrongs being inflicted, and mostly in those schools where corporal punishment has

practically disappeared. To illustrate my position :—a boy commits a grave fault. A good whipping would probably have a permanently beneficial effect; instead of this he is quietly removed from school. No other school will receive him; he is sent to a private tutor to live with many other delinquents like himself; all his happy boyhood is crushed, his life blighted, and his parents disgraced. What I urge is, that a sound whipping would have been the appropriate punishment, and would morally have benefited the boy; whereas his removal from school has simply affixed a life-long stigma on himself and his friends, with no beneficial result whatever. In fact, the punishment was out of proportion to the offence, and inappropriate in the highest degree; for it failed to effect the desired end which all punishment should, at least, aim at securing.

It must not be thought that schools are mainly to blame for the infliction of unmerited punishment: the practice is almost entirely owing to the **popular outcry against corporal punishment** in any form. It is well known that no government or body of men, in any department of life, can long withstand a popular demand, whatever may be its nature. In years gone by popular feeling sanctioned corporal punishment to wrongful excess; it now favours, and with the implication of evil consequences, its total abolition.

In advocating the just and proper retention of corporal punishment in schools, I am aware that opposition has been expressed by some of the best schoolmasters. Amongst them I would name Mr. Maurice Hime, of Foyle College, Londonderry, who has written—

"Persuasion, my experience more and more assures me, ought to be the grand art cultivated by the schoolmaster. To be able to convince his pupils that truth, and purity, and industry, and chivalrous tenderness towards the young, and manliness, are better, far, far better than impurity, and untruth, and indolence, and bullying, and unmanliness, and

cowardliness—this is the great business of a schoolmaster's life. To perform this business satisfactorily is really not a particularly arduous task. The boys who frequent our schools (I include all schools except reformatories) are, generally speaking, desirous individually to be good, not bad. It is the schoolmaster's province to see that his boys, as a collective body, have a similar desire. To succeed in establishing amongst them a love of right and a hatred of wrong can, I am convinced, only be effected by convincing them, through their reason, that wrong ought to be hated on account of its own evil nature and evil consequences, and that right ought to be loved on account of its amiable nature, and the endless good that flows from it. Corporal punishment, I am satisfied, will never convince a boy of these things."

If boys can be thus restrained from evil, corporal punishment should of course be banished. To inflict it for idleness, inattention, unpunctuality, and general troublesomeness, is, I believe, wrong. But to employ it for gross immoralities, including thieving and lying, for repeated bullying and brutality, for drinking, and for settled insubordination to rules, is, I still urge, a most wholesome and fitting practice, instead of resorting to the boy's removal from school and the consequent cancelling of his chance of reformation of character.

So heartily do I agree with what Dr. E. A. Abbott, sometime head-master of the City of London School, has said concerning punishments, that I cannot resist the temptation of extracting from his little book on "Home Teaching." If his precepts were applied, personal home training of young children would all but obviate the necessity of punishment at school, since it is neglect of this training during childhood that leads to much vice at school, and in the world. He says: "In the reaction against arbitrary or unapt punishments, some people have been led to the conclusion

that, as an invariable rule, all punishment should be natural, that is, should follow naturally as the result of the offence. If, for example, a child tells a lie, he is to be punished (so it is maintained) by the distrust which naturally awaits his future statements, till he has regained a character for truthfulness.

"But it seems clear that this rule cannot be always adopted, either with physical or moral errors. If a child plays with fire, a natural and convenient punishment would no doubt be that he should burn his fingers in moderation. But Nature in such cases is not moderate, and may punish the child once for all by leaving no child to punish a second time, or by grievous and permanent crippling or disfigurement. In the same way with moral offences, if a boy who has told a lie is to be treated for a length of time as a liar, his self-respect may be permanently lowered or destroyed, and so he may become a moral cripple.

"The best rule seems to be that parents and teachers, in punishing, should avoid all appearance of vindictiveness, punishing not because *they* are injured or inconvenienced, but because a wrong has been done and right demands correction and amendment. Provided the child feels that the punisher has no pleasure in punishing, it will not always be necessary that he should recognize exactly that the punishment springs by a natural sequence out of the offence. . . . Flogging does not spring naturally out of lying; but in spite of any philosophic dicta to the contrary, there is more hope of curing a boy of lying by flogging him, than by distrusting him for days together, as a liar. . . . Further, let it be remembered that punishment, if fit, is effective in proportion as it is certain and speedy. It ought not, therefore, to be delayed, by one who is conscious of being wholly free from personal irritation, any longer than is necessary to investigate the truth of the charge and select the fittest penalty."

A head-master who is constantly requesting parents to

remove their boys on account of offences, instead of looking upon the boys, together with their faults, as "necessaries," should be regarded as a failure, producing more harm even than the misconduct of his boys. Boys are sent to school to be educated *completely;* not simply to be *mentally* taught so many hours a day, and then left to themselves for at least eighteen hours a day, with the punishment of dismissal on the occasion of (frequently venial) wrong-doing.

Head-masters are needed who know how to strike hard at boys' offences, and yet retain their hearts' respect and love.

There is no doubt that a time of trial, of one kind or another, occurs to all boys at school. Happy the boy who has his first great trial early in life, while he is still pliable, and before he ventures into the world. With some boys the trial is manfully met and overcome, and increased strength of character results. With others, often those *only weak* in character, the trial is overpowering, and they fall—fall terribly sometimes. I wish I could inscribe deeply in the heart of every master who has boys to educate that it is his office—indeed, his solemn duty—to act the good Samaritan by such a boy, and strive by justly adapted punishment, by management, and especially by love, to win him back at school into the right path. It is these uninteresting, unmanageable, and morally-neglected boys who should have a master's chief attention; whereas these unfortunates are only too often turned away, while the interesting and lovable boys are apt to be petted, pampered, and spoiled. So strongly do I feel the power for good that a really capable, conscientious master possesses over a boy under his care, that I would scarcely lose hope of even the worst boy, if such a master would honestly strive to gain the boy's heart, and let him feel that, in spite of his unlovable nature and his personal unworthiness, he still possessed his master's sympathy and care.

It must not be forgotten that our great Public Schools

belong to the Nation. They are administered by a "governing body" for the Nation's benefit; the Governing Body appointing a head-master to organize and supervise the machinery necessary for their appropriate working. Now, it seems to me that, as they are the schools of the nation, **no member of a school should be expelled**—except under that most salutary rule of "superannuation," which, exercised with prudence and equity, should be compulsory in all public schools—**without the previous sanction of the "governing body,"** or at all events without the parent's right of appeal to that body before the decree is executed. Were this legitimate right conceded to parents, school questions would not so frequently be submitted to the bar of public opinion in the *Times* newspaper, but would be equitably and finally settled by the "governing body" of the school. Moreover, such a rule is simply just, for a public-school boy can only enter a public school by bringing a good character, and if he lose his character at school, he should possess the opportunity of redeeming it there.

This rule would obviate all personal spleen in the dismissal of boys, and would prevent their being quietly removed for trivial, though troublesome, offences. It would also cause the school authorities themselves to endeavour at least to deal with them, as should be the case, in the first instance. Moreover, did this rule exist it would probably never require to be *enforced:* the very fact of its existence would render its execution unnecessary, as it would completely extinguish the arbitrary exercise of irresponsible power, which so few are capable of applying with justice, or with judgment.

Above all punishments required in the management of a large number of boys, I would urge the plan of **rewards** for good conduct—rather than the converse of punishing bad conduct.

Both plans are required, and answer; but rewarding

approved conduct is, I think, the more salutary, and tends, where it can be carried out, to promote the health and well-being of boys, and the happiness of masters. A kind word or a kind act, seasonably bestowed, will often win a boy and urge him to strive to do right, when no punishment will produce any beneficial effect, and will make him feel that his master is not a slave-driver, but a humane and sympathizing friend. Most boys—but not all, by any means—are like young animals: treat them kindly in breaking them in, and they become amenable to guidance; reverse the system, and their power of obstinacy and carefully-planned waywardness is at once revealed and confirmed.

It should be borne in mind that by rewarding good conduct the commission of evil is prevented; and this is an enormous gain, since it establishes right-doing as a *habit*, which after a time is not easily violated. On the other hand, punishing bad conduct has the great defect that it can only be put in action after the offence has taken place; and thus the habit of wrong-doing is formed, while the perpetrator, even before the evil is committed, will sink into the debased practice of weighing in his mind the amount and kind of punishment that is likely to be inflicted.

In our prisons the system of giving marks daily for good conduct is of great value, for it creates a habit of endeavouring to act rightfully, which probably has never been promoted before, and tends to become of permanent benefit to the prisoner.

In concluding this most important subject of school discipline, I cannot but express the feeling of scorn which arises when I hear of a boy unwisely punished for some fault. This feeling, however, is soon followed by the sorrow of contemplating the ill effect it produces on the recipient, when an equitable punishment would have ensured a beneficent result. **No boy resents a just punishment**; but

an inexpressible sense of wrong fills his heart when he is unjustly or capriciously punished. On the other hand, a boy feels contempt for a master when he fails to receive a punishment which he has richly deserved. There are some few masters, however, sufficiently strong and magnanimous to **withhold a well-merited punishment on an offender** who has thoroughly and penitently realized the evil he has committed. Such magnanimity may sometimes be suitably bestowed, and will exercise a far more lasting effect on the boy than the most severe punishment, and thus possibly prove a turning-point in his life.

There is no subject in the whole of this treatise, which I feel so diffident in attempting to handle as **the code of honour** *amongst boys at school*, for it is fraught with momentous consequences, which demand, for its complete treatment, an abler pen than mine.

I am convinced that no subject is involved in the whole course of school-boy life, on which moral health, and moral disease, so largely depend as that of the code of honour. It determines the entire *tone* of a school. The *moral character* of masters will influence the tone greatly: the *code of honour* amongst boys themselves, *much more*. High principle amongst masters, *especially in the smallest affairs of life*, which boys keenly notice, *may* influence the *few;* the code of honour of the boys *will* affect the *many*.

So acute are boys in their observation of the characters and dispositions of masters, that a boy, only twelve years of age, said, in speaking of his "form-master" of whom he was afraid, "I am sure Mr. X—— has really a kind heart, because he is so fond of his kitten."

If masters can only influence for good the few right-minded boys, these will impress the weight of their character upon the many; and thus the code of honour of the entire school may ultimately be raised to the highest attainable level.

This code varies greatly in different schools, and in the same school at different times, depending largely upon the circumstance of the masters endeavouring to influence the characters of their pupils; or simply teaching their class a certain number of hours, and then dismissing them from their supervision and thought.

The code of honour amongst boys is unique: nothing else exactly resembles it in the world. It rises to the highest summit of virtue; it descends to almost the deeps of degradation. So exacting is this code, that, on the occurrence of a wrong, an innocent boy who is accused, and on whom suspicion rests, will suffer any punishment which a master may inflict, without a murmur, rather than, by a word, bring the fault home to the guilty.

On the other hand, the code may ensure that the sinner will permit the innocent to suffer, rather than manfully admit his guilt, undergo the penalty, clear his conscience, and exonerate his fellow. Worse still, the boys' sense of honour is often at so low an ebb, that other school-fellows will be cognizant of the guilty one, endorse his despicable conduct, and abstain from bringing the force of school *public opinion* to bear upon him, and compel him to acknowledgment. Not for a moment would I counsel, or even countenance, that a school-fellow should quietly and privately **sneak** upon the wrong-doer. But the public opinion of the school ought always to be on the side of justice; and the honour of a school is at stake when one of its members has not only disgraced himself by misconduct, but is doubly stained by allowing an innocent school-fellow to suffer in his stead. In such a case, the whole school should insist upon the culprit himself admitting his guilt. Failing this, one of the leading boys should publicly announce his intention of saving the honour of the school by impeaching the offender.

Sometimes a "set" of boys will undermine the character of a whole school; and, although their evil deeds are well

known throughout the school, no boy is courageous and honourable enough to acquaint the master, and thus prevent others being led astray. Such an act of disclosure on the part of a boy would not be *sneaking*, but true manliness.

Some boys, again, will commit a silly indiscretion—what is frequently called a "boy's trick"—and annoy a master, who, in the interests of discipline, demands the name of the defaulter. The whole "form," or the whole school, remains silent. Consequently the form, or school, is punished in a body, and the offender is mean enough tacitly to concur. An honourable admission by the offender, with manly acceptance of the penalty, signally serves his fellows by a fruitful lesson of truthfulness and moral courage, and at the same time stamps upon his own character an impress never to be effaced. A fine ambition for every boy!

It has been well said, "The courage wanted to-day is not the courage to face the cannon's mouth—there is plenty of that in England's make-up—but the courage that dares to be true. The men who are wanted are men who believe it is right to tell the truth; men to stand erect, without the crook in the back that leads often to success, but not to virtue—that is, manliness, which is more than opposition to vice."

But if the offender is not prepared to acknowledge his error bravely, the whole form, or school, should bring the weight of its influence to bear, and chivalrously aid the master, since his efforts are obviously directed to the maintenance of the school's honour, and therefore of the honour of each boy. Why is the boys' code of honour so frequently of an inferior type?

The code has reached the abyss of degradation when a boy who has received a well-deserved punishment is regarded as a hero by his school-fellows.

Further, one boy will sometimes *steal* from a school-fellow: another will *lie* to his master: another, *immoral*

himself, will endeavour to degrade the standard of purity: others will *smoke*, and *drink:* others, dishonestly prepare their work with *cribs*, and thus gain an undue advantage over more honourable competitors. The master will naturally use every effort to detect the wrong-doers. Yet this code of so-called honour permits boys to use arts for screening a culprit; and they thwart the master in every conceivable way, even to throwing him on the wrong scent, instead of seeking to clear the honour of the school. This nobler course, too, would arrest the guilty early in his downward career, for

> ". . . . facilis descensus Averno;
> Noctes atque dies patet atri janua Ditis:
> Sed revocare gradum, superasque evadere ad auras,
> Hoc opus, hic labor est." *

In justice to boys, however, I am bound to add that, in my opinion, this course could be more easily effected were the scale of punishment more equitably graduated, and unaffected by caprice or momentary temper.

Into the details of the acts which testify to the absence of fine feeling, and of the sense of rectitude, I need not enter. They include the obnoxious treatment of new boys: the commission of despicable acts of ill-treatment based solely upon the existence of peculiarities in the character, or manner, of boys; and the cowardly advantage taken of a boy's innocence, or harmlessness, or delicacy, which should rather operate as a shield and protection to him. These acts result in deeper deterioration of the bully's own character; in injury to the health of the sufferers; and, too frequently, in producing a deterioration also in the latters' character by reason of the shifts and evasions which this tyranny tends to create.

The manly and righteous boy, rejoicing in higher position, or larger character, or greater strength, will accept

* Virgil, Æn. vi. 126.

fully the responsibility that he is "his brother's keeper," a responsibility which will only become the deeper with the weakness of his "brother." And the code of honour imperatively demands restoration, by the concurrent efforts of masters and boys, to this higher level.

SUNDAY AT SCHOOL.

Sunday at school is significant to masters and boys, according to the point of view from which the *master* regards that day, whether he recognizes the fact that a day of idleness is a day ill spent; while a day fully occupied may be made one of happiness, or wretchedness, in proportion as the master appreciates the nature of the boy.

To many boys Sunday at school recalls happy reminiscences which have proved of lifelong value, and have greatly helped to mould the character in uprightness, purity, and unselfishness; while to others it brings the remembrance of the most miserable days—days whose deeds, though they wish to bury them in oblivion, are ever too fresh in memory to die: days on which "*they had nothing to do*," and were thus led to the commission of sins they would fain forget and atone for, simply because the master failed to recognize that a day of idleness is the *Devil's day*: days of wretchedness and terror to the small boys, when they suffered the greatest bullying because the big boys "had nothing better to do."

Sunday at school is the day of all others when the master should devote special time to his boys. It is the one day of the week when the best, *and the worst*, friendships are formed between school-fellows, which should be encouraged, or discouraged, by the personal vigilance and influence of the teacher.

By quiet conversations, too, such as a father would hold with his child, causing the boy to forget the master in the

friend, and involving a complete absence of the modes and methods of speech attached to the sacerdotal office, a master may, by personal character, fashion and refashion into any form the character and disposition of the boy.

Sunday is pre-eminently the day on which parents should strive by their letters to *keep touch* with their children as far as possible, and maintain the remembrance and power of home influence.

The services in the school chapel should be short and impressive, and adapted to interest and instruct boys. They should not be too frequent, as boys square the account by absenting themselves altogether from church during the vacations, for this very reason, as parents continually testify. These golden opportunities will be appreciated, and will prove of inestimable advantage to those who are so placed during school-life as to reap their benefit. Those who have been long connected with schools are keenly aware of the difference between the head-master who, by ability and sympathy, can rivet every boy's attention during the sermon, and thus manifestly produce a beneficial effect during the week upon the tone of the school; and that head-master, or chaplain, who is incompetent to address boys, and consequently unable to gain even their hearing, so that each boy settles himself to sleep, which tells a tale more significantly than any words can depict. Who can measure the incalculable gain to the one boy, and the loss to the other?

But masters cannot be talking to boys all day on Sunday, and there is a limit to the attendance of boys in chapel, *if the services are to produce any good impression.* The interval, therefore, between the services and the meals must be considered. Part of the time may be profitably spent in reading aloud; in private reading of suitable books; in writing home; in visiting friends; in listening to an interesting address; while country walks (especially to be

encouraged), the museum, the school library, or an organ recital in the chapel, afford much healthy and profitable *recreation.*

Earnestly would I impress upon school authorities, that the moment Sunday is regarded as *a bore*, the boy will surely endeavour to relieve the weariness, and too frequently by undesirable methods.

VIII.

PLAY.

The physical and intellectual beauty of the ancient Greeks is traced to the public games, which formed part of a religious observance. No other nation has ever produced such perfection of human form; no other institutions have ever so deeply influenced the moulding and elevation of the mind. Fortunately we live in an age, at all events in this country, when recreation of all kinds is deemed a virtue and a necessity rather than a vice. This is a modern development of race character, whose promotion has been aided by all sorts and conditions of men and women, but mainly by the members of the profession to which I have the honour to belong, through recognition of its paramount value in the attainment of the highest form of health.

The idea of the indispensableness of recreation, mental as well as physical, has been a process of slow growth; hence, in my opinion, its signal success. Its progress, however, in my judgment, is still in its infancy. The true conception of recreation does not necessarily mean diminished work; rather does it imply increased leisure for other and varied forms of work—the staple and habitual work (as it may be termed) being accomplished in briefer time through the enlarged energy and concentration which intermediate recreation incites, an ampler space is afforded for other modes of activity. To employ the Greek distinction, the ἔργον is aided by the παρέργον. For recreation does not simply signify play or

amusement; in its proper sense it implies change of occupation or attention. In its genuine sense, recreation is synonymous with re-creating or re-forming, where, by alternate action and repose, the several faculties are re-created and restored to serviceable power.

Thus, those who lead a sedentary life require, as *their* means of recreation, physical activity; while those whose life is passed in active employment find their congenial and restorative recreation in rest, or books, or art, or science. All these forms of recreation are valid and valuable in that they maintain the body and mind in a healthy, vigorous condition; and leave less scope for disease, and unworthy habits and pursuits.

As the development of the brain is the basis of mental education, so the invigoration of the muscles represents the basis of physical training. The muscles somewhat exceed in weight one half the weight of the entire body; and contain in their substance about one-fourth of the whole volume of blood. Thus they exercise an active influence on the circulation, the respiration, and the nutrition of the body; and constitute the chief producers of animal heat. Further, the development of a considerable portion of the brain is dependent on muscular activity.

It is as important, therefore, for human beings, especially adolescents, to take **exercise**, as to live in fresh air, eat wholesome food, and obtain sufficient sleep. And this exercise should be, like work, meals, and sleep, part of the daily business of life, until the desire for it becomes an ineradicable instinct.

We, as a nation, owe our success mainly to our mental and bodily vigour—a vigour which is irrepressible. What other nation would dream of playing football and polo in India and Burmah? Our British energy, as a rule, requires little encouragement or fostering; usually it is naturally exuberant, and simply requires right directing.

The physical education of the young tends to training in perception and judgment, as well as in adroitness and courage. Even yet, however, the influence of physical education on mental and moral growth is not sufficiently regarded; and the law is not yet practically recognized that bodily and mental culture must be concurrent if the highest development is to be attained.

Our world-wide reputation, as well as our universal presence, is mainly owing to the vigorous habits of our sons. The sportsman continually precedes the missionary in new countries; the missionary, the trader; and the trader, the statesman.

Think of the joy of proficiency, the delight engendered by knowledge; and how, when a game is played, malice and ill-temper just filter away unobserved. What a training for life! These qualities are developed in our school playing-fields. Let them, therefore, be encouraged in every possible way, so that the honour and fairness which usually attend them may also be promoted.

No question in the training of the young is of more general importance than the mode of employing the *out-of-school* hours. Are the young as fully and wisely occupied in that time as during the hours of work? If not, moral discipline must be absent. Do the boys take regular and vigorous exercise? If not, no sound health can result. Is their freedom from work a period of cheerful recreation, and constant lively occupation; or is every hour a time of weariness and idle lounging? If the latter, then no guarantee for conduct exists, and the character and tone of the boys must deteriorate.

I shall now endeavour to set forth the value of physical education to boys and girls, with especial reference to the virtues of well-organized games in which *all* shall join.

EXERCISE.

The **Advantage of Exercise** lies in the fact that it forms the universal essential of *growth*. A harmonious training, accordingly, of the entire nature is the condition of effective manhood. To enable the young to gain only a bare existence is a grave neglect of social duty, as well as very short-sighted policy. To ensure their thriving is our bounden obligation; for the strength and wisdom of the next generation depend upon the mental and physical education we are providing for the children of the present.

Regular bodily exercise is the greatest preservative of health, and the condition of mental, moral, and physical soundness. It is by this means that the natural functions of the body are normally performed, disease prevented, and life prolonged.

In considering the question of recreation, all sound experience shows that adequate exercise is absolutely necessary to expand the lungs, to ensure healthy red blood, and generally to produce the highest state of vitality in the body; and the brain, as part of the body, participates in the increased power. It would be most unreasonable to expect an energetic and alert brain free from weak sentimentalism, without a well-constituted body; and the converse is also true. Further, exercise is of supreme value in relation to *character*, as well as to *health*. All boys' games tend to develop good temper, sometimes under very trying circumstances, with self-reliance, self-control, endurance, and courage under difficulties, quick action, and rapid judgment. They are thus educated in a habit which will help to make them excel in the battle of life. How many men learn in their games at school, in spite of many failings, to "play the game" of life with fairness! The future is almost hopeless for a boy who at school practised dishonesty in his sports.

The whole time during which the boy is not at work, asleep, or feeding, should be spent in recreation of some kind, both for the purposes of health and the expenditure of superfluous force.

Recreation, or **physical education**, is scarcely second in importance to mental development. Thus, in *physical exercise* all the functions of the body are involved. The *circulation* of the blood is accelerated, the necessary blood-changes are more effectually carried out, and the increased action of the diaphragm aids the return of the venous blood; congestions are thus obviated, and the heart is not overtaxed in consequence of the increased exertion. The effect on the circulation is productive of incalculable benefit to those who undergo much brain work; for all organs in full work have a determination of blood to them, and thus brain work relieves muscular weariness, and muscular exercise affords rest to the brain. The increase in the circulation of the blood from exercise causes a more rapid destruction of tissue: more detritus accordingly has to be removed—burnt up: there results an augmentation of animal heat, and a slight rise of temperature is found by the thermometer after active exertion, which is again reduced to normal on the cessation of exercise, by means of the evaporation of sweat taking place from the surface.

The *respiration*, in addition, is quickened, and if the exercise be taken in the open air, more oxygen is inhaled: by this means the blood impurities are more rapidly oxygenated and destroyed; and the blood, being thus depurated, becomes more healthy, and thereby causes increased vigour, sounder health, and longer life. The lungs at *rest*, and the lungs when the body is undergoing *exercise*, are quite different: during the latter period, double the air is inhaled, and thus double the changes are effected.

Dr. Edward Smith has shown the comparative **effect of exercise on the amount of inspired air**, thus—

Lying position	1·00
Sitting position	1·18
Singing	1·26
Standing	1·33
Walking one mile per hour	1·90
„ two miles „	2·76
„ three „ „	3·23
„ „ „ „ and carrying 34 lbs.	3·50
„ „ „ „ „ 63 lbs.	3·84
Riding and trotting	4·05
Swimming	4·33
Walking three miles per hour, and carrying 118 lbs. ...	4·75
„ four „	5·00
Treadmill	5·50
Walking six miles per hour	7·00

Parkes, expressing these results in another form, has shown that under ordinary circumstances a man breathes 480 cubic inches per minute; while walking four miles per hour he draws in $480 \times 5 = 2400$ cubic inches per minute and while walking six miles per hour, he inhales $480 \times 7 = 3360$ cubic inches per minute.

During exercise, too, the secretion of the skin is increased; and the muscles become hard and strong. There is also greater appetite, especially for meat and fat. The brain is more eager for active mental exertion; and exercise tends to diminish the erotic desires in the young, and is on this account also of inestimable value. Exercise is followed by that salutary feeling of being **tired**—I do not mean *over-tired*, for that is painful and injurious—which generates good temper, and kindness of heart with its tendency to comradeship.

In the school-room every boy's place is assigned, and every occupation and hour accounted for during school-time. The same rule should apply to out-of-school hours. I expect the retort—Where, then, is *liberty?* There I join issue. Liberty I would not curtail in any degree; rather should it be increased. But I would allow **no liberty to**

do nothing. Organize as wide a range of choice of occupation in play-time as is feasible. Let every boy **follow his bent,** at all events, during some portion of his free time. But insist on some out-of-door occupation, and let it be reasonably accounted for in a time-table.

A little **organization of games** alone is required to render this course practicable, without needless and oppressive detail. Let the head-master be the *General:* the house-master, the *Colonel:* the assistant master, the *Major:* the head of games, the *Captain,* who should select his own *Lieutenants,* and *Second Lieutenants* from his school-fellows as assistants in the scheme, and the result will be secured without trouble to any one concerned. Idleness is always an outward and visible sign of deficient organization, and inefficiency at Headquarters.

If only head-masters would recognize their responsibility for the well-being of each boy, equally with that of the school collectively, and would occasionally enter the playing-fields and observe for themselves, how many boys would be found actually engaged in games, or taking active exercise? He would find, as a rule, one-third of the school playing earnestly and vigorously; another third watching the play, and avoiding exercise; while the remainder would be loafing, literally doing nothing but slouching about, hands in pockets.

There are schools I know where half the school may be found at play; at others, even two-thirds, or three-fourths will be engaged in energetic, enjoyable games, or exercise of some kind. And I am even acquainted with one school where it was common for the whole number—ten fifteens at football—to be playing at the same time. On the other hand, I know another school where a "new boy" had not participated in a game of any sort for nine consecutive half-holidays! It was nobody's fault, because it was nobody's business to provide that the small boys should not only have

a chance of playing, but should also be individually looked after, and shown where and how to play. It seems to be quite forgotten that these new boys of to-day are to be the leaders of games in a few years; and that consequently they require constant training in order to enable them to occupy that position with credit, and should thus be taken in hand as soon as they enter the school, not only for their own mental and physical development, but equally for the reputation of the games of the school. Physical education demands as much forethought, method, and adjusted application as mental training: at present it fails to receive its due organized care.

Since these remarks were written, I have come across the regulations as to physical education of a head-master who is a genuine organizer. I append a few of these regulations as a sample of the practical mode of **organization of Physical Education.** He states—

"The two head boys, who are selected by myself, make out from printed lists cricket, hockey, and football sides, according to the season. The sides are so arranged that there always are a few over the number necessary, in case of any boy being incapacitated. These sides are only provisional, as boys can be changed from one to another at any time, so that promotion is always open to all.

"I look over the sides, chiefly in order to see that, in football especially, no boy is put to play with those much bigger or stronger than himself, and also that the instructions contained in the book of the medical officer are duly carried out. Then, in consultation with the head boys, I appoint captains of sides, boys often being taken from a higher side to captain a lower.

"Every day, in our assembly after morning prayers, I (or my deputy) see the boys divided into sides for the game of the day, those who are unable to play, or wish for exemption, sitting apart.

"The sides are then arranged by the head boy as well as possible with regard to numbers.

"Football sides play about three times a week (not counting Saturdays), the big side only twice, for about fifty minutes each time; hockey sides, or punt about, or runs on the other days in winter. Boys who are unable to play, or who have leave off sides (the number required being sufficient without them), say what form of exercise they wish to take, and the fives courts, lawn tennis courts, etc., are arranged for.

"In summer, the big side plays games about twice a week, the other sides three or four times. Boys on the lower sides, on their days off, have to take their turns of fielding when big side have nets, but otherwise they can go cycle rides, etc., only stating beforehand to the acting head boy what they mean to do.

"Generally, one or two masters play on big side at football and cricket, and masters often undertake to coach, or referee, or umpire for a particular side.

"Otherwise there is no play field supervision by masters, the school officers being responsible."

There is always a popular outcry, more or less pronounced, against some **supposed ill effects of school games.** Even where the sentiment is not overt, it exists as an under-current, and causes much trouble to school authorities. I trust that those who read this book will cease to regard school games as a waste of time, and will realize their importance in securing the welfare both of the individual and of the schools.

The attitude taken up by many *parents* with reference to games at school is simply intolerable, and if their boys become vicious, the management and masters are blamed, while in truth this result is frequently attributable solely to the attitude thus assumed.

When the question of *school games* is under discussion,

the parent frequently urges the objection that the boy is too delicate to take part. But when the same boy is examined for "*Life Assurance*," a marvellous "bill of health" is presented, with the absence of every hereditary taint.

In our well-to-do preparatory and public boarding-schools for boys the claims of school games are, to a large extent, recognized and enforced; but, to my mind, not sufficiently so. For there are still many of the younger boys for whom games are not arranged, or for whom there is not room for daily play, and who are consequently too often allowed to excuse themselves from games altogether.

I am not surprised at small boys shuffling out of games where they have to contend with boys much older and bigger than themselves. For example, what can a small boy do in a game of football, except spoil the game and be unnecessarily knocked about, where half the players are twice his size and weight; and how can a small boy enjoy, or even play at, cricket, where the bowler is practically a grown man, who bowls swiftly, and the batsman hits with the force attained by long practice and skill?

It is requisite that **boys should be "sized" for games** —the small players being separated from the bigger ones— if play is to be full of enjoyment, credit, and freedom from risk. It must also be remembered that if big boys are to excel in games, more attention in this respect must be devoted to the little boys when they first enter school. No boy can succeed in games if they are not organized and enforced until he becomes a big boy; it is then too late, and yet this is too often the rule. I, therefore, urge that it is the games of the small boys which should be most carefully arranged by the school authorities, for the moment they have mastered the drudgery and begin to excel, they are keen to play; whereas, if they are allowed to shirk games during their early school days, they will never take

the trouble to surmount the drudgery and learn the game, and in this way loafers are bred.

In order to arrange adequately this "sizing" of boys for games, it is imperative that they should join in them as members of the *school*, rather than as members of a *house;* and this course would tend to generate a wholesome *school feeling*, which is most desirable as a *general* bond of co-operation and unity, but which in many schools is so manifestly deficient.

I regret to say that my profession is accountable for the loafing of a goodly number of boys who are, without sufficient reason, forbidden to play. Parents are able to find too many doctors ready to acquiesce in their wishes—the doctors little realizing the vast amount of harm thus entailed upon individual boys, and the extent of the prejudicial effect inflicted upon the school to which these unfortunate specimens of English boyhood are sent. Moreover, this course is wholly unnecessary; for, by a little tact on the part of the doctor, the mother's prejudice could be overcome to the lasting gain of her son.

School happiness is dependent as much upon play as upon work. Games are essential to the boys' health, their growth, their characters, and the well-being of the school. It may be taken for granted that a loafer is an undesirable individual; bad himself, he corrupts others, for no boy is satisfied with being vicious alone. I would, therefore, suggest for the earnest consideration of school authorities the advisability of handling this question firmly but considerately, and insist—

1. That, as a general rule, no boy shall be admitted into a public school who cannot take his part in the school games, as such boys are unsuited for public-school life.

2. That no certificate of exemption from games shall be accepted by the school authorities except that of their own medical adviser, who knows the capacity of the particular

boys, and the nature of the games in which they are expected to participate. The parents, of course, should have the right to claim a consultation between their own medical adviser and the professional officer of the school.

3. That for the few boys who should not, for medical or surgical reasons, be permitted to join in games, well organized exercise should be arranged, such as I shall presently describe.

4. That in the event of school authorities still consenting to admit all comers, those who do not join in the games should be handed over to the drill-sergeant for necessary daily exercise. The training by the drill-sergeant should be the *mauvais quatre d'heure* of every boy who is lazy at work or play. If there is one remedy which more than another would exterminate the loafer from schools, it is the daily routine carried out by the drill-sergeant. If this plan be objected to, the loafers should be sent out for a walk, two and two, with some attendant.

Why parents desire to send a boy to a public school, and then, due to their own whim and with the aid of their doctor, forbid him to take part in what is one of the main virtues of public-school life, I cannot understand. The proper place for the education of such a boy is "The Seminary for Young Gentlemen." These boys are the curse of schools; and I grieve to say they are foisted upon schools most unjustifiably. It is the loafer in our schools, and the "hooligan" in our streets, whose unchecked animal instincts and bullying propensities form ever-widening circles of evil.

The advantages of school games are shown in the healthy action of mind and body, and also in the development of character. Observe, on the one hand, the young boy who is keen in games, and compare his physical condition with that of him whose amount of exercise is inadequate. Notice his healthy complexion, good wind, the

elastic gait, splendid muscles, increased stature, fine physique, and sure development into vigorous manhood.

Consider, again, how boys' games tend to induce a well-balanced mind and character: how they instil into his nature, as nothing else can, glowing spirits from robustness of health; quick response to calls of duty, instead of lethargic habits; good temper, often under trying circumstances; love of justice and fair play which lasts with life; self-reliance; endurance; confidence in comrades; desire to excel, which ultimately becomes a noble ambition; quick judgment; aptness to act with others for the good of all, and not from selfishness; courage under difficulties; self-control; and last, but not least, the check on morbid desires and sensations, by the expenditure of superfluous energy, with ensuing purity of life. In fact, most games form exercise to muscles and brains, and involve both rapidity of observation and quickness of decision. In them again potential manliness of character can become real, with a just ambition to excel in every phase of the battle of life. Moreover, it should never be forgotten that it was the development of **games which abolished boys' fights** at school, that were formerly so rife.

It seems, then, scarcely to be believed that parents are to be found who are so unwise as to seek through mere whim to prevent their sons attaining these advantages of school life, being content with the mere rudiments of languages, mathematics, and science, and casting aside unregarded the development of the body and the character. Fortunately, these parents are few, but these few should not be permitted to affect prejudicially the school life of others simply for the gratification of their own fancies.

Our great schools render a far more substantial service in the education they afford than this comparatively limited benefit; for they are capable of influencing well or ill the whole character of a boy by means of the comradeship of

his school-fellows and the salutary influence of his masters in out-of-school hours. Whether this influence shall be good or bad depends largely upon school games. He is wanting in discretion who will attempt to conduct a school of several hundred highly-fed, well-bred boys, at the time of life when their animal instinct is strongest, without insisting that they shall one and all take vigorous daily exercise.

One of the reasons why some **parents object to their sons joining in school games** is the "funk" inherent in the boy himself, which every parent should strive to eradicate by compelling participation in sports during childhood, and thus aid the boy's preparation for his ultimate intercourse with the world, and his acceptance of its troubles and adversities with good humour and cheerful fortitude.

Another objection is, that many **accidents occur at games:** this is really incorrect. Boys are always naturally more or less subject to accidents. But quite as many, if not more, accidents arise from "skylarking" and by-play, than from really well-organized games. The retort will be, Will you venture to assert that there are not numerous, and even severe, accidents resulting from football? If thirty-three years' experience at the very birthplace of this much-abused game, played three and four times every week in winter—and very warm games sometimes, owing to the rivalry between *houses* for the glory of being "cock house" —counts for anything, it ought to make parents and doctors consider the matter more thoughtfully. I have never yet found one serious accident from football—no accident more severe than I have seen from cricket, house runs, steeple-chases, swimming bath, gymnasium, and, above all, by-play. If the game were always played by *boys* the outcry against football must cease. I am not now upholding it as a *man's* game: it is here that the severe accidents arise. I will even go further, and say that, *counting the number playing*

at football at any one time, the percentage of accidents (at *schools*, I mean) would be little, if any, higher than those occurring during any other game with an *equal* number playing at the time, or during "boshing" and "scrummaging" amongst a similar number of boys.

Then, again, the **sickness arising from games,** "especially *cold-catching*," is the cause of another outcry against boys' games: true, but why?

1. It occurs largely in consequence of the unsuitability of the clothing for games, which should be remedied without delay.

2. It results from not "*dressing*" for all games. The remedy is always to "dress" for games.

3. It is produced by changing into insufficient and inappropriate clothing too long a time before the game commences; and by standing about after playing, while perspiring freely. The remedies are, not to "change" until the game is about to begin, and to have a warm dry coat, or "sweater," always ready to put on as soon as the game is finished; or, still better, to go home at once, have a bath, and change everything, including socks.

4. But the greatest sufferers in this respect are the non-players or spectators, who stand in the rain, or in a cold wind, or on wet grass, watching football, athletics, or a rowing match; or who lie down on the damp grass to watch a cricket match. The remedy for this is, well-organized games for ALL, and no spectators.

But while I have spoken thus strongly on the necessity of boys, with few exceptions, joining in school games, I hold equally forcibly that there should be a **physical examination of all boys on entrance to school,** as I have already pointed out on page 94. Each boy should be as carefully and as thoroughly examined as though for life assurance. He is mentally examined to ascertain his capacity in work; and I maintain that he should be

examined physically with equal care, so that his physical education may be thoughtfully organized and regulated, and, I would further add, enforced, since his physical education is concurrently as important as his mental education.

I fully recognize that, if this course be not judiciously carried out, children may suffer in consequence; though I am bound to add that, in my experience, the cases where harm has resulted from even indiscriminate, unregulated, and unwise exercise are exceedingly rare: I would insist, however, that such instances should never be permitted to occur.

Where injury has ensued, it has arisen in almost all instances, not in the delicate, but in the strong, from imprudent and severe exercise being suddenly taken after a period of comparative idleness, and without prior training, in forgetfulness that all exercise should be gradual in its increase. When not in constant daily use, the muscles become flabby and deficient in vigour, the heart included. The lungs also lose their elasticity. If overtried suddenly, something must "give" somewhere: unused muscles cannot bear sudden spurts. Great muscular effort demands graduated exercise for its achievement. After long inaction, the resumption of the effort at the stage at which it was left off is the prelude to accident, disease, and even death.

It is certain that if this physical examination were efficiently conducted, there would be found a certain number of boys—few, I admit—who should not be permitted to join in all the school games as at present constituted. For instance, boys with a tubercular history; those who have recently had a severe or prolonged illness; those who have grown beyond their strength; those with a physical defect or deformity; and, last, but not least, those who have mitral, or aortic, disease, and who require unceasing care. Without this vigilance, while the heart is growing, its cavities are certain to dilate to excess, with all the attendant discomforts

and dangers, instead of being permitted to develop that compensating hypertrophy of its walls which is essential in valvular disease. On the other hand, I know a case of well-marked mitral disease in a boy who would not be restrained in his exercise, and who was one of the greatest athletes, winning at school and at the university a large number of the highest prizes. And yet, when I examined his heart in later years, I found it sound.

Suitable exercise should be arranged for delicate boys, therefore, who would engage in school games if they could, but who, from inherent delicacy, disease, recent illness, or deformity, should either join in some of them under medical direction, or be prohibited. Systematic organization of exercise, such as gardening, carpentry, gymnastic exercises, drilling, golf, music, singing, art, drawing, and field excursions in botany, natural history, and geology, should be provided for these cases.

There never can be any excuse for lounging and idleness, which, I regret to say, too often arise from the apathy of the authorities, upon whom should rightly rest the organization and encouragement of these forms of exercise and interest. For these boys need their recreation as much as—nay, more than—the strongest and most robust, if a propitious opportunity is to be afforded for surmounting their delicacy or defect. The primary aim in the **education of weaklings** should be the development of the body at the time of life when it is most capable of response. The vigour generated by appropriate exercise tends to prevent the advent of disease in the vital organs; and renders the body proof against tuberculosis by raising the tone of the entire system. Further, the growth of the muscles makes the limbs less prone to joint disease, and fractures; and by aiding the contracting power of the abdominal muscles reduces the chance of rupture occurring. If such a scheme were more effectively put into practice, these comparatively

feeble boys would have a better prospect of developing into a strong and healthy manhood. They should not be excused exercise appropriate to their capacity.

I would therefore urge the following points in connection with the limitations of exercise :—

1. The careful physical examination of all children when they first enter school. In this way only can the healthy be safely compelled to play.

2. The proper apportionment of exercise consequent on this examination, in order that the physically weak, diseased, or deformed may be restricted to that form of exercise which is suitable. In this way only should the unfit be excused from the ordinary school games.

3. The medical control of all severe exercise, so that the boy who is physically fit to undergo it, shall not be permitted to do so **without prior and suitable training for his prolonged exertion.** It is these cases where, in my experience, the greatest harm results, and opprobrium is produced. Boys who think that, because they have won a race by rowing or running in one season, they can perform the same feat in the next without fresh training are sure to overstrain and injure themselves.

I do not uphold the general adoption of the various **drill "systems"**—such as the Swedish, for example—at present in vogue for the physical education of the young, however excellent they may be in themselves. They necessarily savour too much of the nature of a "set lesson," and boys already, and girls still more so, have more than sufficient of these prescribed tasks. In special cases, under exceptional circumstances, they are of great value, where ordinary boys' games are unavailable or unsuitable, as in the case of very delicate or deformed boys, or where no playground exists.

For ordinary exercise, it would be as reasonable to expect *adults* to take recreation in the form of one of the "systems."

Let adults still indulge in exercise by hunting, shooting, boating, and mountaineering; and let boys continue to play their games of football, cricket, and boating. These all afford a mental refreshment and recreation, whereas the "systems" partake too much of a school task, and do not provide the requisite mental change and rest.

Inasmuch, therefore, as exercise is imperative for the young, masters should see that games are properly organized by the boys themselves, subject always to the approval of the school authorities, by whom they should also be enforced.

It must, as I have said, be granted as an axiom that regular adequate exercise is absolutely demanded for producing the highest state of vitality of the body, and in the increased power which results, the brain, as part of the physical system, obviously participates. Exercise, therefore, is a necessary handmaid in education.

OVER-EXERCISE.

The clamour often popularly raised against exercise should be limited to **over-exercise**, or to ordinary exercise imprudently taken. It is excess of exercise which is deleterious to growing boys; preventing good work by depriving the brain of a full supply of blood, in consequence of the exceptional demands made by the muscles; engendering a feverish excitement and dislike of steady work; wearing out and stunting, and often entailing permanent damage to, the body; while exercise in proper measure produces health and strength, and improves school work. To gain the benefits and avoid the evils, it must be borne in mind that, in the performance of exercise, energy is expended, and finally exhausted, and that this end arrives sooner in those whose tissues are immature, since they are deficient in **staying power** by reason of this fact. The **defect in all exercise**

of the young (except where they are left to themselves), whether **mental or physical,** is that it usually **fails to be short and frequent.** An hour's drill for a child is cruel; whereas four quarters of an hour (at suitable intervals) are of untold value in their growth and development.

Exercise should be gradual in its increase; the highest stage being attained in the same way as a man climbs a ladder, step by step, or as a trainer "trains" his horse.

If we do not wish to hear of the "evils" of rowing, of running, of football, and of the "lawn-tennis arm and leg," the muscles necessary to the exercise must be trained by degrees. All muscles may be educated to any strain within reason; but unused muscles are unable to bear sudden efforts. I shall more fully describe the symptoms of over-exercise under the head of *running* on page 369.

Severe brain work precludes much bodily labour; and strenuous bodily labour prevents great mental strain: both cannot be sustained together, and it is intemperate to try; but the best amount of work is done with a reasonable proportion of each.

If these English "school games"—the glory of our country—are to be enjoyed without injury, the exercise must be regular, and if it has been omitted, as at the various seasons, it must be resumed by degrees: no boy must imagine that he can at once take up the thread where he dropped it months before. Most accidents, in consequence of a neglect of this caution, happen at the beginning of each season.

Syncope, or fainting, in boys is usually attributed to over-exercise; but my experience has shown that, while it may in some cases be occasioned by the physiological condition of the heart and vascular system at puberty,* or be due to a temporarily dilated heart† resulting from

* *Lancet*, May, 1886.

† *British Medical Journal*, March, 1873.

active physical exertion in an unfit state of body, it is nearly always toxæmic—the blood being poisoned by the imperfect action of the excreting organs.

COMPULSORY GAMES.

We now come naturally to discuss the first law for all schools, especially public schools, where the boys are older, and more liberty exists—that school games, which should form the physical education of the boy, should be *compulsory*, so that he may be compelled to join in some games, while choice of other occupations during his remaining leisure hours should be left to himself.

It is said that **compulsory games** are bad, because they prevent a boy following his own bent. It would be just as reasonable to assert that a boy should follow only his own bent in *mental education*, which would mean in many instances simply "novel" reading. The same argument would apply to a boy's eating and drinking: the assertion that he should not be required to eat meat and potatoes and drink milk, but should be permitted to gratify his inclination, would merely imply dependence upon the pastry-cook's delicacies. And this is unfortunately the training in too many homes.

Compulsory games are a necessity in physical education; and even when they are systematically carried out, and faithfully played, there remains still ample time, as is seen on page 267, for every boy to fulfil the devices and desires of his own heart in his preferences in recreation.

The boy is an active animal, and unless he be kept employed at an innocent and healthy occupation during play-time, which will allow the expenditure of his superfluous spirits and strength, he will not be idle—he is too restless for that—but will occupy himself with something

that is probably not innocent or healthy, and will become neither a credit to himself nor his school, but an evil-doer, and a teacher and example of evil-doing to others.

Not only should parents and masters see that boys join in the school games; but to enable them to do so, schools must provide space in which all *can* play, and few schools, unfortunately, have ever arranged for this need. It is so frequently forgotten that every idle hour to the boy is a "bore;" and that every idle boy tends to become a vicious boy, and, morally and physically, an unhealthy one.

The bane of every school is the "idle boy"—the boy who won't play: he is a constant worry to his master, being never out of mischief: a source of misery to himself, and very often a bully, having nothing better to do. Until parents recognize this fact, the constant outcry against compulsory games will continue; whereas, this compulsion is one of the chief sources of a healthy tone in schools, especially public schools. When this rule is abolished our schools will become largely a source of evil. Moreover, school games always furnish a topic for innocent conversation, which is an inestimable boon.

If all boys were encouraged to be manly, energetic, and enthusiastic at their games, they would be trained to become healthy and ingenuous throughout their whole school life. Moreover, the happy recollections and experiences of the games of boyhood confirm the habit of exercise in early manhood, when physical recreation is manifestly most important. Failing this course, there will arise an unmanly precocity in self-indulgence, betting, smoking, and drinking: boys will naturally develop into premature "men of the world," and schools become tainted with an atmosphere of "society," which no master can purify.

What can be more exhilarating and inspiring than the healthy rivalry of sides at games, and of various houses, or schools, pitted one against another, every boy joining in

the contest? The healthy and innocent ambition which incites one boy to strive for the headship of his form, and to excel at his work, makes the same boy, or another, seek to gain the lead at one or all his sports, whether football, cricket, or boating.

Some surpass in work, others in play; both should join in both, and be made to play as well as work. What is distasteful in work is not excused to the boy: it is considered part of his education to do the work that is placed before him. The same rule should govern his physical education, and then what was distasteful originally may become a pleasure when it has been practised well and mastered.

The boy who does not join in games, but swaggers and lounges, should, after failure to *make* him take part in them, be removed, before he has an opportunity of corrupting others through his idleness and the evil it engenders: the only ground on which a boy should be exempted from joining in the games should be physical incapacity or illness.

It is a fact beyond dispute, that a boy who is forbidden by parents to join in school games, and who, at the same time, as is usually the case, is supplied with plenty of pocket-money, will, in a short space of time, be ruined, in all probability, in character, and become a source of detriment to the school.

But many will ask, Is there no way by which this **loafer can be cured,** and yet retained at school, without disadvantage to himself or his school-fellows? I believe there is, and that he could be absolutely cured of his bad habit. To effect this, a rule should be enforced, that any boy who does not regularly join in the school games, whether from his own or his parents' desire, should, as I have already urged, be handed over to the drill-sergeant for two hours' exercise a day. By this means the loafer would obtain the amount of outdoor exercise which is necessary for health.

His round back, flat chest, and slouching gait with hands in his trousers' pockets, would be rectified, and he would thenceforth be known by his military bearing, to his great gain. The loafer's pocket-money should also be applied in payment of the drill-sergeant for his trouble; he would then have less money to spend at the tuck-shops, and Disraeli's description in "Coningsby" of the boy with "the pallid countenance, the lack-lustre eye, the hoarse voice clogged with accumulated phlegm, indicated too surely the irreclaimable and hopeless votary of lollypop, the opium-eater of school-boys," would soon be a relic merely of a forgotten past.

Occupations for play-time, again, should be provided for all weathers, so that the wet, as well as the fine, day may supply its physical education, play, and pleasure. What a vast amount of mischief wet half-holidays at school are accountable for! School authorities might, more completely than they do, keep their pupils at work on the wet regular half-holidays, and restore these abstracted half-holidays on fine days. This course would, no doubt, entail much inconvenience, but this would be more than counterbalanced by its beneficial effect in preventing evil.

The burden of my argument relative to compulsory games is, that it is the duty of all school authorities to provide a physical education—and in using the words "physical education" I desire it to be understood that I mean, not exercise only, but an exercise that involves *recreation*—as carefully arranged and systematized, and as impartially applied to all, as is moral and intellectual training; and further, that this physical education should be in the control of the authorities, and not solely in that of the boys themselves.

Moreover, physical education requires as much forethought, method, and adjusted application as mental; whereas, at present, too much routine is involved in both.

At preparatory schools, where, as a rule, the younger boys are educated, it should be the duty of one of the masters to play with the boys, and he should himself see that the head of each *eleven*, or *fifteen*, arranges that all his team should play. At present the senior boys in the school usually manage their own game, and all the rest are idle for want of some one to set them going. This would be obviated if a master always started them in the game; and, still better, if he played with them.

CLOTHING FOR GAMES.

In many of our oldest and largest public schools regulations exist prescribing the clothing that should be worn by the boys both during school and play hours. With reference to the clothing for school hours, I have nothing to add to my previous statement respecting the proper provision for the boy on entering school, except that all boys in a school should, as far as possible, be dressed alike—a simple school uniform would undoubtedly be the most effective means of evicting the competition in dress and high collars. At all events, parents should see that their sons should on no account be *peculiar* in their outer or under garments. Nor should they allow their sons to be *shabby*, and thus be subject to teasing, if not bullying, with the result first of making others look down upon them, and then of making the victims look down upon themselves. Parents, probably, never realize the cost to the feelings of their sons which these two aspects of clothing involve.

I have, however, much to say upon the proper **clothing for games**, since its suitability or unsuitability forms a main source of health or ill-health. Boys should have special clothing for all games entailing exertion, not only that they may save their cloth clothes, but also that they may be clothed appropriately for playing, and may then

have dry clothing to put on after the exercise. The boy who is too lazy to change, as so many are, should be punished, for serious illness and even death are sometimes occasioned through a boy playing in his ordinary clothes—say, at racquets—perspiring freely, and then, without a change of garments, sitting in school, standing about, watching others play, or lying on the grass.

The clothing for games requiring exertion should, in summer and winter alike, be flannel, and flannel only, and white flannel is the most suitable: it is the best non-conductor, and the greatest absorber of moisture. Unfortunately, many injurious rules or customs in respect of clothing —many of them originating before medical knowledge had deigned to concern itself with such commonplace subjects—still exist in some of our older schools. For example, what can be more reprehensible, in relation to health, than the rule that boys should in winter wear thin cotton jerseys, thin summer-flannel knickerbockers, and remove their warmer clothes for an hour or more before commencing their game of football, boating, or running; and in spring and summer appear in white linen, or cotton, shirts at cricket or boating, instead of flannel clothing?

These special flannel garments should be changed immediately after exercise, in order to get rid of the moisture they contain. A feeling of chilliness after exertion means that the body is cooling too rapidly, and that extra clothing is necessary to avoid an illness; or the boy should move about, so as to check the rapidity of the reduction of temperature. The woollen garments should be *dried*, by some thoroughly responsible person, after being worn, and washed at least once a week.

The decision of the proper clothing for games is sometimes left improperly in the hands of the boys themselves, who make the most unreasonable rules against the wearing of flannel garments for all exercise. Is it right for elder boys

to regulate conditions which affect the health and life of their school-fellows? Are they sufficiently conversant with the laws of health to be empowered with this control? The head-master and the house-masters should obviously, under the guidance of the medical adviser, retain this authority in their own decision.

