by sheer misfortune, confined to one grade of work, whether they be fitted by disposition or skill for that work or no, are not possibly all in their right and natural spheres. From habit and dread of change they may oppose anything like a change, and may often violently resent the proposal of a change. Driven to change, by necessity, they are led to find other employments as congenial and as remunerative, while many experience, in the change, benefits they never had anticipated, and never would have realized if they had kept in the old and beaten paths.

Perhaps no part of the argument is truer than this last exposition, seeing that labour is never so thoroughly distributed as when it is diversified, and that humanity has no limits in diversity.

VOLUME I.

PART II.

EDUCATIONAL AND SOCIAL.

CHAPTER I.

ESSAYS EDUCATIONAL AND SOCIAL.

THE essays relating to education and social life belonging to our library are many in number, and cover a wide field. They commence in the year 1831, and they continue up to the year 1886. I regret to say that, owing to their multiplicity, I shall be able to give to them much less space than they deserve. I can only undertake, indeed, to offer such an epitome as is derived from a careful collection and long study of them, connecting them, as far as possible, with the order of time in which they appeared as well as with the subject.

The characteristic of these essays is akin to that which marks the political and economical. The aim, throughout, is to collect facts and arrive at principles for practical action from facts. Professor Masson, in his review of the works of our author, makes much of this method. The phrases, "*Get at the antecedents*," "*Mount to the sources*," are, Professor Masson says, the stereotyped maxims.

The suggestions proffered in the educational schemes were, from the first, original in one particular sense: they were, and are, invariably directed to the combination of physical with mental training. In them, in point of fact, the physical is, with very few exceptions, placed before the mental. The conception

is to make the nation a nation of physical models, as well as of learned scholars; a nation that the sculptor can describe with enthusiasm equally with the historian; a nation that can hold its own in the scale of vitality, and protect its own by the virtues of common physical prowess and endurance, as ably as by statesmanship and knowledge, more ably than by expediency and craft; a nation that shall accept and act upon the motto:—

"*Primo vivere deinde philosophari.*"

CHAPTER II.

EDUCATION AS THE CORRECTOR OF CRIME.

THE first educational essay in the series of the educational class to which I now bring the reader, was published in the *Examiner* of February 20th, 1831, and was issued, marked "not for sale," in a separate pamphlet.

The pamphlet was entitled, "*The Real Incendiaries and Promoters of Crime.*"

Preceding the appearance of this little work, the incendiary had been actively engaged in making England a bonfire. The fires did not break out simultaneously, but travelled slowly from county to county, propagated by *vivâ voce* communication, by the force of imitation, monomania on the rampage,—or by pure revenge.

A young man was executed at Winchester, and was interred in the yard of a village church. An adjacent farm was soon after fired, and illuminated his grave,—the first of a series of crimes.

Other crimes ran side by side; cattle were poisoned or mutilated; witnesses who gave evidence on the facts of crimes were denounced as "forsworn," not for having stated anything untrue, but as having broken the faith which they owed to their fellow-labourers against the superior classes, now viewed as enemies and as oppressors. Assassinations were

plotted, and in some instances effectively carried out.

On the side of the poor and working orders all was tumult, passion, and resolution extracted from necessity. On the side of the ruling classes all, or nearly all, was blind authority, determination at all hazards to keep down the tumult and to rule the land. Of this ruling class Mr. Bentham had spoken as "a class of men by opulence rendered indolent, and by indolence and self-indulgence doomed to ignorance; men who, being by opulence rendered destitute of all motives for mental exertion, and by the very nature of man, from the beginning to the end of life kept in a state of relative ignorance and mental impotence."

It was while matters were in the state here described that the essay on the "Real Incendiaries" was written and published. The essay described the condition, traced out the causes of the condition, and prescribed the remedy.

The remedy suggested was deduced from the tracing out of the cause of the conditions which led to the evil.

It had been assumed by those who by accident were the legislators, that the cause of the bad condition was the diffusion amongst the people of seditious publications, and the too free reading of information skilfully communicated from one person to another. Our essayist removed that delusion completely. He showed that nothing was done by discussion through reading or writing; that few were in any degree competent for such a service, and that before the commission of an actual crime there was nothing in writing to lead up to it. Afterwards,

when by trial of offenders those who tried and carried out judgment made known the offence, then there was a revengeful publication which increased and intensified the evil; but before that, the evil was all carried on by the tongue, by sayings without argument which led to doings without reason.

In these communications for evil amongst the oppressed populations, short sentences and doggrel lines were the great agencies through which the spirit of evil was kept in active operation. Just as in our day the saying, "Accumulated capital is unpaid labour," has become a pass-word, so in those days such doggrels as the following had their way:

> "If the people of England be wise,
> They will neither pay taxes nor tithes."

Or another, which stripped of its original vulgarity, remains good common sense:

> "Hungry stomach, empty purse,
> May be better—can't be worse."

Or still another, repeated by a woman at Sleaford, as an inflammatory toast which she had herself drunk to:

> "Ye gods above, send down your love,
> With swords as sharp as sickles,
> To cut the throats of gentlefolks,
> Who rob the poor of victuals."