A *tight* belt round the waist during active exertion is unadvisable, as a "rupture" may thus be caused.

CHANGING-ROOMS.

In order that boys may be induced to "change" for games, and undress immediately afterwards, **changing-rooms** should be handily placed for the purpose on the ground floor. Here boys should have "bath" accommodation, so that a hot or cold bath may be at once available: there should be hooks on which they can hang their clothes, and seats on which they can sit to change them; and a pigeon-hole in which they can place their football boots, instead of kicking them about the room. These rooms should be warmed and well ventilated. The plan of changing clothes, which are generally wet and muddy in winter, in the dormitories or cubicles, should never be allowed: by this practice not only do the floors become covered with mud and ordure, but the boards get saturated with wet, and the rooms are consequently unfit to sleep in at night. The plan is dirty in the extreme, and has no redeeming feature.

DRYING-ROOM.

No provision in a school is more important than a well-constructed and suitably arranged **drying-room** for drying clothes and boots. It must not only be warmed, but be so well ventilated that the evaporating moisture may find a free exit without condensing.

TRAINING.

It is the custom for boys to submit themselves to **training** for football, boating, and other athletic sports, and every now and then to make themselves ill during the process. This is my reason for broaching the subject in this treatise, although at first sight it may seem somewhat irrelevant. I am anxious, however, to omit no condition in a boy's school life which tends to improve or impair his health.

And first, it should be an invariable rule that only strong hearty boys should undergo "training." No delicate boy, not even a sound boy who comes, however, from delicate parentage, should be so allowed; or the delicacy, which might have remained dormant, or missed the individual altogether, may become developed, and thus remove all chance of good health.

The **purpose of training** is to nurture the body to such a condition as to enable it to perform the hardest physical work rapidly, or for a prolonged period. It is, in fact, to produce the highest possible state of health for hard physical work, though sometimes at the expense of good mental work. The essence of training is that the heart and lungs may become accustomed to sustained exertion, and this should only be effected by degrees. The muscles by graduated practice become tough and strong for their work; by exertion and perspiration the body gradually loses its fat; and by suitable diet a fresh deposit is prevented.

Boys, generally, know so little about the conditions required in training for active and prolonged exercise, such as football, athletics, and boating, that they often succeed in making themselves seriously unwell, and are compelled to "give in," through becoming **stale,** before the day of the race, which a little proper guidance would have enabled them to win with honour and ease. The chief points to be regarded are—

1. *To get rid of Superfluous Fat.*—For this purpose steady and prolonged exertion should be undertaken. Walking exercise is good to begin with, and more active exertion should follow as the system becomes accustomed to it and eager for the strain. This exercise should commence quite twenty-eight days before the period of the intended trial; but it should be performed only every other day at first, the intervening day being devoted not to absolute rest, but to reduced exertion. There are some who assert that boys should never go into training at all: from this I most emphatically dissent. For it is a fact that the boys who "train" are the boys who win: this reason alone is substantial. But I would add, as a stronger reason in favour of training, that it is entirely wrong for boys to join in races, whether "athletics" or "boat races," without careful prior training. Yet boys attempt very severe exertion, in one form or another, without any training at all, leading frequently inactive lives for days and weeks beforehand. These are the boys who "come to grief," and give all English sports a bad name with those who are ignorant of the causes.

2. *To prevent Fresh Deposit of Fat.*—Growing boys not only require, but cannot healthily exist without, a diet that contains abundance of carbonaceous or fat-forming material, especially sugar, and of starch which is converted into sugar: fat itself, too, is equally necessary, though in smaller quantities. If an attempt be made to dispense with these constituents for a lengthened period the health suffers, and, as a rule, this improper dieting is the cause of the baneful effects of a training system.

Sugar is the natural food of muscles; and if well-knit muscles are wanted for sustained effort, they must not be deprived of the nourishment which Nature prescribes.

It is often stated that *boys* should never vary their diet in training for severe exercise. In opposition I assert that

the boys who diet themselves in training are the "winners." And I have received decisive testimony from boys themselves—those who have gained the highest rewards—that a training diet, with careful avoidance of the "tuck-shop," is essential to success. Moreover, when a boy, who should have succeeded, has failed, it is one of the commonest observations among them, that "he didn't take the trouble to train." Such practical evidence refutes all theories.

But for *men* undergoing training a much longer time for dieting may be required and endured without risk, as the changes in the system of the adult are less rapid, and, since their growth has been completed, the exertion demanded of them may be more severe.

The **diet required for boys in training**, in order to prevent the fresh deposit of fat, is appended; but, I would again repeat, **fourteen days of it are sufficient**:—

TABLE XXXIV.—THE BOY MAY EAT

Mutton.
Beef.
Veal.
Lamb.
Tongue.
Kidney.
Sweetbread.
Soups, unthickened.
Beef Tea and Broths.
Poultry.
Game.
Venison.
Potted Meats.
Fish, except Salmon and Eels.
Custard.
Cheese.
Eggs.
Bread, especially Crust, or Brown Bread, or Toast.
Oatmeal.
Lentils.
Haricots.
Spinach.
Watercress.
Mustard and Cress.
Lettuce.
Asparagus.
Celery.
Radishes.
French Beans.
Green Peas.
Brussels Sprouts.
Cabbage.
Cauliflower.
Onion.
Broccoli.
Seakale.
Jellies, flavoured but not sweetened.
Fresh Fruit in moderation, and without Sugar or Cream.
Pickles.

THE BOY MAY DRINK

Tea.
Coffee.
Cocoa, from Nibs.
Milk, in moderation, especially Buttermilk and Skim-milk.
Light Bitter Beer, but better without any alcohol at all.
Apollinaris Water.
Soda Water.
Seltzer Water.

THE BOY MAY NOT EAT

Duck.
Goose.
Fat Bacon and Ham.
Fat of Meat.
Butter.
Cream.
Sugar.
Potatoes.
Carrots.
Parsnips.
Turnips.
Beetroot.
Artichokes (Jerusalem).
Rice.
Arrowroot.
Sago.
Tapioca.
Macaroni.
Vermicelli.
Semolina.
Pastry.
Puddings, all kinds.
Sweet Cakes.
Condiments, all except Salt.
Marmalade.
Jam.
Sweets.

THE BOY MAY NOT DRINK

Cream.
Porter and Stout.
Sweet Ales.
Beer in any large quantity; and Beer should never be taken by boys without food.

This diet should not be too rigidly followed. It should not be adopted at all by boys who are naturally thin. The scheme is furnished to show what diet generates fat and prevents good "wind;" and what helps to absorb fat, and to give the greatest strength and the most enduring "wind." But, as I have already said, those who are growing must not be deprived of fat, sugar, and starch for more than a few days consecutively.

In training, to obtain good "wind," it is of the highest importance to avoid the possibility of indigestion, for nothing more thoroughly defeats this end. Food, therefore, should be eaten slowly, and masticated thoroughly. No food or drink should be taken between meals. The amount of sleep specified on page 130 should be strictly observed.

There is a most fallacious notion amongst all trainers, be they trainers of boys, men, or horses, that, whilst undergoing training, the smallest quantity of fluid should be allowed; and hence those in training often suffer from actual thirst. It is an undoubted fact, that most people take daily more fluid than is requisite to satisfy thirst; whereas this simple satisfaction is all that the system needs for the healthy performance of its functions.

It should be a rule with every one, for the attainment of the highest condition of health, to avoid excessive fluid. From two to three pints daily is the amount generally required by an ordinary healthy adult, except in hot weather, or under great exertion causing free sweating.

Many will object that they are always so thirsty that they must drink freely to live at all. It will be seen that this is not true: it is a question of habit pure and simple. It would be just as true for the "drayman" to say that he needs five gallons of beer a day; whereas the truth is, he has simply indulged in this bad habit until his system, with its wonted adaptability, has learnt to accommodate itself to the inconvenience by degrees.

The custom of drinking more fluid than is necessary to supply the actual wants of the system gives more work to all the organs to perform. It is, moreover, a frequent source of indigestion; the stomach being required to absorb the excess of fluid before the gastric juice is able to act effectively upon the food which it contains.

The right principle to adopt in training is—that water should be freely allowed, but in small quantities at a time; always sufficient to satisfy thirst, but the person undergoing training should never allow himself to become actually thirsty. As he perspires an ounce of fluid from his body, another ounce of water should at once be supplied in its place. Dry tissues, and unnaturally thickened thirsty blood, are incapable of the highest exercise of their functions.

On no account should he suffer thirst for minutes or hours, and then, when the exercise is over, take, as many do, an excessive quantity of fluid, which only renders him uncomfortable, destroys his appetite, and causes indigestion and loss of sleep.

It is always wiser to finish eating before drinking.

3. *The time of exercise for training* should certainly not begin until two hours after a meal; neither should the adolescent continue more than four hours without food, otherwise he will be faint before the exertion is finished, and the exercise will be blamed instead of his own imprudence.

4. *The period of exercise for training* should be carefully regulated. At first, two hours' ordinary walking exercise should be taken every day for a week; then two hours' fast walking for several days, with a gradual increase to running exercise for a short distance rapidly, followed by a rest; thus finally accustoming the muscles, heart, and lungs to the more severe exertion for an hour.

5. In this way *the circulation and respiration* become used to rapid exertion, and, instead of being over-done and liable to injury, these functions are made more vigorous and enduring. Parkes says: "The trainer establishes a concordant action between the heart and blood-vessels, so that the strong action of the heart during exercise is met by a more perfect dilatation of the vessels, and there is no blockage of the flow of blood; in the lungs, the blood not only passes more freely, but the amount of oxygen is increased; and the gradual improvement in breathing power is well seen when horses are watched during training."

6. *Under-training.*—I cannot speak too strongly against boys attempting, as is frequently done, very great and prolonged exertion—for instance, hard boating, or a run of many miles—without any preliminary training: it is then

that serious mischief is likely to occur, especially to the heart and lungs. Under-training, I think, is worse than

7. *Over-training*, which means *over-exercise*, either too quick or too fatiguing; or the result of inappropriate or prolonged under-dieting causing wasted muscles.

8. *Muscular fatigue.*—Those who have much mental work to do—*e.g.* for prizes, or for position in school—and yet undergo considerable bodily exertion, often lose some hours of mental labour, owing to subsequent muscular weariness; and are thus incapacitated from sustaining the combined efforts of body and mind. This feeling of tired muscles should be avoided by taking exercise short of inducing fatigue.

9. *A great fault in training* among boys is to allow the day before the great event to be one of idleness; whereas, without being made one of fatigue, it should be restricted to what is called a "breather." And the day before that should be one of exertion almost, if not quite, as severe as the effort required on the day of trial.

10. *The daily cold bath* is simply imperative in training. By some athletes the bath in any form is deprecated, in the belief that it produces languor and disinclination for exertion: it is only the improper use of the bath which has this effect.

It is when the cold bath is taken in the form of the "swimming bath" in summer, that this prolonged immersion—from fifteen to sixty minutes—occurs. This happens chiefly amongst boys and young men, and the beneficial effect of the bath is thereby converted into a harmful one. For the blood is driven from the skin, which contains about two thousand five hundred superficial square inches, and being kept from it for so long a time, its blood-vessels become contracted, and owing to the paralysis of the nerves from the cold, are unable to recover themselves with a rebound when the cold is removed. The blood, which should

have occupied this large surface, being driven into the vessels of the internal organs and retained there, over-dilates them, producing congestion, and the various injurious conditions of congestion of the brain ensue with persistent headache, congestion of liver and jaundice, and congested kidneys with albuminuria. There also arises marked nervous depression, which may remain for days, expressed not only by inertness, but by a torpor of the whole system, mental and physical.

Those who remain too long in the water are undoubtedly liable to experience these sensations; but those who remain only a short time are always invigorated—the bath being really a most important aid to the athlete, engendering muscular vigour, increased nerve-power, and preserving health.

By attention to these matters, boys will get through their sports and boat-races more easily, without being made uncomfortable, and without interference with their work and health: training so conducted will, on the contrary, make them vigorous and manly.

THE PLAYGROUND.

The provision in schools, and in respect of both sexes, of plenty of **space for play**, is as important as the allotment of sufficient cubic area in which to live, work, and sleep. In some schools there is already room for play; in many, even of our best schools, the area is quite inadequate. There can be no excuse for the absence of a playground at every school; where land cannot be obtained, a playground can be constructed under, or over, the school buildings.

Play-time is one of the most formative elements in school life. Yet little care is generally taken to ensure that a boy is legitimately occupied during play-time, but a severe

punishment is awarded if he be *caught* doing wrong. Many are well employed, in a variety of ways, amusing and instructing themselves; while others are occupied in every mischief a boy can devise—including smoking, drinking, playing billiards, and strutting about the streets.

The causes producing this unfortunate result are—

1. That there is not room for all the boys to play at the same time, even if they wished.

2. That "loafing" is permitted, instead of being strenuously discountenanced as a fruitful source of evil in every school.

3. That parents obstruct legitimate games, and thus encourage—indirectly it may be—the "loafer," with his extended power of debasing himself and others.

No genuine reform will be accomplished until the serious duty of both parents and masters is recognized of co-operating in the *prevention* of evil occurring during unoccupied hours, rather than attempting to eradicate, or *cure*, it after commission. It is the paramount obligation of the authorities in our great schools—in lesser schools it is already fairly well fulfilled—to look as carefully after boys during out-of-school hours, as to educate them in school time.

I hear already the outcry, from many of our great schools, "Where, then, is their liberty?" But who will venture to gainsay that the liberty of many of our schools should, as at present exercised, rather be designated *licence?*

In proof of this, I need only appeal to each head-master to furnish a list of the boys whom he has discovered doing wrong during play-time, and has *silently dismissed* during his term of office—to omit altogether the consideration of those who remained *undetected*. It is still, I regret to say, insufficiently admitted, that an imperative duty of schoolmasters lies in making it "easy to do right, and difficult to do wrong," in their government of the young.

It is an indisputable fact that when boys go wrong at school the fault is frequently due to the defective physical conditions under which they are compelled to live, rather than the result of natural vice: the boys should often be more pitied than blamed. Temptation has been allowed too oppressive an opportunity before strength of character has had sufficient time to grow; during the development of character, help and guidance are essential. Sydney Smith wrote: "I have always said that the greatest object in education is to accustom the young man gradually to be his own master." Whereas, at present, he is left too much to himself, and becomes his own master long before the appropriate stage of responsibility has arrived.

The urgent requirement, consequently, is, that sufficient space should be provided in which all boys *can* play, and that means should be adopted to ensure this end.

TABLE XXXV.—TABLE OF SPACE REQUIRED FOR OUTDOOR GAMES.
(FELIX CLAY.)

Cricket	8 acres for every 100 boys.
Football (Rugby)	110 × 75 yards.
Football (Association) ...	maximum: 200 × 100 yards.
Football (Association) ...	minimum: 100 × 50 yards.
Hockey	100 × 50 yards.

The tendency, unfortunately, is gaining ground, even in schools, of allowing a few skilled experts to play, while the rest are merely spectators. To watch a good game occasionally is beneficial to all; but the custom is becoming too common, and tends to the loss of vigorous recreation for the majority, and a failure to provide, and mature successors capable of playing skilled games in after years. Where watching is allowed, it should be on the understanding that exercise shall be subsequently imperative upon the onlookers, such as a house-run, or a spin on a cycle.

The desire to "watch a good game" is too frequently an excuse for a taste of *dolce far niente*—a most pleasant sensation, I admit, but not the best for growing boys.

It is necessary, in **planning a playground,** that the ground should be level, for where inclines exist the tripping up is always dangerous. It should also be well drained, so that swampy patches, which are most unhealthy, may be avoided.

A **bicycle shed** is a modern necessity in most schools, and adequate provision should, therefore, be made for the care of bicycles.

THE TIME FOR PLAY.

Every spare moment not already occupied by work, meals, or sleep, should be allotted to play, and recreation of some kind.

There is one important point connected with this rule—that no *very active* exertion should take place for at least an hour and a half after a full meal, such as dinner. And yet there are schools where long "runs" commence the moment dinner is swallowed.

The **time allowed for play** varies considerably in different schools. In the preparatory school arrangements, given in Table XXXI., page 272, it will be seen that two hours are allotted every afternoon, besides odd moments, and a half-holiday every Saturday: this arrangement is excellent.

In Table XXXII., page 273—which, with minor modifications, exhibits the usual arrangement of work in most of our great schools—there is a half-holiday every other day, the intervening day being one of rather full work. This arrangement should be altered, by substituting some active game *every* afternoon. In addition to half-holidays, several

"saints' days" are observed in some schools; but it is time that these whole holidays were abolished, as they seriously and most unnecessarily interfere with work.

In Table XXXIII., page 274, I have presented an arrangement which is in operation in public day-schools; it practically affords very little daily recreation, but allows a whole holiday on Saturday. This means that boys at these schools are virtually allotted no time for exercise during sunlight, for five days during the week, from November to March. This plan, also, does not ensure sufficient rest for boys during the five working days.

In some schools, not only have the boys a half-holiday every other day, and a whole holiday every saint's day, but in the middle of the term an "*exeat*" is allowed, and boys are then permitted to go home for one to three days. In old times, when terms were half-yearly, this was perhaps a natural arrangement; but now that vacations at home occur three times in the year, involving four months' absence in all, exeats are unnecessary and injurious to the boy and his school. They constitute a most serious interruption to his work: the school, too, is exposed to the possibility of infectious diseases being introduced in the middle of the term: the risk and anxiety in this respect at the beginning of each term are already more than sufficient to be endured. I trust that exeats may soon be abolished at every school, since, under existing conditions, they are absolutely indefensible.

GAMES.

Having discussed the importance of physical education, its periods, methods, and necessary appliances, during the years of adolescence, we are in a position to speak of the various ways in which physical education should be promoted. I would first insist that stately walks, two and

two, in town, for either boys or girls; and the employment of the Swedish, or Ling's system of gymnastics, and physical drill, so excellent in themselves, especially for the delicate, maimed, and deformed (but not required for boys whose muscles have had free play at games), are not the modes in which exercise and recreation should be secured for normally growing boys and girls. Even the gymnasium, with all its advantages, should never be permitted to take the place of **games**; but only to supplement them at odd moments, in winter, after dark, and on wet days. The gymnasium, and physical drill mean change of work, it is true; but nevertheless it is work, and not recreation.

The exercise of the young—if it is to be susceptible of the highest value—must be taken in the open air, in the form of games. It should be **recreation, as well as exercise**; not a set lesson in the hands of the gymnasium instructor, or the drill-sergeant.

In considering the question of exercise, it is well to remember that an excess of anything satiates and sickens: change of work, and change of play, are as important as variety in diet. It would be as unreasonable to feed a boy always on plum-cake as it would be to keep him always playing at cricket, or always learning Greek. While we are constituted as at present this variety must be provided, and a master should be told off to organize, and to be responsible for each kind of game adapted to the different tastes of the boys; in this way all can obtain the form of recreation in which they take a keen interest, and thus follow their several bents under guidance, with the acquisition of specific expertness.

Games should be adjusted to age, constitution, and sex, as well as the seasons of the year. The same game played too frequently not only satiates, but deforms. An infinite variety of exercise is essential for the perfect development of the body as a whole.

The **games and exercises suitable for boys** comprise—

Football.	Base Ball.
Cricket.	Wrestling.
Riding.	Fencing.
Walking.	Boxing.
Running.	Gymnastics.
Brook-jumping.	Physical Drill.
High-jumping.	Cycling.
Skipping.	Rifle Corps.
Rowing.	Rifle Shooting.
Swimming.	Camping out.
Skating.	Workshops.
Racquets.	Natural History Excursions.
Fives.	Gardening.
Lawn Tennis.	Music.
La Crosse.	Singing, and Glee Club.
Golf.	Art.
Hockey.	Drawing.

It is beyond my province to discuss the merits of each of these methods of exercise, but I cannot pass all of them in silence. Each boy has his taste for some games, and his aversion from others; within certain limits, he should be able to exercise his choice in recreation. If exercise be insisted on, as it should be, manly boys at school will be produced, who will develop into *men* in the best sense of the term. If each boy were to furnish an account of his exercise, its most efficient working would be facilitated.

With respect to the much-abused and healthy game of **football**, the chief outcry, periodically raised, is against the playing of the game according to "**Rugby rules**."

That accidents do occur at football, and when played under "Rugby rules," is beyond question. But to whom do they usually happen? Almost invariably to grown men who have excelled in past years, but who have now lost their elasticity, are out of training and flabby, and have increased in weight and lost the old knack of playing. To these players the game may be injurious—that is to say, the good obtained may not counterbalance the risk incurred; though even of

this I am not sure. But I trust the time is far distant when football, as a winter game, is to be banished from our schools, unless some equally active and exciting form of play is substituted.

Football should not be played, amongst growing boys, more than three times a week, and only when the ground is suitable: fifty minutes are ample for each game. Masters should be on the alert to see that the game is not played too fast—the modern tendency—since this practice entails too severe a strain upon growing boys. Odd half-hours, in winter, are well spent in "drop-kicking" and "squash" association football.

The outcry against all games, whether football, rowing, riding, or tennis, for example, should not be levelled against the games themselves, but be directed solely against the practice of playing at a time when the physical condition of the players is unfitted for the exertion.

The man who is unwise enough to think that, because he has been the best football player at school, he can always play hard, without previous and prolonged training, is sure to meet with accidents. He who, having once been in his university *eight*, assumes in subsequent years that he may, without fresh training, row hard in a "scratch" race with impunity, is certain to over-try his heart—with a popular clamour against boating, as the result. Those who incur the sprains of the rider and of the lawn tennis player are almost invariably those who ride hard and play hard at the beginning of the seasons, when they are out of training and condition.

I maintain, from a long experience, that football, as played at our schools, by young, elastic, light boys, highly trained, and always at it, is—where bear-play and the spleen of the bully are repressed by the conscientious reporting, without fear or favour, to headquarters, of every infringement of legitimate play—a great gain to schools and attended very

rarely by accidents, and those seldom of a serious nature. The way in which accidents most frequently happen in football at school is when boys play with men; and thus the "sides" are not of equivalent size and weight.

My experience does not enable me to recognize either the justice or prudence of parents in raising an outcry against football, as played at our schools. That it has its accidents, like, but not worse than, cricket, boating, jumping, the gymnasium, and every other boys' game, no one will gainsay; but its benefit to boys far outweighs its defects, and all who know anything of it from experience, and not from hearsay, will admit the justice of this statement.

No word is necessary in praise of the virtues of cricket as a recreation. I would only remark that if the *elevens* of our great schools are to attain the perfection of which they are susceptible, a thorough organization of the game must be effected throughout the entire school, so that the requisite capacity may be educed early in life, and well developed during youth. At the present time there is too much looking on at the "swells" by the little boys; and, far too frequently, a whole school will be found observing the few elder boys playing, instead of learning cricket themselves.

Cricket, like other games, should be compulsory, at all events on some half-holidays. But, as there are some few boys who have an inherent dislike to cricket, and a total inability to play—boys who can neither bat, bowl, nor field—these, after a thorough trial, should be exempted. For, if compelled to play, they are bowled out during the first "over," and for the remainder of the half-holiday, while their own side is "in wicket," they are loafing about and taking no exercise; or "fielding," and that very badly, for their opponents. Such boys would obtain far more recreation and advantage to themselves from some other form of exercise, and at the same time the game in which their fellows exult

would not be marred. When thus excused, however, some other occupation should be enforced, and they should not be permitted to make their aversion from cricket a ground for idleness. A distaste, too, is engendered for the game, in consequence of the small boys having to "fag" at the nets too long, and too frequently, for their seniors. Moreover, the boy who never takes any other exercise, such as walking, running, and swimming, must not assume that he will excel at cricket. The best cricketer needs running and walking exercise to train his wind and legs for a long innings. And he requires fives, racquets, and continual bowling and throwing, in order to bring his arms and chest into the most effective condition.

One of the great obstacles to the game of cricket at a large school is the want of space; for the "pitches" are sometimes so close together that the play is fraught with danger. And on account of this difficulty many boys cannot play, unless the games are perfectly organized for the benefit *of all*. It would be interesting to count the number playing on any given half-holiday, for every "pitch" accounts for twenty-two boys. What are the others doing? Is any other game planned for them?

Boating is one of the best exercises for boys and girls, and every available piece of water should be utilized for the purpose, since the exertion develops all the muscles almost equally, making strong arms and legs, a well-expanded chest, and a straight, strong back. It is also, when carried out with precaution, adapted for the development of the heart and lungs. Again, it induces training in endurance, pluck, and determination. But I think it would be an invaluable rule to restrict boating to those who take the trouble to learn to swim first; the pursuit, while necessitating swimming, would thus be safer.

In rowing, it should be particularly borne in mind that frequent periods of rest are necessary, for the tendency here

is to prolonged exertion. Those who row should begin quietly, and by degrees increase the distance and force, until a long distance can be traversed without fatigue or harm. No severe exercise, such as rowing, should be undertaken without prior training, by those who have been leading a sedentary life, by those recently convalescent from an illness, or by those suffering from colds or coughs.

The following **rules for boating** should be enforced:—

1. Every boy should *learn to swim* before he is permitted to enter a boat.

2. Every boy should be compelled *to keep on his own side* of the river.

3. Every boy should be taught the *danger of weirs:* that there is danger in loitering in their vicinity; and that the apparently still water above a weir is even more treacherous than the turbulent pool below.

4. Every boy should be taught *never to stand up in a boat*, under any circumstances whatever. If it is necessary to change seats, the boat should be first rowed to the shore, and be held by the boat-hook.

5. If a *boy falls from a boat into the water*, he should be made to hold on to the boat while it is rowed to shore before he is permitted to re-enter.

6. If a *scull falls into the water*, the greatest care is requisite to avoid upsetting the boat while recovering it; and reaching over the side to seize an object in the water is most dangerous.

7. Every boy should be taught to beware of *steam launches, and to get out of the way of their wash.*

8. Every boy should be warned, before he is permitted to enter a boat, of the danger of *larking* in it.

9. No boy should *tow a boat* until he has thoroughly learnt the intricacies of the process, which, neglected or unknown, are sure to bring disaster.

Walking should be encouraged as one of the finest forms

of exercise; and interesting and instructive rambles over the country are more practicable in this mode than in any other. It is also a form of healthy activity which is available in manhood when the habit has been cultivated in youth. He who has been unaccustomed to take vigorous exercise in early years is little likely to acquire the practice at a later stage.

There are few modes of activity more healthy and enjoyable than **running**. Some of the pleasantest reminiscences of school-life are the **cross-country runs**; and, I am also bound to add, among the most painful. These runs are as much enjoyed during boyhood, as are runs with the hounds during manhood. And they deserve encouragement: they are a valuable mode of exercise on wet days, when snow is on the ground, and when the ground is frozen too hard for games. Even apart from the healthful effort they involve, they are useful in preventing the idle hanging round a fire, which is apt to be the custom on such days.

The running at schools varies from one hundred yards to thirteen miles and upwards. Opinions greatly vary, dependent upon the capacity of the runner, whether the short and quick run, or the long one, is the more arduous. There can be no doubt, however, that the short and quick run is apt to cause immediate damage to the heart from strain, from which in all probability it soon recovers; while the long running rather tends to create permanent mischief in the organ from dilatation. I may go a step further and assert that, for *boys* at school who have not finished growing, the short and quick runs are harmless; while the prolonged effort is frequently productive of much mischief, from lack of staying power. To growing boys a three-mile race is often the most exhausting, on account of its being run at the *pace* of a mile race, and should be prohibited. It is not feasible here to enter into detail in proof of this, but the experience of a close observer during a generation, who sees every

accident as soon as it occurs, is of some value. I may add that, for full-grown *men*, the short quick race is more harmful, and more trying, than a prolonged run.

Running, as adopted at our great public schools, comprises three kinds—

1. **Athletics**, where the running varies from one hundred yards to a one-mile race. These competitive races should be forbidden except for those who are strong, and known to be expert runners.

2. **House-runs**, where the running varies from three to thirteen miles and more, and is performed mainly along the high-roads.

3. **Paper-chases**, which are run across country, and include **brook-jumping**. These cross-country runs are a most exhilarating and enjoyable English pastime, where the distance is not too long; or the pace too quick, but with plenty of time allowed for walking; or the brooks too wide. For brook-jumping necessitates accurate judgment, courage, and staying power. Judgment and discretion are required in learning to run quietly, so as to save "the wind" between each jump, and thus retain a maximum of "wind" for carrying the jumper over the brook dryshod. Judgment and knack are again involved in avoiding loss of time, and these qualities are only acquired by practice and experience, in learning to "take off" accurately and quickly, and "land" and pick up the running again on the other side with agility. But—to use a phrase which will most influence boys—the un-English method of brook-jumping, where no attempt is made to leap, but where every brook is waded, and every boy drenched, is so senseless and dangerous a proceeding, that this form of the game should be ostracized by the "scratching" of every boy who does not "come in" dryshod —a certain sign of his having jumped the brooks.

Of all boys' exercises for recreation, there is none (not even rowing) that permits of over-exertion so readily as that

of *running*. Those who have not finished growing are equal to almost any quick, active, temporary exertion; but are incapable of sustaining prolonged strain without lifelong harm sometimes resulting. As, on the one hand, there is no greater advocate of the art of running than myself—for I regard this exercise as an excellent means of promoting the growth and development of boys and girls, who sit much at lessons—so, on the other hand, I am an unsparing opponent of unwise and unreasonable running, with its frequently serious consequences. These results are denied by many who ought to know better; but if the experience of the sufferers (those who *cannot*, or *ought* not to, run, but who nevertheless are compelled, with more force than persuasion) be considered, instead of the opinion of strong athletes, the true state of affairs would be so patent as to necessitate immediate redress. But, with the curious perversity of human nature, every one's view is sought but that of the sufferers, who alone know "where the shoe pinches."

The subject of **over-exertion** is one of such general concern, that it demands a place in a Book on Health, on account of the permanent consequences it may involve. It is not always easy to provide that exercise shall not degenerate into *over-exercise*, when one has to contend with the enthusiastic impulses of exuberant youth. Still, vigilant care should be used to ensure that no exercise should proceed too near the border-line of over-exercise; for any adverse circumstance, such as slight impairment of health, a warm day, soft ground, mist or fog, or a high wind, may then produce disaster.

In order to obviate this result, every exercise should be adjusted to the age, size, and physique of the young: that which may be most suitable for the age of nineteen, in a robust constitution, is most inappropriate at the age of thirteen, associated with a delicate physique. These simple but important points are insufficiently recognized, and it is

quite refreshing to find boys voluntarily "sized" for their games, where the nature of the game itself does not render this course imperative.

Properly arranged, under a reasonable system, running cannot harm boy or girl. It develops lungs, heart, and limbs; and teaches the importance of graduated exercise, with the object of getting by degrees into training for more arduous exertion.

There are some parents who would still prefer that their boys, like their girls, should take their exercise in walks two and two, under the superintendence of an usher. A public school is not a suitable place for these young gentlemen and ladies! I would rather teach girls to avoid stately walks, and take the exercise which will improve their physique, promote a graceful carriage, and afford enjoyable relaxation. But if running were established in a suitable form, no reasonable parent would have any ground for objection.

I will define what I regard as **reasonable running**, *i.e.* running which will develop, and not damage, the body. Our large schools comprise, as a rule, a certain number of boarding-houses; but a few, in addition, have a large proportion of the boys housed in a central building, where the plan I am about to suggest can be more readily carried out. I shall describe the scheme in connection with the former arrangement. A boarding-house contains from thirty to fifty boys. These boys consist of *average* boys, by far the larger number; boys *above* the average; and those *below* the average. Of these two latter classes there may, perhaps, be half a dozen in a house.

1. The six boys who are *below the average*, from their size, physique, recent illness, or delicacy of constitution, should form a "run" of their own, united with similar boys from other houses. The "run" should not exceed *three miles* in *distance*, nor the *pace* surpass three miles an hour. On *warm*

days, when fatigue is more easily induced; on *foggy* days, when the breathing is less free; on days when the *ground is heavy;* and at the commencement of each running season, still more time should be allowed. This practically means that these small boys would, on days when games cannot be played in the school field, be compelled to take a three-mile run across country; and that they should have a spurt of running, then a walk, a rest, and so on. For all the young —and rightly so—dislike the solemn, aimless walk. Some, who have not tried it, will inquire how boys can take an hour in *running* what they can easily *walk* in that time. Those who desire to learn experimentally the *fact*, should endeavour to *run* three miles within an hour. They will find that, after two hundred yards have been passed, they will want to walk, "to get their wind;" and that when they walk, they only do so at the rate of a mile an hour. When, too, they have covered half the distance, they will be glad to stand and rest a few minutes. They will thus find that an hour is not too long for the feeble, or those out of training, to accomplish the run of three miles.

2. The next set of boys, comprising, perhaps, half the house, who are *up to the average* in respect of age, size, and physique, including also boys much over-grown, should take a run not exceeding five miles, with the rule that no one should be allowed to compass it under the hour. More time should be enforced on unsuitable days.

3. The next set, consisting of the other half of the house, which comprises those who are *up to the average* for their increased age, size, physique, and stamina, might have a run never exceeding seven miles, each to take his own time, and on bad days extra time should be enjoined.

4. The six strongest boys in a house, associated with similar boys from other houses, and receiving their promotion on account of acquired and well-trained running ability, might be permitted to take a nine-mile run; but this distance

should rarely be exceeded by growing boys, and then only by those *known to be* running experts. No one should be allowed to enter this set without passing through the lower grades. Each should take his own time, and additional time should be enforced on unsuitable days.

Every "set" should be under the charge of a captain, who should be recognized by means of a distinguishing badge, and who should report any case of incapacity during the run immediately on his return: the case should then be closely investigated. He should, further, have the power of *compelling* any boy to walk home who showed signs of fatigue. He should responsibly arrange that the runs should be slower, and shorter, *at the commencement of the running season.* In this way, no boy could run beyond his capacity; his exact staying power would become known to the captain of the run, and the house-master; and no boy would be promoted from one set to another until he was declared fit.

To those who require a justification of these precautions in a recreation so natural to boys, I reply that boys do get overdone, and suffer considerably, as men do, from lack of judgment, and want of thought, as well as from ill-arranged and unorganized systems, as I shall proceed to show.

A boy becomes **overdone from running from various causes,** such as poor physique; running distances beyond his capacity, or at too quick a pace; and, though possessing a good physique, undertaking long distances without previous training. By *training*, I mean that boys should run a few yards, then walk; then run again, and so on. Moreover, the same boy will run the same distance, at the same time, and at the same pace on a *cold* day, and come in fresh; while on a warm, muggy day, with the ground heavy, he will finish *merely fagged;* or he will *faint*, or *vomit*, on the way, and require to lie down on the road; or he will complete his run, but *vomit* all the evening after reaching home; or, if still

more over-taxed, he may become absolutely *insensible* while running, and this state may last for hours; or he may *die* while in the act of running.

The first symptom of **distress while running** is an *inability to continue breathing* with comfort. The respiration becomes quick and shallow, followed by a gasp and a sigh, with a sense of constriction, probably diaphragmatic, and growing still shallower and more irregular.

Then *bright specks* are seen in the eyes; and the eyeballs throb, the pulsation being seen as well as felt.

Then some *loss of power takes place in the legs:* they will not run straight; the knees give way.

At a further stage, the runner becomes *completely dazed:* he runs mechanically, does not know what he is doing, or where he is going. At the last stage, he becomes insensible, falls, and dies. Professor Michael Foster points out that this lamentable fact arises really from blood-poisoning, in consequence of the presence, in excess, of some substances introduced into the blood by the contraction of the muscles. And, further, "that no ordinary physical examination will be able to determine whether a lad is fit to undertake a 'run'—it may, of course, in many ways, show that he is *not:* in the present state of our knowledge, this can only be settled by *trial.* No boy should be allowed exertion beyond a certain limit, who *has not proved by trial his fitness for it.*"

It is accordingly clear that, while running is an excellent pastime, it should be practised as a man climbs a ladder, one rung at a time; that it should be absolutely under control, and adapted to the age, size, and physique of the runner; and, further, that **some boys cannot run,** however sound they may be certified to be.

As football played on every half-holiday in winter is too exhausting, if any mental work is to be levied, and since many days in winter are unsuitable for that pastime, some

other exercise must be substituted, in order that recreation may be provided for all weathers.

There are many valuable games, mentioned on page 364, which have been allowed to disappear from our schools, and which could be advantageously resuscitated if the junior masters could be induced to organize them, one master for each game, and thus render them popular; or even if a few of the masters would themselves play with the boys. The gain to schools would be immense, if *sometimes*, and for some boys *always*, less arduous exercise were available than football and running. These games are capital *pièces de résistance;* but they are too solid for all occasions.

Our great public schools (and this circumstance constitutes one of the signal benefits of large schools) should not only provide football, paper-chases, cricket, and boating, but also racquets, fives, lawn tennis, and hockey.

Hockey can be played regularly before, after, and even during the football season, and the exhausting effects of excessive football can thus be avoided.

Skipping is one of the most simple, general, and effectual means of obtaining valuable exercise for the development of the body.

A gymnasium should be accessible, and utilized by all boys for odd half-hours for certain exercises, and at stated times for the regular course of gymnastics.

For ill-developed boys it should be available *daily* for a special class.

Physical Drill should hold an important place in school exercises, where games are impracticable, as in towns; or where they are only occasionally feasible in consequence of the distance of the playing fields from the school. It teaches the young to act in unison, to obey words of command with promptitude, ensures an erect carriage, and removes stooping and a slouching gait.

It should also be instituted as a mode of superseding

mental punishments; and for the daily drill of badly-growing boys.

A **rifle corps** affords excellent training in shooting, in exercise, and skill as well as in discipline, and teaches boys early the difficult but important lesson of acting together under leaders: "**camping out**," too, is beneficial in every way when the corps is officered, as it should be, by conscientious masters; and when those who encamp learn to do for themselves everything which appertains to tent life. I would also urge that the organization of the rifle corps should be extended to our schools throughout the country, and that nearly all boys at school should pass through its ranks. All possible means for its encouragement should be adopted, not only for the sake of the benefit derived from the drill, the promotion of *esprit de corps*, the rifle shooting and the camping out, but also for the ultimate advantage of the nation; and elementary **engineering** in all its branches might be added with advantage to mind and body.

A **Brass Band, and a School Drum and Fife Band** attached to the rifle corps, also afford occupation, interest, and instruction to many boys, and furnish an excellent training.

The formation of an **Ambulance Corps** would also attract and instruct elder boys, and enable them to be expert and helpful in minor accidents. Enrolment would also train them early to show sympathy with suffering.

There should be added **workshops** to develop mechanical taste, which is of advantage to all and of great value to many, while they form a capital resource on wet days. In speaking of the education of a gentleman, John Locke, himself a physician, said: "I would have him learn a *trade* —a manual trade." This would ensure the education of the *hands*, which at present is insufficiently regarded.

It might not be amiss, too, if a **billiard table** were provided, where play could be obtained on wet half-holidays.

Many of the boys in our great schools have billiard tables at home where they have learnt to play, and enjoy the game. A wet day makes them long for a game, and consequently the public-house is apt to become an insuperable temptation. Why this excellent game can only be played in school-life at the public-house is not easy to understand!

I further suggest the useful and healthy *swimming bath*: a library and art museum: natural history and debating societies: music: singing, which develops the chest: drawing: bicycle excursions: and gardening, the last of which could generally be easily arranged and made most enjoyable, especially for the delicate boys.

Thus occupation would be provided for every boy of every conceivable taste, and in all weathers. I need scarcely add that it is most important that the gymnasium, racquet court, and workshops should be thoroughly ventilated, if they are to prove a means of healthy recreation.

I lay special stress upon the value of the swimming-bath and bathing. Every school that can possibly manage it should have a place in which the boys can learn and practise **swimming**. If the *sea*, be near an excellent place is thus afforded in the summer for learning to swim. The difficulty in adapting arrangements, however, in order to avoid interference with school work, is the dependence upon the tides.

If a *river* be available, it may be utilized, with advantage, for summer-bathing; for a running stream, in warm weather, is much more enjoyable than a *school swimming bath*. But where neither of these accessories exists, and when the weather is unsuitable for open-air bathing, the **swimming bath** under cover, the water of which has been suitably warmed, furnishes a most important desideratum at schools for bathing throughout the entire year, and a safe means for teaching the smaller pupils to swim.

Swimming should be taught, if necessary; though, as a

rule, nearly every boy will learn by himself, or from his school-fellows.

For a certain time during the day the bath should be closed to all but those who cannot swim, in order that beginners may be better able to learn unnoticed.

The size of the bath should vary according to the number of boys in the school. The entrance should not be at the end from which the boys dive: the door should open on one side of the building by a porch; then, as the door opens, no one can see the bathers inside, nor can the wind enter with a direct rush. The bath itself should be arranged for all sizes of boys, and two points are essential in its construction—

First, that the hot water should enter the bath from the boiler at the *shallow* end, where the little fellows in learning to swim paddle so long in the water, so that they may have the benefit of the warmth.

Secondly, that the *cold* water should leave the bath for the boiler from the deep end, and from the bottom of the water; and that the *hot* water, as I have said, should enter at the shallow end at the bottom of the bath. Being specifically lighter, it will rise to the surface, and thus, by its upward movement and constant circulation, warm the water throughout. When the hot water enters the bath at the surface, as is sometimes arranged, it simply floats on the top like oil, its heat ascending and warming the building only, while the water below is absolutely cold, often 15° Fahr. lower than that at the surface. There is not only a great waste of power in such heating arrangements, but it is positively injurious to swim in water which is hot round the neck and cold to the feet; occasioning fainting in the young, and tending to produce apoplexy in the middle-aged.

There is, however, a better plan than that of passing the water from the bath itself through the boiler, by providing a

system of hot-water pipes round the bottom of the bath, and circulating through them hot water or steam.

The temperature should never be below 65° Fahr., or above 70° Fahr.; for boys, winter and summer, generally stay too long in the water—which should be discouraged.

If bathing is to be a source of health, and not a cause of mischief, it is necessary to bear in mind certain rules, the most important of which are those prescribed by the "Royal Humane Society," in relation to the **Time of bathing**. I cannot improve upon their excellence, except by adding another.

IMPORTANT TO BATHERS.

1. Avoid bathing—within TWO hours after a meal.
2. Avoid bathing—when exhausted by fatigue or from any other cause.
3. Avoid bathing—when the body is cooling after perspiration.
4. Avoid bathing altogether in the open air if, after having been a short time in the water, there is a sense of chilliness with numbness of the hands and feet; but
5. Bathe when the body is warm, provided no time is lost in entering the water.
6. Avoid chilling the body by sitting or standing UNDRESSED on the banks or in boats after having been in the water.
7. Avoid remaining too long in the water; leave the water immediately there is the slightest feeling of chilliness.
8. The vigorous and strong may bathe early in the morning on an empty stomach.
9. The young, and those who are weak, had better bathe two or three hours after a meal; the best time for them is from two to three hours after breakfast.
10. Those who are subject to attacks of giddiness or faintness, and those who suffer from palpitation and other sense of discomfort at the heart, should not bathe without first consulting their medical adviser.

And I would add—

11. Bathe as many times a day as you like, provided you are not in the water each time for more than a few moments. In summer, a plunge and out again, several times a day, is not only refreshing, but very invigorating.

Harm results when boys remain so long a **time in the water** that they get thoroughly cold. The time should be measured by minutes, not by quarters of an hour. Bathing makes the skin more healthy, and gives it tone: *prolonged* bathing, on the contrary, has a depressing action on the skin, and at the same time congests the internal organs, with resulting serious mischief, as I have already explained.

Being impressed with the vast general importance,—an importance not limited to school-life, but extending indefinitely,—of teaching boys while at school the method of saving a drowning person, I proposed in 1882 to institute a prize at the school which I have the honour to serve. Casting about for the best way of carrying out this intention, I asked the Royal Humane Society if they could help me with an examiner and a medal, provided I reimbursed them, as I thought the prize would be much more valued by the winner, and would create more competition, if it came from so estimable an official source. I pointed out to the Society what a vast amount of benefit would be effected if the suggestion aided in making the boys of our public schools take an interest and excel in **life-saving by swimming**. The Society immediately entered into the scheme warmly, and themselves very generously awarded "an annual *silver medal* for each great public school for the best practice in rescuing from drowning;" thus, I hope, there will pass into the world every year hundreds of boys, well skilled in life-saving by swimming—able themselves, and capable of teaching others.

RULES TO BE OBSERVED BY COMPETITORS FOR THE PRIZE SILVER MEDAL AWARDED BY THE ROYAL HUMANE SOCIETY FOR PROFICIENCY IN SWIMMING EXERCISES AT PUBLIC SCHOOLS AND TRAINING-SHIPS WITH REFERENCE TO SAVING LIFE FROM DROWNING.

1. The Competition shall be open to all boys of the school (or training-ship), subject to the approval of the head master (or officer commanding training-ship), provided only that no one shall be allowed

to compete unless he has given satisfactory answers in the preliminary examination.

2. The Competition shall take place in the river or other bathing place used by the school (or ship), and shall be carried out under the supervision of the head-master (or officer commanding) or such umpire as he may appoint.

3. The Competition shall consist of the following trials:—

1*st Trial.*—A dummy, or block of wood to represent a body, to be floated at some distance, not exceeding thirty yards, from the place where the competitor has to enter the water. He is to swim to it, and bring it back to the starting-point.

N.B.—In running water this rule may be modified to such extent as the head-master or umpire may consider necessary.

2*nd Trial.*—A weighted dummy or block of wood, with arms, to be sunk in a known spot at some distance, not exceeding fifteen yards, from the place where the competitor has to enter the water. The boy to swim to the spot, dive, and bring the dummy to land at a place appointed. The spot where it is sunk may be indicated by a floating cork, not to be attached to the dummy.

3*rd Trial.*—A dummy to be sunk in the bath or river; the place not to be indicated. The competitor to enter the water at a given point, dive, find the dummy, and bring it to shore. In bringing the dummy to shore the head must be kept above waters.

Every boy shall be allowed one attempt in each of the 1st and 2nd trials. In the 3rd trial (as the element of chance enters to some extent), he shall be allowed to have three trials, should he fail to find the dummy in his first, or first and second efforts.

4. A certain number of marks shall be allotted on the following basis to every competitor in each of the above trials:—

1*st Trial.*—10 marks maximum; divided—5 for time, and 5 for manner of handling.

2*nd Trial.*—25 marks maximum; 15 for time, and 10 for handling.

3*rd Trial.*—(*a*) 30 marks maximum; 15 for finding (the full number to be given for bringing the dummy to land, whether after one, two, or three attempts), and 15 for handling.

(*b*) To competitors who have failed to find the dummy at any of the three attempts, but have exhibited an accurate and systematic method of search, and skill and endurance under water, the judges may award such marks, not exceeding 30, as they may consider to have been earned.

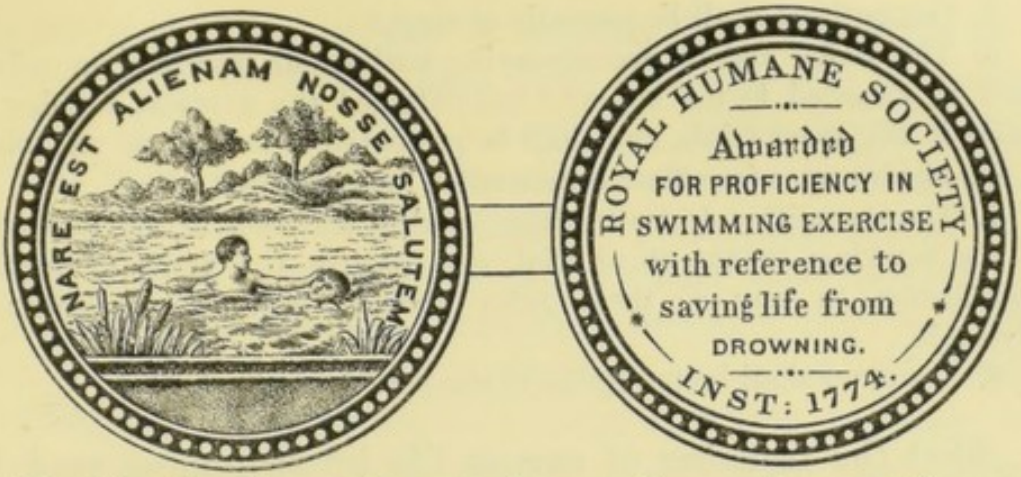


FIG. 25.—THE ROYAL HUMANE SOCIETY PUBLIC SCHOOLS MEDAL.

ROYAL HUMANE SOCIETY.

INSTITUTED 1774.

SUPPORTED BY VOLUNTARY CONTRIBUTIONS.

PATRON,

HIS MAJESTY THE KING.

VICE-PATRON,

H.R.H. THE DUKE OF CONNAUGHT, K.G., &c.

PRESIDENT,

H.R.H. THE PRINCE OF WALES, K.G., K.T., K.P.

This is to Certify that a Silver Medallion for "Proficiency in Swimming Exercises with reference to saving Life from Drowning" has been awarded to

.....

.....

.....

....

SECRETARY. CHAIRMAN.

4 *Trafalgar Square,*
London, W.C.

5. Competitors shall be partially clothed.*

6. The Medal and its accompanying testimonial inscribed on vellum shall be awarded to the boy who has obtained the greatest number of marks in the above trials, and shall be presented at such time and place as the head-master (or officer commanding) may appoint.

7. The Committee desire to draw special attention to the extension of the marking in the third trial, and reserve the right of further modification in any of these rules should circumstances render it advisable.

8. A winner shall be ineligible to compete a second time.

That the teaching of saving life by swimming may be of use even while at school, I can personally testify, for a nephew of mine, a public-school boy of only fourteen years of age, saved, in 1885, the life of a school-fellow who, while bathing, had got into a sluice. He had already sunk twice, when this boy saw him, jumped in with his clothes on, and rescued him. The Royal Humane Society awarded a medal for this plucky act.

But while these "rescues by swimming" restore the poor victim to *land*, I should like to see him restored to *life;* and I have, therefore, supplemented the generous gift of the Humane Society, at my own school, by a small prize (a silver challenge-cup), for the best practice in the "**restoration of the apparently drowned,**" when he has been brought to land, to all intents and purposes dead, unless immediate help be forthcoming.

This method of "*How to Restore the Apparently Drowned,*" is one of paramount importance for boys to know, being not merely a question of health, but of *life*. Every now and then a boy is nearly drowned from a blow on his head in diving; or from cannoning under water; or from becoming faint through swimming too long under water, and from other causes.

Now, if life is to be saved at such times, boys must

* "Flannels," without boots or shoes, are suggested as an appropriate costume.

rely on themselves, instead of waiting for the arrival of a medical man, since the first few moments are the most critical. I am, therefore, striving to teach boys how to act on these occasions. There are various methods: for instance, *Marshall Hall's*, which is practically out of the question, as it requires two, if not three, boys to carry it out effectually; but where will three ordinary boys be found in a moment able to act calmly in concert? The same objection applies to *Silvester's method*, which requires, for serviceable use, that one person should hold the tongue, while another works the arms in the orthodox fashion. I do not think that one among five hundred boys would be competent to hold the tongue effectually.

I have, therefore, taught *Howard's method* (Figs. 26 and 27): first, because one boy can manage it alone; secondly, on account of its extreme simplicity and efficacy.

Why this method is not advocated and practised generally I cannot conceive; for although "Silvester's method" admits air freely into the lungs *when the tongue is properly held*—which is very difficult to effect, especially as the jaws are usually clenched—yet it is nevertheless not a question of the *quantity* of air admitted which is essential, but the requirements are, the expulsion of the water, the substitution in its place of air, and the ability of one person to complete the process. It is thus carried out:—

HOWARD'S METHOD.—HOW TO RESTORE THE DROWNED.

1. *Instantly* turn the patient downwards, with a large firm roll of clothing placed under the stomach and chest.

2. Place one of his arms under his forehead, so as to keep the mouth off the ground.

3. Press with all your weight two or three times, for four or five seconds each time, upon the patient's back, so that the water may be expelled from the lungs and stomach, and drain freely out of the mouth.

4. Then *quickly* turn the patient, face upwards, with the roll of clothing under the back just below the shoulder blades, and made the head hang back as low as possible.

5. Place the patient's hands above his head.

6. Kneel with the patient's hips between your knees, and fix your elbows firmly against your hips.

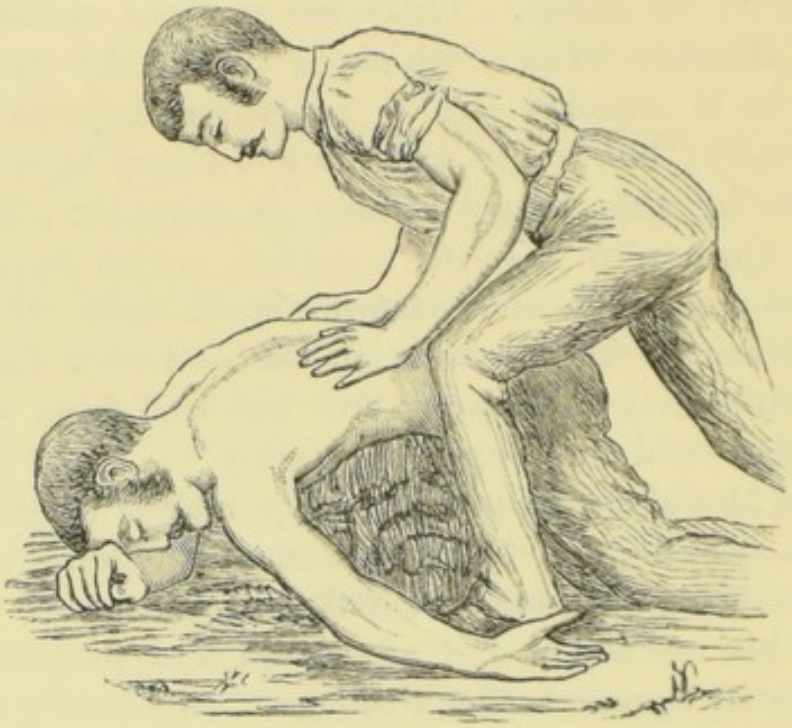


Fig. 26.—Pressing and draining Water from Lungs and Stomach.

7. Now, grasping the lower part of the patient's naked chest, squeeze his two sides together, pressing *gradually* forward with all your weight,

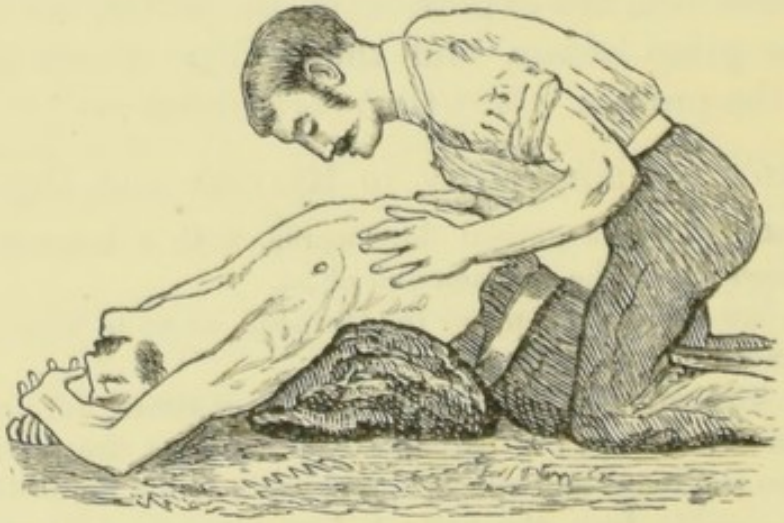


Fig. 27.—The Bellows-blowing Movement, for pressing Foul Air out and drawing Pure Air into the Lungs.

for about three seconds, until your mouth is nearly over the mouth of the patient.

8. Then with a push, *suddenly* jerk yourself back.

9. Rest about three seconds; then begin again, repeating these bellows-blowing movements with perfect regularity, so that foul air may be pressed out, and pure air be drawn into the lungs, for about eight or ten times a minute, and during, at least, one hour, or until the patient breathes naturally.

NOTE.—The above directions must be used on the spot instantly, without a moment's delay, or success may be hopeless.

Prevent crowding around the patient; plenty of fresh air is important. Be careful not to interrupt the first natural breaths; if they be long apart, carefully continue between them the bellows-blowing movements as before. After breathing has become regular, let the patient be rubbed dry, wrapped in warm clothing, take hot spirit and water in small occasional doses, and then be left to rest and sleep.

In the year 1903, Professor E. A. Schäfer instituted the following plan as the most feasible for the restoration of the apparently drowned:—

1. Immediately on removal from the water, place the patient face downwards on the ground with a folded coat under the lower part of the chest. Not a moment must be wasted by removing clothing. If respiration has ceased, artificial respiration is to be commenced at once: every instant of delay is serious.

2. To effect artificial respiration, put yourself athwart the patient's body in a half-kneeling posture, and facing his head. Place your hands flat over the lower part of the back of the chest, one on each side, and gradually throw the weight of your body forward on to them so as to produce firm pressure—which must not be violent—upon the patient's chest. By this means the air and water are driven out of the patient's lungs.

3. Immediately thereafter raise your body slowly in order to remove the pressure, but leaving your hands in position.

4 Repeat this forward and backward movement (pressure and relaxation of pressure) every five seconds. In other words, sway your body slowly forwards and backwards upon your arms about twelve times a minute, without any marked pause between the movements. This course must be pursued for at least half an hour, or until the natural respirations are resumed. Whilst one person is inducing artificial

respiration in this way, others may, if there be opportunity, busy themselves with applying hot flannels to the body and limbs, and hot-water bottles to the feet; but no attempt should be made to remove the wet clothing, or to give any restoratives by the mouth, until natural breathing has commenced.

It is thus evident that Schäfer's method is identical with the first half of Howard's, and that the body is kept throughout in the prone position.

TABLE XXXVI.—A TABLE OF NORMAL AND ARTIFICIAL RESPIRATIONS COMPARED. (SCHÄFER.)

Method.	Each respiration.	Total per minute.
Natural respiration	450 c.cm.	5850 c.cm.
Silvester's method	178 „	2280 „
Marshall Hall's method ...	254 „	3300 „
Howard's method	295 „	4020 „
Schäfer's method	520 „	6760 „

At one of our Universities, in 1885, a life was saved not only through practical knowledge of the method for restoring life, but owing mainly to indomitable perseverance. For even after the process had been well conducted for some considerable time, without any result, and when all hope of success was extinguished and efforts were being discontinued, a bystander suggested a prolonged effort, which was finally rewarded with success.

But supposing the attempts at resuscitation are in vain by artificial respiration, much can still be done by the doctor, who, where it is possible, should have been summoned at once. For, under such conditions, the right side of the heart is over-distended, from its inability to force the blood through the lungs owing to the cessation of respiration, and consequently it is unable to contract upon its contents. The entire venous system becomes engorged, and, in some

cases, ruptured from the over-distension, while the arterial system is more or less empty. Only one course can relieve this engorgement—that of venesection. Hence the necessity of obtaining immediately a doctor's services, who can also administer hot saline injections after venesection, and at the same time induce the inhalation of nitrite of amyl.

As I am keenly interested in the education of the young in the **Art of Swimming**, it may instruct some of my readers if I introduce a reference to those sad cases of sudden death where a powerful and skilled swimmer suddenly throws up his arms in the air and sinks. Various interpretations have been offered, and I advanced one in July, 1894. The catastrophe has been attributed to failure of the heart's action; to cramp; and to sudden water-pressure perforation of the drum of the ear causing vertigo, and unconsciousness. But, did any of these causes furnish the probable explanation, the accident would happen equally to the experienced and to the inexperienced swimmer.

Let us analyze the facts. A strong and experienced swimmer, while enjoying his swim, and when the suggestion of exhaustion cannot possibly arise, suddenly throws up his arms in the air, utters no sound, and sinks like a stone. Now, my interpretation of these facts is this—being a competent swimmer, he is able to take his breaths at long intervals, and sometimes completely empties his lungs before refilling them. The next inspiration accordingly he is compelled to take *quickly*, and, being low in the water, because of the absence of air in the lungs, a very slight ripple, or splash, on the surface may cause even a single drop of water to be suddenly sucked in with as great a force and rapidity as the suction power of a vacuum, which, producing a sudden spasm of the glottis, effectually obstructs the entrance of air, prevents the utterance of sound, and thus compels an instantaneous sinking, facilitated as it also is by the action of his arms. This misadventure never happens to the in-

experienced swimmer, who very rapidly becomes exhausted, for he is incapable of so managing his respiration as to empty his lungs before refilling, but perpetually takes his breaths at short intervals, and in jerks.

The great importance of learning to swim; of being able to resuscitate a drowning school-fellow; and the benefit that can thus be disseminated by hundreds of boys from public schools, must be my apology for dwelling at such length upon the subject in a treatise on "School Health."

SCHOOL FIRE BRIGADE.

There are naturally diversities of interest in all schools; and it is clear that the greater the number of interests that can be excited the better it is for the boys themselves, and the more conducive to their ultimate work in the world, where educated gentlemen are dispersed to all parts of the globe trained in every technical skill which may prove of service to their fellow-creatures.

A training in the modes of **saving life from "Fire,"** and in the concerted action necessary for **the extinction of fires,** is of inestimable practical advantage during school life, by enabling the boys themselves to afford assistance in the event of fire, and preventing panic. Every large school should, therefore, have its **Fire Brigade,** so that the boys may learn the manipulation of all fire-extinguishing and life-saving appliances. The membership of the brigade will be keenly desired, and the drill as ardently learnt.

IX.

ILLNESS.

Although **illness** at all times and in all places is one of the greatest of misfortunes, illness at school involves so much that is distressing, that we must consider minutely the modes of its prevention, the methods of treatment on its occurrence, and the restoration of health, without permanent weakness, or organic defect, remaining.

It is heartrending to the parents, who are often at a distance—both parents sometimes residing in India or in one of our colonies—from their child. For, knowing neither doctor nor nurse, they are naturally apt to think that no arrangements can, in any degree, be as effective as those which would be provided at home under the mother's eye, and with the attention of the confidential family medical adviser.

Every parent has, therefore, a right to be informed, as a settled practice, of the illness of his child at school, whether the illness be slight or severe. If it be slight, the child can write himself; if severe, the head-master, or the house-master should communicate the daily report of the medical officer.

It is an anxious time for the house-master, for he knows how a parent must feel, separated from his child at such a period; and he is consequently often over-solicitous that all that skilled science can do should be effected at the right moment, and in the right way, for the sufferer.

It is also a time of anxiety for the conscientious medical

officer, who has sometimes to bear alone the entire responsibility of a life. Never are those beautiful words of Hufeland brought more vividly home to a medical adviser than at such an epoch: "Thine is a high and holy office; see that thou exercise it purely; not for thine own advancement, nor for thine own honour, but for the glory of God, and the good of thy fellow-creature: hereafter thou wilt have to give an account of it."

It is anything but a pleasant time, even when the illness is not dangerous, to the boy himself. For, being naturally a lively animal, he feels acutely the necessary discomforts and restraints of illness, and is ever striving to be free. Moreover, he is separated, more or less according to circumstances, from his school-fellows and his games, and this he regards as a "bore."

When **convalescent** from an illness, he is often still more to be pitied; for, feeling well, he is longing to be set at liberty, before he is either free from infection, or strong enough to bear exposure and exertion.

But when a **death** at school takes place—fortunately so rarely that the mortality, in the school I have the honour to serve, only amounted to 15 deaths in 33 years, out of 435 boys always present, or one in 1306 or 0·07 per cent. per annum—the whole school is hushed: every one is appalled.

It is the aim of this treatise, not only to point out how illness and death may be reduced to a minimum in all schools, and under all circumstances, but also to **prevent seeds being sown at school**, which may develop, after school life has ceased, into vice, disease, and early death.

MEDICAL ARRANGEMENTS.

In preparatory schools, with a small number of boys, the **medical arrangements** are, of course, the same as in a

private family. The doctor attends only when summoned, and the patient is nursed in the same way as is usual in private houses, that is, in the quietest, or most isolated-room.

But in our great public schools a **complete medical organization** should exist—perfect in detail, and capable of coping with any difficulty, small or great, not only for the welfare of the individual boy, but also for the benefit of the entire school.

To ensure this, one essential condition must be observed: there should be undivided responsibility; consequently, **one medical officer** should be appointed, and one only. The whole school, including the masters, their families, and servants, should be under his supervision in medical and sanitary contingencies and regulations.

It is, however, the custom with some of our great schools to have more than one medical adviser. This unwise plan entails an injudicious division of responsibility without any compensating gain. One doctor is quite competent to deal with all the cases of illness that occur; and he should be solely responsible for the conduct of his staff of nurses.

At other schools, one medical officer only is appointed; but he is not allowed to practise his profession outside the school. A more short-sighted policy it is difficult to conceive. Such an arrangement is really disastrous to the welfare of the health of the school: the medical adviser tends simply, through restriction of varied experience, to rust and become useless. He literally has not sufficient illness "to keep his hand in;" consequently his power of diagnosis fails, and he becomes unable to diagnose any but a far advanced typical case. Whereas he should be able at any stage of every malady to diagnose early and accurately; for without accurate diagnosis no efficient treatment is possible.

If the reader will kindly refer to my Table of Infectious Illness at Rugby School, on page 457, he will see at a glance what I mean. For instance, in thirty-three years I have

seen, in my school practice, only five cases of diphtheria and four of typhoid fever. There is something wrong with a school in which many of these major illnesses occur; and yet, if the practical experience of the medical officer is limited to these few cases, he cannot obviously be in the highest state of professional competency for dealing with them when they arise. So that the custom is not only unwise, but bears unjustly upon the parent who has a child with a dangerous illness under the care of a doctor whose experimental knowledge is circumscribed by the school sick-roll—unless, of course, the school is so full of illness as to afford him sufficient practice. For wide practice is essential to efficiency.

It must surely be evident that it is the duty of the school authorities to appoint the best physician that can be obtained, of superior attainments and recognized high character, to pay him a suitable salary, and to allow him to obtain all the practice he can secure in the neighbourhood, including especially a hospital appointment where it is possible. By this means he will constantly see all descriptions of illness, arising in every kind of constitution, under every conceivable circumstance, and will thus be compelled, with advantage to the school, to keep abreast of the best and newest medical and surgical knowledge. A narrow routine tends to fossilize even the ablest men.

It is evident that when *typical* examples of the various diseases occur, there is not much difficulty in recognizing and treating them; but inasmuch as typical cases are the exception, and as all diseases present an infinite variety in their character and course, and require a corresponding modification in treatment, it is obvious that he is the fittest adviser whose experience of these variations is not confined to a single class of persons—adolescents—in which they appear, but extends to their manifestation in all sorts and conditions of men.

The **appointment of medical officer** to a great school

is one of importance, as will be seen from a discussion of his various duties; for on their proper discharge much of the health and happiness of the school will depend. The medical officer, while appointed by the head-master, should hold his office by virtue of the will of the governing body of the school, and not at the head-master's decision. For, if the medical officer, in case of threatened dismissal, possessed the right of appeal to the Governing Body, he would then be able to serve more completely and effectively the school and scholars, without the threat of dismissal being suspended over him at every turn, and at every suggested remedy for improvements or abuses.

Since this was written, I find Dr. Farquharson, M.P., in his work on "School Hygiene," making the following pertinent remarks: "In the first place, every school should be provided with a medical attendant, appointed by the head-master, working under his direction, responsible to him, and to him only, but with the right of appeal to the governing body in case of capricious dismissal. It is just possible, although not probable, that, as occasionally happens in private practice, sanitary recommendations may clash with the self-interest of those to whom they are made, or differences of opinion may arise on points of professional ethics, or even on actual practice. Under these circumstances, the assumption is not an extravagant one that an attempt may be made to cut the Gordian knot of controversy by the sacrifice of the opponent, and that the future career of the doctor may be seriously compromised by removal from his post. Such things have occasionally happened within the professional ranks of education, and may at any time happen again; but, inconvenient although it may be for an assistant-master to lose his appointment, he will seldom fail in obtaining employment elsewhere, and therefore stands on a different basis from the medical man, whose credit must necessarily suffer in the neighbourhood in which he lives, and who loses a

considerable and perhaps essential part of his income by dismissal. Without in any way wishing to impair the authority of the head-master, or to insinuate a doubt of the almost invariably kind and sympathetic treatment of those under his charge, we are compelled to admit the occasional infirmity of human nature and the possibility of injustice being done, and it will, therefore, be right to allow the doctor an appeal to the governing body in case of what may appear to him to be unnecessary or insufficiently explained removal from his post."

It would be an additional safeguard to public schools if the medical officers were held responsible in some way to the governing bodies, for it would obviate certain well-known difficulties, reported in the papers from time to time, and would ensure greater trust on the part of the public. I do not think that this responsible relation should take the form of a report on the sanitary and efficient state of the school premises, for that could be better accomplished by an officer entirely unconnected with the school. But a report on the sickness of the school might be furnished to the head-master for presentation to his governing body.

The medical officer should, therefore, be responsible to the governing body and the head-master for the entire arrangements in respect of sickness and accidents occurring at school. He should send the sound boys to their work, and prevent the unsound ones being worked when they are unfit. He should regulate and control the entry and return of all boys who have been sick, or who come from houses where sickness has occurred in the vacation. He should also, through the head-master, advise parents of any infectious illness that has arisen during the latter end of term, so that precautions may be adopted at home for preventing the infection of the family, and the spread of infectious diseases over the country from the school as a centre.

The **duties of the school medical adviser** are thus

fourfold, and of paramount importance. First, to treat accidents and sickness of all kinds; secondly, to have under his control all sanitary arrangements in the school, boarding-houses, and sick-houses; thirdly, to prevent infectious disease entering a school, and to minimize it if it occur; fourthly, to protect parents from such diseases being imported into the home from school.

But while, in order to ensure efficiency, I thus advocate undivided responsibility in carrying out the important medical work in large schools, I would also urge that a **consultation** should be obtained without the slightest difficulty whenever it is considered necessary by a master or a parent, with a view to the welfare of the patient, or the school; and to the prevention of the possibility of arbitrariness. *Nemo mortalium omnibus horis sapit.*

A **daily attendance** by the medical officer is necessary for the proper performance of his duties. He should visit the whole school every day at a certain hour, fixed at a time when all the boys may be found in their houses; and the earlier in the morning the better, so that any one feeling unwell may be immediately placed under treatment. This visit should be made most punctually, for boys are boys, and if appearance before the doctor entail the slightest trouble on their part, they will not present themselves; though if they know that the doctor can be found at a certain moment, they may then condescend to appear. Under this system alone can the beginnings of illnesses be ascertained, and their early detection, and isolation guaranteed,—sometimes long before a definite diagnosis is possible.

The **fundamental medical rule** for schools should be, that any feeling of indisposition must be declared at once. "*Report yourself to the matron or doctor on the occurrence of the slightest ailment*," must be the formula perpetually urged; for by this means alone can serious illness and epidemics be prevented. If the complaint be found to be *nothing*, the

boy should be sent into school: if a *slight malady*, he should be kept indoors, so that he may not become worse: if a *serious illness* be imminent, he should be removed immediately to the sanatorium, and placed under the most favourable circumstances for cure. If the *illness* be an *infectious one*, the matron should at once isolate the patient until the doctor has seen him, and then, if there be a doubt, he should be *quarantined*, or if a certainty, he should be immediately transferred to the school infectious hospital, and kept apart from the rest of the school.

The rule of reporting illness promptly is absolutely necessary for the efficient medical government of large schools. A great difficulty to be contended against is the careless boy, who, knowing that he is not well, even showing a *rash*, "thought it was nothing," and so fails to report himself, and thereby endangers the health and life of his school-fellows. Similar trouble arises from the disingenuous boy, who hopes to escape detection, and so *will not* declare himself. The special importance of reporting at once a *rash* on the skin, however insignificant in character, cannot be too early impressed upon all boys as soon as they enter school, for it averts many an epidemic by affording the opportunity of instant isolation.

There are a certain number of boys in all schools who, though not ill, are not sufficiently strong, for the time being, to bear the ordinary strain and exposure of school life. They need more home comforts and attention than can be well provided where the number of boys is large. **A School-home for Delicate Boys** would meet this requirement. As far as I can learn, in no great school is special provision made for these cases, although it could easily be effected without trespassing on any vested interests, and with very great benefit to the boys themselves.

The **class of boys** for whom this provision should be arranged in the shape of a *School-home*, includes young boys

who are not naturally strong, but weakly, and who need forethought for a year or two at the commencement of their school life before they are able to "rough" it amongst a large number: boys from a hot climate, who cannot bear much exposure for a term or two: boys who *have* a constitutional ailment that demands watching: boys who require special attention during school life in order to *prevent* the development, owing to an unfavourable family history, of a constitutional complaint: boys who have had a recent severe illness, from which they have recovered, but who still need the care of home life for a term or two, the parents not wishing them to lose ground at school by absence until they can dispense with this vigilance.

The **Officer of the School-home** might be a carefully selected junior married master; or, still more appropriately, the medical officer to the school, where he is capable of managing boys, and could be induced to accept their charge, as the boys would then be under constant medical supervision.

The **Constitution of the School-home** would demand mature consideration.

The removal of boys to it should be entirely under the control of the head-master, so that parents should possess no voice in the matter except through him. In this way every parent would not be under the impression that his own boy was delicate, and needed solicitude.

The fees, again, would naturally make the home prohibitive to any except those who *really* required the additional care. The number should be strictly limited, according to the number in the school, and every reasonable modern sanitary improvement should be introduced, so that the boy might be surrounded by every condition conducive to health.

Every member of the school-home should be assigned 1000 cubic feet of air-space in which to live and sleep;

and no house for this purpose should be licensed by the head-master without this essential provision.

By this means house-masters would be largely relieved of anxiety about such boys; parents would feel that a valuable aid to health had been provided; and the delicate boys would enjoy a better opportunity of losing their weakness, and growing into vigorous men.

PROVISION FOR SICKNESS.

Every boarding-house in a large school should have an isolated **day sick-room,** to which every boy who is not really ill, and yet not well enough to be at work, should be removed, and should remain under the constant supervision of the matron, who should exercise full control, and supervise his diet, as regulated by the medical officer. Schoolfellows should be prohibited from visiting these ailing boys without special permission: contact would thus be avoided between the healthy and the indisposed; and the conveyance to the latter of unsuitable articles of food would be prevented.

There should also be a **night sick-room,** in which a boy who is not quite well should sleep, in preference to his dormitory: this room should be reserved solely for this specific purpose. A separate lavatory should also be arranged for the use of the isolated pupil.

Should, however, a case of *infectious* illness remain in the sick-room for even a short time—for instance, while waiting for the doctor—the room should be thoroughly disinfected before another boy is placed there; and this may be effected by sulphur fumigation, or by formalin, as described under the heading of Disinfection on page 512. The bedding, also, on which the infected boy has slept in the dormitory, should be removed and disinfected, together with all his clothes, and the dormitory itself well flushed with a cross draught of fresh air as long as possible; for the sun and fresh air, which

permeate every crevice, are among the most powerful disinfectants which can be employed; or the fumigation should be effected by one of the methods already mentioned.

Information of the occurrence of the first appearance of an infectious disease should be officially given to the housemasters, so that they may be able to enjoin vigilance upon their matrons.

No boy who is really ill at school ought to be nursed at his boarding-house. For no adequate accommodation exists there for the purpose: no skilled nurse is in attendance: the noise and bustle are incompatible with the necessary care and quiet: every one is fully occupied with those who are in health: and his school-fellows, by always wanting to visit the patient, retard recovery.

How parents like to treat their children, when ill at home, is one thing; but how schools tend them, when they are absent from their friends, is another. Here the most perfect arrangements should alone be in force, and the best skilled nurses alone employed, so that everything may be devised, from first to last, for speedy and effectual cure. This rule cannot be questioned, and prevails, I believe, mostly, though not entirely, in all great schools. For I regret to say that cases of infectious illness are constantly treated in boarding-houses; thus, at one of our greatest schools I knew of seventeen cases of "mumps" passing through their illness in the boys' cubicles amongst the healthy boys. At another great school, cases of "diphtheria," one of which proved fatal, were treated in a master's boarding-house. At another school, there occurred many instances of "typhoid fever," five of which were dealt with in a dormitory of a master's boarding-house, and four in the school-house. Moreover, in one of our most ancient schools, which has been re-built at a distance from its former foundation, the governing body have not even seen fit to provide a sick-house of any kind, and all cases of illness, however infectious

in character, have consequently to be treated in the master's boarding-house. I refrain from comment on such unjustifiable proceedings.

A sanatorium, or sick-house, is indispensable, and should be installed for every great school, where *all* cases of *illness* and *accidents* should be attended to. Here, with appropriate arrangements, may also be admitted sufferers from *infectious diseases;* unless the school has made provision for two sick-houses—the one for accidents and non-infectious diseases, the other for infectious maladies. I think one sanatorium is sufficient, provided it be constructed *secundum artem*, and skilfully managed; for it saves the expense (and illness is generally costly) of two administrative departments. The ideal arrangement would be, of course, two sanatoria, absolutely distinct in every detail of construction, and administration, where economy need not be considered but these happy conditions I have never found.

At most schools, even were two sanatoria built, the practice of a single administration would still prevail on the ground of expense; so that no material advantage is gained by separate buildings.

Few schools could sustain the financial strain of establishing and conducting two perfectly distinct sanatoria. For this course would involve not only the construction of two buildings complete in every detail, but two adequate staffs of officials—matrons, nurses, and servants. Now, as one, or both of the houses, might contain no patients for weeks, and even months together, a considerable waste of money would be entailed; and if one only were officered when need arose, unsuitable appointments would often occur in consequence of the urgency and haste with which they would require to be made. Moreover, the contemplated object would be defeated when officered in this mode; for the staff of the one building would have to supply the vacancies in the other until the appointments were effected. Further, as

the infectious sanatorium would frequently contain several infectious diseases at the same time, in the various isolated blocks, no advantage would result. It is manifest, accordingly, that in making provision for school sickness **one sanatorium should be erected in isolated blocks,** capable not only of separating infectious from non-infectious maladies; but also of segregating one infectious disease from another when they concurrently occur. Each block should be allotted a separate nurse as occasion arises, and the food should be supplied from a single administrative block under the charge of a capable matron. Each block should possess its own crockery and other utensils of a distinctive colour, in order to avoid their use by other blocks.

But it is simply ridiculous for schools to incur the serious expense of providing means for the isolation of infectious diseases, if parents, masters, and their wives are permitted freely to visit the patients. Isolation where not absolutely complete is worthless. It would be preferable to treat openly all infectious illness as though it were non-infectious, than to devise means for perfect isolation, and foolishly allow *outsiders* to mix with *the sufferers.*

The **site of a school sanatorium** should be as near to the school as is prudent; for a sanatorium situated at a distance entails much unnecessary suffering and considerable risk; in fact, far greater hazard in removing cases of sickness, than is incurred by having a properly managed house for infectious disease adjacent to the school.

The building should be *detached*, standing in its own **grounds,** having no trees or erections near enough to keep off the sun and prevent the winds having free access in all directions. Its **wards** should, as far as possible, face due south, or south-east and north-west.

A **play-ground** should be attached, where sick and feeble boys can get fresh air and exercise when unable to take walks in the country, as well as space adapted for such

games as tennis, croquet, cricket, baseball, and others for the stronger convalescents.

A very few words on **construction** must suffice for the purpose of indicating some special points.

The **foundations** should have a concrete floor throughout. By this I intend that the whole surface of the ground under the building should be covered with an impermeable layer of concrete. In this way only can mischief to health from "**ground air**" and moisture be prevented.

The **walls** of the rooms should not be less than fourteen inches in thickness, as a slighter dimension will not keep out the cold or damp. The *inside of the walls* should have rounded corners, vertical and horizontal; and should not be papered, but either painted, or covered with silica, which will wash with a disinfectant several times; or still better, the walls should be lined with Keen's or Parian cement, which will wash *ad infinitum*, and to which nothing will adhere. The lower part of the walls, to a height of five feet, may be of white glazed brick. A wainscot is undesirable on account of affording a lodgment for dust.

The well-laid **floors** of the wards should be stained and varnished: never washed, but wiped with a damp cloth every day when in use, and polished with beeswax and turpentine once or twice a week. Or they may be ironed with hot paraffin, which renders them impervious; or with Archangel tar, thinned with petroleum.

All rooms furnished for sick inmates should allow at least 1000 **cubic feet of space** for each non-infectious case, exclusive of the 800 cubic feet required for the nurse in attendance; but for infectious illness 2000 cubic feet are needful, and even more may be necessary if the disease he severe or malignant, since such cases are generally much mitigated by an abundant supply of fresh air. Cross-ventilation should invariably be the rule.

If it be important in a boarding-house, as I have striven

to prove, to have the **drains** properly constructed, with the soil-pipe thoroughly ventilated, and all house-drains cut off absolutely from the street-sewer, this course is still more essential in the sick-house; for it is a serious proceeding to send a boy to a sanatorium for some comparatively trivial ailment, and then subject him to the contraction, while there, through faulty drains, of a dangerous disease, such as typhoid fever.

In towns, therefore, all the drains from the sanatorium should be severed from the sewer, and in the country earth-closets should used; or, if a cesspool exists, it ought to be far from the sick-house, on a lower level than the well, and should be treated as though it were a sewer, by disconnecting it from the house.

The **Lavatories** for the sanatorium should be built out from the corridors, and made quite separate.

The **number of beds required for a school sanatorium** must depend upon many and various elements. One of the chief of these is the *age* of the pupils; for the younger the pupils, the more liable are they to be attacked, and the more serious the illness when occasioned, by the several exanthemata.

The community at large has derived such incalculable benefit from the care and teaching of the medical profession on this question, that very young children, during their **nursery** and **family life**, at which period the mortality from zymotic diseases used to be very serious, are now largely exempt from their advent during those critical years—to such an extent, indeed, that when they reach **school life** they are unprotected in consequence of not having previously suffered from these maladies. Thus, when any infectious illness appears in such a virgin soil as a large assemblage of susceptible adolescents, it spreads to an extent that did not occur thirty years ago, notwithstanding the greatest care and vigilance. It is, therefore, incumbent upon school

authorities to recognize this feature of modern infectious illnesses, and make adequate provision. The *public* have gained enormously by this knowledge, as shown by the fact that the *mortality* from these diseases is greatest between the ages of one and five. But *schools* have, in consequence, to deal with an increased *number* of cases of infectious illness, though that period of incidence is preferable to an excessive mortality during childhood. I would urge doctors and parents to continue to endeavour to protect the little ones by sedulous attention to these facts; for every year that a zymotic disease can be postponed in a child's life is not only a gain in a reduced death-rate, but also in a lessened permanent damage to the constitution, with superior health and longer life as the result. And this gain far outweighs the inconvenience and expense to schools, serious though these burdens sometimes are. By the exercise of promptitude, also, in the isolation of every case as it arises, and in maintenance of the isolation so long as infection is possible, the **progress of the disease is delayed,** and in this way—the cases not all occurring simultaneously—a fewer number of beds is necessary in dealing with epidemics.

The *number of boys* in the school will also occasion a variation in the advent of the disease; as a rule, the larger the number the more extensive in proportion is the illness. The amount of illness, also, will depend to a considerable degree upon the *situation* of the school, and the *sanitary state* of its buildings and surroundings.

As affording a general notion, however, of the number of beds required at school for accidents, and sickness of all kinds, I should advise that, where boys *under thirteen* years of age are congregated in large numbers, 20 per cent., and where *over thirteen* years of age, 15 per cent. should be arranged for, if provision for school illnesses is to be adequate. I think these numbers might be reduced to 15 and 10 per cent. respectively for the *usual routine* of

school illnesses; though *occasionally*, at rare intervals, they would prove insufficient, and would require to be supplemented from extraneous sources. There are few schools, however, where at present even the smaller number are allowed for; although the suggested provision merely implies that in a large school every boarding-house of fifty boys should be responsible for the proportion of five beds in the common sanatorium.

It would be prudent to furnish beds in the sanatorium for the reception of cases of infectious diseases occurring amongst junior masters: in masters' families; and among their domestic servants, inasmuch as they are often involved in these illnesses, and great difficulty is experienced in obtaining accommodation elsewhere for their efficient isolation.

In addition to the *bed* requirements of school sanatoria, it is essential to arrange for **the feeding and sitting of convalescents.**

A **suite of rooms** is requisite **for the matron**; and ample space is necessary for the feeding, sitting, and sleeping of the *temporary staff of nurses* engaged during the occurrence of acute illness or epidemics, allowing one nurse for every eight beds; and one bed more for a *night nurse*. These **nurses' quarters** should be made as comfortable as possible, for their hours of work are often prolonged, the strain arduous, and the confinement close. Moreover, unless this condition be fulfilled, the work, often so critical, is apt to be imperfectly performed from fatigue, or the nurses may even refuse to remain at their post. If, as should be the case, the sanatorium be built in separate blocks, a nurses' room should be attached to each block and floor, for the purposes of isolation.

Further accommodation is required for the necessary **staff of servants,** one of whom should be the man, or boy, who manages the disinfecting chamber, cleans boots and windows, looks after the garden, and runs errands.

In the construction of a school sanatorium, the prime requirement is the provision of ample means for *individual isolation*. The essential fact may therefore be expressed as the necessity of a **sufficient number of wards, as well as the requisite number of beds.**

The most *convenient size*, for illness, if nothing else were to be considered, is undoubtedly *one-bedded rooms;* for this arrangement furnishes a large number of separate rooms for quarantine purposes, as described on p. 412. But the isolation, except in acute illness, becomes tedious to many boys, and makes them unhappy through lack of companionship.

Two-bedded rooms are very comfortable, but moral objections exist to this plan. The tendency in some schools is, in consequence, to build *large rooms* to hold eight or ten beds. They are, I admit, very attractive and very convenient in many ways, and the boys like them, as they are more cheerful during convalescence. But they are a mistake, and most unsuitable for a school sanatorium, where beds are always scanty in number, and where wards for quarantine are often imperative, if the medical officer is to be supplied with the most efficient arrangements for the individual patient, and the retention of complete control over school-illnesses. Where these large wards of eight or ten beds are in use, it continually happens that one isolated case of infectious disease may occupy the ward of eight or ten beds, and that usually when the demand for beds is most urgent!

On the whole, I would advocate that, in a **school sanatorium, most of the wards should contain only one bed** for quarantine purposes, as well as for cases of severe illness where quiet is indispensable; while the others should not include more than *three beds*. In this way the most efficient work would be obtained from the fewest number of beds.

A school **sanatorium should, therefore, be built on the block system.** These blocks can be arranged and varied according to the number of beds required, and the

means of isolation desired. Instead of the blocks being in separate detached buildings, the sanatorium may be constructed in one large building for administrative and executive purposes. Such a building may comprise either three or four *wings*, each having two or three *floors*, and each capable of being kept practically separate. Each wing may include three, or more, *wards*, each ward contain one to three *beds*, all to be occupied at the same time or not, according to the nature and severity of the illness. In some schools, as I have stated, as many as seven to ten beds in a room are arranged: this plan, however, is erroneous. It is not only imperfect in working, but the noise from those who are only slightly unwell, or who are convalescent from an illness, must always be a great disturbance to those who are ill. One delirious boy, too, would disturb the sleep of the remaining boys, and often terrify them. Each *floor* may be distinct and separate by providing no inside staircase, and making one outside staircase, for the first floor, and another for the second floor. Or, the ground and first floors may communicate by an inside, as well as an outside, staircase, while the second floor is kept absolutely distinct by the provision of a separate staircase outside the building.

In such a sanatorium the *ground floor* of one or both blocks may be used for accidents, and for all cases of non-infectious diseases, such as rheumatism, pneumonia, and severe colds. If all these rooms on the ground floor are fitted with "French windows," opening into the garden, each can be used as a separate quarantine room by keeping all the doors locked, and admitting (and afterwards discharging) each suspicious case by the window, by which means no doubtful case would enter the building, but would be completely isolated during the period of suspense. The room should be thoroughly disinfected after the discharge of each case that proved itself infectious, before being again employed for any purpose.

The *first floor*, by shutting off each wing from a well-ventilated staircase by double doors, will provide separate houses under the control of one matron, but under the charge of a special nurse for each, and will also secure isolation for the *minor* zymotic diseases, such as mumps and measles, without the possibility of one illness spreading to another room.

On the *second floor*, the *major* zymotic diseases, such as scarlet fever and diphtheria, can be completely isolated from

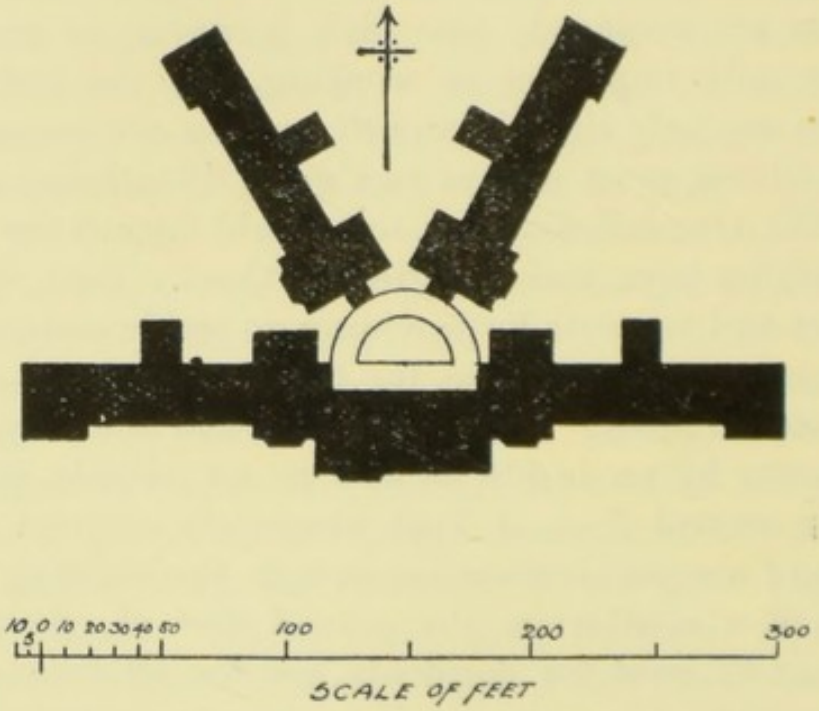


FIG. 28.—A BLOCK PLAN FOR SANATORIUM.

all other parts of the house, by having an outside staircase to admit the patients, and a small outside lift for the conveyance of food and other necessaries.

In carrying out this scheme, the plans can be so varied and modified as to provide ample accommodation for all cases of illness in schools, in whatever numbers, and according to their finances.

I have shown some plans in block, in Figs. 28 and 29, which are practically identical blocks, drawn to scale, of

Fig. 30, each block being placed at a different angle from the administrative block.

Each block can be extended or diminished in size completely detached ; or connected with the administrative block by an open covered way shown in the drawing.

Many an old school sanatorium, quite unsuitable according to modern conceptions and needs, could be rendered effective by the exercise of a little ingenuity in bricking up a door here, and erecting a staircase there, so as to secure

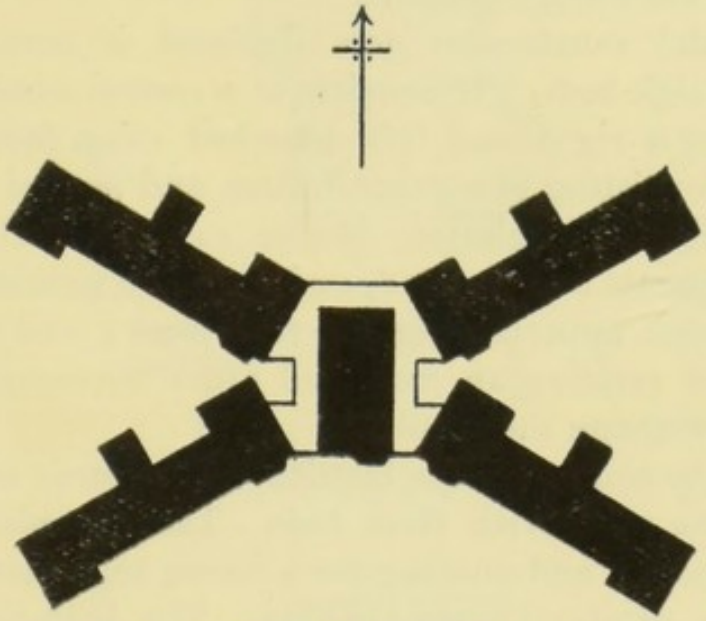


FIG. 29.—A BLOCK PLAN FOR SANATORIUM.

reasonably effectual means of isolation, until the convenient period for complete reconstruction had arrived.

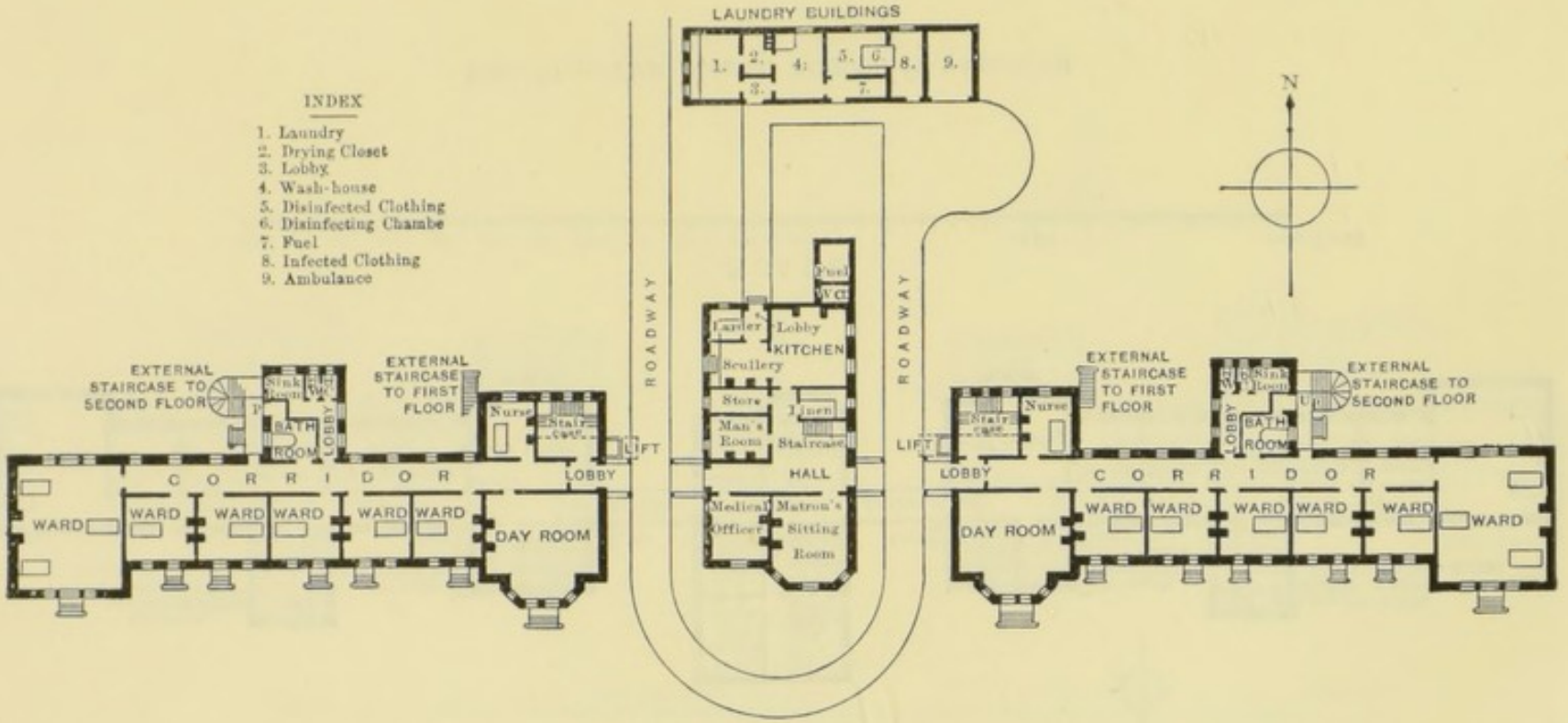
The methods of construction, so long as they conform to the principle applicable to school sanatoria, of providing as many **means of isolation** as possible for the variety of infectious diseases incidental to the young, can be varied in accordance with the taste of the architect, and the shape and size of the site available.

I here insert some drawings of what I consider to be a **Model Sanatorium** (Fig. 29), so that those about to build may have an appropriate standard. The model I am

presenting can be extended, or reduced, according to requirements; but the salient points, indispensable in school sanatoria, should be faithfully observed. But, being incompetent to embody this conception myself, I furnished my suggestions to my friend, Mr. Keith Young, F.R.I.B.A., of London, and I here express my acknowledgments of his valued assistance in the preparation of these admirable drawings of a Model School Sanatorium, represented in Figs. 30, 31, and 32. They seem to me as nearly perfect as our present knowledge permits.

The model sanatorium now depicted is arranged for forty-eight sick-beds. It consists of a *central administrative* block, having a right and left detached *wing*, facing south, each wing consisting of a ground, first, and second floors, so that six distinct isolation blocks exist. Each *floor* is perfectly separate and isolated, owing to the provision of an *outside staircase* appertaining for each floor; and there is a small *lift* for sending up food and other necessaries. One *matron* can manage the whole.

Each *wing* and each *floor* furnishes *five wards* of *one bed* each, and *one ward* with *three beds*. There is also a room for *convalescents;* and another for a *nurse*, together with all the requisite sanitary arrangements. The bath-room is so arranged that, after the disinfecting bath, the convalescent can leave the building without re-entering. Each wing thus provides six isolation wards on each floor for *quarantine* purposes; and on the ground floor all the windows of the wards are *French windows*, so that a suspect can pass into, and leave, a ward without entering the building. Each bed is allotted 2000 cubic feet of air space. The arrangements on the *ground floor* can be utilized for non-infectious diseases, and the *first floor* for the *minor* infectious diseases, such as measles: in this case the bridge between the wings may be of service for the use of a night-nurse. The *second floor* may be devoted to the *major* infectious diseases. If larger wards



GROUND FLOOR PLAN

FIG. 30.—THE MODEL SCHOOL SANATORIUM.

FIRST FLOOR PLAN.

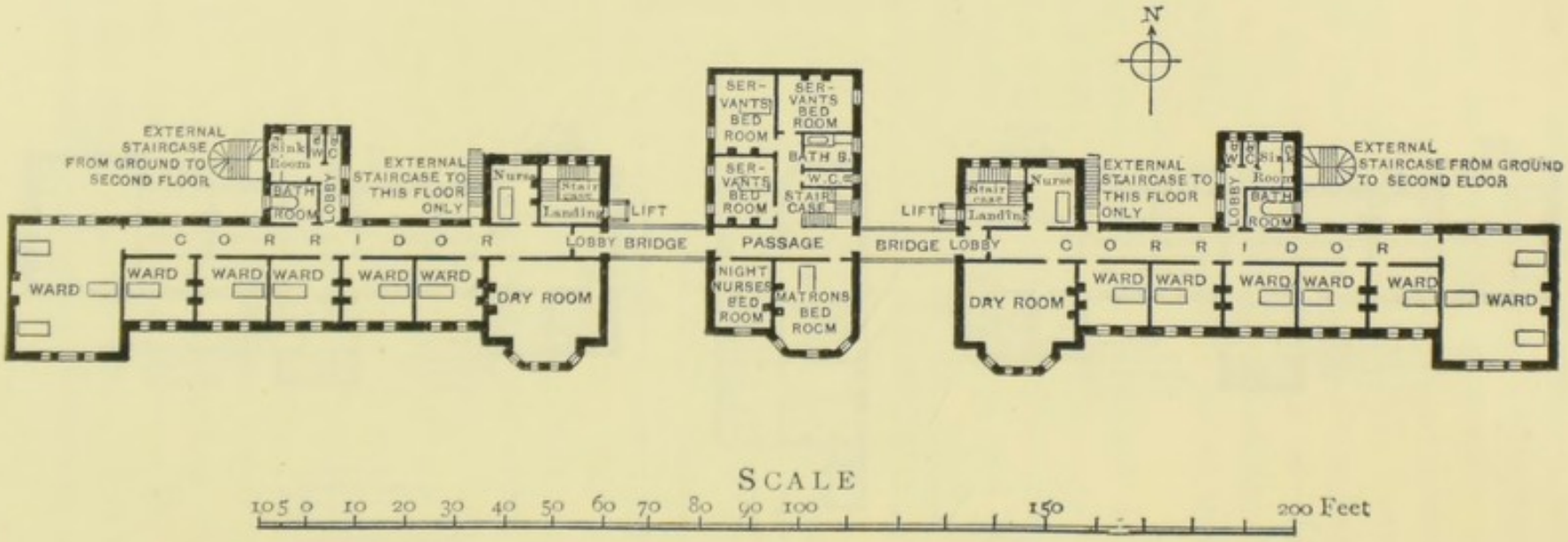


FIG. 31.—THE MODEL SCHOOL SANATORIUM.

SECOND FLOOR PLAN.

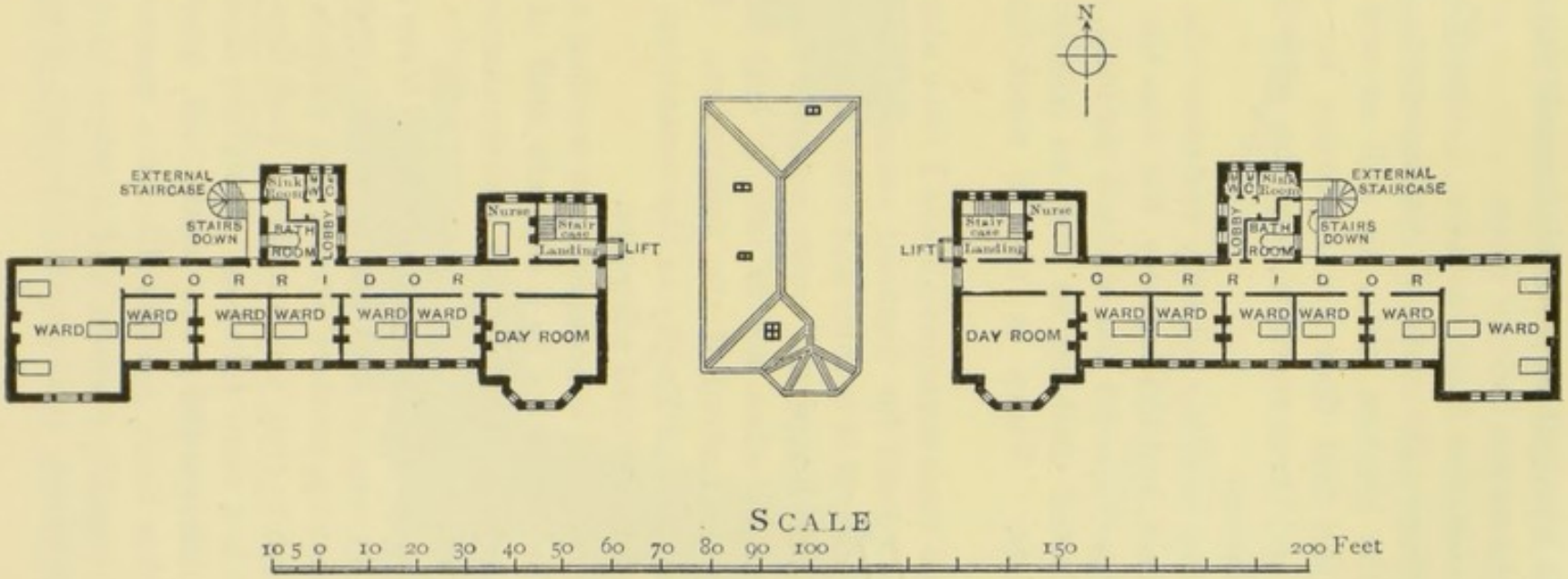


FIG. 32.—THE MODEL SCHOOL SANATORIUM.

be desired, the terminal three-bedded wards can be enlarged to contain eight or ten beds or more.

The *administrative block* includes a consulting-room for the medical officer; the matron's sitting-room; the porter's room; and the kitchen suite, as well as store and linen rooms. On the first floor are bedrooms for the matron, night nurses, and three servants, together with the necessary sanitary appliances.

The *Laundry building* not only embraces the washhouse, the drying closet, and the laundry, but also the disinfecting chamber, with a room for the infected clothing, and another for the disinfected clothing, so that no possibility of a re-infection exists. There is also a coach-house for the ambulance.

Where some such arrangements as I have above described cannot be carried out for financial reasons, then for scarlet fever and diphtheria it is safer and wiser to provide a special house, or "**fever hospital**," quite separate from the sanatorium, although, when *not* in use, it may be under the supervision of the matron of the sanatorium. The relation of the fever hospital at Rugby to the sanatorium is exhibited in Fig. 33, and has proved adequate.

When the hospital is occupied, the nursing and management should be conducted by a separate staff of nurses, and servants or helpers, holding no communication with the sanatorium staff.

But a house for the isolation of scarlet fever is absolutely useless—and its original cost and recurring expenses entirely wasted—if masters, masters' wives, and parents are allowed to visit boys while they are inmates. Isolation under such circumstances is a mere delusion. Isolation should either be thorough or disregarded; one weak link, however strong may be the other links, renders the chain unserviceable.

In order to enable parents and masters to communicate with their children and pupils who are thus isolated, a

telephone might be arranged (a speaking-tube might convey infection), the mouthpiece for the use of parents and masters being placed in the matron's room, and under her control; so that it could not be improperly, or unadvisedly, employed.