These saws, says our author, less diffuse, and therefore less difficult to be remembered and communicated than print, "are apt on the tongue," and "the jingle" gives them their iterative quality. They were suggested to the mind of the labourer by the slightest occasion for anger. Like the barbarous laws by which he was punished, they allotted one indiscriminate measure of vengeance to every variety of offence. When a senti-

ment is in print, there is something to be seen, and answered, and guarded against; and to persons in power this form of communication would also have the recommendation of there being something to prosecute. These saws circulated unseen; and there was the fear that many a life could be lost on the point of an epigram.

The example of the agricultural population could be added to that of the uneducated population of France before the Revolution, and to that of the Irish peasantry—and indeed of any country sunk in ignorance and impelled by want—in proof that government, by keeping the poor in political ignorance, prepares a retribution of evil for itself in common with the remainder of the community. The proceedings of the aristocracy were of a nature calculated not only to keep the labouring classes ignorant, and render them fanatical, but to make them ferocious What effect had the "strong arm of the law," the "avenging sword of justice," exercised in sanguinary executions, produced on the character of the Irish peasantry? To any well-informed person, who had observed the effects of misgovernment in that barbarized and unfortunate country, how dreadfully demoralising must appear the tendency of these vindictive punishments which had been inflicted on the English peasantry for offences against laws of which those who administered them were, in the first instance, ignorant. "The law rules the poor," said our labourers, "and the rich rule the law." They believed that the rich wielded the "avenging sword" as their instrument, and that for the poor it was powerless. Nor can it be denied that the recollection of such instances as that of the impunity of

the attempt made, in the case of Queenborough, to starve a whole town, and those of Newark and Stamford, aggravated the feelings throughout wide districts. The labourers were thus led to detest the law as their enemy, and blindly to sympathize with every culprit as the victim of injustice and hateful tyranny.

The strength of this feeling was strongly evinced after the execution of a man who, apparently from personal malice, set fire to a mill near Kingston, and attempted to assassinate the owner. When the delinquent was executed, the prosecutor was threatened with the vengeance due to "a murderer," and his premises were fired into. Fear begat hatred —hatred revenge. The poisonings of cattle, which occurred at several places, were noted as instances of the generation of the malignant feeling. The existence of a new feeling of hatred amongst the labouring classes was fearfully marked by their denunciations of the witnesses who charged them, "as forsworn." "Vengeance" inflicted upon men in this state of feeling could only lead to the perpetration of outrages that had long been witnessed in Ireland.

This was the stage of descriptive teaching, and upon it followed the lesson of prevention in the following terms.

The Duties of Government for the Education of the People.

"There can be no safety from the most fearful outrages against life and property but in the intelligence and moral feeling of the labouring classes. The Government should, therefore, in the first place, be imperatively required to abolish entirely every fiscal

impost that can operate, directly or indirectly, to obstruct the diffusion of knowledge among the people. Every facility should be claimed to allow the free operation of individual interests, in supplying publications which may induce the labouring classes to read. No matter how poor, how inadequate, how coarse and distasteful to cultivated minds might be the nature of the publications first sent forth; if they are read, they can scarcely fail to be of service in contributing to the formation of a habit of reading, which will facilitate the diffusion of publications of a more useful and elevated character.

"The ministers of the home department gave effect to one meritorious measure, which was calculated to render more service in preventing devastation than the strongest army Government could have brought into the field. By means of the official franks they circulated throughout the manufacturing districts, 'The Results of Machinery;' a tract which, though defective in some of its reasoning on the main point, was nevertheless highly serviceable for the interesting collection of facts which it presented on the subject to the minds of the working classes. Is the ignorance of our rulers so dense, that they cannot be made to appreciate the advantage of permitting that to be done every day which they permitted to be done on this one occasion? Is their jealousy and cowardice so low, so vile, that they will continue to prevent the accomplishment of this immense good, lest publications which are distasteful to them should thereby obtain circulation?

"Those who possess the requisite knowledge, and the capacity to expound it so as to make it accessible to the understandings of the labouring classes, should

now send forth tracts expository of the circumstances influencing wages, and on other subjects involving the principles of political and domestic economy, and of morals and legislation, which contribute to the welfare of the whole community.

"Concurrently with these measures which regard the *adult* population, strenuous efforts should be made for an universal and efficient education of the rising generation.

"The most pressing measure immediately called for is, however, the entire removal of the odious taxes on knowledge. The reduction of the stamp duty, proposed by ministers, will benefit only the press and the middle classes; as regards the labouring classes, it is paltry, and will keep the larger channels of public information as far out of their reach as before. Every penny of duty retained is a bounty on ignorance. Every minister or member of the legislature who contributes to the retention of any portion of the tax, thereby contributes to the crime and misery by which the community is afflicted to such an appalling extent."

I leave this essay to speak for itself. I had better said, I leave it as it has spoken, for it has been speaking ever since it was written, and has been persistently proving the truth of that which it forecast.

CHAPTER III.

THE HALF-TIME SYSTEM IN EDUCATION.

CONNECTED with the work of our author as an educational reformer, nothing stands more prominently forward, and testifies more clearly to his genius, than the introduction of what is now so well known as the *Half-Time System* in school life. This system includes a division of labour for the scholar, in which it is arranged that a limited time shall be devoted to book learning, a limited time to physical work, and a limited time, when that can be effected, to games or other exercises which afford pleasure to the mind.