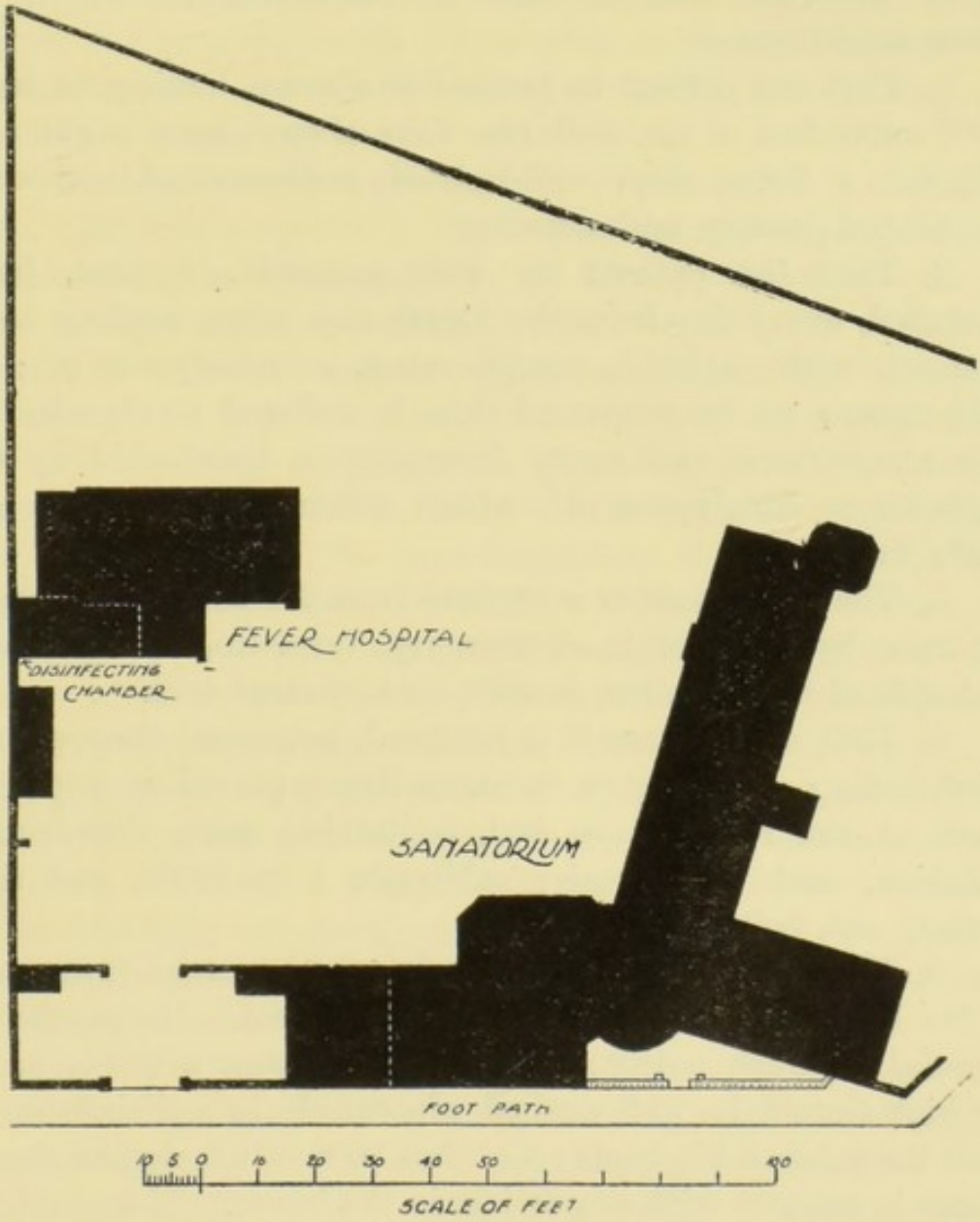


FIG. 33.—BLOCK PLAN SHOWING THE DETACHED FEVER HOSPITAL AT RUGBY.

The vexed question arises of the **medical officer visiting cases of scarlet fever**—and he should be absolutely

the only one to do so, unless the illness be dangerous, when the parent, or his representative, might remain with the boy, provided thorough disinfection be carried out prior to his departure. I think this course may be safely allowed, without fear of conveying infection, on these conditions—

1. That the patient be treated in a room having at least 2000 cubic feet of air, with the door always open night and day into a large, airy, well-lighted, well-warmed, and well-ventilated passage and staircase.

2. That the patient be well greased all over, head included, every day from the fourth day when peeling commences, with carbolic, camphorated, or eucalyptus oil; by this means no desquamated skin is suffered to circulate in the atmosphere, and every fragment is disinfected by the carbolic or eucalyptus oil, which adheres to the bed and body linen.

3. That all the other secretions from the body be destroyed at once by perchloride of mercury, formalin, carbolic acid, chloride of lime, sanitas, creolin, or a mineral acid.

4. That all linen, as it is removed, be passed through the disinfecting chamber; or be immediately placed in a pan or bath at the foot of the bed, containing some disinfecting solution, such as corrosive sublimate 1 in 1000; and then wrung out, boiled, and washed.

5. That the medical officer only see his scarlet-fever cases after he has visited the rest of the school. He should be careful to touch nothing in the house except with his hands (which should be well washed afterwards in a disinfectant), and the soles of his boots: no other part of his clothes should come in contact with any article in the house. If he prefer a special coat for the purpose, it should be made of brown holland or of mackintosh, and should extend from his neck to his feet, with sleeves close-fitting at the wrist: this coat should not be kept in the building, but out-of-doors under

cover, and should be put on before he enters, and taken off out-of-doors.

He should visit only as often as is imperative; and should remain for as short a time as his duty renders really necessary.

After every case of scarlet fever, it is important to disinfect the sanatorium as thoroughly as though another case would never enter the building, in order that it may not remain a permanent hot-bed of infection.

The details prescribed for the treatment of sickness are not complete—especially for scarlet fever—without ample **quarantine arrangements**; so that, while every case, on the merest suspicion arising, should be at once separated from the school, it may not be transferred to the infectious wards until all doubt is removed. I know no more anxious or arduous duty befalling the physician to a great school than the provision for several dubious cases of scarlet fever. To leave them in the boarding-house is unwise: to place them in the scarlet-fever wards is wrong: to put them all together in one room is unjustifiable, for if one alone should prove to be a case of scarlet fever, the others are subject to the very greatest chance of being infected through exposure. The only proper and safe quarantine arrangement accordingly is, to place every doubtful case in a room in the sanatorium by itself, for the few hours during which the doubt remains; then carefully to disinfect every room which has held a true case, and has thus become infected, before introducing another doubtful case.

By this strict isolation, from the beginning, of suspicious cases during the period of suspense of judgment, epidemics can be very much reduced, if not actually prevented.

Every public school needs some mode of conveyance for the removal of sick boys, unable or unfit to walk, from the boarding-house to the sanatorium; but especially for infectious cases, for which public conveyances ought never to be used. A suitably-constructed **ambulance carriage,**

drawn by a horse, is undoubtedly the best form of conveyance; for, in the event of necessity, it can be transferred to the railway, so that a boy can be carried to the door of his home; inasmuch, however, as it is but seldom required, the expense may be deemed to be unnecessary. The next best conveyance is a Bath-chair which will shut up, and which can be washed and fumigated inside without damage. A stretcher is also a great convenience for removal in case of accidents.

In view of the possibility of fire in the sanatorium, **fire appliances** must be kept in constant readiness—

1. For *the escape of the inmates* by a sufficiency of staircases; and by ropes, and rope-ladders affixed to windows; and

2. For *extinguishing the fire* by buckets of water, or by hose; and by means of direct telephone communication with the nearest fire station.

THE MANAGEMENT OF THE SANATORIUM.

The **management of the sanatorium** is a matter of such paramount importance to the welfare of individuals, and to the school itself, that a careful and detailed consideration of the subject is necessary.

All arrangements in this world, of whatever description, when only required occasionally, are apt, unless very great vigilance be exercised, to be out of order at the very moment when they are wanted. School sanatoria, which sometimes are not in requisition for several weeks together, are a prominent example of this fact. The only way of averting this inconvenience is to maintain them in such order that they are always ready for use.

The best skilled nurse that can be obtained should be appointed as **matron to the sanatorium.** She should be wholly responsible for the superintendence of all the

arrangements for the care and treatment of the pupils during illness. She should be exclusively answerable to the medical officer for the conduct of every detail in the treatment of the sick, and in the management of the sanatorium. If any fault has to be found by those in authority, the complaint should be made to the medical officer only, and not to the matron who carries out his orders. It is absolutely impossible for any matron to discharge her duty faithfully if she be subject to the head-master, the house-masters, and their wives.

Under her control should be the necessary number of nurses and servants according to the size, and requirements, of the sanatorium. When many cases of illness occur, or when the illnesses are so severe as to entail much night-work, extra nurses can be obtained by the medical officer from one of the excellent nursing institutions found in all large towns, for no fagged nurse can do her duty.

The matron must be not only a highly-skilled sick-nurse, but capable also of managing household affairs: she must, further, be a woman of gentle and forcible character, so that she may be able to control those under her care, which is not always an easy matter when boys are convalescent after an illness. For some have high spirits, and delight in mischief; while others have the proverbial ill-temper incidental to recovery, both of which call for the exercise of patience and firmness. And one of her most important functions is to interest, and amuse, the patients during their convalesence, and thus help them to occupy this tedious time.

Much tact, again, is required in dealing with parents, masters, and their wives, many of whom are apt to think they know more about sick-nursing and the general treatment of disease than those who have spent years in acquiring the requisite skill.

While a pupil is ill, therefore, the matron should recognize no authority but that of the medical officer in charge,

and respectfully, but decisively, refuse to follow requests—which should properly and solely be made direct to the medical officer—by any one else: otherwise reliance cannot be placed on her by the medical officer, who is finally responsible. The first to upbraid her for any ill-result will be the one who induced her, either from thoughtlessness, or often simply from the love of interference, to deviate from her instructions.

To ensure the readiness of the sanatorium for occupation when required, adequate **warming and airing** are imperative: a certain construction of the *warming apparatus* is therefore necessary; and special arrangements require to be made, and rigidly enforced under the constant personal supervision of the medical officer, on whom the undivided responsibility should rest for carrying out every detail of the working. It is useless, and unreasonable, to expect any servant to keep several fires alight in an unused house every day.

The sanatorium should, accordingly, be provided with proper means for being constantly kept warmed and aired, with the least possible trouble, either by hot-water pipes throughout, hot-air flues, or calorigens; besides having open fireplaces in all rooms for fires during occupation. The whole house, wards, staff quarters, and lavatories, can thus be always aired and warmed by maintaining one good fire when the house is not in use. This fire should be always burning in damp weather, and lighted every other day in fine bright weather, except in summer, when it should be lighted on every day that is damp or without sun. On every suitable day windows should be open throughout the house, so that the entire building may be well aired and purified. Every now and then the water-closets and sinks should be inspected, and flushed when the house is not occupied, though when the house-drains are properly cut off from the sewer, as they should always be, this is not of such paramount importance, since no sewer gas can then enter the house.

I have many beds under my care, and so completely in working order are all arrangements that, from the day the boys return to school to the day they leave for the vacation, I can fill up any and every bed at a given moment without any other preparation than making up the bed or beds, and setting light to the fire in each room as required. By hot-water pipes throughout both sick-houses, the *rooms* are constantly aired and warmed; and the mattresses, blankets, and pillows are also kept aired by being placed against the hot-water pipes, or by very large hot-water tins being folded within them for twenty-four hours each, in rotation. By thus maintaining sick-houses always in perfect working order, they can be used in sickness with impunity, and by no other means can they be safely occupied when sickness, as is generally the case, occurs suddenly.

It is indefensible to place a case of illness or fever in a bed that is not well aired, or in a room which is unwarmed. Nor is it enough that a fire be lighted, in a room previously shut up, immediately before the reception of the patient. The result of this is that the warmed air condenses on the cold walls and makes them reek. I do not think it possible to conceive a more injurious condition for a recent acute fever case, than that of cold damp walls or a damp bed. Yet this happened in a well-known case, which was brought to trial, where death had resulted.

I have laid particular stress upon the importance of being thus prepared for sickness in schools, which is usually more or less intermittent in character, because, as a rule, sufficient attention is not directed to the question, and arrangements frequently fail to be made, and often, indeed, are scarcely thought of, until the illness actually occurs. This, in my opinion, is altogether too late: constant readiness for sickness of every description is needed, if our schools are to be maintained in a thoroughly healthy state, both before the school assembles, and throughout the term.

Complete **ventilation** must be provided free from draught, in addition to the cubic space I have indicated. As a rule, the windows in the small wards ought not to be opened during sickness, but the inlet for fresh air—which must be constant—should be through the open door into extensive and well-ventilated corridors and staircase. By this means the fresh air enters the room indirectly, and the patient is then less liable to draught than would be the case if the window opened directly on to him. Not only does a plentiful supply of fresh air benefit the individual, but in infectious illness too much stress cannot be laid on its importance to the community: the poisonous element, by this provision, is more rapidly destroyed, and never acquires a concentrated form. In short, the process should be the open-air treatment without draught.

The **temperature** of the wards should neither be cold nor hot; as a rule 60° Fahr. is about the average; though rarely a hotter, and usually a cooler, temperature is beneficial, according to the character of the illness.

Convalescents from any illness always need artificial warmth in cold weather; and even then the temperature of the body is generally subnormal, varying from 95·5° to 97·5° Fahr.

The **furniture** in the sanatorium should be as plain as possible, and restricted to what is really necessary for comfort and convenience, and on no account should carpets be allowed; mats, however, may be used, the best being those made of cork, which will wash and are warm to the feet.

The **bedsteads** should be iron, with a wire mattress, on which is placed a horsehair mattress. The head of the bedstead should be drawn a foot away from the wall, for free circulation of air.

In all infectious illness—especially scarlet fever—if a **succession of cases** occur, and the same beds and the

same rooms have to be used again, *a second case should on no account be put in the same room, or on the same mattress, or between the same blankets, until thorough disinfection has taken place.* It is an infringement of this rule, I think, that accounts for the later cases being often more severe than the earlier ones. The rule, therefore, ought to be very closely observed, under the personal superintendence of the medical officer.

The washing of the soiled linen should be carried out in the **sanatorium laundry**, where this is possible, in order to avoid the chance of spreading infection. Where this cannot be done, a laundry should be found where no other washing is taken in. On no account should any of the linen from the sanatorium be sent to the laundry where the washing from the boarding-houses is done. Of course, *theoretically*, all the washing of clothes in accidents and non-infectious illnesses could be safely carried out at the common laundry; but, *practically*, there will always be the possibility of a mishap at some critical moment, and the infected linen be sent where it should not go. The only safe practice, therefore, is a separate washing establishment. If, however, all the soiled linen be first passed through a disinfecting chamber, it may be washed anywhere without risk.

A point not sufficiently considered in schools is the provision of **games for convalescents**, who have still to remain in the sanatorium. Unless something be done, these boys are certain to get into mischief. **Books** are always provided; but boys cannot continue reading all day long, especially when their brains have wasted with their bodies during the illness. Moreover, the books are sometimes so inappropriate in their *print*, and in their *contents*, that boys with enervated brains and enfeebled bodies cannot take an interest in them, on account of the fatigue which their understanding entails. It seems to be forgotten that those who have been ill have not the same mental power as those

who are well and strong; and books are often provided for convalescents which would be exceedingly suitable for a healthy boy's library, but which are worse than useless for sick boys. For rather than fatigue themselves with reading them, boys provide themselves, or their school-fellows supply them, with light literature and novels, and these often of the worst description—books, frequently, which no young boy can read without risk of serious damage to his character.

The impressions made upon a boy's imagination, while brain development is in progress, by reading an improper book, are indelible; and the converse is equally true. Hence the importance of only placing appropriate literature in his hands.

What I am anxious to point out is that the fault does not lie with the pupil, whether boy or girl, but with the authorities, who do not supply suitable books for those who are, or have been, ill. If this evil is to be avoided, some lighter literature, even children's books, in good large print, must be at their disposal.

In the sanatorium of a school all kinds of infectious diseases are received from time to time, and it is manifest that, in the provision of **books for boys suffering from infectious diseases,** some arrangement must be enforced to prevent one kind of infectious illness being transferred to the subject of another kind through their agency.

To carry out this important principle, one of two methods must be in force—

1. Every book used during an infectious illness must be burnt immediately the illness is over, for it is difficult to be quite sure of their disinfection, unless every page is separately treated. If this be not done, the next reader will in all probability catch the complaint. The plan, however, of burning such books is expensive and unnecessary.

2. Or, the sufferers from each infectious illness must be

provided with their own books for use only during the illness. This will entail endless trouble, confusion, and mischief, unless a certain course is adopted and then it becomes simple enough. Hence I advocate the plan, which I myself adopt, of pasting a band of coloured paper, two inches wide, round the back and over both the covers of every book and magazine, so that it is plainly visible, as the main feature of the outside of the book, whichever way it lies, thus: scarlet for scarlet fever; yellow for chicken-pox; blue for measles; green for roserash; white for whooping-cough; black for small-pox; brown for mumps; and so on. Then each parcel of books is kept in a large box in a well-ventilated box-room.

Games of all kinds, both indoor and outdoor, should be arranged: tennis and squash-cricket for fine weather; chess, draughts, backgammon, dominoes, and bagatelle for bad weather. And if masters' wives—whose kindness and attention I am the first to recognize and appreciate at all times, and especially in sickness—would teach convalescents knitting, netting, crochet, and mat-making, many a weary hour would pass more pleasantly, with great benefit to all concerned.

The **selfishness** of human nature, I regret to say, **pervades even the sick-room,** and it is not uncommon to see a strong boy occupying the best chair or sofa, leaving the weaker and more sickly school-fellow to shift as best he may.

Sufficient time must be allowed for **convalescence after illness before resuming work;** and the medical officer must be rigorously deaf to all entreaties for any abridgement of this necessary time.

In the **treatment of disease** certain **general principles** are involved, which may be considered under the following headings.

In the **hygienic treatment** the battle is half won by

placing the patient under the most favourable conditions for the extinction of the disease. There are certain rules common to the treatment of all diseases which may be mentioned for guidance.

It is imperative that the treatment of the sick at school should be *solely under the control of the medical officer* in charge, subject, as I have already pointed out, to consultations whenever they are deemed necessary. The most essential, and primary consideration should be the *comfort* of the patient, and every effort should be made to promote it by attention to the peculiarities of each individual. The number of beds in a ward, the cubic space, and the ventilation have been already discussed. All illness should practically be *treated in the open air*. The days of hot, close rooms are numbered. In a small ward, where the window cannot be open without causing a draught to the patient, the door may be open day and night for admission of the fresh air from a well-ventilated corridor, constructed for the purpose.

The *temperature* of a ward is rarely required to be above 56° Fahr. The *bedclothing* during an illness accompanied by fever should be light, so that the sufferer may be kept cool; while, when the fever is passed, increased clothing is needed during convalescence.

The natural *light* should be plentiful; without a glare in the patient's eyes. The best artificial light is the electric light.

The nervous system requires the utmost rest, and freedom from noise. *Sleep* should be abundant, since the sufferer has not only been worked hard at school, but is growing, and is subject to the additional strain of illness. He should, therefore, be shut up for sleep for two hours every day after dinner, and should settle down for the night by 8.30 p.m. This is necessary in all cases of illness; imperative in severe illness where the invalid will sleep early in the night and

early in the morning, but be wakeful between midnight and 4 a.m.

Efficient **nursing** is indispensable. Sufficient nurses should be engaged in order that weariness may not depress vigilant and continuous attention to duty. A tired nurse is incompetent for her arduous work; and cannot make allowance for the restlessness and peevishness of the sick. She looks after the cleanliness of her patient, and of the ward: endeavours to ensure a daily *natural relief* after breakfast; and maintains the strength of her charge as directed by the medical officer. Where illness is attended by exhaustion the recumbent position should he maintained not only during the illness, but until convalescence is well-established. Also, the greatest vigilance must be exercised to insure that the stomach shall not be overloaded by too frequent feeding where there is extreme debility, as dilatation of the stomach is apt to ensue, and absorption of nourishment arrested.

In the **dietetic treatment** much thought and judgment are demanded, not only in the treatment of the disease, but also in studying and controlling the caprice of each individual, so that it may not interfere in the progress to recovery.

During a boy's confinement in the sanatorium on account of illness or accident, he should have no **food** supplied to him except through the medical officer, and nothing but what the doctor orders, or sanctions, should be given, from whatever source it may be sent. If it be thought that the medical officer fails to arrange an appropriate variety of diet, or insufficiently tasty articles for those who are bad feeders during or after illness, the question should be openly discussed with him. He can then explain, if needful, the reason of the course he is pursuing. It seems frequently to be forgotten that it is clearly to the interest of the doctor to cure the illness, and to strengthen the boy for his school-work as quickly as possible, and that he

can have no other desire than the patient's welfare, when he does not pay for the food, but merely orders it at the expense of others.

I know that parents will often grumble; but this is not surprising to one who possesses any knowledge of the feeding of sick boys, when the unsuitable and deleterious articles of food are seen which parents sometimes send to them during illness.

I know, also, that boys, accustomed to continual self-indulgence in eating and drinking, generally find fault with sick-fare; but this is not to be wondered at. Who does relish sick-fare? or who likes sickness itself? It is not a question of what boys approve of when ill, but what constitutes the best mode of removing the illness as soon as possible, without permanent injurious effects. The young do not realize this, and, naturally, dislike the ordeal. I remember the following amusing incident, which occurred in my experience some years ago. I had several boys ill at the same time with one of the mild infectious ailments, for which they were kept in bed, and allowed a milk and farinaceous diet only, for the first few days. Amongst these boys was an elder one—a "swell." He found fault with his fare, much to the amusement, and with the silent sympathy too, I have no doubt, of all the rest. I explained to my patient that it could be no pleasure to me to deny him anything, that I did not pay for his food, that I only withheld some foods from him for his own benefit and to prevent a greater illness; that, in such illnesses, the doctor is a "pilot," who, knowing the "sailing," strives to steer clear of "rocks" and "sandbanks." He was, however, implacable, and my explanation failed to satisfy. Accordingly, as he had arrived at the years of discretion, I promised him that he should have for his dinner anything he liked to order; and I requested the nurse, who was standing at my side, very much amused, to provide him with whatever he pleased: I forget now what he chose. But

the next day, and for several days, he was very poorly and miserable, and scarcely able to take even what I desired to give him. He expressed regret that he had been so unwise, and assured me that he was convinced that I had only his welfare at heart when I restricted his diet. His smaller school-fellows, convalescent and enjoying their food many days before he himself was able to do so, quietly enjoyed the fun of seeing the reward of unreasonable discontent.

For a master in superior circumstances to send delicacies to individual boys when they are ill at the sanatorium, is a doubly injudicious practice. It places all his colleagues in an invidious position—those who conscientiously will not interfere in illness, and those who are not so well off; and it confers no benefit upon the recipient. However, if masters or parents will send eatables to the sanatorium, even to convalescents, the course to be pursued by the medical officer is perfectly clear—they should be divided amongst all the school-fellows who are in the sanatorium at the time, and able to enjoy them. This is the only mode of preventing a feeling of jealousy that naturally arises when one boy receives something to eat different from the fare of another who is, or has been, suffering from the same illness: an unwholesome rivalry amongst house-masters themselves will thus be averted.

The requisite **medicinal treatment** of sick boys at school, still more of those in the sanatorium, should be exclusively under the control and direction of the medical officer. At present this is not the case; and, indeed, so far as I can gather, the contrary course is very prevalent: I suppose because the love of amateur doctoring is inherent in human nature. Those who attempt quack doctoring forget, or never realize, that a remedy, when inappropriately applied, may not simply prove inefficacious, but will frequently produce positive mischief. In addition to this result, however, the greatest harm is effected through the unfortunate

patient failing to receive the suitable remedies of the physician until the amateur fails or becomes frightened, and the disease has had time to develop thoroughly, so that relief and cure are rendered more difficult.

Not long ago I heard of a head-master's wife—with the best intention, no doubt—administering belladonna wholesale to healthy boys every morning as a prophylactic against scarlet fever, which was rife at the time, in the belief, I suppose, that a drug which produces redness of the skin, when taken in poisonous doses, will prevent the advent of a disease, one of whose characteristics is that it is accompanied by a similar redness—an hypothesis the futility of which was proved by the late Dr. Warburton Begbie, after a most careful and exhaustive investigation. In recent years, again, the administration of cinnamon as a prophylactic in epidemics of all kinds has become the fashion, with equally unavailing results.

I have heard of another head-master's wife having prescribed, and sent, a remedy for a boy in a sanatorium while he was already under the treatment of the medical officer. When the medical officer in charge accidentally discovered this, he, of course, returned the remedy to the lady.

It seems to me that the time has arrived for the absolute cessation of this amateur doctoring of other people's children, who are not in a position to object; for it can only occasion needless discomfort and suffering, without the slightest compensating gain.

Where large numbers are ill at the same time, and often with the same malady, some system is requisite for the guidance of the matron and nurses, and for the benefit of the patient, in the avoidance of mistakes. Many years ago I adopted the following plan, which has worked admirably. I had some small books ruled and printed in the following form, one of which is given to each nurse for her own patients, and is handed to me at my visit, with the temperatures

recorded, when I enter the usual notes in it every morning and night.

NAME ....

HOUSE.			DISEASE.									
Date. — Month.	TEMPERATURE.		Action of Bowels	Albuminuria.	FOOD.						Occupation.
	M.	E.			Milk.	Farina.	Egg.	B. T.	Fish.	Meat.	

When boys are ill, and lodged in the sanatorium—as they should always be—**a report of the illness, however trivial, should be sent to the parents**; for, unless this be done, anxious parents are apt to exaggerate the severity of the illness. The proper person to forward the report—through the house-master—is the medical officer in charge. Parents would then learn of the illness first-hand, and thus a more accurate account of the illness itself, with the daily condition of the patient, would be furnished. This procedure would instil confidence in the mind of the parent, and obviate needless alarm, whether such alarm had been caused by ignorance of the nature of the malady, or misconception of the actual state of the patient in consequence of insufficient information, or by the inability of a non-medical authority to convey an accurate notion of the importance, or the triviality, of the attack.

Where the medical officer unwisely forwards an unintelligible account, the parents can ask their own medical

adviser to interpret the nature of the illness, and the condition of their child.

CLASSIFICATION OF DISEASES OCCURRING AT SCHOOL.

The **illnesses incidental to school life** may be classified into the following groups, for each of which accommodation is requisite for treatment :—

1. *Feigned* illness.

2. Ailments of a *temporary* and *trivial* nature, where a few hours' detention from school and special care are alone necessary.

3. *Accidents.*

3. Illnesses of a *non-infectious* character, which, nevertheless, involve separation from the healthy for the purpose of skilled nursing.

5. *Infectious diseases*, for which provision must be made in respect of—

(*α*) *Quarantine single wards*, where cases of uncertain, but of probably infectious, nature may be early isolated until the ailment is capable of diagnosis; or, when necessary, throughout the period of incubation.

(*β*) *Isolation wards* for the segregation of the various kinds of infectious diseases, where they can be treated, and detained until infection has ceased to exist.

6. *Contagious diseases.*

It is desirable to append some detailed observations upon the preceding list.

I am obliged first to speak of **feigned illness**—the malingerer. All schools possess this creature, but he is found especially at the public schools, where he has increased opportunities for carrying out his inclinations, and great scope for practising ingenuity. And he spares himself no pains to carry his point.

There are two specimens of the class: the boy who has nothing the matter with him, except that he dislikes work, —the true malingerer; and the boy who has some slight discomfort, which he exaggerates when work has to be done, but ceases to remember in the intervals of work—semi-feigned illness. These creatures—I cannot call them boys—are usually seen on whole school days, or when the lesson is "unseen," and this fact should clearly reveal to the master the boy's peculiar system of preparing his lessons at other times. They are rarely to be seen on a half-holiday; though it must be remembered that the "malingerer" of whole school days is apt to become the "loafer" of half-holidays, and strives to shirk any game which is distasteful to him, if play is compulsory. I need scarcely say that he does incalculable mischief to others, as well as to himself.

This impostor is not a natural production, but a carefully manufactured article, produced at the cost of considerable adroitness on the part of the malingerer, and signal denseness on the part of the parents; and being produced at home, solely by parents or their subordinates, becomes, when sent to school, a source of bad example to others.

The parent commences to produce this specimen very early in the life of the boy—almost as soon, indeed, as he can talk: the process is very gradual, and usually passes through the following stages. The boy has something disagreeable to do at home, which he does not relish, and performs with bad grace. By-and-by he dislikes it more and more as its repetition occurs; and at last it becomes so irksome that it worries him, he pulls a long face, and looks the picture of misery. The parent, instead of observing the drift of the case, says, "What is the matter? Do you not feel well?" No answer. Then further leading questions are put, and the chord is struck—the first step in the malingerer's career is started. "Do you feel sick? Have you

an ear-ache?" Happy thought! "Yes; my ear is very bad." Then follow sympathetic expressions, and the disagreeable duty set to him is waived. By-and-by the return of the distasteful task comes round, and the same dodge is tried and is successful. Similar ruses are practised a few times as they are found to pay, and the confirmed malingerer is produced. He is, in due time, sent to school, and is to be found when work is on hand, or the weather is cold, wet, or foggy; never when there is any pleasurable excitement on a half-holiday. He tries to evade the doctor—occasionally with success, and soon learns what description of ailment and what facial expression are required to delude his master. These he practises with indescribable skill, and often succeeds, as he learns how to ring the changes in a sufficiently varied manner to gain his purpose. This type of boy is often very trying to patience and temper, and no pains should be deemed too great to judge such an individual accurately in each single instance, so that, on the one hand, he may not feel that he can *do* the doctor or his master; while, on the other hand, he may not be sent to work, or punished, when he is really unwell. It requires much circumspection and caution on the part of the doctor to be sure that his judgment is correct, and then no mercy should be shown: let him be shamed if possible, and as soon as possible.

I have spoken at length on this point because the practice ruins a boy's character; and because I wish parents to see that it is they who are mainly responsible for the origination of the evil: later on, its arrest is difficult, if not impossible.

Sometimes, however, a malingerer is produced by the *bullying* which a boy has to undergo at school. To extricate himself he feigns illness, and will then resort to every conceivable and inconceivable means to gain his end—so terribly does the bullying affect his mind.

The **trivial ailments** pertaining to school life assume an infinite variety, and are comprised mainly under the classes

of chills, headache, indigestion, diarrhœa, vomiting, and hæmorrhage. They are all, usually, insignificant; though **some of them indicate the earliest stage of grave mischief,** and should, therefore, always receive prompt attention at the onset.

Chills and "colds," when recognized and attended to, are, as a rule, merely transient; when neglected, or occurring in the delicate, they may develop into acute or prolonged illness. Besides this, they frequently entail a depressed state of health, and render the individual susceptible to the attack of other micro-organisms. It is well to bear in mind that chilliness may be the initial expression of acute fever; and that "a cold" may form the first indication of measles.

Headaches, while most frequently arising from errors in diet, or constipation, occasionally point to the onset of acute illness, to albuminuria, or to defective sight, and demand close investigation.

Indigestion, while usually caused by injudicious diet, excessive tea and coffee drinking, taking these beverages too strong, or deficient mastication, may signify greatly impaired health.

Diarrhœa, frequently due to the same causes, and, therefore, nature's safety-valve, may be the precursor of serious illness, such as typhoid fever, or ptomaine poisoning.

Vomiting is generally lightly regarded, and considered merely a symptom of a *bilious attack* arising from errors in feeding, and indicating nature's method of relief for the infringement of the laws of health. On the other hand, it sometimes indicates the commencement of the gravest conditions. Thus it is one of the commonest symptoms of the advent of the acute exanthemata (such as scarlet fever); of diphtheria, and pneumonia; of the early stage of brain-fever (meningitis); and of inflammation, or obstruction in the bowels (perityphlitis, intussusception, and strangulated

hernia). It should, therefore, be respected as a symptom involving many and urgent possibilities. I have seen death result through failure of this vigilance of regard. "I thought it was nothing but a bilious attack," is a common observation, which frequently leads to disaster, owing to loss of valuable time.

Hæmorrhage from within may prove a source of intense relief to the young, as in the case of nose-bleeding, when it is most frequently a vent, and should not then be interfered with: it is very liable to occur in warm weather. If severe, or very frequent, the sufferer must be placed under medical advice. But when hæmorrhage arises from the lungs, in coughing (hæmoptysis); from the stomach, in vomiting (hæmatemesis); from the kidneys (hæmaturia); or from the bowels (as occurs in intussusception), it may direct attention to a serious and *very urgent* condition. The school doctor must also be alert against the imposture which may be practised by hæmorrhage from gum-sucking.

A word or two may be opportune concerning a few of the commonest **accidents,** or sudden **incidents,** liable to occur during school life, which demand the immediate, clear-headed attention of a master or school-fellow, for ensuring the safety of the sufferer, and for the prevention of panic.

Insensibility, or loss of consciousness, arises from various causes, and always creates alarm.

Fainting is the most frequent occurrence calling for timely assistance, and results from a variety of causes. The immediate course to pursue is to lay the sufferer on his back; undo collar and cravat; and provide him with as much air as possible indoors, by opening door and window, out of doors by preventing crowding round him. Sips of water to drink, and sprinkling the face with cold water, are efficient aids to recovery.

Epilepsy is a condition of insensibility accompanied by

muscular contractions ranging from slight twitchings to severe convulsions. Where an epileptic fit occurs, the sufferer should be placed on his side. His movements should not be restrained; but coats should be placed under his head, and beneath his elbow to obviate injury to those parts from muscular contractions. A knotted handkerchief may be inserted between the teeth to prevent wounding from tongue-biting.

Epileptics subject to severe fits should not be placed at school, where the attacks necessarily and seriously affright schoolfellows; but they should be educated where alarm cannot be occasioned.

Hysteria is unaccompanied by complete insensibility, and is usually attended with laughing, or crying.

The treatment of **suffocation** from *drowning* I have already described on p. 384. Suffocation from the inhalation of noxious gases, from *smoke* in a "fire," may be prevented, or relieved, by tying a wet pocket-handkerchief over the mouth and nose; admitting air freely by opening or breaking windows, when the fire would not thereby be increased; or still better, when possible, removing the sufferer from the burning building. In suffocation from an *escape of gas*, which soon becomes fatal when undetected, as during sleep, fresh air is the urgent necessity; and in both the preceding events the same methods should be employed as those adopted for restoring the apparently drowned. But the rescuer must be careful that his efforts are not rendered futile by himself succumbing to the noxious fumes. Where circumstances permit, he should, therefore, break the windows from the outside before entering the room; otherwise, he should rush into the room, after taking a deep breath on the threshold, smash a window, and put his head through for respiration.

The entrance of what is technically termed a **foreign body,** such as a piece of meat, an orange-pip, or a coin, **into**

the larynx may also cause suffocation, and requires instantaneous treatment even before the doctor can be summoned. For the symptoms engendered are alarming: the face becomes purple from the sudden interference with respiration; the eyes protrude; the sufferer makes inarticulate sounds, seizes hold of his throat, and falls unconscious. In the case of a piece of meat, the finger, being passed into the mouth and reaching the back of the throat, may be able to extract it. Though it fail to be secured the act will excite retching, which will most likely displace it. In the case of orange-pips or small coins, the small child, who is the usual sufferer, should be held in the air by his feet, with his head downwards, and taking the glottis unawares, with a smart thump in the back, the article may be jarred out, and fall on the floor.

Where foreign bodies, such as a pin, needle, or nail, are **swallowed,** no aperient should on any account be administered. The food taken should be as dry as it can possibly be. The evacuations should be carefully broken up, and diligently examined day by day, when the object will be discovered in one of the solid masses. It will usually be recovered between six and seventy-two hours.

Where foreign bodies, such as pieces of pencil, or beads, are inserted in the **nostril,** they can be removed by inciting sneezing: failing this, they require removal by the doctor. When introduced into the **ear,** immediate medical aid may be expedient, lest they should induce complications. When they enter the **eye,** the sufferer should be directed to *look down*, and then, taking hold of the eyelashes of the upper eyelid with the thumb and forefinger, the eyelid can be everted, and the particle removed with the pocket-handkerchief. When the object is adherent to the cornea it should be left for the doctor to remove painlessly under the action of cocaine. When thorns, splinters, and needles are imbedded in the **skin,** it is preferable that the doctor alone should extract them, as the layman, from the lack of the requisite

instruments, is apt to depress them more deeply, and thus prevent their removal without excision.

The pain of **stings** usually arises from the presence of the sting, or from the inoculation of the formic acid of insects, which can be neutralized by the immediate application of an alkali, such as soda, or sal volatile, or with Condy's fluid. If these are not at hand, pinch the skin up into a fold and abstract the sting if possible, and then suck the wound.

Bites of dogs always need the aid of the doctor. The condition of the dog, and the circumstances of the bite should receive the closest scrutiny, so that, when necessary, Pasteur's inoculation may be resorted to. If the doctor is not immediately available, it is a good plan to tie a handkerchief tightly, when feasible, above the locality of the bite in order to arrest the absorption and circulation of the virus: then to wash the wound—after previously enlarging it, where necessary—with Condy's fluid, or with an alkaline solution such as sal volatile, or soda.

Sprains are very painful injuries. The commonest is that involving the ankle. If it is slight, a handkerchief may be firmly bound round as a figure of eight bandage: if severe, the foot should not be used, and the sufferer should be carried home, or walk on crutches. If the accident happen far from home, it affords comfort to tie the two ankles together so that the uninjured foot lends support to the injured one, while riding in the conveyance.

The great desideratum in the event of **fracture** of a bone is the employment of some means to fix the fractured ends, so that they may not grate upon each other, and in order that the sharp point of one end may not perforate the skin during transit to the sanatorium. The simplest plan in the case of a broken *arm* is to fasten it to the side with pocket-handkerchiefs, and then sling the forearm in another handkerchief. Where a *leg* is broken, the two legs and feet may be tied together, making the sound leg the splint for

the fractured one. Another very simple mode, and always available, is to spread a coat on the ground, roll each side up, including the sleeves, towards the centre, so as to form a roll on each side, with a depression or furrow in the middle. Lay the broken limb in the depression, and tie it on firmly with handkerchiefs. After such appliances the sufferer may be placed on a stretcher, and be conveyed to the sanatorium without pain, or further injury.

Dislocations arise from a separation of the bones at a joint, and can be distinguished by the pain, deformity, and immobility. Except in the case of fingers, which may be readily pulled into place, they always require reduction, under an anæsthetic, by the medical officer, and no layman should attempt this operation.

When **external hæmorrhage** is occasioned at school, it usually supervenes upon a wound which may be caused by playing with knives, by bottle-bursting, by window-breaking, or in the workshops by a chisel slipping. Where the wound is small, however free the bleeding may be, the simplest and most effectual method of arresting it, is to press the thumb firmly on to, or in, the wound, and hold it there until the patient reaches the sanatorium, or until the arrival of the doctor. If the wound be of larger calibre, it may be necessary to apply a pad and bandage. For this purpose a clean unfolded pocket-handkerchief may be firmly affixed by another handkerchief wound firmly round it. It may be further necessary to apply a handkerchief tightly round the limb above the wound, as a tourniquet, in order to abate the supply of blood to the wound; but this should only be done when it is found that the local pad is insufficient to control the bleeding.

The first effort, in **burns and scalds**, is, instantly to remove the clothing from the injured part, using the scissors or knife freely when required, and then to cover it quickly with the most handy dressing procurable, such as

a wet pocket-handkerchief. The most valuable dressing is cyanide wool, a thick layer of which should completely cover every part that is wounded. But as this is not usually available, there are several domestic remedies which are serviceable. Salad or linseed oil, poured over the surface, and then covered with wool or linen, makes a very comforting application. A piece of washing-soda, as large as a walnut, dissolved in half a pint of cold water, and applied on linen, removes all pain. When the injury is extensive the shock is very severe, and may urgently require hot drinks, such as milk or soup, with small quantities of hot stimulants to prevent collapse.

In the **laboratory the skin is sometimes injured** by means of strong acids, as sulphuric acid; or alkalies, such as potassium. In these instances, the affected part should be quickly placed in water, or bathed. The pain can be mitigated by using a dilute acid to arrest injury in the latter case, and a dilute alkali in the former.

In the event of **poisoning**, an attempt should at once be made to excite vomiting, except when strong acids or alkalies have been swallowed, and in such cases alkalies and acids, when diluted, are valuable antidotes to one another. Vomiting can often be effected by tickling the back of the throat with the forefinger. If this fail, a copious draught of mustard, or salt and water in addition, will usually prove successful. The commonest instances of poisoning in schools are due to carbolic acid; but as crude carbolic acid should never be found in any household, poisoning from this source should not again occur at school. Olive oil should be instantly administered; or Epsom salts; or alcohol, such as whisky.

There are two other poisons which are somewhat commonly kept in households—opium and chloral. The treatment for opium poisoning, which includes morphia and chlorodyne, is the immediate emptying of the stomach, if possible, and then the administration of a copious draught

of Condy's fluid and water, half a teaspoonful to a tumbler of water. Sleep should be prevented by giving coffee to drink, and by incessantly directing his attention.

The antidote for chloral is strychnine, but as this can only be given by the doctor, all that can be promptly undertaken until he arrive is an attempt to empty the stomach by vomiting.

In **frost bite**, the part affected should be wrapped in cotton-wool, and carefully excluded from the access of any other sudden external warmth, even that of a warm room. Sips of warm drinks, not stimulants, aid the recovery.

The internal structure of the nose is furnished with a mechanism for warming and filtering the air, and is the natural channel for the inhalation of air for the purpose of respiration; while the mouth is a closed cavity, which should never be opened except for the purpose of eating or speaking. From their earliest years, children should, therefore, be taught to breathe with the mouth shut, and, when this cannot be done, the fact should be observed by the parent, or teacher, with a view to surgical rectification. For the back of the nose is sometimes occupied in the young by **adenoid growths**, which intercept nasal breathing, and entail a nasal twang in the voice. Where these growths are slight, and do not interfere with nasal breathing, or cause deafness, they should be left entirely alone: there is no need to meddle with them; and during the period of growth of the child they tend to disappear.

When, however, they attain such proportions as to cause a persistent nasal catarrh, oral breathing, or interference with aural functions, they occasion a vacant aspect in the countenance, owing to resulting obstructed hearing, and entail consequently apparent mental dulness. Under these circumstances the sooner they are removed the better, when the unintelligent expression at once passes away.

With respect to the class of **non-infectious diseases**

I need only submit a few brief remarks, as they all require skilled medical treatment, under which they should be placed without delay.

I wish to make clear to teachers that the disease termed **tuberculosis** (consumption), which is classed as an infectious disease, and arises from the bacillus tuberculosis, is in reality a *house disease*, dependent mainly upon breathing impure air in class-rooms, studies, and dormitories, which furnishes a soil in which the bacillus is able to germinate. And, further, that while the disease may not manifest itself during school life, it is during that period, and under the conditions named, that the power of resistance to the bacillus becomes diminished. If tuberculosis is to be prevented, the opposing force of the individual must be *augmented* by suitable means, such as an open-air life, adequate food, and sufficient sleep.

Some other diseases are still placed in the non-infectious category, which are really dependent upon micro-organisms, such as **pneumonia,** which owes its origin to the pneumococcus, and **rheumatism,** to the diplococcus rheumaticus. With reference to pneumonia, it may be of interest to state that during thirty-three years I have had amongst 435 boys,* seventy-three instances only, with three deaths, or a mortality of 4·10 per cent. of the cases affected, or 0·021 per cent. per annum of the number of boys under observation.

The **albuminuria of adolescents** is a subject of considerable moment in school life, inasmuch as exaggerated importance is frequently attached to it, with the result that the sufferer is needlessly removed from school, when his immediate and future welfare really requires nothing beyond the exercise of common prudence. Having worked persistently at this question since the year 1876, during which period I have had under my care several hundred cases of this condition, I think I am in a position

* Taken as under continuous supervision *per year*.

to express a decided opinion on the nature of this ailment of adolescence.

There can be no doubt that this functional trouble arises from the unstable condition of the vaso-motor system, though at the same time I must decisively add that vaso-motor disturbance, when long continued, or frequently repeated, necessarily conduces to deteriorated tissues, with the sequel of organic disease. During many years I believed that in this condition I was discerning the origin of organic mischief of the kidneys, so severe and persistent were some of these cases of albuminuria. I have, however, fortunately sometimes met with some of these patients many years after they had left school, when I failed to find any of them still affected with the disease. I quite admit that the limited experience of one observer is valueless, though I feel competent to add that many of these sufferers, when candidates for life assurance, are most unnecessarily refused from excessive and groundless caution. There are three classes of adolescents in whom this functional disturbance manifests itself—

1. The first, and by far the largest, class exhibits increased arterial tension, produced by excess of nitrogenous food, or from imperfect action of the scavengers of the body, or from an hereditary tendency to gout. I can diagnose them at once by their aspect, with the stethoscope, or with my finger on the pulse. A dose of blue pill works wonders.

2. The next extensive class comprises those who suffer from chilblains; and those who have cold, clammy, swollen, congested extremities, with a feeble, large, compressible pulse arising from depression of vaso-motor control. The heart participates in the general want of tone, and dilates.

These sufferers are relieved by abundance of food, and the administration of tonics.

3. The remainder are the spare, highly strung, oversensitive, neurotics, who are relieved by the most equable, and the least anxious, mode of life that can be obtained.

The pulse is thin, thready, and with a normal tension. The diminution of examinations, with adequate sleep adjusted to the age, produces a most salutary effect.

The symptoms of this ailment, in all its varieties, are greatly diminished by resting after partaking of food. It is quite impossible to institute here a full discussion of this large question. But I enter a strong protest against these sufferers having their education arrested; their games prohibited, though excessive exertion should not be allowed; their food supply curtailed, with the consequent insufficiency of nutriment for growth; and life assurance refused—on the invalid ground of a transient functional perturbation of the vaso-motor system. Boys thus affected should join in all reasonable exercise that does not involve competition for prizes of any description. Quite recently a lad in whom I was interested, and whom I attended for two years, was unnecessarily removed from school by his house-master, entirely owing to the alarm occasioned by the medical report he received. At the same time these disturbances in youths should be carefully looked for and treated, so that a temporary derangement may not, through want of timely observation, merge ultimately into organic disease.

The brief reference to diseases would be incomplete without including **typhlitis, perityphlitis,** and **appendicitis,** although their occurrence is most unusual at the public-school age.

Appendicitis is said to be caused by sudden movements, by severe exertion, by chill, by indigestible articles of diet, by bolting food, and by constipation. Were this statement correct, I scarcely think that, at the ages when indiscretions in exercise, in eating and drinking, and in inattention to the internal economy are paramount, I should have escaped with only fourteen cases in thirty-three years, and one death, or a case-mortality of 7·14 per cent.

In slight attacks there is merely discomfort in some part

of the abdomen, with tenderness, on deep pressure, in the right side just above the groin, in what is termed the iliac region. These patients require to be instantly put to bed, where they should remain for five clear days. In this way, with close attention to the state of the intestinal evacuations, and the administration of appropriate food, no further symptoms may arise.

In well-marked instances one of the most experienced writers (Dr. Murphy of Chicago, with a record of 2000 cases) registers the advent of symptoms in the following order:—

1. Sudden and severe pain in the abdomen.

2. The sequence of nausea or vomiting within three or four hours.

3. General abdominal tenderness, most marked in the right iliac region.

4. A rise in temperature commencing from two to twenty-four hours after the first sensation of pain, and reaching, in severe cases, 103° Fahr.

He further insists that "the symptoms occur, almost without exception, in the above order, and when that order varies, I always question the diagnosis. If the nausea and vomiting or temperature precede the pain, I feel certain that the case is not one of appendicitis." Further, "I would not operate on a case where I was confident that no rise of temperature had been present in the first thirty-six hours of the disease."

It is well to bear in mind that, in these, and allied cases of inflammation of the bowels, the cessation of pain, where a corresponding alleviation of other symptoms does not concur, forms an indication of still graver mischief, such as gangrene of the appendix, or of the bowel.

In the fulminating type of the attack, attended with urgent pain, rigors, persistent vomiting, delirium, high fever and rapid pulse, instant operation is imperative,—and indeed

in all instances where appendicitis is clearly diagnosed operation is the sagacious course to pursue, as the mildest type of case may suddenly become appalling in its severity.

In every type of the malady the early application of leeches, or ice, to the right inguinal region will relieve the pain, and mitigate the severity of all the symptoms while preparations are in progress for operation. It is wise to avoid the administration of sedatives for palliating pain, until a definite conclusion as to the nature of the illness, and its treatment, has been reached, since such a course is apt to mislead by the relief afforded.

The following table is a record of the *years* and *months* in which the disease occurred in my school experience.

CASES OF TYPHLITIS, PERITYPHLITIS, OR APPENDICITIS, OCCURRING IN RUGBY SCHOOL BETWEEN APRIL, 1871, AND APRIL, 1904.

Year.	Month.	Number of Cases.
1877	February 19	1
1878	March 19	1
1880	February 11	1
1888	March 13	1
1889	September 29	1
1895	October 12	1
1896	November 5 and 16	2
1899	November 13	1
1900	February 4 and March 4	2
1901	November 5 and 12	2
1902	March 4	1
		14

There is another class of disease which is sometimes of the gravest import to the young, originating as a simple **earache,** but apt speedily to assume so serious a form as to produce not only deafness, but death. Earache should never be lightly regarded, for many cases require early and

energetic treatment, if the catastrophes just mentioned are to be averted.

The most frequent nervous disease incidental to this period of life is **St. Vitus's Dance**, and while *all* work should cease during the acute stage, I am quite clear that when this stage has passed the pupil should resume—not hard work, but—*some* work. It is not desirable either in these instances, where complete recovery is sometimes long delayed, or in the case of **epileptics**, that idleness should be allowed.

The subject of **infectious disease** at school is of the first importance, especially where the younger boys are being educated, owing to their special susceptibility to attack, and to the severity of the illness which is inversely related to the age of incidence. The most powerful means of combating infectious diseases is cleanliness.

Diseases of this nature cause about one-seventh of the deaths which occur in Great Britain. Nevertheless, they are to a large extent preventable: that is, they may be kept at bay by means of appropriate sanitary surroundings; and may be hindered from extending, when actually imported into a community, by measures of quarantine, of isolation, and of disinfection.

A trivial infectious illness assumes importance in schools in proportion to the number of persons simultaneously exposed to infection. Such illnesses are always a cause of anxiety, and often entail a serious interruption to work. As a class they are fostered where organic matter, inclusive of animal exhalations, is undergoing decomposition—in fact, these conditions form a fertile soil in which the microbes of infectious diseases can flourish.

These diseases vary in extent and in frequency to an enormous degree in different schools. In some they are encouraged, owing to a damp situation causing an absence of vigorous health: in others, by reason of facilities for

infection, owing to the schools being situated in towns: in others, in consequence of the boys being crowded together in boarding-houses by hundreds instead of by tens: in others, on account of faulty sanitary arrangements; or, by reason of an impure water supply. And when once originated in a school, illness of this class is multiplied by imperfect medical arrangements: infected boys are not immediately and completely isolated from the rest; or boys suffering from many of the infectious illnesses are allowed to remain, and be treated in the boarding-house with those who are free from infection.

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. Obligation to render such returns would prevent overcrowding, cure faulty drains, remove refuse heaps, and provide a sound water supply, more effectually than any other scheme that could be devised. For the school that habitually showed a large percentage of infectious illness would soon lose its pupils. It would have either to remedy its faults, or become defunct through inherent unadaptiveness. We should not then hear of schools which number their infectious cases by hundreds, or of another which unhappily exhibited diphtheria at the rate of nearly a hundred cases in a year, ending fatally in two instances—a master and a boy.

It was said by Pasteur, that the mind of man would become lord over infectious and parasitic diseases; and that prediction is being rapidly fulfilled.

Schools, however, are still the prey to infectious diseases, and will be until we are able to secure their prevention by protective inoculations: they should, however, be meantime held under some effective control. At the present time some schools are, I think, criminally careless, in neglecting adequate provision for their occurrence, and leaving the way open to their advent.

Infectious diseases are caused by living vegetable organisms which enter the tissues from without: multiply in them; and in their reproduction generate metabolic products, which are termed *toxins*, and which give rise to the symptoms and lesions that render it possible to diagnose each separate disease. On entering the tissues these micro-organisms only generate if they find the soil adapted to their reproduction.

The vegetable organisms productive of infectious diseases are termed schizomycetes, though usually named *Bacteria*, which are divided, according to their shape and form, into cocci, bacilli, and spirilla. Every micro-organism has not only a fixed specific period of reproduction, but this varies somewhat according to the suitability of the soil for germination; and it is not until germination has occurred that the toxin is produced. The time which elapses between the entrance of the micro-organism and the creation of a dose of its toxin sufficient to give rise to more or less characteristic signs of the specialized disease is designated the *period of incubation* to be hereafter considered. This period varies in definiteness according to the fertility of the micro-organisms themselves, and the capacity of the soil for cultivation which forms their nidus.