The mode in which this reform originated is so useful a study, and so truly interesting from an historical point of view, that I shall devote the present chapter to a description of it, following, in the narrative, the author's own words as far as is compatible with the necessary condensation.

In 1833 Mr. Chadwick was appointed one of a Central Commission to examine into the condition of the labour of children and of young persons employed in factories. The commissioners found generally that the children were worked during the same stages as adults,—eleven, twelve, or more hours daily, and they condemned this practice as being economically as wasteful as it would be, on a farm, to work

young colts to the same extent as adult horses. They pronounced that six hours of daily labour was as long as could be allowed for young children without permanent bodily injury, and that manufacturers continuing to enforce work during those long hours must do so with double sets of children, six hours each set. The ordinary condition of long-time labour in factories had practically excluded the children from the benefits of education; so that a population had been growing up, deteriorated morally as well as physically by excess of labour. Physically the effects of excessive hours of labour were aggravated by the bad sanitary conditions of ill-ventilated and ill-drained workshops, and ill-drained and ill-ventilated dwellings; while the economical results, waste of working force, were such as would be the case if the farmer, to obtain one working horse, had to raise two colts, or as if the adult working horse, when raised, lasted only two-thirds of the productive time that would be obtained under better sanitary conditions.

It fell to the author to work out a bill providing for the organisation of executive machinery for the application of the principles which were adopted by the Commission, and the provision which he proposed for the protection of the working population against exclusion from education was, that it should be a condition of the employment of children by the manufacturer, that every child so employed should produce a certificate from a competent teacher in a fitting school, certifying that the child had been under instruction three hours every working day during the week preceding. Three hours a day was half the time then generally occupied in the working schools. Hence the name half-school timers.

His colleagues of the Commission agreed in declaring, upon adequate medical testimony, that even ten hours' daily continuous labour for little children, as implied in a ten hours' bill, was too long, and proposed, as a compromise, a limitation to eight. But being individually charged by the Government with the preparation of the bill, he inserted provisions for a limitation of children's labour to six hours, and it was really a six hours' bill which was carried through the House of Commons, together with the condition of employment that every child employed should be three hours a day under a competent school teacher, with a rating clause for providing sufficient schools and school teachers where none were found to exist.

The three hours or half-school time provision was intended not solely as a security for education, which his own educational information and superior testimony enabled him then to say was as much time as could be occupied profitably with any subject-matters of instruction with very young children, but as a primary security against over-work. He reasoned that if he secured their presence in school for three hours, he prevented their presence for that time in the workshop, and cut off that amount of time from any adult stage of work to which they would otherwise be subjected. The three hours' compulsory attendance at school, even where the teaching was inferior or nominal, soon proved successful as a preventive of bodily overwork. The effect was, as medical officers attested, a better growth, and also a better quality of labour during the reduced hours—as employers admitted. The securities for the competency of the school teaching, and the rating

clauses, having been thrown out in the House of Lords, the education was often extensively nominal, illusory, and often fraudulent. But where, by voluntary exertions, the half school-time teaching was provided of a proper quality, as by intelligent manufacturers, such as the Messrs. Walker of Bradford, Mr. Ackroyd, the Messrs. Ashworth of Bolton, Mr. Bazley of Manchester, the Messrs. Chadwick of Rochdale, the Messrs. Birley of Manchester; or where there were schools under trained masters to whom the "half-timers" were sent, as at Oldham, Rochdale, Manchester, and elsewhere; or where, as in the Poor Law district schools, the half-time system was carried out,—there was testimony, from experienced school teachers, of practical results which affected the whole of the prevalent practice of infantile and juvenile training and education.

The experience of the short school-time district industrial schools was demonstrative of a general conclusion, that by the administrative division of educational labour the elements of popular education, reading well, with some skill in parsing, writing a fair hand, spelling well, arithmetic up to decimal fractions, the naval and military drill, and vocal music, might be taught well together, with the elements of religious instruction, in about one-half the time before commonly occupied in teaching indifferently the three elementary branches, as they are considered, of a popular education.

It was found that, beginning with the infant school, these courses of mental and bodily accomplishments might generally be completed soon after the tenth year; whereas, under the previous practice, school-attendance was required until the thirteenth year for

the communication of an inferior amount of book instruction alone. The practicability of the reduction by one-half of the ordinary period of teaching was established by the evidence of the most successful school teachers.

The gain in time, from six or five to three hours daily school-attendance, and from six to three years, —half the term commonly occupied,—was not the sole nor the most important gain achieved in the large, separate schools by the division of educational labour, and the application of the half-time principle. A boy who acquired the same amount of knowledge in one-half the time of another boy, obtained a proportionately superior habit of mental activity. This was soon the experience stated, in good half-time school districts, by employers of labour, who ceased to employ "long-timers" where they could get the "short-timers"; and this quality of superior mental alertness, combined with the bodily aptitudes created by previous drill, gave the comparatively stunted pauper boys of the towns the preference over the strong robust lads from the coast.

The division of educational labour by trained teachers in the district schools and in the larger public schools, founded on the same principles, surpassed, as might be expected, all small schools in which the common elementary instruction for the middle class prevailed and, indeed, the instruction in the older schools for higher classes also.

Next to the gain in time by the division of educational labour, in the system exemplified in the district school, was the gain in pecuniary economy.

By means of a staff of qualified permanent paid officers and a division of labour, with gradations of

administrative superintendence in each Poor Law Union, there was effected an average yearly economy of upwards of two millions; and if the principles which were laid down had been adopted by Parliament, with some additional outlay for qualified paid service, the economy might have been carried to between three and four millions per annum upon the previous expenditure of the unpaid overseer, or the single paid officer—the assistant overseer. Thus it was proved in the instance of the district schools, that by means of an educational division of labour on the administrative principle suggested by a staff of school teachers, comprising, in the best instances, the services of a principal with those of a chaplain, a head master at about £200 per annum, first and second assistant masters, and a staff of pupil teachers, drill masters, and drawing masters, an economy of fully one-half was effected against the single master —even though he were a trained master—teaching on a small scale. The expense of the educational power of the trained staff was, on the average, in the district schools, £1 per head per annum.

CHAPTER IV.

THE PHYSIOLOGICAL LIMITS OF MENTAL LABOUR.

THE reasons for the suggestion of the half-time system of education and the grounds for its success were thought out long before they were acted upon, and were afterwards described, in 1860, by their author himself, in words short, explicit, and admitting of no condensation. I propose, therefore, in the present chapter to quote him verbatim on the subject now before us:—

"The business of education still requires for its successful prosecution scientific observation, and the study of the subject to be operated upon—the human mind. Even to empirical observation it should have suggested itself that the mind has conditions of growth which are required to be carefully noted, to adapt the amount of instruction intended to be given to the power of receiving it. It is a psychological law that the capacity of attention grows with the body, and that at all stages of bodily growth the capacity is increased by the skilful teacher's cultivation. Very young children can only receive lessons of one or two minutes' length. With increasing growth and cultivation, their capacity of attention is increased to five minutes; then to ten, and at from

five to seven years of age, to fifteen minutes. With growth and cultivation, by the tenth year a bright voluntary attention may be got to a lesson of twenty minutes; at about twelve years of age to twenty-five minutes; and from thence to fifteen years of age, about half an hour: that is to say, of lessons requiring mental effort, as arithmetic, not carried beyond the point at which the mind is fatigued, with the average of children and with good teaching. By very skilful teachers and with very interesting lessons, the attention may be sustained for longer periods; but it is declared by skilled observers that prolonged attention beyond average limits is generally at the expense of succeeding lessons.

"The preponderant testimony which has been received in the course of some enquiries into educational subjects, is that with children of about the average age of ten, or eleven, or a little more, the capacity of bright voluntary attention, which is the only profitable attention, is exhausted by four varied lessons to subjects and exercises requiring mental effort of half an hour each in the forenoon, even with intervals of relief. After the mid-day meal the capacity of voluntary attention is generally reduced by one-half, and not more than two half-hour lessons requiring mental effort can be given with profit.

"The capacity of attention is found to be greater in cold weather than in hot, in winter than in summer.

"I collect that the good ventilation, lighting, and warming of a schoolroom will augment the capacity of attention of the pupils by at least one-fifth, as compared with that of the children taught in schoolrooms of the common construction.

"I also collect, that the capacity of attention varies with bodily strength and weakness. It is reported to me that school-boys, of nearly the same ages and conditions, of the same school-rooms, and under the same tuition, being weighed, and divided into two classes, the light and the heavy, the attainments, as denoted by the number of marks obtained, were found to be the greatest with the heaviest, that is to say, those of the greatest health and bodily strength.

"These were chiefly town-born children, of common habits. The robust children of rural districts, of less cultivated habits of attention, are found to be slower in receiving ideas; but with cultivation they are brought up to equal capacities of attention, and to greater retentiveness of the matter taught, than the common classes of town-born children.

"There are differences in the capacities of attention in different races, or in the habits of attention created previously to the school-period by parents of different races. The teacher of a large school in Lancashire, who had acted as a school-teacher in the southern counties, rated the capacity of attention of the native Lancashire children as five to four, as compared with those in Norfolk. In other instances the differences were wider.

"Experienced teachers have testified to me that they can and do exhaust the capacity of attention, to lessons requiring mental effort, of the great average of children attending the primary schools in England, in less than three hours of daily book instruction, namely, two hours in the morning, and one hour after the mid-day meal.

"Infants are kept in school, and the teacher is occupied in amusing and instructing them, for five

or six hours, but the duration of mental effort in the aggregate bears only a short proportion to the whole time during which they are kept together. So in schools for children of more advanced ages. Even the smaller amount of mental effort in infant schools is extremely subject to dangerous excess. I am assured by a teacher in the first infant school established in Scotland, that he did not know a pre-eminently sharp child who had in after life been mentally distinguished.

"In common schools, on the small scale, the children will frequently be not more than one-half the time under actual tuition; and in schools deemed good, often one-third of their time is wasted in changes of lessons, writing, and operations which do not exercise, but rather impair the receptive faculty.

"It may be stated generally that the psychological limits of the capacity of attention and of profitable mental labour is about one-half the common school-time of children, and that beyond that limit instruction is profitless.