While these vegetable organisms usually cause disease and death by the production of toxins, the rapid development of the bacilli may also lead to the mechanical obstruction of the bloodvessels through their agency.

There is another group of bacteria which cause the

production of poisonous alkaloidal bodies known as ptomaines giving rise to acute gastro-enteritis.

Three hypotheses have been advanced as to **the cause of infectious diseases.**

1. The one regards the *individual constitution* as playing the most important part; *e.g.* in tuberculosis and leprosy, the curability of the disease is assured by developing, through hygienic measures, the resisting capacity of the affected individual.

2. The second considers that external causes, as in cholera and plague, operate in the form of *specific disease-producing germs.*

3. In the view of the third other external conditions, defined as "predisposition of place and time," as in typhoid fever, are conceived to be the predisposing cause. A local inflammation, or a simple catarrh, may excite to a state of activity bacilli previously inactive, and continuing inactive in the absence of this condition. It is common knowledge that persons are susceptible at one time and not at another, dependent upon the conditions described under the preceding sections No. 1 and No. 2. The fact of immunity proved the existence of predisposition. It may, therefore, be taken for granted that the cause of infection involves the several elements of the three hypotheses.

The question of **immunity** must be briefly referred to, looking to its intimate connection with infection. Immunity expresses that state of body which is impervious to the attack of the micro-organisms associated with infectious diseases. This immunity may be individual, racial, or acquired.

1. There are many *individuals* who, for many years of their life, are proof against the action of the microbes of certain diseases, though frequently exposed to their attack; while at another period they succumb at once, either from increased virulence of the microbes, or in consequence of

special conditions in their own health. This is *temporary immunity*. In other cases this immunity continues during life—*permanent immunity*.

2. An instance of *racial immunity* is furnished by negroes who are immune against yellow fever.

3. The best illustration of *acquired immunity* is that of persons who, having previously suffered from a disease, are immune against a subsequent attack—a fact of material importance to schools. This freedom may also be acquired, as shown in Pasteur's classical work, by artificial inoculation with an attenuated virus, or with small doses of living organisms.

On the other hand, there are individuals, families, and races, whose **susceptibility** to the attack of certain of the infectious diseases is so assured, that they fall victims at the first moment of exposure; while others, again, are so extremely vulnerable that they are prone to more than one attack of the same infectious disease.

These problems of immunity and susceptibility are too wide for adequate discussion in this work: the briefest reference must therefore suffice.

In **the prevention of infectious diseases** much can be accomplished by knowledge, prudence, and forethought.

By residence on a healthy site: by cleanliness in the person and surroundings: by regular daily exercise: by full, but not excessive, mental work; and by abstention from articles of food which disagree, the highest state of health alone can be secured. In this way the germs of lower life causative of disease—really parasites—find greater difficulty in growth and multiplication in the human body, in accordance with the well-known law that most parasites exert their sway with greatest power on animal and vegetable organisms whose vitality is diminished. The greater the vigour of the animal or plant, the less the chance afforded to the parasite.

For **the germination of infectious diseases** there

are always two essential conditions,—a suitable soil, and a specific seed. The microbes are in the air in a given season; and if an individual be in an impoverished state of health, or if his surroundings be insanitary, the road is thereby thrown open to their incursion into the system. For instance, putrefactive, and disease germs, as Sir John Simon states, show little power of active diffusion in dry air, whereas in humid air, and in low-lying ill-ventilated localities, they abound not only in the atmosphere, but also in the soil, and the ground water.

So **many school illnesses,** which owe their origin to microbes, **show their primary signs in the throat,** and *often without occasioning discomfort there*, that a knowledge of the condition of the throat in every departure from health should form the first inquiry of the school doctor. In my very early days of office at Rugby, I recognized the importance of examining the state of the throat in the young: the practice, consequently, became a confirmed habit of looking at the throat of every boy who expressed himself as not feeling well, without waiting for any specific complaint from him. And whenever I noticed the least deviation from a healthy appearance, however trivial, strict isolation was enforced, and he was separated from the healthy until quite recovered. For every boy suffering from a sore throat should be regarded as possibly dangerously infectious until its nature is clearly revealed. In this way all ailments attended with sore throat, some of them of the greatest moment to the young, have been prevented from spreading. It is scarcely necessary to point out that it is the first cases that require to be watched for and isolated, if the diseases, as I shall prove is competent, are to be limited in extent. On inspecting the throat in the young in the very earliest stage of its abnormality certain common conditions are discovered which gradually assume the various forms typical of recognized diseases. And I see these throats and isolate them often

long before a diagnosis is possible. When asked, as I frequently have been, what is the matter with the throat, I am only able to plead ignorance; but I strive to impress the fact upon my inquisitors that, when I am in a position to diagnose the case at first sight, I have secured it far too late for the welfare of the individual, and for the protection of other members of the school. Moreover, where a school is supplied with the requisite number of single quarantine wards, an early exact diagnosis is not necessary, so long as the sufferer is transferred to one of them instantly.

It cannot be too explicitly understood that the great majority of cases of school infectious diseases are of a very slight nature. So unapparent, indeed, are some instances of even scarlet fever, and diphtheria, that no real illness exists, and their diagnosis is attended with the greatest difficulty and no little anxiety. For these cases cannot be placed in the wards with unmistakable examples until the diagnosis is manifest, and thus quarantine rooms must be available for their separation until an accurate judgment is practicable. And yet these slight instances form a source of grave danger to the *individual* if immediate care be not taken, for severe sequelæ are apt to supervene: they are fraught with danger also to the *community*, through lack of isolation, in that they entail an extension of the disease. And it is these superficially trivial cases of the disease, where there is really no *illness* of any kind, that more than any other cause produce epidemics. For the **degree of infectiousness** is **not** necessarily **proportional to the severity** of the attack; and all these zymotic diseases spread most frequently from boy to boy, rather than originate from independent sources. There is no duty more gravely incumbent on the authorities than that of preventing the passage of infectious disease from pupil to pupil in schools; and of employing every means to obviate its extension beyond the limits of the

school. Yet schools exist in which no precautions are adopted to avoid either catastrophe.

What has been effected in one of our great schools in the prevention of infectious illnesses is shown by the following table. The number of *boarders* in the school varies from time to time, which is an important fact in calculating averages. Thus in 1874 they fell to 299; while the highest numbers have been 548. For the whole thirty-three years the average is 435 per annum.

TABLE XXXVII.—TABLE OF INFECTIOUS DISEASE IN RUGBY SCHOOL FROM APRIL, 1871, TO APRIL, 1904, THERE BEING AN ANNUAL AVERAGE OF 435 BOARDERS.

Name of illness.	Total number of cases.	Average number of cases per annum.	Average number of cases per cent. per annum in respect of the boarders yearly under observation.
Influenza	1037	31·42	7·22
Measles	543	16·45	3·78
Ophthalmia	428	12·97	2·98
Roserash	408	12·36	2·84
Mumps	337	10·21	2·35
Chicken-pox	113	3·42	0·79
Scarlet fever	93	2·82	0·65
Ringworm	37	1·12	0·26
Whooping-cough	34	1·03	0·24
Fourth disease (recognized) ...	19	0·58	0·13
Diphtheria	6	0·18	0·04
Typhoid fever	4	0·12	0·03
Erysipelas of face and head ...	1	0·03	0·01
Small-pox	0	0·00	0·00
Total of all cases of Infectious Illness among 435 boys in 33 years	3060	92·71	21·32

This table gives promise that the "infectious diseases" of the young, even when they are congregated together in

large numbers, may—by studying their "life history," by the advancement of sanitary science, by adequate provision for the immediate isolation of every patient, and by placing in quarantine every suspicious case—be held in check to a large extent. It proves, moreover, that small-pox may cease to be a disease of school life by efficient re-vaccination. It further shows that in this school "filth diseases," such as typhoid fever, depending mostly upon unsanitary conditions of life, such as impure water, imperfect drains, and decomposing refuse heaps, have been all but exterminated.

It also points to the fact that, with the exception of influenza, which forms one-third of all the zymotic diseases, "epidemic roseola" (roserash) is the most infectious disease of all; for, although measles shows an actually larger number of cases, yet if every case of catarrh could be isolated for four days, which is impossible,—as no school could then continue working,—that disease could more readily be checked than roserash, which, even with instant isolation, spreads extensively whenever it arises.

If a similar record were taken of zymotic diseases occurring amongst an equal number of young people of the same ages, and distributed over an equal number of years, living in families, instead of being congregated in school, I doubt very much whether as clean a bill of health as this would be presented.

In a few years I trust that all schools will be less pestered by these internal parasitic diseases, for Pasteur has shown that by vaccination with *modified* micro-organisms of chicken-cholera, of anthrax, of rabies, and others, immunity is obtained from the action of *unmodified* micro-organisms.

We are, however, interested in a wider question, and have to inquire whether all infectious diseases are not the products of bacteria; and if so, whether similar specific preventives can be adopted for them all. It is impossible to discuss this question here. I would only, in a word or

two, remind my readers what vaccination has done in the case of small-pox; and earnestly hope and believe that the same beneficial results will soon be effected in respect of the remaining zymotic diseases.

The various **sources from which infectious diseases at boarding-schools** may arise I now proceed to enumerate, with their remedies:—

Source.	Prevention.
1. From the *town* and neighbourhood where cases already exist.	1. Liberty, during play hours, is a rule at all public schools; but while there are "out of bounds" districts, the town is generally not forbidden. I would not lightly advise any infringement of this wholesome freedom—so valuable a condition of healthy life. Nevertheless, it is a constant source of infectious illness; and whenever a town epidemic prevailed, it would be sufficient to acquaint the boys with it, as they would keep away without the necessity of putting the town "out of bounds": boys may usually be trusted to avoid a known source of infection.
2. From *day scholars* often bringing infectious illness into school from infected homes.	2. As the system of day scholars cannot be abolished, school authorities should encourage the greatest openness in such matters from parents, and should be always on the alert, and equally open themselves in return, which is not the case generally at the present time. No boy should enter school from an infected home. If he has already had the disease in question, he could continue to attend school if removed to a lodging. If he has *not* had an attack, he should not be permitted to enter school until he has been quarantined in another house, remote from all source of infection, for the period of incubation of the particular disease.

Source.	Prevention.
3. From infectious illness occurring among masters' or medical officers' children.	3. Such cases of illness in masters' or doctors' families should be most strictly isolated; or, better still, sent into the sanatorium, as if they were pupils in the school itself; otherwise infection may be introduced amongst the boys of a house or form. Masters' and doctors' houses should be above suspicion.
4. From the *laundry*—a constant source of anxiety and doubt.	4. Where possible, schools should have their own laundry, as many have already: this is the only efficient mode of preventing infection from this source.
5. From the *dairy*.	5. Every great school should have its own dairy; or be supplied with milk from *one* trustworthy source, which should be under the supervision of the medical officer.
6. From the *sewers*.	6. The only security against this source of illness is to cut off the house-drains absolutely from the town-sewer, as I have advised: to ventilate the soil-pipe; and to see that the town-sewer is thoroughly ventilated and flushed periodically. Parents should make these necessary inquiries themselves, and should not leave them to chance.
7. From *cesspools*,—one of the most fertile sources, and often causing the most dangerous illnesses.	7. Earth-closets should be employed in the place of water-closets draining to cesspools, where possible. If cesspools must be used, there should be no possibility of their overflowing into a "well:" they should be cut off from the house-drains and themselves ventilated.
8. From *impure water*, especially when contaminated with sewage.	8. No "well" should be used in a town: wells in the country should be so placed and constructed that no water from the surface or from the superficial layer of the soil can enter. All water should be properly filtered.

Source.	Prevention.
9. From *railway journeys* to neighbouring towns for various purposes.	9. These journeys, as far as possible, should be forbidden, as they are a frequent source of infectious illness in a school: a railway carriage being a prevalent fertile hotbed of infection. For other school reasons the journeys should be reduced to a minimum, if allowed at all.
10. From "exeats."	10. Exeats should be abolished in all schools, now that "terms" exist instead of "half-years:" not a good word can be said for these relics of the past.

Epidemics at all times, and under all circumstances, are of serious moment to communities; but in no communities are they more unfortunate than in schools—unless it be in the case of very young children in the nursery, where the mortality is so much heavier. There are two classes of individuals who facilitate the occurrence of epidemics in schools:—

1. The boy who, though not feeling well, having perhaps a sore throat, or a rash, "thought it was nothing:" fails to report himself, and spreads infection for days before he is detected, and isolated.

2. That exceedingly silly person "who is not afraid of infection," and who professes to believe that because he feels no fear, he cannot become a carrier of infection. Infinite pains must be exercised to teach that a person can convey the disease, after exposure, although he himself may escape an attack, or may even have previously suffered. It is the slight cases of infectious diseases, often undiscovered until far advanced, and sometimes never detected, which are answerable for the most serious epidemics. I cannot too earnestly impress the fact that the degree of infectiousness is not in proportion to the severity of the illness.

During the course of epidemics it is said that the micro-organisms of zymotic diseases increase in virulence. I have not observed this in school epidemics where due precautions are taken; but it is quite clear that even during mild epidemics individual susceptibility accounts for severe, and fatal, cases. In diphtheria, however, there can be no doubt that the first cases are frequently of an exceedingly mild type.

The **deplorable effects of epidemics** manifest themselves in schools in various ways:—

1. Owing to the number of individuals who are unprotected at the school age—larger now than formerly, on account of greater individual family care—zymotic diseases find in schools fitting subjects for widespread attack.

2. School epidemics are accountable for much loss of time in school-work, and in play, and thus not only impede education, but growth and development also at a critical age.

The absence from work on account of sickness, too, is sometimes very serious to individuals: causing, it may be, the loss of a scholarship, and thus sometimes blighting a university career through failure to gain the money-value involved.

3. Sometimes infectious disease damages a child for life, on account of the severity of the illness, or its sequelæ.

4. Owing to a period of prolonged ill-health, subsequent to the illness, some of these maladies are apt to furnish a fitting soil for the advent of other and more fatal diseases.

5. Occasionally epidemics even cost the sacrifice of life by the severity of the illness, or through the poorness, or peculiarity, of the constitution attacked.

6. The expense involved in the treatment of epidemics must always be heavy, for doctoring, nursing, maintenance, the provision of expensive arrangements for isolation, and for subsequent disinfection.

7. The existence of such diseases may make even an old,

valued, and well-established school totter to its foundation, if they be severe or frequent.

8. These diseases sever boys from their friends and schoolfellows at a critical time of life, by the solitary confinement necessary for their limitation.

It is thus obvious that infectious diseases are most virulent enemies to schools. It is, therefore, incumbent upon all who are interested in schools to assist in their prevention or amelioration. Infectious diseases are, however, so treacherous in their attack, and so widely disseminated, that they defy the most patient watchfulness, and thus cause endless trouble and anxiety.

In order to assist in their prevention, certain expert knowledge is a *sine quâ non*: knowledge which can, indeed, be supplemented by books containing records of the experience of other observers; but which must in the main be personally *obtained* from long experience in watching the ways of minute germ-life, and interpreting their results.

A knowledge of the **natural history of zymotic diseases** is imperative. Without an intimate acquaintance with the natural history of each disease, and in the absence of accurate interpretation of the facts, no advance towards their effective mitigation or abolition is possible. For the minute seeds, on which this class of disease depends, possess their own **seasons** of growth and development exactly as other vegetable seeds. And, although individual seeds may germinate out of season, and thus keep a disease alive, yet a main crop, in the form of an epidemic, will only develop in its appropriate season of the year, and only then when other exceptional (and not yet fully understood) conditions are favourable, in exactly the same way as the gardener speaks of a good plum year, or a good apple year.

Another fact to be borne in mind is, that each disease has apparently its own seed, producing a result *sui generis*. But it is a curious circumstance, at present unexplainable,

that the growth of *some* germs in the body seems to induce such an alteration in soil, as to facilitate the immediate fertilization and growth of the germs of *other* diseases. For example, the concurrence, or sequence, of measles and whooping-cough, and of scarlet fever and diphtheria are well known; and I have observed the marked influence which influenza has had on the concurrent, or subsequent, development of influenza and roserash, and of influenza and mumps, the latter followed by the frequent occurrence of orchitis—a conjunction I had not seen for years, in fact not since I discovered that the orchitis of mumps almost invariably appeared on the *eighth day*, and rarely so if the individual were detained in bed from the commencement and over that day.

The preference shown by infectious diseases for certain seasons of the year, is dependent on the influence of meteorological conditions upon the life history of the specific micro-organisms, as well as upon the susceptibility of the host.

In order to establish by facts, which far outweigh arguments, that the various zymotic diseases have their own seasons of normal fertilization, I have analyzed (in Table XXXVIII., p. 465) the various diseases of this class which have occurred at Rugby School during my tenure of office. Owing to the intervention of school vacations, which occur every twelve weeks, these records only apply to schools, as the disease may continue its course at the homes of the pupils.

The value of this table lies in the fact that it is a record of the zymotic diseases occurring among an average of 435 per annum of young people, varying in age from thirteen to nineteen years, of a most susceptible age, congregated together, and living seemingly under exactly the same conditions year after year. It shows, with complete clearness, that the *minor* zymotic diseases of schools, such as measles and roserash, arise almost exclusively during the first seven

XXXVIII.—TABLE SHOWING THE SEASONS OF THE YEAR IN WHICH INFECTIOUS DISEASES HAS OCCURRED AT RUGBY SCHOOL FROM APRIL, 1871, TO APRIL, 1904.

Name of Disease.	Number of cases occurring during the month of												
	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sep.	Oct.	Nov.	Dec.	Total.
Influenza	88	244	238	6	40	102	146	0	1	26	61	85	1037
Measles	10	231	13	1	77	115	96	0	0	0	0	0	543
Ophthalmia	5	39	61	3	49	81	53	0	2	90	29	16	428
Roserash	0	20	175	60	31	78	40	0	1	1	0	2	408
Mumps	6	32	81	10	9	28	110	0	0	9	28	24	337
Chicken-pox	1	8	19	1	5	11	4	0	0	9	31	24	113
Scarlet Fever	0	10	9	5	15	14	14	0	1	2	9	14	93
Ringworm	2	8	4	0	5	5	2	0	1	1	6	3	37
Whooping-cough...	0	2	4	0	13	6	9	0	0	0	0	0	34
Fourth Disease	0	0	19	0	0	0	0	0	0	0	0	0	19
Diphtheria	0	0	0	0	2	1	0	0	1	0	1	1	6
Typhoid Fever	0	1	0	0	0	0	0	0	0	1	1	1	4
Erysipelas	0	0	0	1	0	0	0	0	0	0	0	0	1
Small-pox	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	112	595	623	87	246	441	474	0	7	139	166	170	3060

months of the year, and that, consequently, they are spring and summer diseases.

Besides these seasonal variations, a **periodicity** is exhibited in infectious diseases. They are more prevalent in some years than others, due to the climatic conditions being especially favourable to the propagation, or to the destruction, of pathogenic micro-organisms. They assume a cyclical character, and Ransome showed that an indication exists of "certain larger, as well as smaller, disease waves." The larger cycle is characterized by an increase not only in extension of area, but in severity also, as indicated both by a rise in case-mortality, and by the tendency of the disease to attack those whose age usually protects them, and those already immune by a previous attack. It has been observed in schools that, when the unprotected reach a certain proportion, varying in different diseases, an epidemic is apt to happen.

In Table XXXIX. (p. 467) I have analyzed the same zymotic diseases of Rugby School *year by year*, in place of months. And it shows, as I have already pointed out, on p. 405—although I had not then analyzed the figures—that, notwithstanding the greatest care in instant isolation, and in spite of increased power of diagnosis owing to so many years' experience, infectious diseases in schools are on the increase on account of the larger knowledge and attention expended in the protection of children during their lifetime in the nursery, family, and the preparatory school.

Equally remarkable are the following additional records, Charts XL. and XLI. (p. 470), which are of even greater moment to schools by reason of the increased severity of the diseases, which entails an augmented mortality.

It is a well-established fact that all the *major* diseases, of an infectious nature, are more prevalent in the autumn and winter, contrary to the incidence of the *minor* diseases which, as I have shown, are incidental to the spring and

XXXIX.—Table showing YEAR BY YEAR the Attacks of Infectious Diseases occurring at Rugby School, from April, 1871, to April, 1904.

Name of disease.	Number of cases occurring during the year																	
	1871.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	Total.
Influenza	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Measles	0	30	0	26	5	0	6	0	0	0	0	71	0	45	0	0	0	183
Ophthalmia	0	0	0	0	4	2	1	2	2	3	1	0	21	9	3	2	10	60
Roserash	1	0	0	7	0	2	59	26	0	14	0	7	30	1	0	0	65	212
Mumps	0	26	21	0	30	0	2	11	0	8	0	1	0	11	3	2	0	115
Chicken-pox	2	0	0	6	1	0	0	5	0	10	1	1	5	2	0	4	0	37
Scarlet Fever... ...	0	1	0	10	2	0	6	0	0	6	17	0	0	5	3	1	1	52
Ringworm	0	1	0	0	0	1	0	1	4	2	1	1	0	0	0	2	1	14
Whooping-cough ...	0	0	3	0	0	0	0	1	0	0	0	1	0	0	10	0	0	15
Fourth Disease ...	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diphtheria	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	3
Typhoid Fever ...	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	3
Erysipelas	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Small-pox	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	4	58	24	49	42	6	74	46	6	43	20	83	58	74	19	11	78	695

XXXIX.—Table showing YEAR BY YEAR the Attacks of Infectious Diseases occurring at Rugby School, from April, 1871, to April, 1904—*continued.*

Name of disease.	Number of cases occurring during the year																	
	1888	1889.	1890.	1891.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.	1904.	Total.
Influenza	0	0	65	89	73	113	69	18	89	31	47	154	71	75	38	38	67	1037
Measles	69	0	12	47	6	0	1	15	0	0	66	0	55	0	54	0	0	360
Ophthalmia	4	2	1	25	21	31	17	18	18	29	95	49	34	12	2	10	0	368
Roserash	0	0	0	0	54	9	0	0	24	24	0	25	3	3	53	0	1	196
Mumps	24	0	0	2	4	51	0	0	2	0	0	30	17	2	88	0	2	222
Chicken-pox	3	11	18	0	3	3	4	13	5	1	0	2	0	0	9	4	0	76
Scarlet Fever ...	0	7	0	0	0	0	2	10	1	0	0	1	0	0	5	15	0	41
Ringworm	0	1	1	1	1	0	3	1	3	0	1	2	2	4	0	3	0	23
Whooping-cough ...	0	0	0	0	3	0	7	0	2	0	0	0	1	1	4	1	0	19
Fourth Disease ...	0	0	0	0	0	0	0	0	0	0	0	0	19	0	0	0	0	19
Diphtheria	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	3
Typhoid Fever ...	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Erysipelas	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Small-pox	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	100	22	97	164	165	207	103	110	144	85	209	263	202	97	255	72	70	2365

summer. This fact was admirably proved by Dr. Robert Barnes in an excellent paper read before the British Medical Association at Dublin, in 1887. He recorded the deaths from scarlet fever, continued fevers, erysipelas, and puerperal fevers, in a series of tables worked out by Dr. Buchan, and published in the "Royal Meteorological Transactions," for the years 1845 to 1874, and continued by Dr. Barnes from 1875 to 1884, thus extending over a period of forty years.

In all these diseases the tables were so nearly identical, that, if superposed, they would almost exactly coincide. I append the charts (p. 470) relating to scarlet fever, as they are of paramount interest in the welfare of schools. Corresponding charts have been drawn by recent writers up to the present time, which exhibit similar results.

In considering the question of the **prevention of epidemics**, it must be borne in mind that *sporadic* cases of infectious illness afford the real test of the healthiness of a school, and of its sanitary surroundings. For, in a school where such illnesses are continually arising, and where, when they do occur, they spread from pupil to pupil, it is evident that a serious fault exists. During an epidemic season some of the best-situated and the best-regulated schools, where the pupils, too, are in the rudest health, will certainly be involved; but the number of cases, and the severity of each, are, under such circumstances, greatly reduced. It is to be remembered that infectious diseases are unprevented preventable diseases; and that they most extend where insanitary conditions exist. If these diseases were always regarded as "filth" diseases, one stage nearer to their eradication would be reached. Dr. Hueppe, of Prague, contends that the specific bacteria, which produce these diseases, owe their origin to putrefactive bacteria, on the Darwinian principle of modification by descent,

Chart XL.—DR. BUCHAN'S TABLE.

Deaths from Scarlatina for all Ages, and both Sexes, Thirty Years, 1845–74.

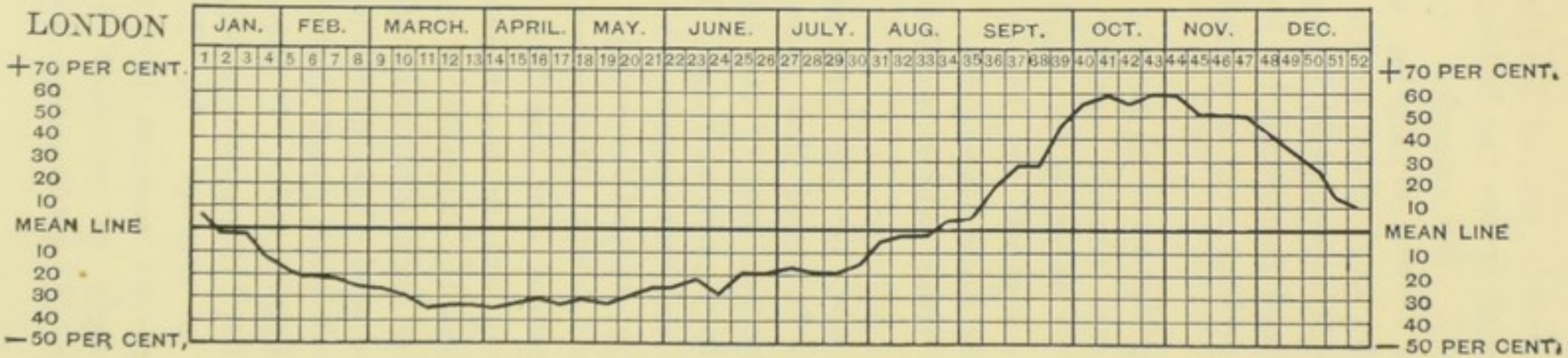
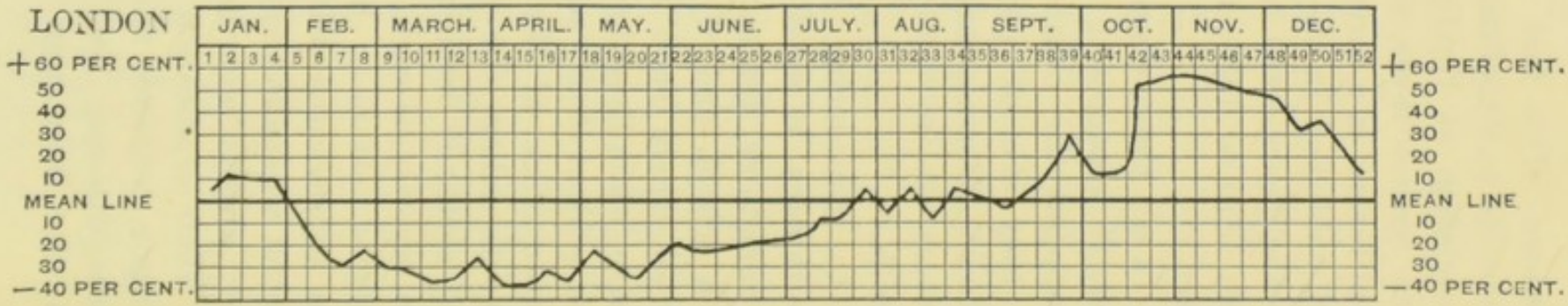


Chart XLI.—DR. ROBERT BARNES'S TABLE.

Deaths from Scarlatina for all Ages, and both Sexes, Ten Years, 1875–84.



and that a hygiene of cleanliness is the surest prophylactic. To render, therefore, the existence of germ-life difficult is to ensure the existence of sound human health.

As a necessary corollary to the importance of an accurate knowledge of the natural history of zymotic diseases, we have now to discuss the following points.

I shall endeavour to show the paramount value of **accurate diagnosis** by advancing the argument of facts. And, for this purpose, I shall select a class of cases which are the *bête noir* of all physicians, though they specially concern school physicians. These cases have misled, and are still misleading, many medical men, in which number I include myself, to our discredit and to the detriment of the welfare of schools. Yet, on careful analysis, they are as separable as typhus fever from typhoid fever.

No diseases, with which schools have to deal, have caused such infinite trouble and anxiety as the following, not only on account of their inherent difficulties in diagnosis, but also by reason of an improper nomenclature entailing serious obscurity. By mistaking roserash (rubella) for measles (morbilli), an error is committed distinctly deserving censure; but the confusion of a disease, hitherto regarded as a variety of roserash, which I have termed, for the present, a fourth disease, with scarlet fever, involves, even admitting the perplexities of diagnosis, very grave results. So minutely does this fourth disease simulate scarlet fever, that I am convinced—I have published a record of such instances—that many illnesses are ascribed to the latter cause which belong to the former, and *vice versâ*. Indeed, the difficulties of distinction are often so pronounced that a series of cases is required before a conclusive diagnosis can be arrived at.

But these questions are too large and technical for adequate discussion in this place. I can merely refer to my articles upon scarlet fever and roserash (rubella) in

the Encyclopædia Medica;* and to my separate pamphlet on the "fourth disease."†

Among the *reasons* for frequency of **mistaken diagnosis** are included:—

1. The fact that we are all too apt to base our diagnosis of this class of ailments too exclusively upon the appearance of the eruption, without devoting sufficient attention to the history, the incubation period, and the presence or absence of other symptoms; whereas these concurrent symptoms should be primarily considered.

2. Because we are too inclined to regard a diffuse red *rash*, followed by desquamation, as unmistakable evidence of scarlet fever, which is very contrary to the fact.

3. There is also the erroneous inference, which I have already mentioned, that because the illness is slight it cannot, therefore, be scarlet fever. On the contrary, some of the slightest cases of serious illness I have ever witnessed have been scarlet fever, and it is a well-known fact that such cases frequently become fatal from the absence of sufficient care. It is these slight, atypical examples of infectious diseases which are sometimes impossible of diagnosis on the ground just mentioned, but which breed absolutely true, and are apt to originate a group of characteristic cases of the disease, or an epidemic. The impracticability of their diagnosis makes it imperative that means should be provided to *quarantine* them until the real nature of the malady can be detected; or, failing diagnosis altogether, to *isolate* them until the danger of infection is past.

The **methods of prevention of epidemics** *at school* accordingly merit our minute consideration.

i. **How to render the school an unfit soil** for the activities of these disease germs. Regard must here be

* Published by Messrs. Green & Co., Edinburgh.

† Published by Messrs. Churchill, Great Marlborough Street, London, W.

assiduously devoted to the continued maintenance of health in the pupil, and the purity of his surroundings.

1. The *dryness of the soil* is one of the chief necessities: efficient surface and subsoil drainage, therefore, is of the highest importance. A breezy site is also another feature of moment.

2. If surface and subsoil drainage be carried out effectively, the quality of the *atmosphere* is so improved, by reducing its humidity, as to possess increased power in oxidizing the spent materials emitted from the body, and in facilitating the destruction of "ground" organic matter.

3. But this augmented state of purity of the atmosphere *out-of-doors* is insufficient without plenty of *cubic space indoors*, as well as thorough *ventilation* in studies, dormitories, dining-rooms, class-rooms, and chapel. To re-breathe the same air more than once is almost as objectionable as the reintroduction into the body of the other excretions.

4. *Impure water* must not be drunk.

5. *Efficient drainage*, for the rapid and complete removal of the excretions, and the prevention of the entrance of gases arising from their decomposition into boarding-houses, class-rooms, and sanatoria.

6. The systematic removal of *house-refuse* before it undergoes decomposition: this must be done at least once a week, though removal twice a week, or daily, is preferable.

7. By the production of so high a condition of health in every boy that he will be less susceptible to the multiplication of the infectious poison. With this object, *work* must be regulated according to *age: exercise* must be taken daily, varying in amount and severity with *age and size:* sufficient *sleep* must be secured, varied according to age and season: plain wholesome well-cooked *food*, with ample time for mastication: a daily *natural relief;* and a clean *skin* are absolutely essential.

We should remember what my able master, Sir John

Simon, taught:—"That a contagium of a given disease, such as small-pox or measles, has no more power to influence the un-predisposed body, than yeast has to ferment alcohol, or to turn pure water into beer."

ii. **How to prevent the sowing of the seeds of infectious disease** in schools, lest any should germinate, multiply, and spread from pupil to pupil.

1. In addition to the causes already enumerated on p. 459, I would mention the very important transfer of a given disease from the first case occurring in a school to *neighbouring schools*, where either younger brothers are visited on Sundays, or where cricket or football *matches* are interchanged. It should, therefore, be an established rule, that when a single case of infectious illness arises in a school, a friendly warning should be sent to all schools in the neighbourhood with which pupils have inter-communication. Such friendly caution saves endless trouble and chagrin.

Day-boys often start infectious disease in a boarding-school. The *families* of masters, and their *servants*, are also liable to those diseases, and thus become sources of infection. When isolation is impossible, the master should live apart from the school, and should not visit his infected house until all danger has disappeared.

2. But one of the most common periods at which infectious illness enters a school is the *commencement of term*. An invariable rule should accordingly be adopted, that, where in the home of a pupil an illness of an infectious nature has occurred, whether he himself has been affected or not—or where a pupil has been in any way exposed to known infection—he should, on arrival, be driven, with his luggage, direct from the railway station to the sanatorium, and there have his head, body, and every accompanying article, disinfected before he enters school. This should be carried out by the sanatorium staff, under the personal superintendence of the medical officer, quite irrespective of

any previous home-disinfection. For the school doctor is responsible to the school, and should not accept what has been already done as a sufficient security, since some parents are reprehensibly, and others ignorantly, careless.

iii. How to **prevent an infectious illness spreading** *and involving others*, when once a case has occurred at school.

1. Have perfect *quarantine* regulations and accommodation. It appears to me that these necessaries must be very deficient in some schools, when a writer records the fact, that a certain epidemic in a school attacked over two hundred boys in one *term;* and he adds, that this is the experience of most large schools. If my Tables XXXVIII. and XXXIX. (pp. 465, 467, 468) be studied, it will be seen that, until the advent of influenza, where every recognized case was also isolated and subsequently disinfected, as if it were scarlet fever, in no *year* did the infectious illnesses at Rugby School exceed 263 in number, including 154 cases of influenza, and that number comprised four different diseases.

2. *Instantly quarantine* the first patient (together with a nurse), where the faintest reasonable suspicion exists; and apply the same treatment in each succeeding instance. Means such as I have shown in the model school sanatorium should be provided for this purpose, which, although costly at the outset, would save in the end a large amount of money, for there is nothing so expensive as illness.

3. *Remove the mattress and bedding* from the dormitory to the sanatorium, as soon as the pupil is himself isolated, for the purpose of *disinfection.*

4. Remove all his *clothes* from his chest of drawers, and all articles from his box, his pigeon-hole, or his locker, and send them to the sanatorium for disinfection, as soon as he himself is isolated. In this way, unexplained *de novo* cases are less likely subsequently to arise, and neutralize the *data* for estimation of the incubation periods.

5. Thoroughly *disinfect* the head, body, and clothes after the illness itself, however slight it may have been, so that *convalescents* may not infect others after their return to school.

6. *Occasionally* it may be advisable to disinfect the clothes of such school-fellows as have been much in contact with the invalid before his isolation, although they may themselves have previously suffered from the illness.

7. *Frequently* it may be prudent to place *in quarantine* a school-fellow who has shared a study with, or slept next to, the invalid, and who has not already had the illness. In this way many an epidemic may be arrested at the start.

8. *Books* which have been used by an infected patient before he is isolated, even at the beginning of his illness or during his convalescence, should be destroyed, or confiscated to the sanatorium box (see p. 427), as it is difficult to disinfect them properly, unless every page be treated separately—a course, it is needless to add, which would rarely be thoroughly carried out.

In the process of infection it is clear, as I have already explained, that the microbes of zymotic diseases enter the system, multiply therein, and when numerous enough to produce a sufficient quantity of the special toxin, generate the particular disease. The interval between their entrance and the manifestation of symptoms, is termed the **period of incubation,** which varies considerably in different infections; but is comparatively constant for each specific infection. Still, variations do exist, as will presently be noticed, depending upon the number of microbes introduced, their activity, and the susceptibility of the host. Where the bacilli are deficient in vitality; or where the power of destroying them by the blood, or by the tissues of the system, is pronounced, they may either fail to produce the disease, or may cause a slight illness only, and with such difficulty that the incubation period is extended. If, however, the

bacilli be active, and the soil suitable, they multiply with a rapidity sufficient to guarantee a copious amount of toxin to which the system quickly succumbs, entailing a diminished period of incubation, and a severe attack, ushered in by rigors or vomiting. By a knowledge of the "periods of incubation" of these diseases considerable trouble, uncertainty, and illness are avoided, since the natural history of infectious seeds, or germs, is thus understood, and it is recognized that these seeds, like every other seed, require a specific time of their own for germination. Thus the necessary *period of quarantine* is ascertained, for those who have been exposed to infection, with a view to reducing the area of the disease.

The outset, or what is termed the **period of invasion,** of infectious diseases is announced by symptoms, some of which are common to all fevers, while others are *sui generis;* and from the nature of which the disease is diagnosed. The various diseases appear to possess special avenues of *invasion:* some microbes finding their entrance into the system by the throat: others by the lungs; and others, again, by the stomach.

In legislating for the prevention of infectious diseases, it should be borne in mind that they are undoubtedly infectious before any symptoms are manifest, even after the minutest scrutiny. This prior or incipient stage is at present undetermined; but if forty-eight hours were allowed beyond the times I tabulate (page 479), I think ample provision for our deficiencies would be provided, and infectious illness be more readily extinguished.

To elucidate my meaning: suppose a case of mumps occurs in a family, where there are four other children who have not yet passed through the illness, and measures are adopted to prevent their infection. The next case will probably be due on the nineteenth day, but may appear as early as the fourteenth day: if the first case has only infected

one of the four, and if the new patient (unknown at present) be left amongst the other three, it is probable that he will further infect one or more. The proper course, therefore, is to separate the children from each other from the twelfth to the twenty-sixth day. This period of segregation is termed the **period of quarantine.** In the regulations for obviating the extension of infectious diseases the time must be calculated for the longest period of incubation of the disease in question.

In Table XLII. (p. 479) will be found a serviceable guide; but all questions involving doubt should be referred to the medical authority.*

The period of incubation of infectious diseases can only be accurately obtained from well-marked isolated cases, or from the commencement and termination of epidemics: it is futile to attempt to trace that period during the acme of an epidemic, while many cases are succumbing daily from the illness. I tried, years ago, to effect this myself, and obtained chaos only in my results. Further, no precise period of incubation can be ascertained while an infectious case remains in the same house with the healthy. It can only be exact when the infected are instantly, or on mere suspicion even, removed to the sanatorium.

There is no incubation period so variously stated by different authors as that of scarlet fever: ranges have been assigned from a few hours to twenty-eight days. This discrepancy arises partly from confusing two diseases which closely resemble each other: the one having a short, the other a long, period of incubation. Nothing is more certain than the fact that the incubation of scarlet fever never extends beyond a week, and rarely lasts so long.

During the time that scarlet fever is prevalent, it should be remembered that there is a class of sore throats—often apparently simple acute tonsilitis only, while at other times

* See the Author's Paper, *Lancet*, October 29, 1881.

TABLE XLII.—Period of Incubation.

Disease.	Shortest period of incubation.	Longest period of incubation.	The greatest number of cases occur on the following days.	The majority of the cases occur between the following days.	Remarks.
	Days.	Days.	Days.	Days.	
Influenza	1	5	3rd	2nd and 4th	
Scarlet fever ...	1	8	2nd and 4th	2nd and 4th	
Fourth disease ...	9	21	14th	10th–15th	More experience is required before these dates can be accurately assigned.
Diphtheria ...	2	7	2nd and 4th	2nd and 4th	
Erysipelas ...	1	13	4th	3rd and 4th	
Small-pox	9	15	12th	11th–13th	
Chicken-pox ...	13	19	15th	14th–17th	
Typhus fever ...	1	21	12th	12th–14th	
Enteric fever ...	1	21	12th	12th–14th	
Measles	8	16	11th	9th–12th	Infectious during the catarrhal stage, which occurs for three or four days before the eruption appears.
Roserash	12	22	16th	14th–17th	
Mumps	14	28	19th	17th–20th	Infectious for one to four days before the parotid swelling is visible.
Whooping-cough ...	7	14	14th	10th–14th	Infectious during the primary cough, which may be three weeks before the whooping-cough commences.

showing a membranous or sloughy appearance, with a complete absence of eruption on the skin—occurring in those who have already had scarlet fever: this kind of sore throat, however, is not only capable of conveying scarlet fever to an individual who has not already been affected, but has also exhibited the streptococcus scarlatinæ. Scarlet fever is often spread extensively by this means; for, if the patient has suffered previously from this ailment, these sore throats are apt to be regarded as simple non-infectious cases, and fail, consequently, to be isolated carefully for three or four days. Being unrecognized, accordingly, as centres of infection, the incubation period of scarlet fever is miscalculated, and thus entails, not only a scientific inaccuracy, but sometimes preventable disease and death.

These facts appear to me to admit of the following interpretation. There is always a certain number of boys who have simple acute tonsilitis several times in the course of the year; and even when the attack is not acute, their tonsils are chronically enlarged and full of accumulated secretion. On the occurrence of scarlet fever, the streptococcus scarlatinæ bacillus apparently finds a suitable soil for development in the inspissated secretion of the tonsils, and while such individuals are themselves protected, the germs are able to fertilize and to infect those who are unprotected.

Thus, A. has scarlet fever on June 1st, and is carefully isolated on the same day; but, previous to isolation, he infects B., that is to say, he gives off germs which find a nidus in B.'s throat, who has already had scarlet fever, and the soreness of the throat appears on June 5th. B., not being isolated, infects his school-fellows for a week. Amongst others, C., who has not had scarlet fever, is infected on the last day of the week, June 12th, and on June 16th, C. shows symptoms of the fever. Here A. is regarded as the source of infection of C., and his (that is C.'s) case accordingly is registered as one of sixteen days' incubation.

Again, B. infects many boys,—who have already been attacked by scarlet fever,—with sore throats only, on various days, and these again others, until some one becomes infected who has not suffered from scarlet fever, and in his case true scarlet fever appears, perhaps on the twenty-eighth day from A.'s isolation. We thus hear of an instance of twenty-eight days' incubation. It is, therefore, imperative to isolate every case of sore throat during an epidemic of scarlet fever. In fact, sore throats have frequently so much serious meaning attached to them, that I isolate every case of even the simplest character that occurs in a school, until I am quite clear as to its nature.

There is, also, another insufficiently recognized source of error in estimating the period of incubation of scarlet fever. And until these, and similar, errors are carefully eliminated, we must be continually hearing of a long period of incubation being involved in the disease. Some years ago the following incident happened in my experience. I attended a case of scarlet fever, and when a week had passed, I assured the master in whose house it had appeared, that no more cases would arise from the first patient. However, many days after, another occurred. At the end of a week I renewed, with confidence, my statement that no other cases could arise from the first or second attacks; but that we had not yet been able to trace the origin of the first. This conviction was again repeated several times, until we had, I think, about five cases: all of them with an uncertain incubation period, and, generally, considerably over a week. I have mislaid my notes of the exact dates. These few weeks were anything but pleasant to me. The master, I have little doubt, thought that my ignorance of the period of incubation of scarlet fever was only equalled by my assurance in reiterating the statement that its incubation was never more than eight days, and rarely exceeded two to four days: notwithstanding this assertion of mine,

each of these cases occurred more than a week after each other.

The accurate interpretation of the facts failed me: though I was convinced of the accuracy of my knowledge of the incubation of scarlet fever. However, by-and-by, the sequel appeared,—the explanation was discovered. The boys went home for the holidays; and one of the parents informed the master that he regretted his son had been allowed to return with his hands peeling from scarlet fever. This boy had never been ill for an hour, and consequently no one was aware of his having scarlet fever: throughout the whole time he had gone about infecting his school-fellows, and the only surprising feature is that he did not infect tens instead of units. Under such circumstances as these, it is not to be wondered if the incubation period of scarlet fever be variously estimated, as is at present done, from a day to a month. The slight ambulating cases must always be reckoned with, and watched for.

By recognizing indubitable facts of this nature, the *number* of cases of scarlet fever will be diminished, and its *incubation* period will be accurately fixed in instances which would otherwise be misleading.* Epidemics will thus become less severe, less frequent, and the incubation period will be precisely determined.

It is rare for scarlet fever to occur after the fifth day from exposure to infection, and never after the seventh day: I know of no trustworthy case on record to the contrary.

The **degree of infectivity** of the several infectious diseases varies greatly, according to the life-history of the particular micro-organisms which occasion it, and to the individual susceptibility of the host. Some swallow, or inhale, bacilli wholesale night and day for years, in whom they apparently produce no effect, in consequence of the soil of the body proving unsuitable to germination; while

* See the Author's Letter, *Lancet*, June, 1883.

others succumb at once. Now, these variations in infectivity must never be lost sight of in considering their generic character. For instance, it is a well-known fact that, while consumption and pneumonia are infectious diseases, the intensity of their infectivity is very slight. The exaggerated fears of the public require calming in this respect, especially in connection with consumption; for they seem to imagine that the disease is equally infectious with measles, scarlet fever, and small-pox, while all that is requisite for its prevention is pure air for respiration, and the avoidance of swallowing the dried sputum of the affected.

On the other hand, where measles, roserash, whooping-cough, scarlet fever, and small-pox supervene, few escape who are not protected by a previous attack. In considering these facts it should not be forgotten that whooping-cough and measles still exhibit the heaviest mortality in the whole range of zymotic diseases.

If we particularize a little more closely we find that enteric fever rarely spreads from person to person where strict cleanliness is observed: that typhus fever, when removed from its source, only affects those who are brought into close contact with the bed of the patient, as the doctor and nurse; and that diphtheria is assured to one who is venturesome enough to kiss the sufferer.

In the present state of medical science the **duration of infection** cannot be definitely settled, since sufficient accurate data are not available on which to base an opinion. The requisite facts for an absolute conclusion are very difficult, if not impossible, to obtain; for practical purposes, however, we must form some provisional rules to guide our daily conduct.

The practical question is this: At what date may a boy who has had an infectious illness rejoin his school-fellows? or, safely return from home to school? or, be allowed to go home? Under this section I only consider the question:

When a boy has had the illness himself, how long does he continue infectious?

I think the following table will most accurately give the requisite information :—

TABLE SHOWING THE DURATION OF INFECTION WHERE EFFICIENT DISINFECTION IS IN FORCE.

Illness.	Period.
Influenza	The boy may return to school at the end of ten days.
Scarlet Fever	The boy may return to school when all desquamation has ceased and the throat, nose, and ears are perfectly healthy—*i.e.* after an interval of four to eight weeks. This is the only safe rule to adopt at the present time in the management of schools, for it is impossible to say precisely when the contagion ceases. But I am far from believing that scarlet fever is infectious beyond a very few days from its commencement—possibly only during its febrile stage—*provided* the skin, and the clothes worn during that period, have been thoroughly disinfected.
Fourth Disease	The boy may return to school at the end of fourteen days, irrespective of free desquamation.
Diphtheria	The boy, after a mild attack, may return to school after twenty-one days; or as soon as his strength permits after a severe attack, assuming convalescence to have been fully established. This may take many weeks. Bacteriological examination of the throat is advisable to insure safety.
Erysipelas...	The boy may return to school when all desquamation, especially that of the scalp, has ceased: from three to four weeks.
Small-pox...	The boy may return to school when every scab has fallen from head and body—*average* time, about six weeks.

Illness.	Period.
Chicken-pox	The boy may return to school when every scab has fallen from the head and body—*average* time, about three weeks.
Typhus Fever	The boy may return to school when his strength has been sufficiently recovered, which, in a mild case, such as occurs amongst children, may only take fourteen days; whereas, in a severe case, it may require many weeks.
Enteric Fever	The boy may return to school when his strength has been sufficiently restored—*average* time, from one to three months.
Measles	The boy may return to school when all desquamation and cough have ceased—from two to three weeks.
Roserash	The boy may return to school after ten to fourteen days from the commencement of the attack, according to its nature.
Mumps	The boy may return to school fourteen days from the commencement, unless orchitis supervene on the 8th day—which occurs at, and after, puberty—when fourteen days more may be necessary.
Whooping-cough	The boy may return to school when the cough has quite disappeared, or else, if the cough continues, six weeks from the commencement of the whooping.
Ringworm...	The boy may return to school when all active growth of the disease has ceased; but, while a broken, or loose, hair remains the fungus is still active, and return should be deferred until the new hair is fully growing.

If we now embody this question of the duration of infection in *figures*, we shall find that considerable latitude must be allowed for the *type of the attack*, which, in some

instances, is so slight as to be recognizable only on the closest scrutiny. Consideration must also be given to the *method of disinfection* available for application to the person and clothes, after the illness has terminated, before the invalid is safe to mingle with his neighbours.

I have, therefore, expressed the figures, in tabular form, relating to the **period of isolation,** which clearly exhibit the details requisite for practical use.

TABLE XLIII.—Period of Isolation.

Disease.	Where efficient disinfection is available.		Where efficient disinfection is impracticable.		Remarks.
	Slight cases.	Severe cases.	Slight cases.	Severe cases.	
	Days.	Days.	Days.	Days.	
Influenza	10	21	14	28	
Scarlet Fever	28	56	42	84	
Fourth Disease ...	? 14	? 21	? 21	? 28	The "?" prefixed to the figures indicates uncertainty, at present, with reference to the period.
Diphtheria	21	28	21	42	
Erysipelas	10	21	21	28	
Small-pox	28	42	42	56	
Chicken-pox	14	21	21	28	
Typhus Fever	14	28	21	35	
Enteric Fever	21	56	28	56	
Measles	14	21	21	28	
Roserash	10	14	14	21	
Mumps	14	28	21	28	
Whooping-cough ...	21	56	28	56	

The adequacy of these regulations is proved by the fact that for thirty-three years I have acted upon them without mishap. I have never known a case sent back to school, after such a period of isolation, competent to produce infection. But still more decisive evidence exists in this fact—that in adopting this course, I have never conveyed infectious illness to a boy's home (where there were frequently young and susceptible children) on his leaving school for the

vacation. Of course the time I have allotted may be unnecessarily prolonged: on this point I cannot at present be quite sure, but in so important a subject I deliberately prefer to keep as far as is reasonably possible from the border of definite risk.

This table of the period of isolation has been compiled on the assumption, that the school authorities protect themselves with respect to the boy's infected hair, skin, clothes, and boots. It is of no use whatever trusting to parents, for the responsibility of sending infection amongst several hundred boys generally does not seem to weigh with them; and, while one parent is very careful in every detail, another is as careless. Accordingly, when there exists the faintest suspicion that a boy is infectious himself, or has left an infected house, he should not be allowed to mix with his school-fellows, until a responsible school authority has washed him thoroughly from head to foot with disinfecting soap, and every article of clothing has been passed through the disinfecting chamber.

If the school is not provided with proper means, as is necessary in all large schools, for purifying infectious boys and their clothes before they enter school or return home, the period of isolation must be greatly extended, as shown in the third and fourth columns of Table XLIII., p. 486,—much to the annoyance of all concerned, and entailing a considerable waste of money consequent upon loss of time that should be utilized in education.

While zymotic diseases are most frequently conveyed directly from the sick to the healthy, there can be no doubt whatever, that *all* infectious diseases are communicable by means of the clothes of persons who visit those who are infected. Where the young are concerned, the most scrupulous honour should be observed upon this subject, and every one coming from an infected house should be regarded with suspicion, and protective action adopted.

Instances in which scarlet fever, small-pox, and typhus fever have been carried from one person to another, by the clothes of a third person who has not been ill, are too common to require more than the statement of the fact. I myself can testify to measles and roserash being thus conveyed, and Dr. Bristowe has related how whooping-cough has been transmitted in this mode. All boys, therefore, proceeding from an infected house should be disinfected by the school authorities; for the neglect of disinfection of the most insignificant article of wearing apparel may be the occasion of an infectious illness, and the origin of serious general mischief. Sometimes the clothes worn at the onset of the illness are placed in a drawer, or locker, and thus escape disinfection. This risk should be specially guarded against at schools, where boys share the same chest of drawers, and their clothes occupy adjacent lockers.

It is incumbent on schools to make the most stringent rules for their self-preservation from these illnesses; but these rules should be founded solely on the natural history of infectious diseases, and should be neither mere whims nor arbitrary dicta, but as true to accurate facts as medical science at present permits.

After exposure to an infectious disease, it is necessary, for prevention of its spread, to separate the suspect from the healthy. The *time required varies according to the incubation period of the several zymotic diseases*, as well as *their period of infectiveness*, and is termed, as I have stated, the **period of quarantine**.

Where the person who has been **exposed to infection has been immediately transferred** (with all his clothes) **from the source of infection**: does not return to the infected house; and holds no further communication with its inmates; or, where the actually affected person has been removed, the requisite **period of quarantine coincides with the period of incubation of** the particular disease.

This term, however, must be calculated from the longest known period of incubation of the disease in question; and must include some hours in addition to allow for the possibility of infection occurring prior to detection of the disease and the separation of the infected, as well as for some hours' miscalculation.

On the other hand, when any one who has been exposed to infection **remains in contiguity** with its source, when, for example, he and the sick person continue to reside in the same house, the necessary **period of quarantine is the period of incubation of the disease, plus its duration of infection, plus the hours of possibility of infection before the infected person was isolated.** This consideration is most important in connection with infectious disease arising during the vacation: in the case of home-boarders attending boarding schools; and of pupils of day schools, where no organized system of isolation is in force.

In quarantining the person who has been exposed to infection, it is essential that **he and his clothes should be disinfected at the commencement of the period of quarantine.**

In those cases where an individual has been exposed to any of the zymotic diseases (except influenza, which is a recurring disease), and, in consequence of a previous attack, is protected, he may continue at school, or return there, provided complete disinfection has been performed, and provided further that he neither remains in the infected house, nor holds communication with its inmates, until its freedom from infection has been declared.

I have indicated the periods of quarantine for the various diseases in Table XLIV., page 490.

The proclivity of infectious diseases varies in different individuals. This is well exemplified even in children of the same family: some appearing by nature almost immune;

TABLE XLIV.—Period of Quarantine.

Disease.	Period of quarantine necessary when the healthy person is removed from the house containing the illness; or when the sick person is removed.					Period of quarantine necessary while the healthy individual remains in the same house with the sick person.									
	Period of incubation.		Number of days infectious before diagnosis is possible.		Total period of quarantine.	Period of incubation.		Duration of infection in SLIGHT cases.		Total period of quarantine.	Period of incubation.		Duration of infection in SEVERE cases.		Total period of quarantine.
Influenza	5	+	2	=	7	7	+	10	=	17	7	+	21	=	28
Scarlet Fever ...	8	+	2	=	10	10	+	28	=	38	? 10	+	56	=	66
Fourth Disease ...	? 21	+	2	=	23	? 21	+	14	=	35	21	+	21	=	42
Diphtheria ...	7	+	2	=	9	9	+	14	=	23	9	+	28	=	37
Erysipelas ...	13	+	2	=	15	15	+	10	=	25	15	+	21	=	36
Small-pox ...	15	+	2	=	17	17	+	28	=	45	17	+	42	=	59
Chicken-pox ...	19	+	2	=	21	21	+	14	=	35	21	+	21	=	42
Typhus Fever ...	21	+	2	=	23	23	+	14	=	37	23	+	28	=	51
Enteric Fever ...	21	+	2	=	23	23	+	21	=	44	23	+	56	=	79
Measles	16	+	2	=	18	18	+	14	=	32	18	+	21	=	39
Roserash	22	+	2	=	24	24	+	10	=	34	24	+	14	=	38
Mumps	28	+	2	=	30	30	+	14	=	44	30	+	28	=	58
Whooping-cough ...	14	+	2	=	16	16	+	21	=	37	16	+	56	=	72

The "?" prefixed to the figures indicates uncertainty, at present, with reference to the period.

while others fall victims to any of the micro-organisms of this class of disease. Lowered vitality, inherent, or acquired from faulty conditions, may be accountable; though, on the other hand, I have known the most vigorous in a family to be the most vulnerable.

Owing to the natural susceptibility of the young to the attack of the bacilli of zymotic diseases, the medical officer to a school would be of all men the most miserable were it not for our knowledge of the natural history of this class of disease, as expressed in **Cullen's law, that one attack of an eruptive fever entails immunity from a second attack in the same individual during childhood.** The "germs" of infectious diseases apparently require a virgin soil for development: a prior attack appears so thoroughly to exhaust the soil, or the products of the former growth to modify it chemically to such an extent, that it is rendered incapable of furnishing a suitable nidus for the reproduction of the germs.

And, without much risk of error, one might advance even a step further, and assert that the **protection** is life-long, owing to the insusceptibility of the adult to the agency of these microbes, so rarely is the adult attacked, unless he has escaped the infection during childhood.

There are some, I know, who affirm that this law is not even approximately true, as second attacks frequently occur. I am compelled to maintain, however, after closely studying these diseases in childhood and youth during a protracted experience, that the exceptions to the law,—the **basis of all our school legislation for this class of disease,**—are merely museum curiosities. I have always inquired into recorded second attacks that have come within my cognizance, and I have usually found that they broke down upon minute investigation. There are, however, a few instances where a first attack has been of so doubtful a nature, owing to its slightness, that it may not protect, even if it has occurred, beyond a certain number of years.

But **the law is not applicable to every one of the zymotic diseases,** as, for example, erysipelas and influenza, one attack of which does not confer immunity, but rather seems to predispose the victim to frequent subsequent attacks.

Nor does the law apply to certain **rare individuals** who are so peculiarly prone to infection that whenever exposed to the micro-organisms they fall a prey. As instances of this exceptional tendency, I may mention that I attended a gentleman for many years, who took *scarlet fever* in some form every time he came within its influence. Another gentleman under my care was inoculated for *small-pox:* had an attack of confluent small-pox which nearly proved fatal: was subsequently vaccinated; and yet died of small-pox, when seventy-five years of age, caught from one of his parishioners, with whom he sat some time reading. On the twelfth day acute fever supervened with characteristic backache, but without any eruption, and he died on the ninth day of a severe illness, attended with delirium.

I think that the more experience we gain in these diseases, the less frequently shall we hear of second attacks of infectious illnesses, save as curious rarities.

This truth, well known and constantly taught, may be lost sight of in consequence of inaccurate observation and diagnosis. For instance, it is necessary, however difficult it may sometimes prove, not to confound measles, roserash, simple roseola, and caterpillar rash, and thus avoid describing each illness as another attack of measles—I constantly hear of even third attacks of measles. Nor should scarlatina, the fourth disease, and erythema be mistaken, and treated as three attacks of scarlatina. Nor ought erysipelas, erythema, and urticaria to be confounded, and described as several attacks of erysipelas—yet this is commonly done. Erysipelas naturally occurs often enough of itself, without adding the stigma of these ailments.

These curiosities, in the nature of second attacks, do not alter the law, without whose guidance and aid schools would be sorry places for children, and a boarding-house master a *rara avis.*

One other fact militates against the hypothesis of immunity from second attacks—that, namely, where bacilli may lie dormant in the tissues for many years, as in malaria (perceptible also in old abscess scars), and then be roused into their pristine activity by any slight traumatism, or period of ill-health.

A few words concerning the earliest stage of the **varieties of infectious diseases** *common* in school life may be of service to those who are responsible for the health of their pupils, especially in those schools where a medical officer does not daily visit. These suggestions are not intended to supply his place, or to teach the requisite treatment; but simply to facilitate the early recognition of the illness with a view to prevention of epidemics, and to point out the slightness of the primary symptoms exhibited in most instances of this class of disease at the school-age. Without prompt detection they must inevitably and unnecessarily spread.

Only one rule expresses the correct treatment of all ailments at school, where a large number of children are congregated at the susceptible age,—namely, the separation of the ailing, from whatever cause, from the healthy at the earliest moment, until the non-contagious character of the illness is *definitely* ascertained. If this action be postponed until an accurate diagnosis is possible, it is usually too late by at least forty-eight hours. So many children's ailments, infectious and non-infectious, commence with the symptoms of what is commonly termed "a bilious attack," that every such ailment should be regarded with grave suspicion, and the sufferer placed in quarantine until its nature is clearly disclosed.

If the sick are only segregated from the healthy when a final diagnosis is competent, considerable trouble may be anticipated. For instance, Influenza, Scarlet Fever, Diphtheria, Roserash, and Acute Tonsilitis, all involve, as one of the initial symptoms, *sore throat;* and an ordinary cold, influenza, and measles commence with symptoms of *catarrh.* It is, therefore, clear that if delay is occasioned by awaiting the diagnosis of the disease, *without quarantine* from the outset, the school is improperly exposed to the chances of infection.

The following brief descriptions of the earliest phases of the various zymotic diseases relate to children of the school age, and not to those of the nursery-age. It is the slight cases of these diseases which the master finds it difficult to recognize; and yet it is for these very instances that he must vigilantly look, if his assistance is to be effective in preventing the extension of these maladies.

Influenza. *Incubation.*—1 to 5 days.

Mode of *Invasion.*—Headache: shivering, or feeling of chilliness: more or less general aching: usually a sudden high temperature, even reaching 105° Fahr.

Symptoms.—Sore throat: backache: sweating after shivering.

Management of influenza.	Mild cases.	Severe cases.
	Days.	Days.
In bed	5	7–10
Up, in ward	2	3–5
Out of doors	3	5–7
Return to school, after disinfection ...	the 11th to the 23rd day	

Scarlet Fever. *Incubation.*—1 to 7 days.

Mode of *Invasion.*—There may, on the one hand, be no deviation from health beyond a slight feeling of soreness of

the throat, and the appearance of a rash on the skin; while, on the other hand, the illness may be ushered in by acute vomiting, intense fever, and severe sore throat.

The *Symptoms* of an ordinary well-marked case are neither slight nor severe, and range themselves thus :—

First day.—Headache, vomiting, sore throat, raised temperature, and rapid pulse. A diffuse red rash is clearly marked on the soft palate; and the tonsils have more or less secretion on their surface.

Second day.—An eruption of a diffuse, dusky red character, commencing behind the ears, and on the face, but not round the mouth; with the fever increased (103° Fahr.), and the pulse more rapid, 120. The eruption of the same diffuse character extends gradually over the entire body by the fourth day.

Fourth day.—The tongue,—from being coated with a more or less thick, white fur, varying according to the severity of the attack, and with minute red dots appearing through the fur,—commences to peel from the tip and edges, until it culminates in the appearance of having been completely denuded of its epithelium, showing the papillæ of the tongue bare. The lips and edges of the ears commence to peel about the same time, and general desquamation ensues over the whole body, beginning earliest where the rash first appeared: varying in amount according to the intensity of the rash; and lasting from a few days to six or eight weeks; indeed the peeling may not cease from the feet for twelve weeks or more.

The disease is undoubtedly more intensely infectious during the first three days than at any other period. The infection may *possibly* endure as long as desquamation proceeds (except that on the feet, which is greatly prolonged, and which I am confident is non-infectious), and *certainly* as long as any discharge from the throat, nose, or ears continues. Further, there seems to be no limit to the possibility

of conveying infection when recent cases are placed with convalescents. It is this course which is answerable for what are termed *Return cases of Scarlet Fever.*

It will be a source of satisfaction to all connected with schools to know that *the death rate per million* * for England and Wales is on the wane.

TABLE XLV.

Period of years.	Annual death rate per million from scarlet fever.
1861–1870	971
1871–1880	719
1881–1890	338
1891–1900	158
1901–1902	138

This decline in the mortality of scarlet fever is shown by the late Mr. A. F. Burridge † still more clearly in the chart on page 497 :—

We thus perceive that the formidable character of scarlet fever has substantially abated; but the possibility of a recrudescence of severity of type must constantly be borne in mind, and expected.

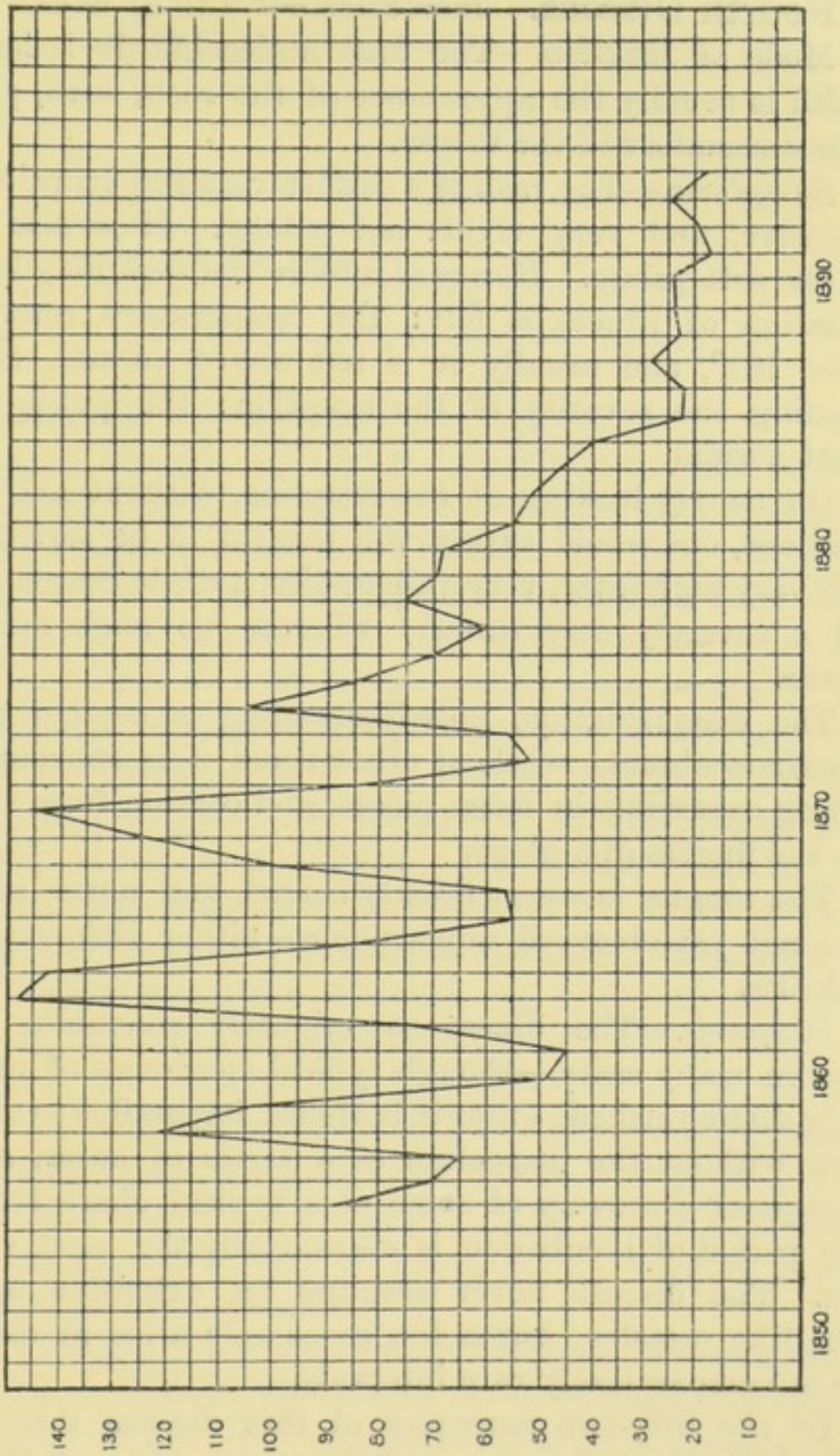
Management of scarlet fever.	Mild cases.	Severe cases.
	Days.	Days.
In bed	21	21
Up, in ward	2	7
Out of doors	5	28
Return to school, after disinfection ...	the 29th to the 57th day	

* Sixty-third Annual Report of the Registrar-General.

† *Journal of the Institute of Actuaries*, October, 1902.

C. NUMBERS DYING FROM SCARLET FEVER OUT OF 100,000 LIVING AT ALL AGES.

ENGLAND AND WALES



Fourth Disease. *Incubation.*—? 9 to 21 days.

Mode of *Invasion.*—The first noticeable deviation from health is usually the appearance of the rash, with, perhaps, some discomfort in the throat.

Symptoms.—The rash is a diffuse rose-red eruption, very extensive, and very vivid: not patchy. It is also visible on the soft palate. However intense the rash may be, little sensation of illness is felt: the temperature rarely rises above 101°, and usually it is not above normal, notwithstanding the severity of the eruption: the pulse, too, is about normal.

On merely looking at the eruption, without asking any questions, one would expect the invalid to be seriously ill, with very high fever, very quick pulse, a white-coated tongue, and a severely sore throat; whereas no such symptoms appear.

The desquamation, notwithstanding a copious rash, is sometimes absent; while at other times it is enormous, the peeling occurring in large pieces, and coming from the toes like the fingers of a glove.

The tongue is never thickly coated, and never peels. I have not yet observed any sequelæ—either rheumatism, or nephritis.

Diagnosis.—The illness so minutely resembles scarlet fever in many cases,—though typical specimens of each are easily distinguished,—that it is almost impossible to diagnose them without the inspection of a series of cases, and the consequent discovery of some of a typical character. The long period of incubation is occasionally the most valuable sign. The disease never assumes an extensive epidemic form like measles; but a few cases only arise at one time, and at comparatively rare intervals.

Of the fifty-two examples of this disease that I have scheduled, forty-nine occurred in the months of February and March, two in April, and one in June.

Management of the fourth disease.	Mild cases.	Severe cases.
	Days.	Days.
In bed	5	5
Up, in ward	2	3
Out of doors	3	7
Return to school, after disinfection ...	the 11th to the 16th day	

Diphtheria. *Incubation.*—2 to 7 days.

Mode of *Invasion.*—Usually a progressive onset of sore throat. Sometimes the attack is sudden, with vomiting, headache, languor, thirst, and alteration of voice.

Symptoms.—The inflamed throat is attended with small white patches of secretion on the tonsils, which gradually assume the form of a membrane, resembling pieces of wet wash-leather, and extending to the palate. In this secretion the micro-organism, termed the Löffler bacillus, is present. The membrane appears on the first to the fourteenth day, and lasts about seven days. The bacilli lurk in the throat and nose long after all secretion has apparently disappeared, and after convalescence is established. The presence of diphtheria is sometimes revealed, not by the illness itself, which may have been so slight as to escape notice, but by an alteration in the voice, arising from paralysis of the muscles of the throat and larynx, incidental to the diphtheria poison.

The kidneys are early involved by the diphtheria poison, even in slight cases of the disease. This fact is manifested by a diminished secretion of urine, which contains a considerable amount of albumen.

While the *mortality* from scarlet fever, for the moment, is on the wane, that of diphtheria is, at present, increasing, as exhibited in the following table relating to England and Wales.

TABLE XLVI.

Period of years.	Annual death rate per million from diphtheria.*
1861–1870	187
1871–1880	121
1881–1890	163
1891–1900	262
1901–1902	250

In the treatment of diphtheria, I desire to emphasize the importance of the recumbent position, in bed, being maintained not only during the illness, but until convalescence is well established.

Management of diphtheria.	Mild cases.	Severe cases.
	Days.	Days.
In bed	14	21
Up, in ward	3	4
Out of doors	4	10
Return to school, after disinfection, or when the strength permits	the 21st to the 36th day	

When once diphtheria has originated, it spreads usually by three methods :—

1. By *carriers*,—the healthy who have been in contact with the disease.

2. By *latent* cases,—undetected slight cases of the malady.

3. By *convalescents*,—who have been liberated while the Löffler bacillus is still active, and capable of surviving in the nose and throat for many weeks after the termination of the illness.

* Sixty-third Annual Report of the Registrar-General.

Erysipelas. *Incubation.*—1 to 13 days.

Mode of *Invasion.*—Languor, headache, pyrexia.

Symptoms.—After twenty-four hours the cutaneous inflammation appears most frequently on the head and face, and rapidly extends from a small patch, followed by desquamation which commences on the 5th to the 14th day.

Management of erysipelas.	Mild cases.	Severe cases.
	Days.	Days.
In bed	5	8
Up, in ward	2	2
Out of doors	3	11
Return to school, after disinfection ...	the 11th to the 22nd day	

Small-pox. *Incubation.*—9 to 15 days.

Mode of *Invasion.*—Sudden malaise, backache, pyrexia, headache, and sickness.

Symptoms.—On the third day a papular eruption appears on the skin, and on the mucous membrane of the mouth. The papules become depressed in the centre, and a circumference of clear fluid surrounds them in rings, which gradually progress to pustules that attain their full development about the 11th day, and form a scab by the 14th day. In some instances the eruption is preceded by a rash, almost indistinguishable from measles. The eruption is most abundant on the face, neck, and fore-arms.

Where small-pox occurs after previous vaccination, it is termed *Modified Small-pox*, and is usually benign in character. It commences with all the usual symptoms of small-pox; but when the skin around the vesicles and pustules becomes inflamed, the eruption dries up (much the same as it does in chicken-pox), and the febrile symptoms abate. Some cases, however, are observed in which the period of invasion

is well marked, but in which no appearance of rash follows or only an occasional spot.

Management of small-pox.	Mild cases.	Severe cases.
	Days.	Days.
In bed	12	21
Up, in ward	7	7
Out of doors	9	14
Return to school, after disinfection ...	the 29th to the 43rd day	

Chicken-pox. *Incubation.*—13 to 19 days.

Mode of *Invasion.*—As a rule, no symptoms arise before the eruption, but languor, headache, and thirst may be present.

Symptoms.—Pimples, becoming vesicles, with a red halo surrounding, appear, which dry and form dark-brown scabs. They occur first on the scalp, and gradually spread over the entire body. The vesicles are cone-shaped, and maintain this form until the formation of the scab.

Management of chicken pox.	Mild cases.	Severe cases.
	Days.	Days.
In bed	5	7
Up, in ward	2	3
Out of doors	7	11
Return to school, after disinfection ...	the 15th to the 22nd day	

Typhus Fever. *Incubation.*—1 to 21 days.

Mode of *Invasion.*—Headache, and malaise, with sudden onset.

Symptoms.—The eruption appears between the fourth and eighth day: it shows a mottled character; and the important fact is that in children the malady may be mistaken for measles. The fever subsides in fourteen days

from the attack. As a rule, this illness is very slight during childhood.

Management of typhus fever.	Mild cases.	Severe cases.
	Days.	Days.
In bed	7	14
Up, in ward	2	4
Out of doors	5	10
Return to school, after disinfection ...	the 15th to the 29th day	

Enteric Fever. *Incubation.*—1 to 21 days.

Mode of *Invasion.*—A prolonged period of malaise occurs, with anorexia, headache, chilliness, pyrexia, aching limbs, and slight diarrhœa. The patient sometimes, merely, is "not quite himself"—in fact, a malaise with nocturnal fever, continuing for a week without further symptoms, may be regarded (when influenza is out of Court) as enteric fever.

Symptoms.—Diarrhœa appears, with high fever at night, showing a fall of two, or more, degrees in the morning. An eruption of rose-coloured isolated spots occurs about fourteen days after the attack. The fever continues for twenty-one to thirty days. At the commencement, the tongue is coated with white fur, which gradually dries, and becomes hard, and brown.

Management of enteric fever.	Mild cases.	Severe cases.
	Days.	Days.
In bed	10	35
Up, in ward	4	7
Out of doors	7	14
Return to school, after disinfection ...	the 22nd to the 57th day	

Measles. *Incubation.*—8 to 16 days. The child sickens with catarrh usually on the eleventh day from exposure; and the eruption appears fourteen days from the same epoch.

Mode of *Invasion.*—Catarrh of the eyes, nose, and throat, with headache for three days.

Symptoms.—As the early catarrh of measles is indistinguishable from that arising from an ordinary "cold," an eruption on the mucous membrane of the mouth, described first by Koplick, which is visible on the second day of the catarrh, forms a symptom of great value in the early diagnosis of measles, and the prevention of epidemics. The eruption on the skin shows itself upon the fourth day, in the form of red, blotchy, elevated spots. It is first apparent on the skin behind the ears, then on the face, and finally spreads over the body. The spots coalesce in the shape of crescents, and ultimately exhibit, in severe cases, one deep-red raised eruption without interspaces of clear skin.

The *mortality*, while somewhat varying from year to year, continues on the whole fairly constant.

TABLE XLVII.

Period of years.	Annual death rate per million from measles, in England and Wales.*
1861–1870	443
1871–1880	379
1881–1890	441
1891–1900	414
1901–1902	328

As the mortality is so severe, and the epidemics so widespread, special care should be exercised in all schools to

* Sixty-third Annual Report of the Registrar-General.

obviate both effects by means of stringent regulations for quarantine and isolation.

Management of measles.	Mild cases.	Severe cases.
	Days.	Days.
In bed	5	7
Up, in ward	3	3
Out of doors	6	11
Return to school, after disinfection ...	the 15th to the 22nd day	

Roserash (Rubella, and German Measles). *Incubation.*—12 to 22 days.

Mode of *Invasion.*—The first sign of deviation from health is usually the eruption; but headache, slight sore throat, pink eyes, and enlargement of the posterior cervical glands may occur.

Symptoms.—The sore throat is very trifling. The rash is first visible on the mucous membrane of the soft palate. It commences on the skin, behind the ears, extends to the face and neck, and gradually covers the whole body. It is composed of minute, isolated, rose-red dots, and in mild cases remains in this form to the end. In more marked examples these dots enlarge, and coalesce in patches, and may resemble some of the stages of measles. In other instances the eruption commences like measles, and remains so in certain regions to the end of the illness; yet in others, the spots coalesce, and the eruption becomes diffuse, in patches, which mimic very closely the eruption in scarlet fever. So that in certain patches the eruption is exactly similar to measles; and in others it resembles scarlet fever; while there may also intervene patches of clear skin. The glands, in the back of the neck, the armpit, and the groin are enlarged.

When once roserash starts it assumes an epidemic form: it is extremely rare to see a few, or isolated, cases in schools.

Management of roserash.	Mild cases.	Severe cases.
	Days.	Days.
In bed	3	5
Up, in ward	2	3
Out of doors	5	6
Return to school, after disinfection ...	the 11th to the 15th day	

Mumps. *Incubation.*—14 to 28 days.

Mode of *Invasion.*—Rarely any symptoms are evident before the swelling appears.

Symptoms.—A swelling of the parotid gland occurs. This gland is situated in front of the ear, between that organ and the jaw, and the swelling extends downwards from this point to the side of the neck under the lower jaw. It commences usually on one side, and after a few days the opposite side becomes affected. Sometimes it begins in the submaxillary glands in the neck, beneath the jaw: at other times, these glands follow the swelling of the parotids. The malady is apt to affect the testicle, usually on the eighth day, with pain, swelling, and acute fever. When mumps appear in the testicle on the first day, the illness assumes an aspect of great gravity.

Management of mumps.	Mild cases.	Severe cases.
	Days.	Days.
In bed	8	14
Up, in bed	2	3
Out of doors	4	11
Return to school, after disinfection ...	the 15th to the 29th day	

Whooping Cough. *Incubation.*—7 to 14 days.

Mode of *Invasion.*—An ordinary cough continues for

fourteen days, and during this stage the infectiveness is very pronounced.

Symptoms.—Sometimes at the school-age there is no whooping; but a paroxysmal cough, most frequent during the night, forms the sole symptom. At other times, the paroxysmal cough, without whooping, causes vomiting. Where the attack is severe the "whooping" is loud, and the cough prolonged. The whoop arises from laryngeal spasm during the inspiration of air. The cough is repeated at frequent intervals until the lungs are emptied, and air-hunger follows, causing a sudden in-take of air, which, owing to spasm of the vocal chords, passes through a chink, and thus gives rise to the characteristic crowing whoop.

The *mortality* shows a decided decrease, as Table XLVIII. proves.

TABLE XLVIII.

Period of years.	Annual death rate * for England and Wales, per million, from whooping cough.
1861–1870	530
1871–1880	513
1881–1890	451
1891–1900	378
1901–1902	292

Management of whooping cough.	Mild cases.	Severe cases.
	Days.	Days.
In bed	0	14
Up, in ward	0	4
Out of doors	28	38
Return to school, after disinfection ...	the 22nd to the 57th day	

* Sixty-third Annual Report of the Registrar-General.

It may be of interest to mention that any two of these infectious diseases may run their course concurrently.

If the subject of a "Convalescent Department" for the treatment of **convalescents after infectious illness** were mentioned to the masters of most schools they would scarcely understand what was meant, for little, if any, thought has been bestowed upon the subject. The Gordian knot is usually severed by returning boys to their homes immediately after the termination of an infectious illness; to their serious detriment; to the risk of the family; and, through them, of the community. The payments levied by schools for educational purposes should include not only board, lodging, and tuition; but should also provide for the care of boys during illness *and* convalescence. Infectious convalescents should never be sent, or permitted to return, home until they are able to mingle with relatives and friends with impunity; nor until they can travel without leaving a trail of infectious germs behind them in railway carriages and cabs. When this rule is observed with some amount of faithfulness there will be a lessened number of cases of infectious diseases in our schools and homes, and the advantage of a diminished mortality.

In all infectious ailments, after the illness itself is ended, if only a *case or two* have occurred, convalescents may be retained in the sanatorium until fit to proceed home or to return to school, provided the period of isolation has elapsed, and efficient disinfection of clothes has been carried out. As no such case should be permitted to re-enter school until perfectly safe, none should be allowed to travel in public conveyances until free from infection.

But where *many* cases occur, following each other rapidly, the sick-beds are required for fresh patients; and each section, as it becomes convalescent, should be removed, and the rooms and bedding disinfected before being occupied by another group. The question of the place of their

removal is often one of great difficulty and anxiety. Of course, no invalid must be touched on any account until he himself be perfectly safe for removal—nay, more, until removal would be beneficial to him, other provision must be made. When this becomes necessary, convalescents may, after thorough disinfection, be returned to an isolated dormitory in the boarding-house; or perhaps an empty house may be available to which they can be draughted as occasion requires.

The **notification of infectious diseases** being now the law, it is a cardinal point for schools to be cognizant of the fact that certain of the infectious diseases require to be "notified," and that, consequently, intimation of an attack of this class of illness, however slight, must be made to the Medical Officer of Health of the district, under a penalty of forty shillings. The term "Infectious Disease" includes small-pox, cholera, diphtheria, membranous croup, erysipelas, scarlatina, scarlet fever, typhus, typhoid, enteric, relapsing, continued, or puerperal fever; but the local authority may extend the definition temporarily or permanently, as has frequently been done in the case of chicken-pox, and measles.

In the Act relating to the **wilful exposure of sufferers from infectious diseases,** it is enacted, that any person suffering from one of these diseases, or any one in charge of a person so affected, who exposes himself, or exposes another in any public place shall be held guilty of a misdemeanour at common law, and shall be liable to a penalty not exceeding five pounds. This Act should render schools more circumspect in their dealings with convalescents after these diseases, and make them abstain from placing such persons in public conveyances for transmission home prior to complete freedom from infection, and until, further, their clothes have been disinfected.

The following ailments which I have classed as **contagious diseases** for want of a better term, are those in which the eyes and skin, but not the system, generally, are

affected by vegetable or animal parasites. I do not uphold the scientific accuracy of the division, but merely adopt the classification as convenient. These parasites might perhaps be better designated "skin pests."

Catarrhal Ophthalmia, epidemic conjunctivitis, or acute muco-purulent ophthalmia. This form of ophthalmia is that which, from time to time, becomes prevalent in most schools. The severe description of ophthalmia, called *Trachoma*, I have never seen in a well-appointed school. I have, however, encountered it in the deadliest form in workhouse schools; and it occasioned the closing of those large State barrack-schools a few years ago. Catarrhal ophthalmia produces redness of the eyes, with a muco-purulent discharge, and is very contagious. Although harmless so far as the eyes are concerned, it obviously interferes seriously with work. It lasts from fourteen days to many weeks. Its origination is traceable to deficient air in dormitories, studies, and class-rooms; and, in certain seasons, it spreads extensively in consequence probably of meteorological conditions, which favour the development of the pneumo-cocci and Koch-Weeks bacilli. It mainly springs, in my opinion, from the soil and manure conveyed on boots and clothes into the moist changing-rooms (overheated from many hot baths) which constitute a hot-bed—an incubator—for the germination of the bacilli. This conclusion is forced upon me by the fact that in former years, when boys had only cold baths after games, I saw very little catarrhal ophthalmia; and where no hot baths are provided, or heated changing-rooms, I rarely have experience of a case of this disease even now. It spreads from patient to patient by personal contact; and by the use of common sponges, and towels. The *continuance* of catarrhal ophthalmia in any school constitutes a standing reproach to its management, lay and medical.

Ringworm arises from the growth of vegetable parasites. It occurs on the *body* (Tænia circinata), where it starts as a

small red patch which,—growing at the edge in a red ring, while the centre "scales" and becomes yellowish in colour,—may rapidly occupy a considerable area. It is readily cured, and in most instances requires isolation only for a day or two.

But the case is very different when the *hairy scalp* is attacked. Here the disease follows the same course as on the body; but as the fungus (Tænia tonsurans) descends into the hair follicles its destruction becomes difficult. A cure cannot be regarded as effected until the scurf has disappeared, and the surface of the scalp is restored to its natural appearance: until no stumpy broken hairs remain; and the hair grows in its normal manner. In only one way can this scourge be quickly eradicated—namely, by shaving the head regularly, so that the fungus may be attacked by germicides, until the hair grows closely in every part. Were this done at the commencement in every case, however small the patch may be, and the patient isolated as carefully as if he had small-pox, a cure would be more readily effected. The shaving is too apt to be resorted to, especially in the case of girls, as a last resource.

Impetigo contagiosa, or scald head, is a very contagious pustular eruption, arising from the presence of staphyococcus aureus, and albus, which, in drying, forms straw-coloured flat circular crusts, seemingly "stuck on" to the surface of the skin: sometimes these crusts darken to a blackish colour. It occurs mainly on the face and head. The cause, in the class of schools I refer to, chiefly resides in soiled football jerseys. The disease appertains to the autumn, and rarely commences before the first frost in October. The cure is sometimes tedious; and the strictest isolation is imperative. The origin of the disease apparently synchronizes with the slightest abrasion of the skin.

There is no doubt that **Pediculi capitis**, the animal parasites termed *lice*, are usually the result of want of cleanliness. Amongst the poor they are, unfortunately, rarely regarded

as a disgrace. On the contrary, when trying to kill these "small game" in a hospital patient on one occasion, the poor woman implored the nurse to leave at least one, or she would never be well! They are difficult to destroy in unhealthy, ill-nourished children, and continually recur. But the cleanest and most fastidious persons may become affected by these parasites from contact with the uncleanly; and the recipients, through a feeling of shame, often conceal the fact until the lice are so firmly and numerously settled, that their eradication is usually impracticable without the sacrifice of part, at least, of the hair. Any one, therefore, who has the misfortune to be attacked by these vermin should seek advice before an opportunity has been afforded for propagation. Their favourite resort is the hair immediately above the nape of the neck; and the eggs or nits are attached to the shaft of the hair. They hatch out in less than a week; and commence egg-laying in another three weeks. Scrupulous isolation is essential.

Scabies arises from the presence on the skin of the acarus scabiei. The female *itch* insect burrows under the epidermis, and there lays her eggs, producing an itching eruption of tiny pimples filled with water which, from scratching, subsequently resemble eczema. The usual place for burrowing lies between the roots of the fingers and toes, where the epidermis is thin; and the eruption may thence extend throughout the body. Here, again, the insect may not only attack the most cleanly, but also the wealthy.

The strictest isolation of the sufferer from this class of diseases, and of all his belongings, should be strictly enforced, until completely cured.

DISINFECTION.

Notwithstanding all precautions for prevention, infectious diseases will occur in schools from time to time. It is

necessary, therefore, to discuss the means to be adopted, when a case of infection has arisen, for rendering the patient, after the illness is ended, sufficiently safe to mingle with his school-fellows without spreading the disease. This is effected by complete destruction of the germs which have caused the illness, or which the ailment has produced, by the process termed **disinfection**.

After infectious disease has broken out, the most anxious question for schoolmasters,—often involving, too, the greatest annoyance to parents,—is that of determining when a boy may safely return to school after such an illness has appeared at *home;* or when the boy may properly re-enter school, or leave for home, after the malady has occurred at *school.* The time lost in such cases—waiting for freedom from infection—is irritating in the extreme to all concerned: the parent thinks that he is paying his money for a thirteen-weeks' term, and finds six weeks wasted in consequence of his son's subjection to infection, and his inability to mix with his school-fellows: the master is troubled through the boy's losing time and position in the school, and also becoming demoralized as the result of his enforced comparative idleness: the boy himself, too, is often sickened and disheartened with his imprisonment and isolation: so that the suffering is general.

This anxiety and annoyance can be greatly mitigated, if not, indeed, almost obviated, by efficient disinfection of the body, clothes, bedding, and room of the sick boy and his nurse.

Disinfection of the body on the termination of the illness is best accomplished by its repeated cleansing; so that any poison on the skin may be rendered inert.

Several disinfecting soaps for the bath are useful for this purpose, such as carbolic soap, terebene soap, coal-tar soap: certain fluids added to water, such as corrosive sublimate, 1–1000, or izal, 1–200; or "acids," such as sponging the

body with aromatic acetic acid, or simple vinegar, which is an excellent destroyer of organic poisons. The nurse, equally with the patient, needs the same exhaustive disinfection.

It is also necessary **to destroy the poison which is emitted from the person in the various discharges from the body** throughout the illness. For this object the coal-tar preparations are the best; such as carbolic acid, izal, and creolin. The application should be continued during one or two hours for the effectual destruction of the poison in excreta, sputum, and vomit.

Disinfection of the person is absolutely useless, so long as the clothes and bedding remain saturated with poison, which they can retain for months.

Howard, a century ago, observed,* "There should likewise be an *oven;* nothing so effectually destroys vermin in clothes and bedding, nor purifies them so thoroughly when tainted with infection, as being a few hours in an oven moderately heated." The mode in which this plan was carried out was to place "his clothes into an oven, in a sack upon a pair of iron dogs." The verdict of sanitary science still affirms that the most efficacious method for the **disinfection of infected clothing and bedding** is dry, or moist, heat.

As each species of bacteria has a stated specific time for growth, so each species has a temperature, more or less prolonged, at which its death occurs,—the non-sporing bacteria, such as pneumo-cocci, being destroyed approximately at 170° Fahr., while the spore-bearers, such as tetanus, require an exposure to 212° Fahr.

The **methods of disinfection by heat** are dry heat: boiling; and steam—the latter being the most widely useful, and the most efficacious. For moist heat kills bacteria at a lower temperature than dry heat; and steam penetrates the

* "Prisons," p. 45.

clothing to be disinfected more thoroughly, and parts with its high latent heat when condensation takes place.

However much physiologists differ as to the heat required to destroy the various infectious germs of disease, the physician who has to prevent the spread of these diseases must arrive at some definite and trustworthy conclusion.

After years of research by bacteriologists, it is now definitely proved that implicit reliance may be placed on *moist heat*, if properly applied. The disinfecting temperature now used as a standard is an exposure to *saturated steam* of 240° Fahr. (115° C.) for thirty minutes; but excellent results are obtained by *current steam* at 220° Fahr. (103° C.) in fifteen minutes.* And even when Lingner's glyco-formal apparatus alone is employed the superficies of clothes and bedding, which cannot be boiled, can be effectively disinfected.

The heat required for disinfecting purposes is best generated in what is called a **disinfecting chamber**, which may be heated by gas, coal, or coke. Into this chamber the clothes and bedding are placed. It will be found one of the greatest boons to parent, master, doctor, and patient.

A large and daily experience with the use of the disinfecting chamber makes me desirous to extol its virtues in no measured terms; for of all the inventions of modern times, nothing can exceed this apparatus in value for the practical physician who has much infectious illness to deal with.

Divers forms of this disinfecting apparatus are in service at the present time, and all are beneficial. For complete efficiency the disinfecting chamber must be close at hand. It should be situated between two rooms, into one of which the infected articles are to be placed through one door of the chamber; while the other room should receive them from the opposite door of the sterilizer. In this way the sterilized articles will not come in contact with the unsterilized clothing;

* "On Disinfection by Heat:" Parsons, Appendix B., No. 10, Fourteenth Annual Report of the Local Government Board.

and of course they should not be returned to an infected room to be put on.

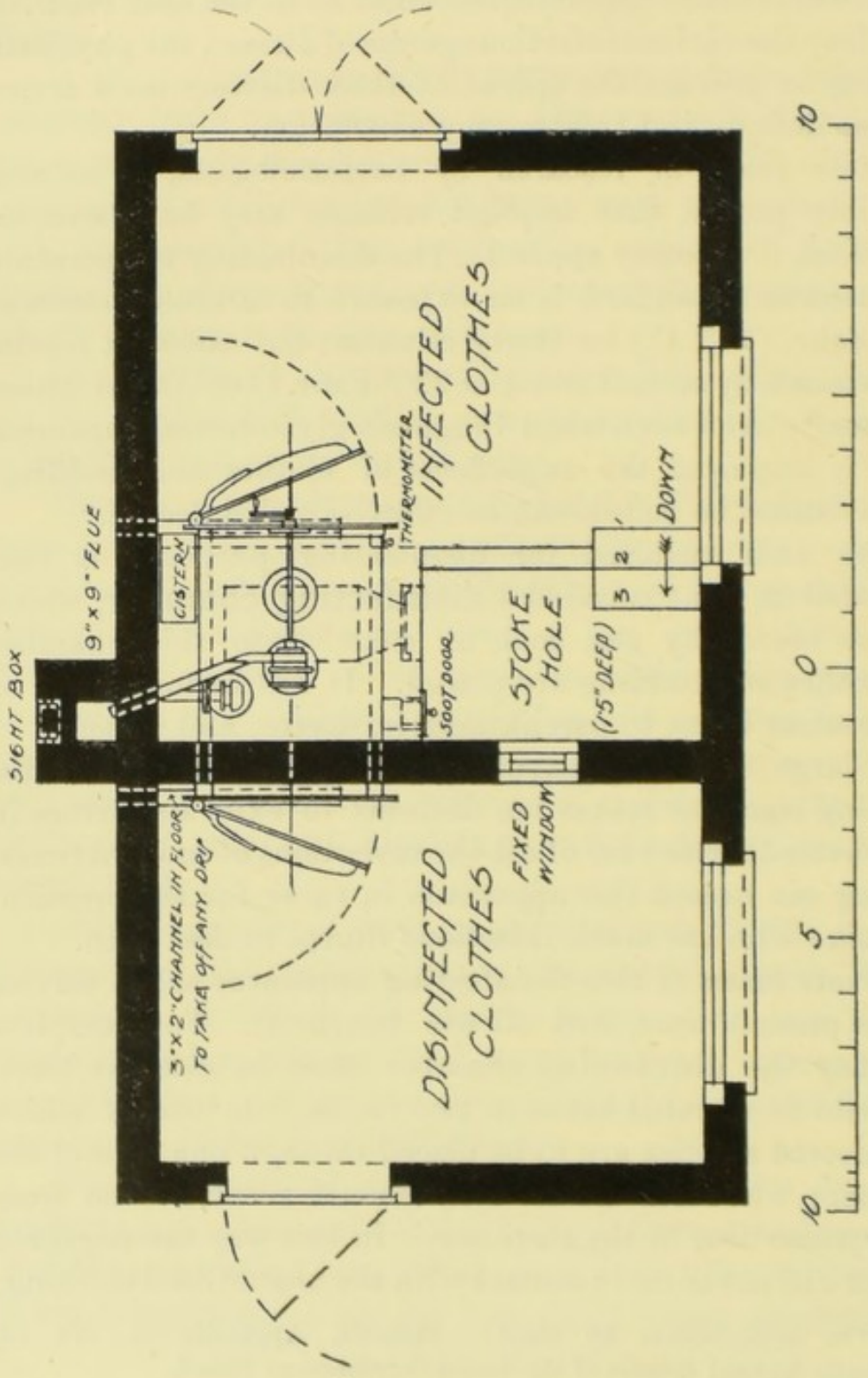


FIG. 34.

The most important **requirements of a reliable disinfecting apparatus** are—

1. That the temperature in the interior shall be uniformly distributed.

2. That it shall be capable of being maintained constant for the time during which the operation extends.

3. That there shall be some trustworthy indication of the actual temperature of the interior at any given moment.

These three conditions are most satisfactorily attained by the use of steam. The best steam disinfectors are those of Thresh, Lyon, Reck, and the Equifex, which are available for bedding, clothes, carpets, and linen, but not for boots.

In the absence of such a disinfector, linen may be soaked for one hour in corrosive sublimate solution of 1–1000, or izal, 1–100; then wrung out and sent to the laundry in their moist condition. All clothing, however, that will wash should be boiled and washed, as the most efficacious plan; but all articles that cannot be washed can be rendered perfectly safe by passing them through a steam disinfector.

Pressure-steam when available in a school, being furnished for other purposes, can be used as the heating medium; and in this case it is passed through a steam coil fixed in the jacket of a disinfector. Where no pressure-steam is feasible, it is more economical to establish a furnace-heated disinfector. The one invented by Dr. Thresh, the medical officer of health of the Essex County Council, is a very convenient disinfector, and less expensive than many on the market.

In the following plans I show a building (Fig. 34) suitable for the disinfection of clothes at a school. A room is fitted, it will be seen, to receive the *infected* clothes, which are placed in the disinfector, and having been subjected to the superheated steam, are then removed from the disinfector into another room set apart for the reception of the *disinfected* clothes.

In Fig. 35 the same plan is seen in section.

About one hour is required for heating the disinfector for use. The apparatus will hold at one time, according to its size, several sets of bedding and clothes. The one employed at Rugby has a dimension of seven feet, and will contain three complete sets of bedding, as well as a large quantity of personal clothing. When heated, disinfection occupies thirty minutes; and drying, another thirty minutes. The articles are then ready for immediate use.

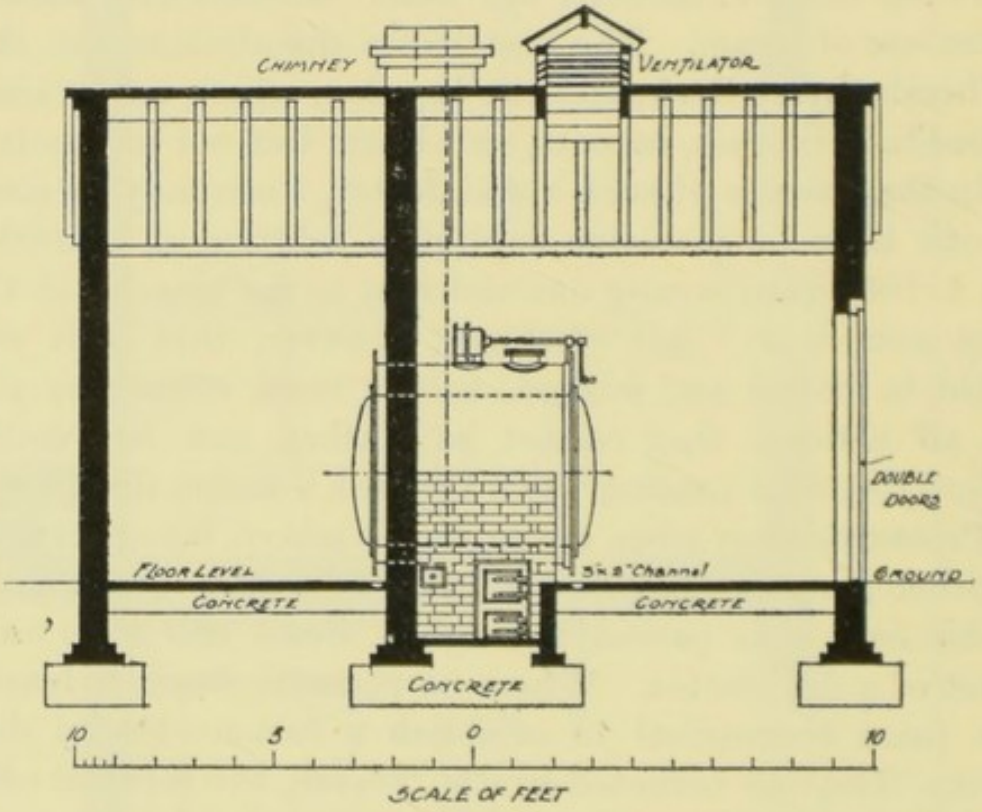


FIG. 35.

The benefit afforded at schools by this apparatus for the disinfection of the clothes and bedding is palpable; but another gain, even greater, is involved in the appliance, on the re-assembling of schools after the vacation. The citing of instances will furnish the clearest explanation, and will be more readily followed.

First, take an example of an infectious illness arising *at school*. A boy has, say, measles: as soon as the illness

has terminated, and he has been out-of-doors for several days, he can be daily and completely washed with carbolic soap. His clothes can then be passed through the disinfecting chamber, and his return to school be safely permitted. His mattress and bedding also can be rendered void of danger, and ready for another case should occasion require.

Secondly, take three examples of infectious illness occurring *at home* during the vacation, and observe the service of this apparatus.

A boy has measles in the vacation. The illness is over, and he is ready to return to school; but he comes from an infected house, and his clothes are saturated with poison. What is necessary to protect the school from the admission of the poison? Instead of sending him away from all source of infection for a time, he can—after home disinfection—return at once to the sanatorium, be thoroughly disinfected there, and then enter his boarding-house without the possibility of harm to any one.

A boy's sister has scarlet fever. He himself has suffered from it at some previous time, but he has been with his sister, or mixed with those who have been in the sick-room; and although little chance exists of a second attack, yet his clothes are infected. How is the school to protect itself? Instead of sending him away from every source of infection in order to purify his clothes, he can enter the school sanatorium for disinfection, and then return to his boarding-house without detriment to his school-fellows.

A boy's brother is affected with scarlet fever. The boy himself has never been attacked, but has been with his brother: is he therefore already infected? Is the disease incubating in him? In this case, he ought to be disinfected: leave the house; and avoid all chance of infection for eight clear days. If he then show no symptoms, he may return to school.

The purification of the person and clothes must be

supplemented by the **disinfection of the infected room.** The former process can always, I believe, be effectively carried out: it is not, however, always possible to make the poisoned room safe, for scarlet fever has frequently arisen in the unfortunate person who has been the next to occupy a disinfected room, even after a lapse of months.

If infectious diseases are supplied throughout their progress with an abundant quantity of fresh air—practically treated, that is, in the "open air,"—little infection remains to be dealt with, since sunlight and pure air are the most powerful germicides. But where undestroyed microbes may remain attached to the surfaces of rooms, or lurk in crevices, various chemical gases and vapours must be supplementarily applied.

Sulphurous acid gas fumes are largely resorted to, and I retain the greatest faith in them. The gas is generated by burning sulphur, and about 3 to 6 lbs. are required for every 1000 cubic feet of space.

Decisive experiments, however, have proved that formalin is still more efficacious. The important point in the use of formalin is the manner in which it should be brought into contact with the furniture, and the various parts of the room. The medical officer of health for Leith has recently perfected the "Invicta" Disinfecting Sprayer. The solution of formalin (1 per cent.) is under a pressure of 45 lbs. to the square inch, and an ordinary-sized room can be disinfected in every part by a disinfecting officer in five minutes. Formalin can also be used as *glycoformal* in *Lingner's disinfecting apparatus*, which consists of a ring boiler, in which steam is generated, and driven into a reservoir filled with the disinfectant which, being vaporized, is ejected in the form of a fine spray through four nozzles in different directions. It is unnecessary to seal up windows and doors during this process, which occupies only three hours, and causes no damage to any articles left in the room.

The *alformant lamp* with *paraform* tabloids answers for small rooms. Twenty to forty tabloids are required for every 1000 cubic feet, with four hours' exposure. The Perfection Fumigator is also valuable.

When the disinfection of the room is completed, it should be ventilated as long as it can be spared: the floor and all washable surfaces of the room should then be washed, and fitted for occupation on the same day if required.

Boots can be safely used after the application of Lingner's spray. It is said that *books* can be perfectly disinfected in the steam disinfector, though the covers are spoiled and crumpled. *Sponges*, *brushes*, *combs*, and *toothbrushes*, can be boiled; and cups, saucers, plates, dishes, knives, forks, and spoons, should be similarly treated.

Where schools do not possess a disinfecting apparatus, certain rigid rules are necessary, before a boy can enter or return to school. These involve the "duration of infectiveness," which has been considered on p 483.

The disinfecting apparatus has proved, together with other precautions, an immense benefit; for the greatest period of anxiety to schools is the first ten days of term. Where boys arrive from all parts of the country, the urgent question is—What illness has been imported into school?

THE PREVENTION OF INFECTIOUS DISEASE BEING BROUGHT TO SCHOOL FROM HOME.

If due consideration, and practical attention, be exhibited by the school authorities, parents will, in their turn, become more careful and conscientious, and schools will then be released from anxiety and suspense during the first few days of term in connection with the possible importation of infectious illness.

But it is necessary and very important for schools to protect themselves still further; for *careless* parents sometimes

have to be reckoned with—parents who, not meaning harm, do incalculable mischief. Still more fruitful of danger than the thoughtless parent is *the parent who does not believe in infection.*

Every school, accordingly, public and private, should supply a form of "Health Certificate" to parents, to be brought back, signed by the parent, when the boy returns; and if he return without it, he should be kept separate from his school-fellows until it is obtained, or until, by the telegraph, a satisfactory answer has been received.