"This I establish in this way. Under the Factories Act, whilst much of the instruction is of an inferior character and effect, from the frustration of the provisions of the original bill, there are now numerous voluntary schools, in which the instruction is efficient. The limit of the time of instruction required by the statute in these half-time schools for factory children is three hours of daily school teaching, the common average being six in summer and five in winter. There are also pauper district industrial schools, where the same hours, three daily, or eighteen in the week, or the half-time instruction, are prescribed; which regulation is, in some instances,

carried out on alternate days of school teaching and on alternate days of industrial occupation. Throughout the country there are now mixed schools, where the girls are employed a part of the day in needlework, and part of the day in book instruction.

"The testimony of school inspectors and of school teachers alike indicates that the girls fully equal in book attainments the boys who are occupied during the whole day in book instruction. The preponderant testimony is that in the same schools, where the half-time factory pupils are instructed with the full-time day scholars, the book attainments of the half-time scholars are fully equal to those of the full-time scholars, *i.e.*, the three hours' are as productive as the six hours' mental labour daily. The like results are obtained in the district pauper schools.

"In one large establishment, containing about six hundred children, half girls and half boys, the means of industrial occupation were gained for the girls before any were obtained for the boys. The girls were, therefore, put upon half-time tuition, that is to say, their time of book instruction was reduced from thirty-six hours to eighteen hours per week, given on the three alternate days of their industrial occupation, the boys remaining at full school-time of thirty-six per week—the teaching being the same, on the same system and by the same teachers, with the same school attendance in weeks and years, in both cases.

"On the periodical examination of this school, surprise was expressed by the inspectors at finding how much more alert, mentally, the girls were than the boys, and how much advanced in book attainments. Subsequently industrial occupation was found for the

boys, when their time of book instruction was reduced from thirty-six hours a week to eighteen; and after a while the boys were proved upon examination to have obtained their previous relative position, which was in advance of the girls. The chief circumstances effecting this result, as respects the boys, were the introduction of active bodily exercises, the naval and the military drill, and the reduction of the duration of the school teaching to within what appear to me to be the psychological limits of the capacity of voluntary attention.

"When book instruction is given under circumstances combining bodily with mental exercises, not only are the book attainments of the half-time scholars proved to be more than equal to those of the full-time scholars, but their aptitudes for applying them are superior, and they are preferred by employers for their superior alertness and efficiency.

"In the common course of book instruction, and in the average of small but well managed long-time schools, children, after leaving an infant school, are occupied on the average six years in learning to read and write and spell fairly, and in acquiring proficiency in arithmetic up to decimal fractions. In the larger half-time schools, with a subdivision of educational labour, the same elementary branches of instruction are taught better in three years, and at about half the annual expense for superior educational power.

"The general results stated have been collected from the experience during a period of from twelve to fifteen years of schools comprising altogether between ten and twelve thousand pupils. From such experience it appears that the general average school time is in excess full double of the *psychological*

limits of the capacities of the average of children for lessons requiring mental effort.

"I have not hitherto been enabled to carry my inquiries to any sufficient extent for a statement of particular results, to the schools for children or youth of the higher ages, but I believe it will be found that the school and collegiate requirements are everywhere more or less in excess of psychological limits. I gather that the average study, in continuous mental labour, of successful prizemen at the universities is from five hours and a half to little more than six hours of close mental study or exertion from day to day. An able Oxford examiner informs me, that if he ever hears that some one is coming up for examination who has been reading twelve or thirteen hours a day, he is accustomed to exclaim, 'That man will be plucked!' and during his experience of thirteen years as an examiner at Oxford, he has never known an instance to the contrary. In respect to the mental labour of adults, it is observed by Sir Benjamin Brodie, in his 'Psychological Inquiries.'—'A man in a profession may be engaged in professional matters for twelve or thirteen hours daily, and suffer no very great inconvenience beyond that which may be traced to bodily fatigue. The greater part of what he has to do (at least it is so after a certain amount of experience) is nearly the same as that which he has done many times before, and becomes almost matter of course. He uses not only his previous knowledge of facts, or his simple experience, but his previous thoughts, and the conclusions at which he had arrived formerly; and it is only at intervals that he is called upon to make any considerable mental exertion. But at every step in

the composition of his philosophical works Lord Bacon had to think, and no one can be engaged in that which requires a sustained effort of thought for more than a very limited portion of the twenty-four hours.

"'But great things are accomplished more frequently by moderate efforts persevered in with intervals of relaxation during a very long period. I have been informed that Cuvier was usually engaged for seven hours daily in his scientific researches; but these were not of a nature to require continuous thought. Sir Walter Scott, if my recollection be accurate, describes himself as having devoted about six hours daily to literary composition, and his mind was then in a state to enjoy some lighter pursuit afterwards. After his misfortunes, however, he allowed himself no relaxation, and there can be little doubt that this over-exertion contributed as much as the moral suffering which he endured to the production of the disease of the brain, which ultimately caused his death. Sir David Wilkie found that he was exhausted, if employed in his peculiar line of art for more than four or five hours daily; and it is probable that it was to relieve himself from the effects of too great labour that he turned to the easier occupation of portrait-painting. In fact, even among the higher grades of mind there are but a few that are capable of sustained thought, repeated day after day, for a much longer period than this.'