But I do not think it is reasonable or fair, as is sometimes done, to compel a parent to incur the expense and trouble of obtaining the signature of his medical adviser to a document which the parent can sign himself as efficiently and truthfully. The certificate might be in the appended form, and should be forwarded also to every parent when the boy returns home.

HEALTH CERTIFICATE FOR PREVENTING THE TRANSMISSION OF INFECTIOUS DISEASES TO SCHOOL.

Obverse.

This Certificate must be filled in and signed by the Parent or Guardian not earlier than the day before that on which a boy enters, or returns to School, and must be delivered by the boy to his House-master on arrival.

I hereby certify that to the best of my knowledge..... has not for at least four weeks [or * during the holidays now ending] been exposed to any infectious, or contagious, disease (as Scarlet Fever, Measles, Roserash, Small-pox, Chicken-pox, Mumps, Whooping Cough, Diphtheria, Ringworm, or Ophthalmia).

(Signed),

Parent or Guardian.

Date,

N.B.—1. If a boy is known to have been exposed to any infection, or to have suffered from any infectious disease during the vacation, the certificate on the Reverse should be filled in, signed, and posted to the House-master, and the boy should on no account return to school without such Master's permission having first been obtained.

2. If infectious illness should arise at home, *subsequent* to the return to school, notice should be immediately sent to the House-master so that the boy may, if necessary, be placed in quarantine.

* If the holidays have been of less than four weeks' duration.

On the other hand, if there has been exposure to infection during the vacation, or the boy has suffered from infectious illness, the following **Certificate of Infection** should be filled in: signed; and posted immediately to his house-master, in order that the necessary regulations may at once be put in force. If printed on the back of the Health Certificate it would obviate the need of another document being forwarded to parents at the end of the term.

CERTIFICATE OF INFECTION FOR PREVENTING THE TRANSMISSION OF INFECTIOUS DISEASES TO SCHOOL.

Reverse.

I hereby certify that.....has been exposed to, or has suffered from, an infectious disease during the vacation, of which the following are the particulars:—

1. Nature of illness.
2. Date of commencement of last case of the illness.
3. Precautions that were taken.
4. He has (or has not) had an illness of this kind previously.

(Signed),

Parent or Guardian.

This should be posted to the Master immediately the fact is known.

On receipt of such a certificate, the house-master will require to know, for the protection of the school, the manner in which he should act on the information. Two courses are open to him—

1. Either to forward the certificate to the medical officer for his directions.

2. Or, to be provided with printed rules, and certificates, to enable him to act in all ordinary cases,—consulting the medical officer only in doubtful cases, to which the several rules do not apply.

For the latter purpose I append a code of rules, most of

which have been in operation at Rugby for many years. They possess, therefore, the stamp of experience.

MODEL RULES FOR PREVENTING THE CONVEYANCE OF INFECTIOUS DISEASES TO SCHOOL.

1. THE following diseases are considered infectious :—

Influenza	Small-pox	Roserash ‡
Scarlet Fever	Chicken-pox	Mumps
Fourth Disease	Typhus Fever	Whooping Cough
Diphtheria	Enteric Fever	Ophthalmia
Erysipelas	Measles	Ringworm

2. No boy shall enter, or return to school who *has suffered from* any infectious disease; or who has been *exposed to infection*; or who has been, within a month, in any *house* in which there has occurred an infectious disease; or in which any one *convalescent* therefrom has resided, until the parent or guardian has given notice to the Headmaster, or House-master on the prescribed form, and has obtained permission for the boy's return.

3. CLOTHES worn during any infectious illness, or during convalescence, must be disinfected before the boy returns to school. No books or papers used by him during the illness and convalescence, no boxes or portmanteaus, etc., which have been in the sick-room at any time during the illness, may be sent with him when he returns to school.

Case A.—A boy who, having himself previously suffered from any one of the preceding diseases, has been again exposed, during the vacation, to any of them (except Influenza, which is a recurring disease), may return at once to school.*

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‡ Roserash. This disease is also called German Measles. It is most important that care should be taken to distinguish it from English Measles, as the two diseases are totally different, and to have been attacked by one furnishes no safeguard against an attack of the other.

* Every boy must present himself at the Sanatorium for disinfection before he enters his Master's Boarding House (not later than 5 p.m. if trains allow).

Case B.—

A boy who has been ill with	May return to school
* Influenza ...	At the end of ten days from the commencement of the illness.
* Scarlet Fever ...	When desquamation has entirely ceased, and there is no "discharge" from the ears, nose, or throat.
* Fourth Disease	On the 15th day from the onset of the illness.
* Diphtheria ...	As soon as his strength permits, after a favourable bacteriological examination.
* Erysipelas ...	When all desquamation has ceased.
* Small-pox ...	When every scale has disappeared, and recovery is declared to be complete.
* Chicken-pox ...	
* Typhus Fever ...	As soon as his strength permits.
* Enteric Fever ...	
* Measles ...	At the end of two full weeks from the appearance of the rash.
* Roserash ‡ ...	
* Mumps	At the end of two full weeks from the commencement.
* Whooping Cough	When the cough has ceased, or at the end of six weeks from the commencement of the whooping.
† Ophthalmia ...	When the eyes have quite recovered.
† Ringworm ...	When the hair has grown again, or no broken hair remains.

Case C.—**A** boy who has not already had the disease in question, and who has been with an affected person up to the day on which the disease declared itself, may return to school after the following time has elapsed, *if he has been immediately removed to another house, together with his clothes and portmanteau, and does not return to the infected house again before entering school, and has held no communication with those in such house, or if the affected person has been at once removed:—*

* Influenza	7 days	* Enteric Fever ...	23 days
* Scarlet Fever ...	10 „	* Measles	18 „
* Fourth Disease ...	23 „	* Roserash ‡	24 „
* Diphtheria	9 „	* Mumps	30 „
* Erysipelas	15 „	* Whooping Cough ...	16 „
* Small-pox	17 „	† Ophthalmia	7 „
* Chicken-pox ...	21 „	† Ringworm	10 „
* Typhus Fever ...	23 „		

* See p. 524.

† Not without a special certificate. No boy shall return to school from a house in which there is a case of Ringworm; but when removed he comes under Case C.

‡ See p. 524.

Case **D.**—**A** boy who has not already suffered from the disease in question, and is *still living in the house* where the disease has arisen, shall not return to school until the following time has elapsed since the last case declared itself:—

* Influenza	17 days	* Enteric Fever ...	44 days
* Scarlet Fever ...	38 „	* Measles	32 „
* Fourth Disease ...	35 „	* Roserash ‡	34 „
* Diphtheria	23 „	* Mumps	44 „
* Erysipelas	25 „	* Whooping Cough ...	37 „
* Small-pox	45 „	† Ophthalmia	? „
* Chicken-pox ...	35 „	† Ringworm	? „
* Typhus Fever ...	37 „		

So soon as the house-master ascertains, from these rules, to which class the case referred to him appertains, he forwards to the parent, or guardian, for completion and return, such one of the following forms of certificate as is applicable.

CASE A.

To be completed by the Parent or Guardian.

I hereby certify that.....has, during the vacation, been exposed to the contagion of..... He himself had the disease in.....19.....

Date..... .....19..... Signed.....
Address.....
.....
.....

To be left for completion by the Head-master or House-master.

.....may return on.....but he must on arrival go straight to the Sanatorium for disinfection before entering his house. He should reach there before 5 p.m. if possible.

Signed.....
Head-master or House-master.

.....School.

Date.....19.....

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* See p. 524. † See p. 525. ‡ See p. 524.

CASE B.

To be completed by the Parent or Guardian.

I hereby certify that.....was taken ill with .....on..... Our Medical Adviser considered him convalescent on ..... and the time fixed by the School Rules, during which he must remain absent, expires on.....I have read the Rules, and have carefully complied with their conditions.

Date.....19..... Signed.....
Address.....
.....
.....

To be left for completion by the Head-master or House-master.

.....may return on.....but he must on arrival go straight to the Sanatorium for disinfection before entering his house. He should reach there before 5 p.m. if possible.

Signed.....
Head-master or House-master.

.....School.

Date.....19.....

CASE C.

To be completed by the Parent or Guardian.

I hereby certify that.....has, during the vacation, been exposed to the contagion of..... The last case of the illness commenced on.....
{ He was removed from the house on.....
{ *or*, the affected person was removed from the house on.....
He is not suffering from the illness now, nor has he had it at any previous time. I have read the Rules, and have carefully complied with their conditions.

Date.....19..... Signed.....
Address.....
.....
.....

To be left for completion by the Head-master or House-master.

.....must leave the infected house, together with his clothes and portmanteau, and remain away from all possibility of being infected by those who attend *or* visit the sick for .....clear days. He may, provided he holds no communication with the sick directly or indirectly on his way, return on .....but he must on arrival go straight to the Sanatorium for disinfection before entering his house. He should reach there before 5 p.m. if possible.

Signed.....
Head-master or House-master.

.....School.

Date.....19.....

CASE D.

To be completed by the Parent or Guardian.

I hereby certify that.....is still living at a house in which there is..... The last case of the illness commenced on.....and the patient and house were declared free from infection on..... He himself has never had the disease. I have read the Rules, and have carefully complied with their conditions.

Date.....19..... Signed.....
Address.....
.....
.....

To be left for completion by the Head-master or House-master.

.....may return on .....the.....of.....
but he must on arrival go straight to the Sanatorium for disinfection before entering his house. He should reach there before 5 p.m. if possible.

Signed.....
Head-master or House-master.

.....School.

Date.....19.....

THE BREAKING UP OF A BOARDING-SCHOOL ON ACCOUNT OF INFECTIOUS DISEASE.

Notwithstanding the exercise of every precaution against the entrance of infectious diseases into schools, where the young are congregated at a very susceptible age, and thus liable to be exposed—and no care for this purpose should be deemed superfluous—still these diseases will not only invade, but spread. The questions, therefore,—"Ought the school to remain at work, or **ought the pupils to be dispersed to their homes**"—may arise at any moment for prompt and judicious decision according to the severity of the illness itself, or to its numerical intensity. The closing of a school may be imperative for the arrest of a severe epidemic, since **infectious diseases mostly spread by infection from person to person**; though the possibility of the extent of the diffusion of the epidemic arising from water, milk, or from the laundry, must constantly be borne in mind.

On the other hand, a single malignant case of infectious illness may occur in a school, and render it imperative upon the medical officer to acquaint the head-master with the fact at once, warning him that it may be the virulent nature of the poison which forms the cause, though possibly the poison may be *mild* in character, and happens only to affect the individual severely in consequence of idiosyncrasy, or some weak element in his organization. But should a second case arise, it is the medical officer's duty to lay the matter clearly before the head-master in a form beyond misconception, for the blame of neglect or ambiguity would rest on the professional adviser.

The head-master then, if he think it necessary, can give **parents, whose sons have not had the illness previously, the opportunity of removing them**; the

others remaining at school. But, in my judgment, no boarding-school should ever be broken up and the boys dispersed, whether the parents desire it or not. The illness was developed at the school, and the authorities should make all necessary provision for its treatment; and the onus of removing a boy, with the risk of illness or death to other children, and the general extension of infection, should rest upon the parents, and not upon the school authorities.

It may be well to adduce an example for the purpose of rendering the importance of the subject quite manifest.

It seems only human to become panic-stricken on the slightest provocation, or without any provocation. A most unwise and unnecessary panic rages from time to time, especially amongst boarding-schools, when there is more or less of an epidemic of scarlet fever throughout the country. Should this be a cause of terror? Is our knowledge of epidemics of all kinds so superficial as to render us ignorant of the fact that all infectious ailments to which flesh is heir do assume, and have always assumed, an epidemic form from time to time in their appropriate season? Medical science has not hitherto been able to cope with this powerful epidemic influence, but the advance which it has made in recent years leads us to hope that this difficulty will soon be overcome.

It is an unquestionable fact that Nature's process of disintegration, for animal and vegetable matter, after death, is conducted through the instrumentality of bacteria and parasites. In declining health all animal life becomes more or less attacked by parasites. During the vigorous health of animal life these lower organisms—for bacteria are parasites—exert very little power. In the case of vegetable life, fungi and parasites infest trees and shrubs which fail to thrive through unsuitable soil or season, and these agents actively

develop and operate in damp, dark places which are unadapted to the growth of the superior forms of vegetable life. They dislike sunlight and air. Further, it is the province of this minute life to germinate most luxuriantly where the higher animal and vegetable life is incompetent to flourish. This is Nature's marvellous scheme.

The cause of the panic which is apt to seize our boarding-schools, and occasion a number of them to be dispersed, scattering scarlet fever into many homes, before the customary period of vacation, I am at a loss to gauge. I can understand the sense of panic when illness suddenly arrives. But, when it is the normal condition that certain diseases should occur at definite seasons of the year, it seems to me that safeguards should be always provided, certainly in all boarding-schools, when panic and helplessness on the advent of the maladies would disappear.

Education should be sufficiently powerful over human nature to prevent the possibility of panics. Yet we find that schoolmasters themselves are often the most panic-stricken. It does not lie with schoolmasters to urge that the panic arises with the public, from whom the contagion of fear is propagated to the profession; for, in a large proportion of instances, one hears of schoolmasters breaking up their schools in the middle of the term on trivial pretexts; whereas this course should never be pursued except on the most urgent grounds.

I have the profoundest respect for a head-master who, without hesitation, has the courage to send his boys home at once, when he finds that the scarlet fever, the diphtheria, or the typhoid fever in his school has arisen from, or has even been fostered by, its unsanitary state, and its unhealthy surroundings, such as choked drains, causing saturated ground from leakage, or defective closets, which can only be rectified in the absence of the pupils. It is little short

of criminal to detain boys at school under such circumstances. But the schoolmaster who, during a general epidemic, breaks up his school, because a few cases of simple scarlet fever have occurred among his pupils is simply acting from unreasoning panic. He encourages the public in their alarm, instead of quieting the perturbation by his weight and sagacity of character; whereas he should show the parents that he possesses sufficient capacity to deal with the illness, and thus confirm their general confidence in his moral and administrative power.

But why does this intense dread of scarlet fever prevail? It is not usually a dangerous illness, but one of the mildest. It is true that sometimes it assumes a malignant form, and then becomes extremely fatal. The largest proportion of deaths, however, take place during its most unformidable character. The illness is frequently so slight that it is never diagnosed; or it is neglected on account of its mildness. Some time ago, I knew of a serious epidemic in a church school. On questioning the master respecting the nature of the illness, and whether any of his scholars had died, he informed me that five cases had proved fatal. On inquiring into the reason of this, he replied, that it was due to the children having had the fever so mildly, that they had been sent to school throughout the illness. It is these neglected cases which cause the greatest mortality. I would urge that where scarlet-fever patients are put to bed, as they ought to be in every case, however slight the illness, for three weeks, and clothed in flannel, the mortality of scarlet fever, or its dreaded *sequelæ* when death does not arise, would be so lessened that the sting would be removed from the illness. If **convalescents be kept absolutely separate from fresh cases,** and from the nurses in attendance upon the latter, the range of attack by scarlet fever would be greatly diminished.

Where scarlet fever occurs in *day schools* to any extent,

the pupils (except those who have already suffered) should not assemble, so that the fever may not be carried into other pupils' families. But in boarding-schools, which should be regarded as one large family, the school, unless the scarlet fever assumes a malignant form, should continue the even tenour of its way, confident that the mortality, when the illness has not arisen from local insanitary conditions, and when it is properly treated, will usually be small. In this way the fever will not be thoughtlessly disseminated throughout the country, entailing needless expense and annoyance in families.

Moreover, in the case of scarlet fever, the mortality of those above the age of ten years—THE BOARDING-SCHOOL AGE—is under 3 per cent.; whereas by dispersing boys to their homes the poison is frequently introduced into households with *younger* children, among whom the mortality is sometimes very high: for instance, in the case of children under two years of age, the percentage is 26. Were such a mortality to occur during the school age, it would deter most men from taking pupils at all, and might well appal those who had the courage to do so, and would certainly compel each one to disperse his school on the advent of the first attack. Considering, therefore, that the mortality from scarlet fever during the school age, even calculating severe and mild epidemics, is under 3 per cent. (at Rugby, during a record of thirty-three years, the experience has been 1·7 per cent. of the attacks), it behoves parents to compel the school authorities to provide for efficient treatment at school, instead of sending the pupils home. By this means boarding-schools would not so frequently act as reprehensible centres of infection throughout the country, though more especially from school to school.

I append a table of the mortality of scarlet fever at the various ages:—

TABLE XLIX.

Scarlet Fever.	
Ages.	Percentage mortality.
0 to 5	18·2
5 „ 10	5·6
10 „ 15	2·6
15 „ 20	2·8
20 „ 25	2·8
25 „ 30	3·5
30 „ 35	4·6
35 „ 40	5·8
40 „ 45	5·7
45 „ 50	
50 „ 55	
55 and upwards	

In a valuable paper read by Dr. Whitelegge before the Epidemiological Society, the following statistics relating to the *liability* of the age of infection were given :—

TABLE L.

Scarlet Fever.	
Ages.	Liability.
1 to 5	42 p.c.
5 „ 10	40 p.c.
10 „ 15	11·5 p.c.

At Rugby, where the ages of the boys range from 13 to 19 years, the incidence of scarlet fever during a period of thirty-three years has been 2·08 per annum, or in other words 0·64 per cent. per annum.

I strongly hold, however, that a head-master has no

right to keep the existence of such a possibly fatal epidemic from the knowledge of the parents, but should acquaint them with the fact, stating also the exact number of cases and the manner in which they have been dealt with, and conveying any further advice and help he may think proper. Such frankness on his part would be reciprocated by equal candour and confidence by the parents.

On the disbanding of a school during a period of infectious diseases, even at the end of term for the vacation, parents should be afforded sufficient time to make arrangements for quarantine; and all boys, thus removed, should take home a certificate (see p. 539), acquainting the parents with the period of incubation of the disease: the time during which the boy should be kept apart; and the date at which he may, without danger, mix with the other members of the family.

But, in dispersing a school, it is necessary to remember that **only those boys who have never had the disease need the privilege of returning home: those who have suffered from it may safely remain at work.**

The breaking up of a school is so serious and expensive to parents and teachers, that it should never be resorted to unless the cases of illness be extremely numerous; or unless the question be one of life and death, owing to the malignancy of the disease, or to structural defects in the school; though the difficulty, when it arises, should be promptly faced and action adopted without a moment's delay.

THE PREVENTION OF THE CONVEYANCE OF INFECTIOUS DISEASE FROM SCHOOL TO HOME.

It has been urged that the introduction by a parent of an infectious disease into a boarding-school with several hundred pupils, constitutes a deeper wrong than the transmission of the poison from school into a home consisting, perhaps, of

only a dozen persons. Were this judgment correct it might prove a conscience-comforting reflection for schools. But I question its truth; for in a boarding-school ample provision is, or should be, in existence for the limitation of disease; and, moreover, the illness can be confined to the school; whereas in the home no adequate means or method of isolation is equally practicable, and consequently the disease is apt to spread from person to person, and from home to home, and, in its dispersion, frequently affects those of tenderer years, among whom the mortality is especially severe.

Life at school is formed of periods of work and rest. The working time is called "term" time, and each term averages about twelve consecutive weeks; while the resting time is the "vacation," varying from three to eight weeks. Now, as there are in all schools three terms and three vacations, it is manifest that the pupils at boarding-schools travel in public conveyances six times a year, though where "exeats" still survive these occasions are doubled. In addition, it frequently happens that each pupil, as he convalesces, is sent home, in order to make room for fresh cases as they arise (without any pretence at disinfection)—in fact, I believe that some schools scarcely know what such disinfection means. It is, therefore, evident that there is almost a perpetual inter-communication between the home and the boarding-school. Contemplate the significance of this fact where, at the most susceptible ages for the invasion of infectious diseases, thousands upon thousands of young people travel in public conveyances at the very least six times annually, unless the most scrupulous care and consideration for others be exercised by the authorities at home and school. Consider, also, the effects produced in this way between school and school where short vacations occur, having the same duration as some of the periods of incubation of infectious diseases; for in this manner the home is

spared and the school infected. The greatest enemies to schools on this question are the schools themselves, since their action is considerably more far-reaching than any indiscretions committed by parents. Let me amplify my meaning. A school is afflicted with an infectious disease. As soon as the vacation arrives, or even previously, many pupils who have been ill are dispersed home to all parts of the country before disinfection has occurred, infecting railway carriages and cabs, so that the same or the next occupant, often members of other schools, become affected and convey the disease to their homes, where it is kept alive during the vacation, and thence carried back to the same school, or to another. In fact, were I asked to name the most likely spots in this country for the starting of infectious diseases *de novo*, I should not point to the water supply, the drainage, the market-place, the highway, the home, the laundry, the school, the church, the funeral, the theatre, or the seaside lodging, but the public conveyances.

As it is the parent's duty to see that infectious disease is not brought from home *to* school, so it is a master's equally important duty to prevent infectious illness being carried home *from* school: he should, therefore, inform parents of the fact, whenever an infectious illness has occurred towards the end of term.

Of course, **no boy who had had the illness in question ought to be allowed to go home until he was perfectly free from infection**: this, I regret to say, is not the case at *some* schools, for boys are sent home immediately the illness is over, even with a printed circular stating that they are still highly infectious. It would be expedient, therefore, that every school should forward a certificate of **freedom from infection** to parents, after recovery from an infectious disease. For to *most* school authorities this course would then form a perpetual reminder of their duty in this respect.

CERTIFICATE OF FREEDOM FROM INFECTION AFTER RECOVERY FROM THE ILLNESS.

I hereby certify that.....who was taken ill with.....
on.....is now free from infection; both he and his clothes have been disinfected.

Signed.....
Head-master or House-master.

Address.....
.....
.....

Date.....19.....

The greatest danger, however, arises from the **boy in whom an infectious disease is incubating,** which will show itself at its natural time, but who, to all appearances at the period of leaving school, is quite well, and may continue so for many days, and yet exhibit, at the appointed time, the illness at home. The parent, not knowing the malady is likely to occur, makes no preparations, may be about to travel with his family abroad, may be at a distance from all medical assistance, and then find to his cost that he has been carrying an expensive and deadly enemy on his holiday trip.

The contingencies I have mentioned should never be permitted to arise; but every parent should be advised by the master of the occurrence, and thus be warned in time of what may possibly happen. Every master, therefore, when infectious illness has appeared near enough to the end of term for a boy to exhibit it after leaving school, should despatch to the parent a form of certificate, cautioning him that his son may develop a certain illness within a specified date—if he has not already suffered from it—and so enable him to use precautions for the protection of his other children and his friends.

Such a certificate I here append, to be forwarded to every parent, or guardian, when an infectious disease has arisen at school during the last few weeks of term.

HOME CERTIFICATE WARNING PARENTS OF THE POSSIBILITY OF INFECTION.

Some cases of.....have occurred in the school during the last few weeks of term.

It is, therefore, **possible that your son may be infected**—if he has not already suffered from the complaint—though every case has been isolated as soon as the disease appeared. The period of incubation of the disease being.....days,—during which time he should be kept in quarantine—he may be considered to have escaped infection if he shows no symtoms within those days, counting from the date of his leaving school.

Signed.....

Head-master or House-master.

Address.....

.....

.....

Date.....19.....

But infectious diseases have at times curious vagaries, as the following case will testify. A. came home from school at X——, where measles or roserash had prevailed, quite well. He brought the germs of infection in his clothes, which passed on to his brother B., who had just returned from school at Z——, where no infectious illness existed. A. then subsequently caught the illness from B. This shows that at first A. was scarcely susceptible to the ailment, while B. was very susceptible; directly, however, there was a concentrated dose of the poison, generated by B. in his illness, A. succumbed and passed through the characteristic stages of the attack.

It is necessary, therefore, to **disinfect the clothes at the commencement of the period of quarantine.**

THE PREVENTION OF THE DIFFUSION OF INFECTIOUS DISEASE THROUGHOUT THE COUNTRY BY MEANS OF SCHOOLS.

It would indeed be surprising were the conditions of school life not accountable for a large amount of infectious disease. In fact, schools are often the very centre of infection; and in the case of day-schools zymotic diseases are sometimes entirely beyond control, except by closing the schools.

Scarcely a year passes without some infectious disease entering a school, through the contraction of infection during the passage from *home to school*, and this is largely accounted for by a previous transmission of an infected patient from *school to home*. That is to say, a boy soon after his return to school falls ill with some infectious illness, although none exists in the school, and none in the home or neighbourhood. It is, therefore, evident that it has been caught *en route*. This opportunity of infection arises chiefly and frequently (I regret to say) through the unscrupulous action of some school authorities, and the reprehensible selfishness and carelessness of parents. For instance, a pupil becomes ill towards the end of term, and instead of prohibiting his travelling in railway carriages and cabs until he is free from infection, the parent desires his return home, "as the poor boy," they say, "will feel dull at school during the vacation," totally regardless of the track of mischief which he leaves behind in public conveyances. This act does not simply occur occasionally, but happens frequently in some schools, notwithstanding the seriousness of the offence, and its punishability by law. There is an absolute absence of consideration for others in such a course; and it is responsible for an appreciable portion in schools of illness of this contagious nature through the transmission of infection from one school to another.

When parents are reticent about the occurrence of

infectious diseases at home during the vacations, great is the outcry of boarding-schools, and justly so; but when schools commit a similar offence the parent who complains is denounced as unreasonable. And in both cases the public is usually totally ignored, as though it were entitled to no right of complaint in the matter. I must, however, in honesty, point out that, of the two offenders, the schools are distinctly the worse. Their action arises, sometimes from ignorance (if I may accuse bodies so august of such a fault), and sometimes from mere thoughtlessness; while in some instances a policy of silence betrays an entire absence of conscience, with the result, whatever cause prevails, that infectious diseases are scattered broadcast. Such an act is as deep a breach of integrity as dishonesty in commercial life. In some cases the practice may be due to ignorance; but in most instances it cannot be truly said "they know not what they do." It is frequently designedly done (without, of course, a designedly evil intention) on account of the great inconvenience and expense which infectious illness so commonly entails; but, whatever the motive, the facts must be plainly and distinctly faced and denounced if righteous dealing of one towards another is to be observed in this respect.

From my references to school life it is evident that in the very nature of the system, entailing as it does a change of residence six times a year, a definite risk is necessarily involved. This practice of terms and vacations cannot be abandoned. Those, therefore, who are answerable for the conduct of the system need to be most scrupulous in its working, so that, as far as possible, all avoidable danger may be averted.

Boarding-schools unavoidably disseminate infectious diseases, unfortunately, to a certain extent, by virtue of the existing system, and the susceptibility of the pupils. For instance, the case of illness may prove to be

the first attack, of which no one, not even the pupil himself, may be cognisant, before he started on his journey; or an epidemic may have occurred at a school towards the end of term, and the time arrives for the dispersion of the school for the vacation. Even if the most conscientious care be exercised in seeing that no pupil who is not perfectly well at starting shall be allowed to leave, still there are a certain number—few, I admit—who will sicken *en route* and prove infectious to the travelling public. This cannot, therefore, be obviated while the present school system is in force. But the home itself, and the school, can be protected by the certificate I have suggested, stating that there is, or has been, infectious illness in either place, and this precaution, I regret to say, is still largely omitted.

Boarding-schools disseminate infectious diseases ignorantly, thoughtlessly, or wantonly by pupils, teachers, and parents, or through the absence of adequate accommodation for sickness. (1) The pupil well knowing, or, to put it as mildly as possible, suspicious that he is suffering from the prevailing disease during the last few hours of term, conceals it from his school-fellows, the school authorities, and the medical officer, in order that he may not be detained. In fact, he is not honourable enough to report himself and face the consequences; but this fault will not surprise any one when I state that schools still exist—high-class ones too—which do not isolate their pupils during the period of infection, and some there are which even keep their pupils at work throughout the whole duration of some of the infectious illnesses. Nevertheless, I am glad to be able to testify that some boys do surrender their liberty manfully, though these, unhappily, are rare exceptions. (2) Another motive is that the school authorities, wearied with hard work and exacting duties, and having made immediate arrangements for their well-earned repose, or change of occupation, despatch the convalescent, but

infectious, patients to their homes the moment they are capable of travelling, quite regardless of their infectious condition. But surely, on reflection, no one will gainsay the truth that school arrangements should be so organized that some officials remain at their post until all the sick are recovered, and capable of travelling with safety to themselves and others. (3) The parent, too, wants his child home for the vacation, and this natural desire is carried out irrespective of the injury he may entail upon others. The expressed sentiments, that "the public must take care of themselves," or that, "it is no business of his," satisfy his conscience. (4) The accommodation for sickness itself is often so insufficient, and in so large a number of schools no provision exists at all for convalescence, that the moment a pupil is sufficiently well to travel he is despatched home in disregard of the possible consequences to the public during his transit. This line of action is accountable for a great portion of the infectious illness in schools, through the passage of infection from one school to another by means of the vacations, and through the machinery of public conveyances. The boarding-school doubtless gains its point in getting rid of an unwelcome pupil for the moment, but it receives a vastly increased and unnecessary amount of infectious disease ultimately. I therefore appeal to the surest, if not the highest, court, when I appeal to self-interest, and urge a complete and conscientious desistance from this indefensible practice.

In studying the following suggestions, school authorities should first fully realize the circumstances and conditions which have to be considered on the reassembling of schools after the Christmas vacation. Instead of their pupils returning to school hearty and vigorous, the bodily system is out of gear from late hours, late suppers, and hot stuffy rooms,—a physical state totally incapable of bearing exposure without mischievous results.

SUGGESTIONS FOR THE MITIGATION OF ALL SCHOOL ILLNESSES IN UNHEALTHY SEASONS, ESPECIALLY IN SPRING TERM.

I. **The Relation of Home Life to School Life.**—There can be no question that most of the illness of the much-dreaded spring term arises primarily from the sudden change from home to school life,—a contrast of conditions which should not exist.

At home the *house* is warm before the lad comes down, on account of the lateness of breakfast: he does not go out of doors until towards 11 a.m., when the *day* is warming; and, usually, with an overcoat.

At school he comes down early before the house is warm: he goes to school before breakfast, while the day is cold; and rarely wears an overcoat, unless enforced by the rules of the school.

II. **The Commencement of Term.**—Consequently, and arising from this opposition of circumstances, the whole school, before a week has elapsed, is affected with severe "colds," which mend slowly from similar reasons, and occasion a "lowered vitality" of most of the members of the school.

III. **The Action of Microbes.**—We all swallow, or inhale, innumerable bacilli, which only attack us when they find a suitable soil, and this they readily discover during the temporarily diminished vitality resulting from "colds," and from the depressing effect of cold weather, and other causes, such as constipation. That is to say, this enfeebled vitality renders the system of each individual susceptible to the invasion of germs. The school thus succumbs to any bacillus of sufficiently powerful activity.

IV. **The Remedies for the Prevention of this Lowered Vitality.**

1. **School Plant.**—The schools, class-rooms, chapel,

studies, dormitories, beds, and bedding should be warmed for three days continuously, under responsible supervision, before the re-assembling of the pupils.

2. **School Work.**—Boys should not leave their boarding-houses in the early morning until after a good hot breakfast.

3. **Sunday.**—Boys should not go to chapel in the early morning until they have thus breakfasted.

4. **Clothing.**—Boys should be encouraged to wear overcoats not only at early lesson, but also throughout the day during bleak and wet weather.

5. **Boots** for school should always be stout. It should be somebody's business to see that they are kept in repair, and daily dried.

6. **Changing for Games.**—Boys should not be permitted to "change" until the time for play. While the present "shorts" are worn, they should not only wear sweaters over the body, but overcoats also which will cover their thighs, until the commencement of the game.

V. **Play.**—Time should be allotted for play (I mean thoroughly efficient exercise) *every* day of the week. Physical vigour would thus very perceptibly be increased, so long as the perpetual monotony of the same game every day were avoided.

VI. **Sleep.**—Still more sleep might be allowed to all boys, especially the younger, by providing that supper shall immediately follow "preparation," and prayers, supper.

THE MORTALITY AT SCHOOL.

I am able, by the courtesy of the present head-master of Rugby school, who is deeply interested in all questions relating to the health and the illness of the school, to place on record the **mortality** of this school for the past thirty-three years, from April, 1871, to April, 1904.

During this period the average annual number of boarders and day-boarders has been 468. I have included day-boarders

also, since two deaths occurred amongst them during this experience: being members of the school their omission would be scarcely just.

During the last nine years of this time the numbers in the school have greatly increased. The ages range from thirteen to nineteen years; and there are eight months in each year spent at school.

1. *Pneumonia.*—A case occurred in March, 1875, and death took place between the fifth and seventh day, from failure of the heart's action.

2. *Pleurisy.*—A case appeared in June, 1877, and death occurred at the end of the fifth week suddenly from syncope owing to pleuritic effusion. In those days the value of early tapping was a disputed question. Had this case arisen a year or two later paracentesis would have been resorted to early before tension occurred, and probably a life have been saved.

3. *Scarlet fever.*—A case occurred in March, 1881, and although it was a mild type of fever death took place on the fifth day. I believe that the mother and four children in the same family had previously died from scarlet fever.

4. *Diphtheria.*—A case arose in July, 1883, and death resulted from exhaustion. The lad was a great naturalist, and had been searching for some of his treasures in the black mud of a ditch, of which his nails were full.

5. *Typhoid fever.*—This case occurred in December, 1889, and death arose from perforation on the twenty-fourth day. The illness originated from eating oysters which were sent as a present from home, and had come from the mouth of the Liffey or of the Mersey.

6. *Cerebro-spinal meningitis.*—This case occurred in November, 1893, at the very onset of an attack of influenza, and death took place on the third day.

7. *Death while running.*—This occurred in November, 1892, during a run of about three miles, from disintegration of the blood. The runs are now so safeguarded, and classified according to age and physique, as to be within the compass of all healthy boys, who can but be benefited by participating in them.

8. *Peritonitis.* (Day scholar.)—This case happened suddenly, after a day or two's illness, in July, 1894, and arose, in all probability, from the rupture of a suppurating mesenteric gland; the patient had suffered from mesenteric disease some years previously.

9. *Gangrene of intestine.* (Day scholar.)—This resulted from obstruction of the circulation in the superior mesenteric artery, evidently arising

from acute infective necrosis, or gangrene, described for the first time by Dr. Edred Corner in 1904.

On November 18th he had slight pain in his abdomen on rising from bed. Operation was of no avail; and he died on November 20th, 1897, after about thirty-six hours' illness.

10. *Measles, and double pneumonia.*—The illness commenced on February 14th, and terminated in death on February 27th, 1898.

11. *Acute dilatation of heart.*—Sudden acute dyspnœa supervened after exertion, on March 31st; and, although much relieved by venesection, the boy died on April 17th, 1899.

12. *Perityphlitis.*—The illness commenced, probably in the appendix vermiformis, on November 13th, and death resulted from perforation on November 20th, 1899. No operation.

13. *Diphtheria.*—The attack commenced suddenly on December 6th, and notwithstanding the instant, and repeated, injection of antitoxin, the boy died on December 14th, 1901.

14. *Pneumonia.*—The illness began on February 15th, and terminated fatally on February 21st, 1902.

15. *Cerebral tumour.*—This was ushered in by sickness and malaise on December 10th, 1902, and ended in death on January 13th, 1903.

TABLE LI.—SHOWING THE DISEASES CAUSING DEATH AT RUGBY SCHOOL BETWEEN APRIL, 1871, AND APRIL, 1904, WITH THE NUMBER OF DEATHS ATTRIBUTABLE TO EACH DISEASE.

Diseases causing death.	Number of deaths.
Pneumonia	2
Pleurisy	1
Scarlet fever	1
Diphtheria	2
Typhoid fever	1
Cerebro-spinal meningitis	1
Measles with double pneumonia	1
While running	1
Peritonitis	1
Gangrene of intestine	1
Acute dilatation of heart	1
Perityphlitis	1
Cerebral tumour	1
Total number of deaths ...	15

TABLE LII.—THE MORTALITY ARISING AMONG THE WHOLE OF THE BOYS AT RUGBY SCHOOL DURING THE THIRTY-THREE YEARS, COMMENCING WITH APRIL, 1871, AND TERMINATING WITH APRIL, 1904.*

1. The *deaths from all causes* amounted to 0·4545 per *school year*, or 1 death in 2·2 school years.

2. The *rate of mortality* per cent. per *term* amounted to 0·0323, or 1 death in 3096 boys exposed to the risk of death.

3. The rate of mortality per cent. per *school year* was 0·0969, or 1 death in 1032 boys exposed to the risk of death.

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* The school year (comprising three terms) which forms the basis of computation is equal to two-thirds of a calendar year.

X.

PERSONAL HYGIENE.

If health and strength are to be maintained at school with freedom from acute serious illness and chronic ailments, not only must schools introduce the provisions I have previously advised, but the boys must also be taught how to manage themselves—**personal hygiene.** Much can be done for them by the occasional guidance of parents and masters, and much can be effected by an appropriate word in private; but the boy cannot always have a guide at his elbow, and must, therefore, learn self-management according to his constitution, and practically to learn that Nature will not suffer any infringement of her laws with impunity: an experience only gained after many adverse trials.

Now that education is brought home to every child of all ages, and both sexes, however feeble in mind or body, a step has been taken which can never be retraced, and one which adds onerous duties to the work of the scholastic profession, especially involving secondary schools, and those among them of the highest grade. For they should set the example which the primary schools may follow rather than initiate.

The question of the physical deterioration of this nation is very prominent at present. And, in so far as it is true, its foundation is laid during the first year of the child's life, and is really a milk question. It does not merely involve the poor, but also the rich, as is evident from the frequency of rickets in high social life, and arises from the fashion of

withholding breast-milk from the infant, and substituting every variety of artificially prepared milk and "foods,"—in fact, everything but pure unboiled "new milk." In the well-to-do the defect is overcome during childhood: in the poor, the bad start is never rectified. The consideration of the remedy suggests that the degeneration can be most effectually combated in the school-room by inculcating the **rudiments of physiology** in its direct relation to Health, *and personal hygiene.* But I wish it to be understood that I deprecate the general teaching of anatomy and physiology to school children, as is the growing custom in the German schools, not only on principle, but also because the child's curriculum is already overloaded.

I now enumerate, as briefly as possible, some of the elements in personal hygiene that should be taught at school.

1. The child should understand that where **vigorous health** exists the internal conditions of the system are not easily disturbed, and diseases attacking from without have a hard struggle in planting themselves.

2. **Pure air and sunlight** in studies, class-rooms, and dormitories are indispensable for health.

3. In order to ensure a high state of health, the first essential is **regularity of life.** Nature abhors sudden changes of all kinds: thus, in the daily life, proper clothing should be adopted, according to the seasons: regular and adequate sleep,—its amount varying with age in place of the customary uniform allotments,—for while sleep in sufficiency refreshes and recreates, an excess enfeebles and impairs: abundant time for regular meals; and suitable opportunity for systematic exercise and work.

4. The **amount of food and exercise** must be balanced: evil results from excess of either. An appropriate quantity of food when work is being done is excessive on a day of idleness. If, therefore, a boy takes a fair amount of food when in exercise, he must not, during a succession of

wet days, with no exercise at all, continue to eat the same quantity. Diet and activity should be evenly counterpoised, since a disproportionate relation between the two involves the production of disease.

5. He should learn to **manage his stomach:** to observe what he can eat, and what he cannot eat without discomfort: to recognize that it is not wholesome to eat that which disagrees with him, and that a frequent repetition of the error will either make him ill speedily, or tend to disease in after life. It is intemperate and disgusting to eat or drink too much: equally so, to eat or drink what it is known will disagree.

It is unhealthy to eat or drink between meals: the pastry or sweets which are desired should be taken immediately *after*, or should form part of, a meal, and not between meals; for they upset the stomach—which requires rest between meals—and prevent the eating of staple food. To enable the stomach to digest its food, active exertion should not be undertaken—certainly not within an hour and a half—after eating.

When fatigued, light food only should be eaten: never a full meal until the fatigue has passed off by rest and light refreshment.

Much ill-health and discomfort are occasioned by eating too fast: all food needs careful mastication, not only to reduce it in size, but also to mix it with saliva: vegetables, —especially green vegetables—are a necessity of health.

6. When not feeling quite well, and **disinclined for food,** it is best to abstain altogether for a few hours, when the disturbance will be righted; but it is unwholesome, when unable to eat ordinary food, to resort to the pastry-cook, or hamper, and eat dainties which can only result in increased discomfort.

7. Boys should make a **good meal at teatime,** and avoid food afterwards, unless it be a little milk and bread

and butter; they are better, however, without anything afterwards, for sleep will then be more quiet and comforting, with a more refreshed awakening in the morning.

8. Temperance in alcohol is essential for all: **total abstinence** is imperative for the young.

9. It is **not dangerous to drink cold fluids while the body is heated,** provided the liquid be taken in sips: the danger lies in drinking a *quantity* of cold fluid, which is extremely injurious.

10. A **cold bath** should be taken every morning on rising. It is not only cleanly, but invigorating to the whole system. The cold bath involves no risk when the body is hot and perspiring; provided it be limited to a plunge in and out. But the cold bath is dangerous if taken while the body, previously heated, is cooling. Avoid remaining long in the bath at any time, and leave immediately when the least feeling of chilliness occurs.

11. Boys should be taught the importance, while young and active, of having a **natural relief** every day, without fail, at the same time, for present health and comfort, and the avoidance of future troubles. This practice is encouraged chiefly by regularity of habit, exercise, and the avoidance of aperients.

12. The **feet** should be **kept warm and dry,** and boots should be made to fit accurately, in order to prevent chilblains and other discomforts and deformities. Slippers should only be worn indoors: to wear them out-of-doors is both slovenly and injurious to health. Socks should be changed when they become damp from perspiration, or any other cause.

13. The **teeth** should be carefully cleaned morning and evening at least, not only for purposes of cleanliness, but for their preservation.

14. The **habit of spitting** should be discouraged by direct tuition: it is not only a dirty practice, but very injurious, and is usually acquired early in life.

Bad habits of all kinds, this included, if seriously sought to be rectified at school give place in after years to inoffensive and civilized modes of life. Both in personal health, and in the comfort of others, the apparently trivial things have the largest effects.

15. The **habit of standing with the back before the fire** is unhealthy, and very selfish; for there is usually only one fire for 30 to 100 boys, and others are thus deprived of its warmth. **Sitting over the fire reading** a novel on half-holidays, instead of taking healthy exercise, should never be practised. The whole weight of the public opinion of the school should be directed against these practices.

16. It is impossible to enlarge too much upon the **condition of the skin,** which is a very important gland of the body, and needs considerable care. It should be always kept clean and sweet, so that its action may be normal and unimpeded: it should be covered with flannel for warmth, for the absorption of its moisture, and for the prevention of sudden changes of temperature affecting the continuous performance of its functions. For active exertion, therefore, which will cause the skin to perspire freely, *special* flannel garments should be provided which will absorb the moisture generated during effort, and allow the ordinary garments to be put on afterwards in place of those which are damp from the exercise.

17. It is most **unwise and dangerous to leave off wearing the thick flannel vest on the first warm day** in the year: warm weather should be well established before this is attempted. In our climate the change is rarely safe before the beginning of June, except in the extreme south; and in some parts this period even is premature.

It is unwise to stand about or lie on grass when the skin is, or has been, perspiring; but every effort should be made to encourage the skin to cool gradually, a feeling of chilliness

being a sure sign that the cooling is too rapid, and that exercise, or another coat, is required.

18. Very strongly indeed would I urge upon boys the necessity, from the point of view of health, of accustoming themselves to **sleep as cool**—not cold—as they can at night: the custom conduces to health and vigour, and to purity of thought and conduct. To spend the night in a bath of perspiration, as many do, from excess of clothing, is most debilitating and unhealthy, and tends to laxity of morals in the young.*

19. And, most important of all, I would urge on all boys the great importance of **purity of life** in thought, word, and deed. True manliness cannot otherwise exist.

20. **Exercise** is the efficient remedy to moderate excess of animal spirits. It is also necessary in order to secure the highest amount of brain power for hard work, and to enable all the functions of the body to act with the greatest advantage. But this exercise should be taken on a comparatively empty stomach, or as soon as the preceding meal has been digested, which varies, of course, according to the nature of the meal—from 1½ to 4 hours. For the young and growing the exercise pursued should be that which requires rapidity and agility, rather than strength or violent effort.

21. The **amount of mental work** that can be borne is very considerable, almost indefinite, if life be regulated, according to age, under favourable hygienic conditions, with proper diet and exercise, sufficient cubic space, adequate sleep, and with an absence of hurry and worry.

But nothing is more to be reprehended in the education of the young than doing as little work as possible during part of the term, and then, when the examination approaches, toiling hard in a spurt. It is bad, physically, for the brain,

* The old writer, Andrew Borde, "of Physyche Doctour," says, in his "Compendyous Regyment on a Dyetary of Health," published about 1557, "in your bed lye not to hote nor to colde, but in a temperaunce."

and injurious, morally, to the character; and, worse than all, it is not sufficiently discouraged in our schools by those who are responsibly in charge.

One mode of effectually abating this indolence alternating with industry would be, to take more account of the general work of the term, and mark it higher, than of the examination at the end. This would entail a still further salutary effect, for it would make school examinations at the end of each term less of a test, and would thus abolish the habit of working for examinations—detrimental as it is to sound work and thoroughness, and fatal also to the attainment of real knowledge.

Let it be remembered here, that physical exercise develops muscles: mental exercise, brains: that excessive physical exercise deteriorates muscles, and arrests natural growth: while abnormal mental effort produces degeneration of brain tissue, and mars its due development. Further, excessive work and deficient food (whether from actual lack of food, or from relative deficiency, as shown where the food is normal but the growth extraordinary) enfeeble muscular tissue. And unduly severe mental work, combined with deficient food, and inefficient sleep pro ratâ, causes deterioration instead of strengthening of brain.

22. Besides these physical conditions, "**good temper, cheerfulness, and hope**" are essential: together with uprightness of life and purity of motive. Deeply important as is the preservation of physical health, I must prominently include moral health, or the former cannot exist in its fulness.

23. It is **not cowardly to fear to commit wrong**; and true courage is shown when a wrong done is spontaneously admitted and the consequences humbly faced. A coward makes an excuse. Acting a lie is worse than telling one.

24. And lastly, a boy should by all means resist **the formation of the character of a "loafer:"** the habit

once created will cling to him for life; and there is no more despicable creature in a school, or in "society."

Important as are these questions in personal hygiene, they are insignificant in the presence of those larger **sanatory** questions which involve the people, and which can only be effectively combated, in my judgment, during school life.

The day is not far distant when medical officers of schools will either instruct the teachers, or the children themselves before they leave school, in those laws of health which will assist them in the management of their own health, and thus aid in the **development of healthy children.**

The teachers can instruct the elder girls, before they leave school, in some of the **duties of motherhood,** and the importance of breast-feeding to the mother as well as to the child, and thus remove the "milk" difficulty which is answerable for so large an infant mortality, and which must be eradicated in these days of a diminishing birth-rate. It is insufficiently known that, of the whole mortality of this country, about one-fourth occurs during the first year of life. Of those infants who survive, about one-half suffer from rickets, arising from inappropriate feeding, which means more or less deformation to themselves, and deficient vitality for the race.

It can never be too early to instil into the child's mind, by degrees, the baneful effects on health, character, mind, and expansion of life of **excess** in **alcohol**: a teaching which involves the virtues of temperance in the adult, and of total abstinence in the child.

All the elder children can be taught in an elementary way the **nutritive value** of the **various foods,** and their **price**; and what constitutes nutrition, and its necessity for growth and work. Girls could be taught more systematically than is now the case the rudiments of **cooking,** especially the modes of rendering food palatable, without diminishing its nutritive value, and thus causing inanition or indigestion.

They might learn, too, that badly cooked food tends to incite the craving for alcohol by reason of the discomforts which ensue. And the teaching should be particularly enforced that while **tea** is beneficial to all, except the very young, excess is often followed by most injurious effects.

The child, too, should be taught that **tuberculosis** is more a *house-disease* than an infectious disease, and that its extermination can be effected by fresh air in the home, however small, and in the school-room, and by cleanly habits. Such instruction will aid in the prevention of the disease, and surpass in efficacy all the Consumption hospitals, inasmuch as they only attack the evil after it has originated.

By many means we *may* alleviate the range of intensity of tuberculosis in the present generation; but it is mainly through the education of the children that we *must* seek its prevention for the sake of the race.

The medical officers of schools can instruct teachers in the **early diagnosis of infectious diseases,** and thereby minimize these diseases in the early years of childhood during which they prove so fatal.

The elder children in all schools should be taught the meaning and value of **vaccination** and **re-vaccination**: what it has done in the past; and of what it is capable.

These are all vital questions bearing on the health and happiness of every child, and the time is ripe for teaching their rudiments at the school age.

XI.

DAY-SCHOLARS.

In speaking of day-schools I refer essentially to scholars who are of the age to proceed to a public secondary school. The consideration of primary schools is of too wide a character to be incorporated in this treatise.

Much may be said for and against the **day-school system.** To some boys it is an incalculable gain to be able to enter a good school, and yet reside at home, with the benefit of home influence, home comforts, and the society of mother and sisters, and the possession also of the discipline and training of home economics, home treatment in sickness, and home trials. To others, however, this plan is most detrimental, for under its conditions they fail to develop into vigorous and self-reliant manhood.

On the whole, it will be generally admitted, I think, that for nearly every boy the boarding-school involves the greatest gain: his work is done more efficiently: he has more time for play: the games are better organized; and he learns the most wholesome lesson—which should be impressed early in life—of finding his own level. He there develops also that good feeling of comradeship which is salutary to every boy throughout boyhood and in after-life, and secures the inestimable boon of staunch friendship which often lasts as long as life.

To the few who only receive harm from being away from home, and to some delicate boys, the privilege of attending as a day-scholar at a good public school is undoubted, but this is not yet sufficiently recognized by parents.

It would be very desirable, if it were more the fashion with parents who reside near a public school, to enter their boys as day-scholars, instead of regarding it as an imperative duty to send them away as boarders to a distant school.

It seems to me also that the day-school system, in connection with our great public schools, could be well extended with general benefit, if a certain house, or houses, were set apart for day-boys, where they would live and eat, work and play, under exactly the same conditions as those prevailing in boarding-houses; but with an absence of dormitories, so that they could spend their evenings at home, after preparation, and thus see their mothers and sisters every day, and sleep at home. They would thus secure some of the benefits of home and school life combined. By this means day-boys would be better able to join in school-games, and the great defect in the day-scholar-system would be removed. Further, the feeling of boarders *versus* day-boarders would be minimized, if not abolished.

For those who do not reside near a good public school, the system of boarding their sons at a school at a distance is a matter of absolute necessity, and not of choice.

I must not, however, consider the effect on the boys only, but also on the school itself where these boys are admitted. Where the parents are high-principled, and uphold the school authorities, conforming to school rules to the letter, day-scholars are a source of benefit to the school by the influence which they exert on the boy himself, and on the school friends who visit at his house; but where the parents are the reverse, and permit laxity in the boy's conduct, and in his observance of school rules, and where the home is ill-regulated, the practice may cause much mischief to the general tone of the school.

The **arrangement of work in the day-school system,** to which I have already referred (p. 274), is exceedingly judicious in respect of commencing only at

9 a.m.: allowing more time for sleep, and ensuring a good breakfast before work is begun. But this salutary element, I grieve to say, is far outweighed in some day-schools by an absence of provision for *play*, and an **excess of home-work** for preparation in the evening.

The latter is frequently the hardest toil of the day. It is work which requires the guidance of the teacher; and yet it has to be carried on without assistance, unless the parents provide a home-tutor, and at a time when body and brain are fatigued. I have heard of such children, often girls, sitting up at work until 10 p.m., and rising at 6 a.m. to resume the unfinished task of the previous evening. I know of others who work at lessons during meal-times, as well as in every spare moment, and, when uncompleted, continue them in bed, because parents insist upon books being closed at 9.30 p.m. Yet, it is often said of these children, that "they won't work," when the truth is that they are *too* willing.

In some day-schools the **physical education is as well organized as the mental**; while in others the school authorities have never realized that it is part of their duty to arrange any games, or even exercise for the boys committed to their charge.

This is one of the great disadvantages of day-schools as compared with boarding-schools, where games, more or less, form a necessary part of the education of the young. **No place is set apart for games,** and the work is so arranged that, in winter, no daylight is left during which the boys can play, for the school hours commence about 9 a.m. and terminate between 4 and 5 p.m.: whereas boys attending a day-school require as much exercise and play as those who are educated at a boarding-school. Boys allowed to grow up without having the benign influence of boys' games as an essential element of their education almost invariably manifest an undesirable precocity. By thus forbidding games during so many months of the year, the taste for them

languishes, and the vacations consequently tend to be spent in mere loafing, with resulting loss to character and vigour.

Moreover, all sound experience shows that adequate exercise is absolutely indispensable for production of the highest condition of vitality in the body; and the brain, as part of the body, participates in its increased power. It is most unreasonable to expect a healthy vigorous brain without a well-constituted body; and the converse is also true.