"Sir Benjamin Brodie once stated to me that he subsequently ascertained that in the above passage he had rather exceeded the limits of the mental labour of Sir Walter Scott, who, in a conversation on the topic, in the presence of Sir Charles Lyell and

Mr. Lockhart, had declared that he worked for three hours with pleasure, but that beyond about four hours he worked with pain. Sir Benjamin stated to me that he was of opinion 'that for young children three or four hours'' occupation in school must be even more than sufficient, and that they would be found in the end to have made greater progress, if their exertions were thus limited, than if they were continued for a longer period.

"In large public establishments in which I have had an executive direction, I have not found it practicable to sustain, on the average, for longer than six hours per diem, from day to day, continuous and steady mental labour on the part of adults.

"I find ground for the belief that as more and more of mental effort and skill is required in the exercise of the manual arts, the hours of work must be more and more reduced for the attainments of the best economical results without waste of the bodily power."

CHAPTER V.

THE PSYCHOLOGICAL LIMITS OF MENTAL LABOUR.

THE physiological side of the question considered in the last chapter is supplemented by a description of the psychological. In this effort the ideas of the author were confirmed and elaborated by his old and attached friend, the illustrious Professor, Sir Richard Owen. For the sake of preserving both their views I proceed herewith to republish them in their natural order.

"The psychological limits to mental labour are governed," says our author, "by *physiological* limits, which in the case of young children are first indicated by bodily pain, experienced during continued sedentary constraint, from suppressed muscular activity, or from muscular irritability. As respects children, the case is put in the following letter which I wrote to Professor Owen, and in his answer:—

"'DEAR OWEN,—Permit me to submit to you for your consideration and for my instruction, some questions on topics of observation made from time to time officially on the common practice of popular education, and whether, in the duration of sedentary attention which its theory requires, it is not at variance with elementary principles of physiology?

"'First, let me observe upon the very young of our species, their mobility at the periods of growth, particularly in infancy,—their constant changes of bodily position, when free to change,—their incessant desire for muscular exertion,—their changes, short at first, longer as growth advances,—these changes being excited by quickly varying objects of mental attention, and forming incessantly varying alternations of exertion and repose, with manifestations of pleasure when allowed free scope for them, of pain when long restrained. Now to what physiological conditions do these alternations of exertion and repose subserve?

"'When obstructed and subjected to constraints for long periods, and when pain and mental irritation and resistance are excited amongst *classes*, are not the pain and resistance to be taken as a remonstrance of nature against a violation of its laws?

"'The theory of the common practice of school instruction is of five and as much as six hours' quietude, and for intervals of three hours each perfect muscular inactivity and stillness of very young and growing children from seven to ten years old, and during this constrained muscular inactivity, continuous mental attention and labour.

"'To ensure these conditions of continued bodily inactivity and prolonged mental labour, the common office of the schoolmaster is everywhere a war for the repression of resistances and incipient rebellions. But are not these resistances excited by nature herself? Are not desk cutting, whittling with knives, mischief, conditions of irritability, manifestations of excessive constraints against physiology? If the conditions of muscular inactivity were completely enforced, what

does physiology tell us may be expected from these restraints? I might ask you, indeed, whether much of the insanitary conditions of our juvenile and very young populations are not consequences following from them?

"'First, there is the proverbial pale-facedness of the young scholar, and the lower bodily condition of those who are subject to the confinement of schools, even of the best construction and ventilation, than of those, who, free from confinement and at large, are at liberty to follow natural instincts.

"'When the weakly fail in health in a marked degree under the restraints of the school, the remedy is restoration to natural freedom, which commonly leads to improved health. I cannot but attribute to the lowering of the system and bodily debility produced by this excessive school restraint (even where there is good ventilation), and the consequent exposure to epidemic conditions and other passing causes of disease, a large share of our juvenile mortality, especially between seven and ten years of age, when the opportunities of retrieving the effects of the school constraints by athletic exercises are less than at later periods.

"'But the constraints of a school are accomplished most fully in girls' schools, more especially in boarding schools, where the sedentary application of young children is extended to eight hours daily, and diseases are attendant upon them, which I cannot help ascribing largely to violations of the laws of physiology. In Manchester, with the increase of prosperity, an increased proportion of females have been sent to boarding schools and high class schools with long hours; and I am assured by Mr. Roberton,

who is especially conversant with the diseases of females, that the proportion of the mothers of the middle class who cannot suckle their own children is increasing. He has shown me statistically that, with all the care bestowed upon females who have been so highly educated, the failures, and deaths in child-birth, are full sevenfold greater than amongst females of a lower condition in life, who have had less school restraint and sedentary application, and more freedom and muscular development in childhood. Cases of spinal distortion, nervous disorder, nervous mania, and hysteria, prevail peculiarly amongst the middle and higher class of females, whose education has been of prolonged sedentary occupation, even under the best sanitary conditions in other respects. As applied to them, it is a proverbial observation that "ailing mothers make moaning children." A lady who was eminent as a boarding-school teacher, but who has retired from business, has observed painful evidence of the injury done by the prolonged hours of sedentary application which custom and the demands of parents require, and she confirms the experience of the best half-time schools, that better instruction might be given in shorter hours. I have received a body of evidence from able teachers, that they can and do exhaust the capacity of attention to book instruction in half the time for which sustained attention to such instruction and bodily inactivity is demanded by custom.

"'But what I seek is the sanction of your opinion as to whether, if the laws of physiology be duly consulted for providing a sound body for a sound mind, other treatment is needed than that which prevails in schools, of requiring five or six hours of sedentary

occupation for children in the infantile stage, and seven or eight for those in the juvenile stage? I appeal to you more particularly from the fact, that in lectures and papers the teaching of physiology is insisted upon as an additional element of popular education, and an additional demand of time in those schools, the whole condition and theory and attempted practice of which, though not yet so recognized generally by professors of the science, appears to me to be a large violation of it, and an offence against infantile nature.

"'Yours ever,

"'E. CHADWICK.'

"'MY DEAR CHADWICK,—I have perused and carefully considered every point in the inquiry which you have addressed to me, and I concur completely with your belief in the agreement with nature of the changes you recommend in the distribution and change of the periods devoted to school restraint and studies, and to bodily exercise and relaxation.

"'All the nutritive functions and actions of growth proceed more vigorously and rapidly in childhood and youth than in mature life,—not merely as regards the solids and ordinary fluids, but also in the production of those imponderable and interchangeable forces which have sometimes been personified as "nervous fluid," "muscular force," etc. Using the latter term to exemplify my meaning, the excess of nervous force is in the child most naturally and healthily reduced by its conversion into muscular force; and at very short intervals, during the active or waking period of life, the child instinctively uses its muscles, and relieves the brain and nerves of their accumulated force, which passes, by the in-

termediate contraction of the muscular fibre, into ordinary force or motion, exemplified by the child's own movements, and by those of some object or other which has attracted its attention.

"'The tissues of the growing organs, brain, muscles, etc., are, at this period of life, too soft to bear a long continuance of their proper actions; their fibres have not attained their mature tone and firmness; this is more especially the case with the brain-fibre. The direct action of the brain, as in the mental application to learning, soon tires; if it be too long continued, the tissues are unhealthily affected; the due progress of growth, which should have resulted in a fibre fit for good and continuous labour at maturity, is interfered with; the child, as an intellectual instrument, is to that extent spoiled by an error in the process by which that instrument was sought to be improved.

"'The same effect on the muscular system is exemplified in the racers that are now trained to run, at $2\frac{1}{2}$ or 3 years old, for the grand prizes at Doncaster or Epsom. The winner of the "Derby" never becomes an "Eclipse" or "Flying Childers," because the muscular system has been overwrought two or three years before it could have arrived at its full development, which development is stopped by the premature over-exertion.

"'If the brain be not stimulated to work, but is allowed to rest; and if, at the same time, the muscles be forbiddden to act, there then arises, if this restraint be too prolonged, an overcharged state of the nervous system. It is such a state as we see exemplified in the caged quadruped of active habits, when it seeks to relieve it by converting the nervous into the

muscular force to the extent permitted by its prison, either executing a succession of bounds against the prison-bars, like the agile leopard, or stalking, like the lion, sullenly to and fro.

"'If the active child be too long prevented from gratifying the instinctive impulse to put in motion its limbs or body, the nervous system becomes overcharged, and the relief may at last be got by violent emotions or acts, called "passion" or "naughtiness," ending in the fit of crying and flood of tears.

"'But all these impediments to a healthy development of the nervous system might be obviated by regulations, based on the system which you rightly advocate, providing for more frequent alternations of labour and rest, of study and play, of mental exertion and muscular exercise; in other words, by briefer and more frequent periods allotted to those phases of educational procedure, and modified to suit two or three divisions of the scholars, according to age.

"'The powers and workings of the human frame concerned in the complex acts and influences, which you have asked me to explain physiologically, are amongst the most recondite and difficult in our science. You will, therefore, comprehend and excuse my short-comings in trying to fulfil your wish. But, on the main point, I have no doubt that your aim is in close accordance with the nature of the delicate and, for good or evil, easily impressible organization of the child.

"'Believe me, ever truly yours,

"'RICHARD OWEN.'

"It is difficult to separate distinctly the evils arising from the excess of simple bodily inactivity, from

the results of the common insanitary conditions of schools—bad ventilation, bad lighting, bad warming, and overcrowding. These, however, are attended by epidemic and eruptive diseases, which ravage the infantile community. Simple constraint appears to be attended by enervation and obstructed functions, and thence maladies of another class. The preventive of these is the occupation of children, with means of physical training, with systematized gymnastics, including swimming, and the naval and military drill. Where there have been good approximations to the proper physiological as well as the psychological conditions, as in the half-time industrial district schools, epidemic diseases have been banished, and the rate of mortality reduced to one-third of that which prevails amongst the general community in England and Wales alone, where upwards of a quarter of a million of children are annually swept away from preventible disease, which enervates those who survive. Four labourers, who have had the advantage of this improved physical and mental training are proved to be as efficient as five or more of those who have not. I am prepared to show that by administrative improvements in the application of the principles in question, double the population may be physically and mentally trained well, at the expense of educating the existing numbers ill."

CHAPTER VI.

EDUCATION AND DRILL.

IN order to systematise, as far as possible, physical with mental educational training, our author, very early in the course of his efforts, suggested the combination of naval and military drill as a part of his educational project. I have before me the outlines of this design in a letter or prospectus printed for general circulation in the beginning of this suggested reformation. This is so complete as a general plan, it is best to let it stand entire.

"EDUCATION.