Yet, as I have stated, it commonly happens that no playground is provided for day-schools; as though a child's training could be effectually and completely accomplished in the school-room. Consideration has been almost exclusively centred on intellectual education to the neglect of the child's development as a composite being, and of the indisputable necessity of physical fitness as the basis of mental strength.

The influence of physical education on intellectual and moral growth has not received an adequate recognition in day-schools; and the law is not yet practically realized, that bodily and mental culture must be concurrent if an approximation to ideal development is to be attained. The physique of the succeeding generation chiefly depends upon the physical education of the present; and our vitality as a nation is involved in the sagacious settlement of the question. I very earnestly, therefore, emphasize the imperativeness of the acquirement of a playground for every day-school. In country districts little difficulty exists in obtaining ground for the purpose; while in towns the difficulty can be minimized, where ground is unattainable, by constructing the playground upon the roof of the school buildings, or by raising the school buildings upon girders to a sufficient height to enable an adequate playground to be formed underneath. In the former case, the children are exposed to all weathers, and have a plentiful supply of smoke and soot; but they secure a *maximum* of sun. In the second, they are protected from wet weather, and thus the playground

is always available; but the benefit from the sun is less. It merely requires thought and ingenuity to ensure a playground for every school, whatever its situation.

The extra cost per school would be amply repaid to every community in the enlarged vigour and capacity of the children committed to its charge. The associations of a playground, moreover, would exercise a salutary influence beyond the period of school days. The pleasant recollections of its games would accompany the child into youth and manhood, and he would be the more likely to prefer his former games to loafing, and to continue the familiar exercises of the past.

The best arrangement, in my judgment, for **exercise at day-schools** would be to allot from 2 p.m. to 4 p.m. every day to games, when the whole school is assembled, and to abolish the whole holiday on Saturdays. This would, I know, prove a distinct disadvantage to masters of day-schools, who often spend from Saturday to Monday away from home. But when one estimates the length of the vacations three times a year, it seems scarcely necessary or right to consider the masters on this point, when such consideration is purchased at the cost of the health, well-being, and character of the school.

Another disadvantage which must not be overlooked is, that **day-scholars may bring infectious illness** into a school unless vigilance and circumspection be exercised both by parents and the school authorities.

A careful consideration of this question is, therefore, imperative. When infectious illness occurs in the homes of day-scholars, three modes of procedure are possible:—

1. Ignoring it, and permitting the disease to spread with disastrous consequences.

2. Prohibiting the attendance at school of a child from an infected home, whether he exhibit the disease himself, or not, on account, in the latter case, of the possible conveyance of illness by the clothes from the sick to the healthy by means of a third person.

This plan is safe to the school; but a great obstruction to the education of a child, where the family is large and infectious illness frequent. The hardship, too, is severe pecuniarily, for in such case the child has to be absent from the school most of the term on account of the home-illness, while the customary fees continue to be paid.

3. Requiring the parent to provide a lodging for the day-scholar, to which he may be sent immediately an illness reveals itself at home. Here a certain period of quarantine is only necessary if the child has *not* suffered from the disease the time varying according to the nature of the disease.

In this case the head-master must be guided by some recognized table of the incubation period of diseases, such as is furnished by the Clinical Society of London, Vol. XXV., Supplement; by the Medical Officers of Schools' Association "Code of Rules for the Prevention of Infectious Diseases in Schools;" or by some authoritative modern work on school hygiene.

4. Permitting the sick pupil who is a day-scholar at a boarding-school to be treated in the school sanatorium; where, however, another member of the household is affected with the same illness the parents should find the pupil a lodging. This would be a reasonable arrangement; for infectious illness is frequently conveyed, in the first instance, from the school to the home. It would confer mutual benefit; though, for efficiency of protection, sufficient sanatorium accommodation would be requisite in order to obviate crowding.

As I have already discussed the question of morality in boarding-schools, it is merely necessary now to mention that **immorality in day-schools** is not unknown, and to urge upon school authorities the duty of vigilant and judicious supervision, since the moral infection sometimes becomes exceedingly prevalent, provided, as it is, with ample covert even in day-school premises.

XII.

GIRLS SCHOOLS.

The general education of English girls is still almost inconceivably defective in principle. Notwithstanding this deficiency, however, girls' schools, so far as I can learn, and observe, are quietly and unostentatiously showing decided improvement; but I should like to see the introduction of the alteration in the method of education that is requisite.

Much, if not most, of what I have advanced in these pages relates already to girls' schools, or will do so, I trust, in time. I would impress upon the head-mistresses, and Governing Bodies of these schools and colleges, the fact, that girls require and deserve the same care and thought now bestowed upon the education and training of boys: at present they do not generally receive it. For, as a rule, with some praiseworthy exceptions I willingly grant, they are unsuitably housed, unwisely taught, and most improperly provided for in respect of bedroom and bed accommodation. It is true that an emancipation of girls has taken place of late years, from traditionary and reprehensible restrictions in development, the happy effects of which are visible in their superior physique generally, and increased height, owing to the provision of playgrounds, and the eagerness of school mistresses to organize games.

Still, the **grave defect in most schools for girls** is the utter neglect of *physical education;* and the failure to perceive, if any difference be made, the *prior* claim of that

education to intellectual culture. We need strong, healthy, vigorous women, and not fragile, fainting, insipid creatures; and yet insufficient efforts are devised to produce them, during the only period in which this result can be achieved —the years of active growth and development. Their exercise, too often, consists of a stately walk in the streets, weather permitting: dancing, calisthenics, and deportment once a week: sometimes lawn tennis.

The exercise at present prescribed is not sufficient, nor is it of a suitable kind. Skipping, trapeze exercise, lawn tennis, swimming, riding, and rowing are more appropriate. Were girls allowed such exercises as part of their daily life, we should cease to see the frequent curvature of the spine, and consequent ill-health; and those wretched spine-boards, on which girls are still in some schools doomed to recline, could be used as "firewood." A girl's back is by nature long, and needs an appropriate chair with the support of a back during lessons; and during the three years of very rapid growth—from eleven to fourteen years of age—when the girl suddenly develops into a woman, rest on the sofa, or on Liebreich's reclining chair (Fig. 36), or in the prone position (Fig. 37) may also be permitted with benefit during the preparation of lessons. But the regimen for straight backs in girls must be thorough exercise for strengthening the muscles whilst they are growing, and not backboards.

Girls need exercise as much as—or, more than—boys; and yet, as I have pointed out, this requirement is most inadequately regarded in this country; and, just as in the allowance of sleep for the young, the error is on the side of too strict a temperance. Girls require as *lively* an exercise as boys, and would enjoy it quite as much.

In the education of girls the prime consideration is not work, or play, or sleep, or good manners, but **food.** And "lest we forget," I must at once press this condition home. The maxim in the feeding of the adult is "to rise

hungry from meals:" the maxim for the feeding of the young—especially during that rapid period of growth in girls—is that **they should get up from meals with a sense of repletion.**

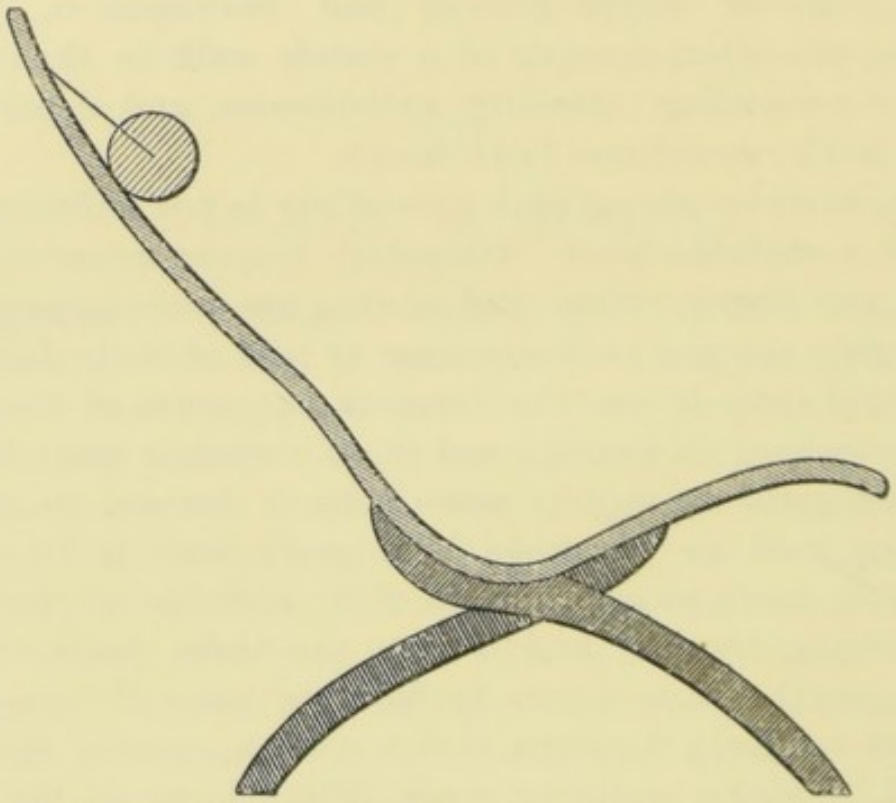


FIG. 36.—LIEBREICH'S RECLINING CHAIR OR COUCH.

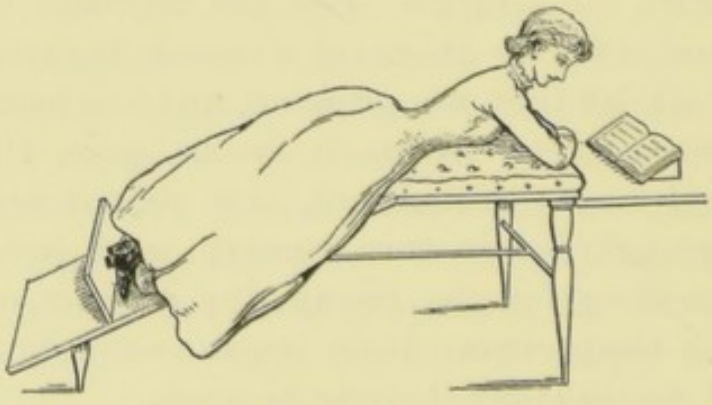


FIG. 37.—COUCH FOR PRONE POSITION. (AFTER NOBLE SMITH.)

The first lesson that should be instilled into the girl at school is the cultivation of a good appetite, and the absence of any shame in eating a plentiful meal four times a day.

Unless this practice be enjoined they suffer from a species of chronic starvation during the active years of growth. Hearty meals, which they should be encouraged to eat, and masticate well, with an abundance of milk instead of tea, are essential for their vigorous development and welfare.

It may seem strange to some who are really interested in the nurture of girls, that I should advocate their eating to a sense of repletion. This counsel, however, I deliberately and earnestly propose; for instead of any mischief resulting from the course, permanently beneficial effects can alone ensue, provided the food be plain and wholesome. The sole chance of surfeit arises when delicacies are consumed, and these should be taken sparingly, but not prohibited. The whole of my advice concerning the feeding of boys applies even more pertinently to girls.

In some girls' schools the feeding is most conscientiously carried out: in others, however, and some of these the most expensive, the food is most distastefully monotonous. Inferior bread is supplied: the meat partly consists of pork three times a week: the puddings are unappetizing; and the pernicious doctrine is impressed, that it is unladylike to possess a sound healthy appetite. They are taught that bread-and-butter, and light puddings constitute the most suitable diet. The product of this false system is the effeminate neurasthenic woman. The woman we desire to see—fresh, vivacious, vigorous in body, and sound in character—can only be reared where this teaching is discarded. The kind and quality of food required I have already discussed in previous pages, and more minutely in my work upon School Diet. I have spoken of variety of food: the necessity of good cooking: frequent meals; and time sufficient for their enjoyable consumption.

I would impress upon parents the fact that it does not follow from the largeness of a school, and the highness of its "terms," that all the preceding requirements will be

necessarily assured; on the contrary, the opposite condition sometimes exists, and "short commons" at each meal not infrequently prevail. I, again, insist, that serious harm is done to the girl, and her future happiness (as dependent upon health) largely marred, if she be made to rise up hungry from a meal.

The present fashion of education is the precise way to produce *girls* who are useless as companions: *wives* who live on a sofa; and *mothers* who are unfit for their duties. If greater pains were taken to form robust bodies, we should find more vigorous brains, and thus a double gain would result; but this cannot be effected without appropriate food and exercise, with abundance of time allotted for eating and playing.

Girls' brains grow with their muscles; and sound brains cannot be produced without compact muscles.

The **reason of the frequent breakdown of health in girls** directly they attempt hard mental work—shown, in some instances, in lifelong incapacitation; in others, in general physical wreckage; and again, in others, in servitude to hysteria and other neuroses—lies not in natural inherent poorness of physique, but in the fact that the impossible is attempted at school through disregard of physical culture. If the higher mental education of girls, of which they are quite capable without injury when judiciously trained, is to be realized, they must not be unduly pressed, as at present, during the years in which their growth and development are enormous, and their natural appetite for food equally Brobdingnagian—that is to say, from the ages of eleven to fourteen, when they leap, as it were, from childhood to womanhood at a bound: at this stage all their nervous force is expended in physical evolution; moreover, school mistresses must recognize the difference of constitution between boy and girl. **Continual application to work** from day to day, from week to week, and from month to month, should

never be enforced on girls; nor should they be allowed to make these efforts. Periodical cessation and rest should be both encouraged and enforced.

Above all, their **mental education** must proceed *pari passu* with a thorough physical education: or, with rare exceptions, the attempted divorce of intellectual culture from bodily training must end in failure, perhaps in serious and permanent misery. If at the present time this course cannot be arranged, let the mental education remain stationary, and the physical education be undertaken more completely, so that by degrees girls may be prepared for the higher intellectual development, and become better adapted for their duties as women.

At present a girl's education is *effeminate* to a degree: the aim should be to render it simply *feminine*.

I further condemn the neglect, as a rule—happily not without exceptions—of the morning cold bath for girls: nothing more sensibly tends to create health and strength, apart from the question of cleanliness. Girls are usually restricted, to their great detriment, to a warm bath once a week.

Girls are, naturally, more subject than boys to nervous excitement, but this could be more effectually restrained by a sounder physical culture. Defects in eyesight, too, unremedied during childhood, will not only foster, but create a nervous constitution. In his paper on the mental affections of childhood and youth, Dr. Langdon Down writes:—"If there is one thing more certain than another about the production of *Idiotcy*, it is the danger which arises from the culture of only one side of woman's nature. There can be no reason why the faculties which they possess should not be cultivated so as to make them not only fit to be 'mothers of men,' but also companions and helpers. My statistics point to the importance of training our sons to be temperate, and our daughters to be self-possessed."

On account of this nervous condition, I think that, as a rule, **competitive examinations for girls** are injurious. Witness the terrible breakdowns which so frequently the physician sees resulting. If this age be one in which young people cannot live unless they are competing, let us err on the right side; and let our girls be taught to excel in every womanly exercise, in preference to nervous excitement, and a preternatural development of the emotions. But why are our girls what they are? Some of them nothing but nerves, others nothing but emotions, others ready to faint on any, or without any, provocation. They are simply **suffering from their faulty education,** their narrow mode of life, and their preposterous fashion of dress. More muscles, and less nerves, are wanted in girls, if health and vigour are to be secured.

The bodily strength, and soundness of constitution of future generations depend, it is needless to say, as much on the health and stamina of our women of the present, as on those of the men.

The absence of daily, regular, and sufficient exercise, such as is afforded by **girls' games**, renders girls listless and apathetic: entails pallor of countenance: constipation with its sallowness, foul breath, and depressed spirits: crooked and stooping backs: knock-knee and flat-foot with characteristically awkward gait.

It should be the aim of parents and teachers to instil into girls the fact that Nature, in providing for the survival of the fittest, has enjoined that a clean and clear skin, clean and glossy hair, clean white teeth, and a light, springy, graceful gait will cause their society to be sought after; while a muddy, spotty complexion, a scurfy head, uncleaned teeth, and an awkward gait will cause their society to be shunned. If, too, the **physical education of girls** were more heeded during their growing years, there would be less emotional disturbance, less neurotic disease, and the bloodlessness of girls, at present so usual, would be less frequent;

for all these defects of girlhood arise mainly from the absence of efficient exercise and recreation, and from the one-sidedness of their education.

The remedy, again, for cold feet, and chilblains on the hands and feet, which are so common amongst growing girls, is at least two hours' good hard exercise daily, instead of fires in bedrooms, hot-water bottles in bed, and hot water with which to wash!

At the present time **the mental training of girls is too high in comparison with their bodily training,** with consequent deterioration in development, in health, and in character. They should be taught that it is their duty to become physically strong. The necessity of being vigorous, as well as graceful, and the possession of natural, instead of artificial, shapeliness should be urged. But they must understand that this perfection of body can only be reached during the period of youth, and through physical culture, by which I mean games and amusements, and not "exercise lessons." This appropriate exercise not only involves muscular development, but is certain to produce a vigorous nervous tissue and brain capacity, and, above all, that strength of character which is so fine a trait in women. Those who are **delicate in health must be safe-guarded,** however, against more work and exercise than their physique will sustain, so that no possibility of strain may result—the surest test consisting in the periodical use of the scales and measure.

In order **to carry out the requisite physical education of girls,** I would categorically insist:—

1. That in girls' schools, day and boarding, a *playground* should be provided. There was a time when even the suggestion of this course would have created a laugh and a sneer in some quarters, for the greater proportion of girls' schools had literally no place of any description arranged for play.

2. That the necessary *time should be set apart* for play. That no girl should ever be longer in school than an hour

without a "break," so that she may stretch her rapidly growing limbs, use her lungs fully, and have a mental rest, and then a change of subject—the schoolroom meanwhile being freely ventilated.

3. That a *suitable flannel dress* should be worn, to enable the limbs and ribs to move without restraint. This dress should be put on just before playing, and taken off after the exertion has ceased. It will not do for girls' schools to advertise "that the girls wear special suits for games," when it is diplomatically omitted to be mentioned that these suits are worn throughout the day, at work and play, and thus defeat their main object.

4. That, above all, appropriate exercise and *games should be organized*, and varied as much as possible, in order that the whole frame may be developed in due proportion, never forgetting the character of the female constitution.

An infinite variety of ways exists in which **suitable exercise for girls** may be systematically devised. Up to the age of puberty the same exercise should be common to both sexes: after that age the games of girls should *gradually* merge into an exercise of a quieter character.

Such exercises as *walking*, *running*, *skipping*, *swinging*, and *jumping* are capital; but walking should be in the country, with perfect liberty of pace and choice of friends, and should never be enforced as a regulation march. In the Olympian games (and the Greeks were masters in the art of physical training), the *footrace* was considered a suitable exercise for maidens, the length of their course being one-sixth shorter than that prescribed for men. *Dancing* is a splendid exercise when performed at reasonable hours in appropriate rooms, and tends to produce the grace of movement which is essential to a woman's education. *Gymnastics*, such as light dumb-bells, parallel bars, the trapeze, rings, horizontal bar, and ladder exercise, may be safely used and with the greatest benefit. These exercises

form a valuable resource, too, on wet days. *Drilling*, and especially the military *physical drill*, with music, is very useful in producing an upright carriage. There is no better or more suitable exercise than *riding*. *Swimming* is cleanly, and would remove the tendency to "nerves" more than anything else: it is serviceable, besides, to others as well as to the agent herself. *Skating* is invigorating and health-giving, and comes at a time when there is more or less a deficiency of means of outdoor exercise: every available moment, therefore, should be granted for this exercise and enjoyment, and work might be well stopped for half the day—as the opportunity for skating recurs so rarely in this country—even if more time were devoted to work when the ice had broken up. Moreover, excellent exercise might be obtained for girls by the use of roller-skates on a good asphalte floor.

Rowing provides one of the best of all exercises for girls. It so strengthens the muscles of the back, that weak backs would be straightened, and the curved spine and outgrowing shoulder-blade would become morbid conditions of the past. The exercise also develops the chest, and the abdominal muscles, together with the arms and legs. It should not be allowed, however, unless the girl has previously taken the trouble to learn to swim.

Cricket forms a delightful exercise for girls: with *lawn tennis*, *racquets*, *fives*, *la crosse*, *golf*, *hockey*, *ringoal*, *croquet*, *base-ball*, and *battledore and shuttlecock*. And if girls were encouraged to measure, mark, roll, and mow their own tennis lawns, it would not only furnish a diversity of exercise and occupation, but would at the same time enforce the excellent lesson of acting for themselves, instead of being helplessly dependent upon others.

Cycling is also a species of exertion of incalculable value.

Gardening would suit many a girl incapable of more active efforts; and causes infinite pleasure and interest. *Natural*

history excursions, music, art, and drawing should all be assigned a place in the curriculum of exercise.

Were such schemes of physical activity faithfully carried out, girls would not require special "lessons in deportment;" for, the muscles being rendered strong and elastic, grace and ease in their carriage would naturally result.

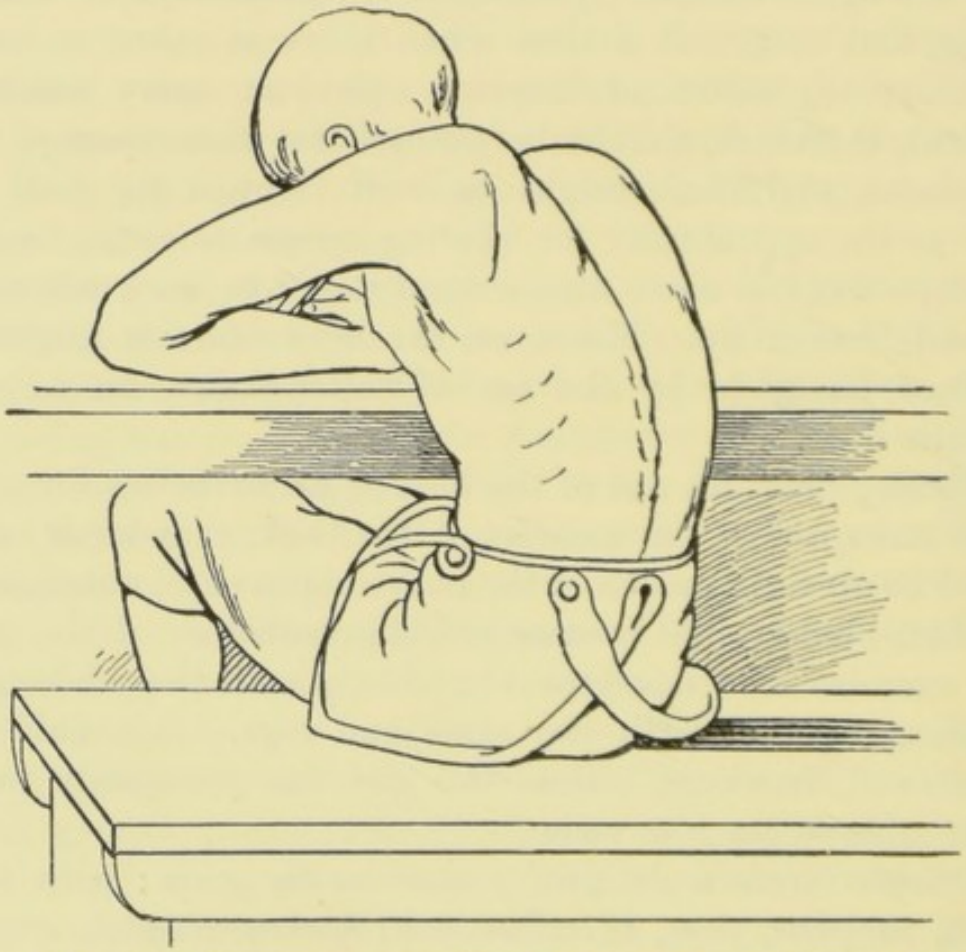


FIG. 38.—LOUNGING OVER TABLE WRITING OUT LESSONS.

By these means the female figure would be improved, and its persistence in staying power enhanced: concurrently would result larger mental vigour, increased power of application and quickness, greater brightness in disposition, and stability and force of character.

Some of the **defects in girls' education leading to deformities** must be glanced at. One arises from the

excess to which the practice of requiring lessons to be *written out* has been carried (Fig. 38); for, with improper seats, unsuitable desks, imperfect light, and several hours' continuous work, instead of an hour in and an hour out, the pupils become so fatigued that they lounge over the table, support the head on the hand (Fig. 39), and a curved



FIG. 39.—LOUNGING AND SUPPORTING HEAD ON HAND OWING TO FATIGUE OF BACK.

spine and prominent right shoulder result. In fact, it is difficult to find a growing girl without an abnormally curved back, one-sided shoulders, a projecting shoulder-blade, and a tilted hip.

It is prolonged, forced inactivity which mainly leads to these injurious postures. Sitting still for long periods is unnatural to all children; and no hygienic seats, or desks,

will compensate this defect, however helpful they may be in other respects. Children should, therefore, be made to sit, or stand, in *good order*. With this object there should be frequent changes of position, and no one should be allowed to stand in the same posture for more than five minutes at a time, and not even so for more than three or four times a day. But bad positions in sitting are more harmful than while standing, as they are continued longer; and become more readily confirmed in girls than in boys, on account of the comparative inferiority of their physical

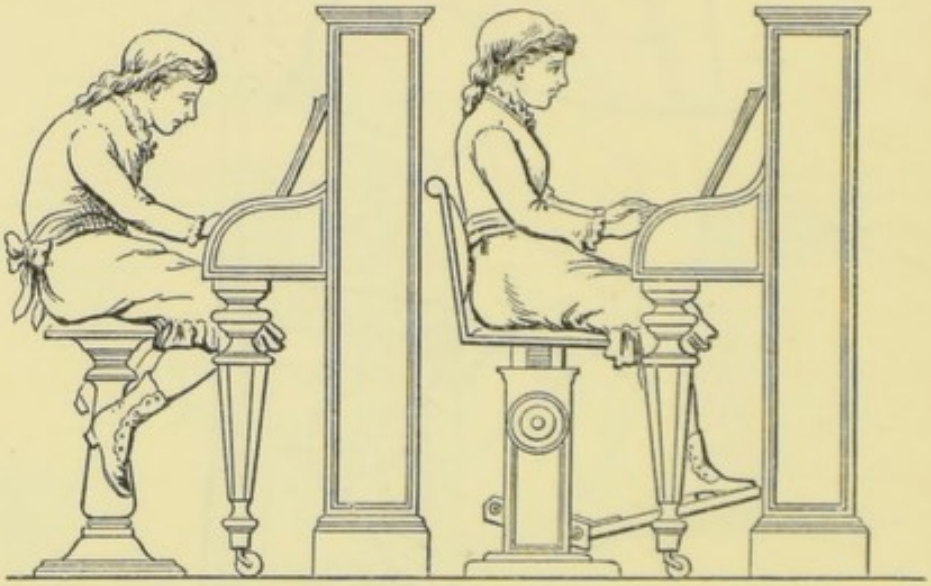


FIG. 40.—SITTING AT THE PIANOFORTE. (AFTER ROTH.)

activity, which, when vigorous, tends to counteract these injurious effects.

An improper position at the piano, where girls spend a considerable portion of their time, is another cause of deformity of the spine, as is seen in the accompanying drawing (Fig. 40).

But lateral curvature of the spine is not entirely owing to the causes above mentioned: it is partly due to the artificial support given to the spine during the years of growth, and the general constraint of the modern dress.

These prevent the muscles obtaining adequate healthy exercise, even where permitted. In the absence of this effective exercise, the unexerted muscles of the spine become weak and flabby, and quite incapable of supporting the trunk in the upright position (Fig. 41). It seems, unfortunately, still to be necessary to teach that muscles cannot become elastic and vigorous without sufficient physical use. The spinal muscles of the girl waste, and allow the spine to

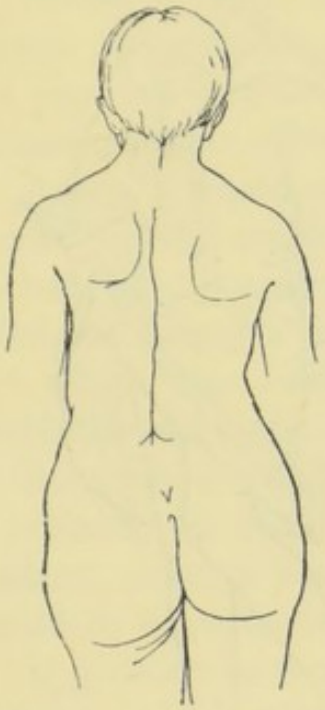


FIG. 41.—SHOWING LATERAL CURVATURE OF SPINE.

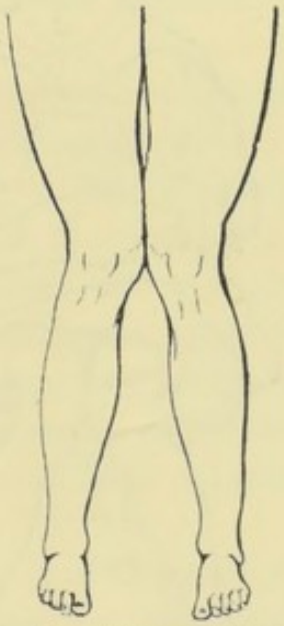


FIG. 42.—"KNOCK-KNEE."

become deformed by reason of their consequent incapacity for the required exertion. *High-heeled boots*, too, not only cramp the feet, but deform them, together with the spine and pelvis—an effect which cannot be too strongly deprecated in growing girls, who are expected to become women and mothers.

Girls, again, become knock-kneed and flat-footed (Fig. 42), causing the most ungainly gait, in consequence of the way in which they are taught to sit, and allowed to stand.

This deformity of knock-knee absolutely prevents a graceful or elegant carriage of the person.

For instance, they are taught that it is unladylike to sit with their knees apart, and accordingly they keep the knees together and their feet apart, with the result

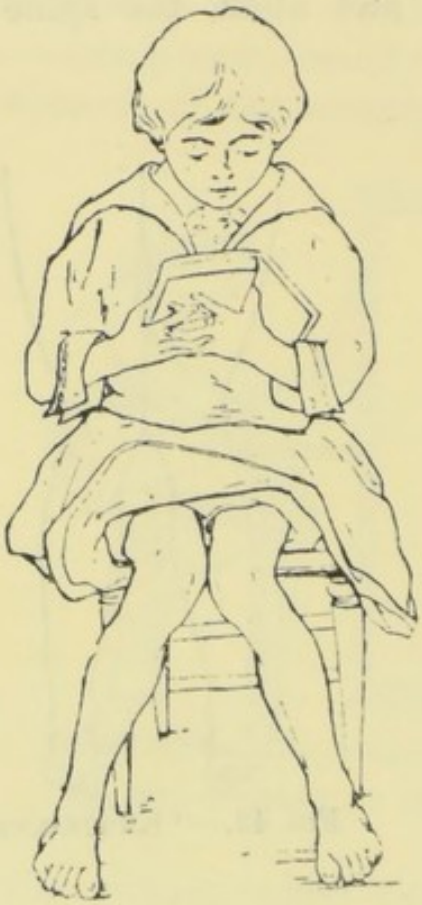


FIG. 43.—SITTING AT LESSONS.



FIG. 44.—STANDING AT LESSONS.

shown in Fig. 43. When standing at lessons the posture is usually that depicted in Fig. 44, and as each leg tires, it is rested in this position, producing knock-knee and flat-foot.*

Such deformities of person need not exist: they would be

* As these drawings were taken from life, they were more conveniently drawn from little children.

unknown if more care were exercised at school in developing the bodies of girls to a high standard of beauty. An effective way of preventing knock-knee and flat-foot in girls is to require them to sit, while learning their lessons, in tailor-fashion.

Another excellent position for learning lessons, and preventing or remedying a curved back, is that of kneeling at a table, which avoids stooping, and restores the natural curves to the spine.

These requisite changes will only be carried out in our schools for girls when parents and the public demand, that the physical education of girls shall form an essential and integral portion of their school training.

Again, I would urge that the education of growing girls should not be acquired at the expense of motherhood: we do not want crammed heads, but strong well-made bodies, fitted for Nature's requirements. There is no sphere for the girl which can excel that which comprises the virtues of **motherhood**; and if teachers and parents were more alive to their duties, and would see that education consisted more in training the girl for the beneficent occupation of a **home-maker,** what a vast amount of happiness and usefulness would be engendered!

If girls are to receive a higher culture, it is their physical training which must precede any increase in their mental education. Without this the process cannot be safely effected; for mental powers too highly developed in women involve a physiological cost, which her feminine organization will not sustain without injury more or less profound.

It is more **essential for a nation to produce vigorous offspring,** than to educate girls to the highest standard. By the highest *physical* education girls can be rendered strong, comely, and well-proportioned: while by the highest *mental* culture (without this physical basis) they *may* be transformed into mere "blue-stockings," or neurotics, or a combination of both.

By physical education I mean *games* and *recreation* which cheer and elate as well as exercise: not merely gymnastics and physical drill, which simply afford exercise without enjoyment, and are curative rather than animating. These latter forms of exertion are mainly for the sickly and deformed.

By physical exercise, too, I mean exercise taken out-of-doors: without this condition, at least half of its value is lost. Every educator of girls should feel disgraced by the lounging attitudes, and awkward gaits, which prevail at so many girls' schools, with their lop-sided shoulders and crooked backs; for in these traits is manifest the vicious system, or absence of system, of existing education. **Symmetry is of paramount importance in women for ensuring normal race-production, and healthy offspring.**

While I hold that girls, subject to the restrictions I have laid down, may safely receive a higher education than has hitherto been accorded, I would urge that their **moral education** is of more consequence to themselves, and the nation, than their purely intellectual development. With a physical education which is their due, we should, almost in a generation, eradicate the neuroses and the anæmia which so widely prevail. In their place we should perceive more serene spirits, and larger stability of character: the aping at men would disappear in a more dignified respect for the qualities and position of their own sex.

The advice which General Sherman gave to his daughter on parting with her for school life is so excellent that I make no apology for its insertion:—

"When you study, study hard; learn to apply yourself so that when you are at work you think of nothing else, and when you are done with your books let your mind run free. I have seen a great many young ladies, and know that such are most interesting who are not forward or

bashful—the truth lies between. Modesty is the most beautiful feature in a young girl, but should not degenerate into bashfulness. Think yourself as good as any, but never think yourself better than the poorest child of all."

I have expressed myself strongly upon the subject of the physical education of girls, because I feel that they are gravely neglected. The life of a boy at school is paradise compared with the lot of most girls, whose day is almost exclusively wasted in lessons. It must be the teacher's beneficent aim to effect the requisite changes for ensuring a superior physical culture for girls.

The observations I have made concerning **morality,** I would repeat here in a modified form, but in a tone no less impressive, since the subject is even more important for girls; and I would urge mothers to warn their daughters of the existence of evils in acts as well as words, and even acquaint them with some of the physiological facts which are discussed freely amongst girls at school. It is better for a girl to learn such facts purely from her mother, than from the loose talk of school-fellows; for it must be remembered, as a difficulty which has to be faced and not shunned, that there is an *innate* curiosity in young human nature—male and female—which *will* seek to be satisfied; and which, if not allowed its fitting satisfaction in the acquisition of virtuous knowledge, will degenerate into a vicious pruriency. "Whence came I?" is as natural a question for the child to ask as, "Whither am I going?" is for the adult; and it should be truthfully answered by the parent in a spirit of purity.

XIII.

VACATIONS.

Closely connected with school life, although not forming part of it, are the periods of rest between the terms at school.

A holiday, a boon to all workers, is a necessity for the young who work hard during their years of growth. Most of our large public schools give about four months' vacation in a year: seven or eight weeks in summer, four or five weeks at Christmas, and three or four weeks in spring.

A **Uniformity of Vacations is advisable** in schools. The spring vacation is movable, and depends on the date of Easter Sunday, which occurs on some day between March 22 and April 25. It would be much more convenient for all, if the spring holiday were fixed, so that it always commenced at the same time, irrespective of the date of Easter Sunday; for even then Easter Sunday would most frequently be included in the vacation.

By this means each term could be equalized to twelve weeks, and the Christmas and Easter vacations could be either five and three weeks respectively, or four and four weeks in adaptation to the individual arrangements of the schools.

As at present arranged the *spring* vacation is a source of so much inconvenience to parents who have children at several schools, that the question deserves the earnest endeavours of school authorities to adopt a uniform period

for this vacation. Parents naturally desire to have all their children home at the same time; while, however, schools vary in the date of their spring holiday this desirable result is impossible. If the universities can uniformly carry out so excellent a plan, why not schools? It is certainly a matter that is ripe for the next head-masters' conference.

The **purpose of the vacation,** which some parents seem unable to understand and therefore continually grumble at the holiday, is, that the pupil and master shall, after hard and prolonged work, obtain a period of rest, or, at least, a change of scene and occupation, for the sake of health, and consequently for the fully successful prosecution of their duties. As education is now conducted, vacations are an absolute necessity to the welfare of the pupil. It would, indeed, not be amiss if they were, for a season, totally abolished, for the reason that schools could then see for themselves that the present vicious course of overworking the young could not be continued, inasmuch as, in many cases, there would be neither pupils to teach, nor teachers to instruct, and thus the system would necessarily become rectified, to the advantage of both.

Owing to excessive work, and insufficient sleep during term-time, growth, again, without the intervening aid of vacations, would be more stunted, the nervous system more jaded, and disease more frequently generated.

It will be of interest to watch the working of the new secondary schools instituted under the new Education Act and compare them with the endowed public schools, for they will not have anything like the length of the vacation enjoyed by the ancient foundations. What will be their effect upon the university distinctions?

Teachers, on the other hand, frequently regard vacations as an opportunity for extracting more work from the unfortunate pupil. Happily, however, most pupils do not

respond to the occasion; while those who do, are the very pupils who most require their well-earned rest.

There is a further, and equally important, reason for holidays, disregarded for the most part by some parents, but fraught with a priceless gain to others and their children. School-boys on the average are absent from home for about ten years. Are these ten years of such minor value to the child, that a parent should separate him from his brothers and sisters, and hand him over to the care of strangers, at the most critical period of his life, without a chance of exerting any personal **home influence?** It is only by means of the vacation that parents can "keep touch" with their children at all.

The sooner we cease to hear of the grumbling of parents about the length of holidays, and the sooner they more generally strive to understand their children's characters, and to infuse into them a wholesome home influence during vacations, the deeper and more permanent will be the benefit to the children, the schools, and the world at large. More personal and sympathetic intercourse between parent and child will tend, if parental responsibility be duly recognized, to make parents hail the holidays as fruitful opportunities for the fulfilment of their duties in cultivating the characters and ensuring the happiness of their sons and daughters.

But why do we hear these periodic murmurs? Because, at school every hour is occupied; whereas at home the parent avoids the trouble of providing hourly occupation and pleasure for his children: the holiday time thus drags heavily, the child gets into mischief in consequence; and the parent "wishes those schools would not give such long holidays."

The holidays are not any too long for health; or for affording fitting occasions to the parent for knowing, loving, and influencing his family.

Vacations involve another valuable use, especially for

delicate boys, and for those who fail to thrive in a normal way. The aim of parents ought to be, not only to educate their children well, but also—and far beyond this object—to gain for them a sound, strong constitution, in spite of unhealthy progenitors. In previous pages I have pointed out that a healthy standard can be obtained, but only during the years of growth and development, that is to say, the years chiefly passed at school.

There is a large class of school-children, who, while never ill, yet, so to speak, are never well. Their *vitality* being low, their health is generally below par. Their *work* is a burden: they manage it, but without pleasure or satisfaction. At the commencement of a term, when they are somewhat fresh, they work fairly well. At the end of a term they become jaded, and other boys, their inferiors in ability, but their superiors in physical stamina, pass them with ease. The teacher complains that such pupils are listless and dull, and expresses the opinion that they do not strive to do their best; in fact, the work levied is so much in excess of their strength that all their endurance and capacity are dissipated. The teacher does not appear to realize that the receptivity of the individual brain, especially in those of feeble health, is not capable of exceeding its normal limits; hence the nascent brain is damaged as the result of this unreasonable proceeding.

Their *appetite* is poor and fanciful: they desire dainty dishes rather than wholesome plain food, and always crave for what they cannot obtain. They constantly suffer from indigestion owing to debility, and to partaking of what is unwholesome and unsuitable between meals. They readily "*catch colds*," which are difficult to shake off: they fail to *grow* as Nature intended; or, if they do grow, their weight decreases.

In a word, brain and body are unequal to the tasks enjoined: growth is in abeyance in quality or quantity,

or both; and there is a general depressed state of health with its attendant discomforts. Those in charge are troubled with the ever-present fear of illness arising; and illness, when it supervenes, too often leaves behind a chronic ailment, or reduces the vitality to a serious degree. Yet, unhappily, no one dreams of attacking the *cause* by diminishing the work.

With a view to obviating this low condition of health, especially where family delicacy exists, and removing it where it has arisen from illness and other causes, parents should avail themselves of the splendid opportunities afforded by the four months' annual holiday incidental to school life, and exercise every endeavour to induce the highest condition of health by resorting to the seaside, a sea-voyage, or mountain air. Parents do not sufficiently take advantage of these aids: they expect, and naturally so, that their sons and daughters should work diligently at school for eight months in the year; and yet, when they observe a depressed state of health and imperfect growth resulting, they do not seek by every means to overcome the evil. The child accordingly suffers throughout life from insufficient regard to existing conditions. What occurs at present is that the boy's *spring* vacation is spent in a town, or possibly in some low-lying, damp country residence. A *part* of the *summer* vacation is usually passed at the seaside, or in some equally favourable resort; while the *winter* vacation is occupied by evening parties, heavy or unsuitable suppers, and an attempt at imperfect rest some hours after midnight. I need not say that this is the worst possible scheme of life for a delicate child. As a consequence, such children frequently return to school, although they have been free from mental work during the holidays, in a more enfeebled state of health than before the school term had ended. This would not occur if parents were more thoughtful for the welfare of their children; for obviously they should return to school more vigorous after their rest, and fitted to cope more effectively

with their work. I, therefore, impress upon parents the imperative duty of utilizing the vacations for recruiting the health of children who are incapable of severe work, and fail to grow. There would then be fewer complaints to teachers that the pupils are dull; and we should, by developing stronger bodies, improve the race.

Periodical Brain Rest is a necessity of Nature. When this world was formed, it was ordained that all living things, vegetable and animal, should enjoy rest. Subsequently it was enjoined that "in the sweat of thy face" should man live. It was decreed that there should be a daily rest, and a periodical rest once a week, and, again, once in seven years.

The exercise of function involves consumption of structure. Repair demands repose. If the work performed transgress the necessary period for repair, damaged structure ensues. Hence the importance of clearly understanding that *ex nihilo nihil fit* in the education of the young.

No vegetable or animal tissue can perform its functions without repose. The heart itself, frequently instanced as an example of continual action from birth to death, gains a period of rest after every beat, equal in length to the duration of its two contractions, and amounting daily to twelve hours. Growing tissues, again, require rest for replacing the result of wear and tear, and an additional supply to provide for growth and development.

Half-holidays are a necessity for teacher and taught; since the most excellent part of education and training is effected during them in the form of school games. They are as essential for the development of the body as work is for the development of the brain, and they assist largely in the formation of character, by affording opportunity for **school friendships,** which are frequently the most valuable in life.

I would, again, urge, what I have already previously discussed, that it is unwise, nay, that it is unfair, to allot a

half-holiday with the right hand, and take it away with the left in the shape of impositions. The child who suffers the most punishment is usually he who needs the most fresh air and exercise for his work and health—in fact, he is often lazy, troublesome, or mischievous solely through their absence.

Sunday is usually called the "Day of Rest." At schools, and especially at boarding-schools, this is a misnomer; for Sunday at school is a real working day, and rightly so. Where this is not the case, and the day is one of idleness, the strain upon the teachers must be severe; for, with neither work nor supervision, some of the worst friendships are formed, and some of the greatest bullying occurs.

The ordinary worker in the world, who properly employs his Sundays, has fifty-two days of rest, or seven and a half weeks' holiday in the year, and if Holy days and "bank holidays" be counted, over eight weeks of annual repose. The pupil at school forfeits, and justly, from thirty-six to forty-six Sundays, *i.e.* about six weeks' rest. Thus school-children who have sixteen weeks' holiday in the year (which is the maximum) lose six weeks' rest in these working Sundays, so that their holidays amount to about ten weeks' rest only in the year. If, then, school punishments are levied from half-holidays, and the holiday task is added to the working Sundays, how many days' recreation do children really obtain? An amount entirely insufficient for the work which is demanded! To deprive them, therefore, of their well-earned holidays is a policy which needs merely to be mentioned to be stigmatized. This just arrangement, however, is constantly violated to a degree that deserves express condemnation.

I altogether protest, therefore, against **holiday tasks**: they show neither "rhyme nor reason."

Holidays being intervals for recruiting, and change of occupation, no work should burden them.

If the prevailing feeling throughout the country between teachers and parents be that the holidays are too long, by all means let the effect be tried of curtailing them for a season, and let the result be watched. But to assign a certain period for needful rest and recreation, and then abstract a portion of it, in the form of a holiday task, is simply a pious fraud which injures all. To the industrious boy—who surely has well deserved his holiday—it stands as a grim spectre daily throughout his holidays, as something that *must* be done, and his last few days are entirely spoilt. To the lazy boy it is simply a matter of perfect indifference, and I suppose he never opens his book until he has actually returned to school, or is on the schoolward route, when he bestows an unprofitable glance upon his task. There is another kind of boy who, when his holiday task is given, asks himself the natural question, *Cui bono?* This he answers in a way which satisfies his own conscience: he accepts the books, for which his father pays, without even condescending to trouble himself with their contents.

Whatever holidays, then, are allotted, let the pupil enjoy them in full measure, without discount.

I have never been able to understand for whose benefit the holiday task is set. It surely cannot be maintained that it does the pupil or his tutor any good. Is it supposed to be a boon to the parent? There is only one aspect about it which I am able to see,—that it is a pious fraud, manifest enough to the dullest pupil.

Moreover the late Archbishop of Canterbury, Frederick Temple, a renowned teacher, said, on December 21, 1898: "It is my experience that within a fortnight or three weeks of the resumption of school, the boys who had followed their desires, and simply read when it pleased them so to do, had immeasurably surpassed those who had been studying all through the vacation."

As there are many teachers, however, who still believe

in the efficacy of holiday tasks, and although I feel very keenly that children should be allowed to follow their own bent in vacations without the shadow of school lessons, I would urge that **the holiday task should assume the subjoined form** as an alternative, until this essential need of rest be completely grasped.

I suggest that some small prize, or at all events substantial marks, might be fairly awarded for the following holiday work:—

1. A prize for the best natural history collection obtained solely during the vacations of the year.
   - α. Butterflies and moths, or insects, mounted and classified.
   - β. Wild flowers, ferns, mosses, or seaweeds, dried, mounted, and classified.
   - γ. Shells, fossils, or minerals.
2. A prize for the best piece of turning or carpentering.
3. A prize for the best sketch from nature.
4. A prize for the best map of the home neighbourhood, or the place visited.
5. A prize for the best recitation, composition, or diary of a tour.
6. A prize for the most accurate observations in any subject that may suggest itself, with a view to fostering or exciting originality.
7. A prize for *speaking* one of the modern languages learnt while resident abroad during the holidays.

The chief aim in most of these occupations, it will be observed, is skill in manual work rather than the cramming of book-knowledge.

There is another phase of holiday tasks in existence which is literally a farce—so ludicrous that its citation would be more appropriate in a "comic paper" than in this treatise. Some schools allow a mid-term holiday—an "exeat"—of a few days, and it will scarcely be believed

that a holiday task is levied from the boys during this brief period! Comment would only detract from the ridiculousness of the proceeding.

But while I very strongly object, as a matter of school routine, to holiday tasks being assigned to all boys, I think idle boys could easily be converted into industrious ones, with infinite gain to themselves, their masters, and their school-fellows, if parents would follow the excellent course adopted by an intimate friend of mine, as a **remedy for the boy who is idle at school.**

He had two sons at a public school, and received a very unsatisfactory report in mid-term on account of their idleness. Their father did not chide them: he simply desired to cure them permanently. He, therefore, wrote and told them, that if he received such a report again, they would be required to perform their neglected work at some time during the year: that they could choose their own time; and that it was quite immaterial to him when the work was done. If they preferred the "term" for play instead of work, he had no objection, but the money he would have spent for their enjoyment during the vacation must be employed in providing them with a private tutor; since they must not expect to be permitted to play throughout the year.

At the end of the term, however, a similar report of idleness arrived. Nothing was said to them; but the following morning the private tutor appeared, and they were compelled to work daily throughout the vacation, to their intense chagrin.

This was a very simple arrangement—nothing but a transposition of work and play. The boys themselves chose to have their games at school and their work at home, and this they had—but only for this particular term and vacation. They saw their father was in earnest, and a permanent cure ensued.

Could a more suitable punishment—or rather, *remedy*—

have been found? Here wrong was committed by the boys' laziness, and the remedy or punishment, suitable, forcible, and natural, inexorably descended upon them.

I believe there is a similar remedy to be discovered for the intellectual and moral ailments of every individual boy, if only those in authority would seek.

Throughout the vacations, the whole of **the school premises**—including the class-rooms, chapel, dormitories, studies, and halls—**require to be kept aired** by opening the windows every day. But at the close of the vacations it is imperative that all the premises, and the beds and bedding, should be thoroughly warmed for at least three days (and in cold, damp weather, for double that time), before the reassembling of the school; and, again, I must repeat, that fires are a necessity for health in that kind of weather, whatever the date of the month may be.

Without this care, illness must always supervene in the early days of every term. Who would ever dream of residing in a previously unoccupied house without airing and warming it? Yet this precaution is too generally neglected in schools, to the serious detriment of the pupils.

XIV.

CONCLUSION.

All will admit that school life should be perfectly happy and healthy—the happiest and healthiest period of life. In these pages I have endeavoured to show how this result may be attained.

In considering the entire life of a boy at school, from the time he enters to the time he leaves, I have—though imperfectly, I feel—endeavoured to show what tends to increase, and what to deteriorate health: what surroundings are necessary for securing the highest state of vigour; and what are the causes, near or remote, of disease. I have also sought to point out that if there be one arrangement worse than another for a boy, one condition more detrimental than another to a whole school, it is that a boy should be placed under the care of a master who is lax in discipline, and has not the capacity of management. As a friend of mine has very aptly put it: "A good disciplinarian is not a man who punishes disorderly boys; he is a man in whose presence boys never think of being disorderly;" for a boy has simply the greatest conceivable contempt for a master—and there is no severer critic than a public-school boy—who is deficient in the power of control.

The existence of good masters—masters naturally commanding respect for character and just administration, no less than for learning—is essential to the production of good boys.

It will be said that I have spoken strongly about the evils of our great public schools. This I admit; and these schools are so vigorous that they can afford to listen to candid speech. But I have done so in no carping spirit. Our great schools are the glory of this country: their admirable points are universally known and allowed. But I cannot be blind, in my love of them, to their faults: they can be improved, and it is better that this improvement should originate from within, rather than be enforced from without. Their defects must be eradicated. Those in authority—it may be from lethargy, perhaps from blindness—frequently do not do their best to minimize the evils that must exist in all human institutions. Facts can only be seen by those who are on the search.

Masters punish detected evils severely enough—often too severely; but they do not generally take the trouble to *seek out* the evils, mental, moral, and physical, and their causes, and strive to *prevent* their occurrence by appropriate provisions, as the physician does in the case of disease. They seem only capable of dealing with the evils when they *have been* committed, and too frequently little care, forethought, and prudence are taken to *prevent* their commission.

Very often it is not so much that individuals are wrong, as that a pernicious *system* exists, causing all the evil, and demanding an inherent alteration rather than the punishment of the individual.

The profession to which I have the honour to belong has ever been in the van in reforming wrongs. It has always possessed the courage of its opinions, and has ever been at the beck and call of distress—the more deadly the disease, the greater the sin, or sinner, requiring assistance, the more hearty and willing has been the help afforded by the medical profession.

In my endeavour to point out defects, and their remedy, I have simply done my duty to the best of my ability. As

to the rest, I have no thought; but leave results in other hands than mine. Respect for public opinion up to a certain point is prudence: beyond that, weakness.

> "Yet do thy work; it shall succeed
> Or in thine own, or in another's day;
> And if denied the victor's meed,
> Thou shalt not lack the toiler's pay."

Faithfully I have tried to depict—from the physician's point of view—the weaknesses, and the possibilities of strength, in schools. Our schools are none of them perfect, and they vary very much, some being years behind others in medical and sanitary matters. I have also striven to show how parents may send forth from home—and masters from school into the world—not only healthy boys, but boys with manliness, gentleness, generosity, and uprightness, able to withstand temptation, and willing to do their duty wherever and in whatever form it may call.

If my observations should conduce to the benefit of any school or scholar I shall feel amply repaid, and can ask no greater reward. Schools must remember that the "golden age" lies ever in the future: that the Ideal is a goal, and not a dream.

In the words of Milton I would close, and say, "For he who freely magnifies what hath been nobly done, and fears not to declare as freely what might be done better, gives ye the best covenant of his fidelity; and that his loyalest affection and his hope wait on your proceedings."

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