"HEADS OF A PAPER on the expediency of measures for reducing the hours of instruction and for the general introduction of the Naval and Military Drill systematised as gymnastic exercise, as parts of any national system of education.

"The subject may be considered with exclusive reference either, first, to the future personal welfare of the individual pupil, on the assumption that his future career will be entirely in civil life; or, secondly, to the interests of the nation.

"In regard to the first topic, the welfare of the pupil in civil life, the case may be established by practical evidence.

"It is proved from the daily experience of what is called the half-time system, and of well conducted schools where the drill is already introduced in combination with industrial training, that the tuition during the reduced hours of book instruction is at least as effective as in schools where the full time is exclusively occupied in book instruction.

"It is proved that the hours of sedentary occupation in schools are generally prolonged beyond the capacity of the pupils for profitable attention, and that with a view to mental as well as bodily improvement they must be reduced.

"It is proved that for occupation of the hours taken from book instruction, drill should be selected, on these several grounds.

"1. *Sanitary or Bodily.*—Because the drill is good (and for defective constitutions requisite) for correction of congenital bodily defects and taints, with which the young of a very large proportion of the population, especially the young of the poorer town populations, are affected; and, that the climbing of masts and other operations of the naval drill are valuable additions to the gymnastic exercises of the drill, and when properly taught are greatly liked by boys.

"2. *Moral.*—For giving an early initiation to all that is implied in the term discipline, viz. :—

DUTY.
ORDER.
OBEDIENCE TO COMMAND.
SELF-RESTRAINT.
PUNCTUALITY.
PATIENCE.

"3. *Economical.*—Because it is proved that drill, when properly conducted, by giving suppleness to the joints,—renders the action prompt as well as easy, and by giving promptitude in concurrent and punctual action with others, adds, at a trifling expense, to the efficiency and productive value of pupils as labourers or as foremen in after life.

"On the second chief topic, namely, the interest of the nation, the general introduction of the drill is called for, and will be of the same use as it was of old in the parochial training to the use of the bow. On practical evidence of officers engaged in the drill, it is shown :—

"1. That the drill is more effectively and permanently taught in the infantile and juvenile stages than in the adolescent or adult stages.

"2. That at school it may be taught most economically, as not interfering with productive labour, and that thirty or forty boys may be taught the naval and military drill at one penny farthing per week per head as cheaply as one man, and the whole juvenile population may be drilled completely in the juvenile stage as economically as the small part of it now taught imperfectly on recruiting or in the adult stage; and that for teaching the drill the services of retired drill serjeants and naval as well as military officers and pensioners may be had economically in every part of the country.

"3. That the middle and higher class schools should have, in addition to the foot drill, the cavalry drill, which the parents of that class of pupils may afford.

"4. That the drill, when made generally prevalent (without superseding), will eventually accomplish in

a wider and better manner the objects of Volunteer Corps and of Yeomanry, which as interrupting productive occupations now becoming more absorbing, is highly expensive, rendering all volunteer forces small, dependent on fitful zeal, and ineffective. The juvenile drill, if made general, will accomplish better the objects even of the Militia. The juvenile drill will abate diffidence in military efficiency, and will spread a wide predisposition to a better order of recruitment for the public service; will tend to the improvement of the ranks of the regular force, whether naval or military; and will produce an immensely stronger and cheaper defensive force than the means at present in use, or in view.

"5. And finally, that the means of producing this defensive force, instead of being an expense, will be a gain to the productive power and value of the labour of the country."

Other Uses of Drill.

The use of the military drill in schools was pressed partly to obtain some physical training for the children, as well as for the cultivation in them of habits of discipline, patience, self-restraint, prompt obedience to command, and concerted action. The non-commissioned officers of the army were employed for the purpose of teaching, and an allowance for drill having been obtained from the Education Department, the drill has been established in about a thousand schools, with a reported good effect on the mental discipline of the schools which was fully equal to what was anticipated. In the district half-time schools there were added to the physical exercises of the drill, when age permitted, the naval

drill on the masts, swimming, and the exercises of the hand and arm in carpenter's work, shoe-making, tailoring, and gardening, and in some instances, the use of the steam engine. For the girls the laundry work and baking were introduced. To the common military drill for the army, the skilled trainer Mr. Maclaren, of Oxford, added a considerable number of useful and practical exercises. For children various exercises have been added, with music and freehand drawing, making the course of schooling a course of pleasure.

The experienced economical result of this course of training in the half-time schools on the lowest types of children has been to give to two the efficiency of three for productive industry; to make the boys competent to earn three shillings a day of wages, or more, instead of two from the ordinary labour; to elicit intelligence and skill for the application of labour-saving machinery, and the cheapening of the cost of production.

In civil service, especially in sanitary service, our author was much mixed up with officers of the scientific corps, officers of the Royal Engineers and Artillery and of the Royal Navy; Field-Marshal Sir John Burgoyne, Sir F. Head, and later on with General Gordon, with whom he was led to discuss many economical questions. He ascertained, as the experience of the School of Musketry, that only a low average of shooting was to be got from the common rank and file as now enlisted; that a better average was got from the non-commissioned officers, and a better average still from the commissioned officers; in short, the skill in shooting rises, he found, with the intelligence. The best shooting

was with the corps of sappers and miners, which is composed of skilled men who receive higher pay; and it was evident that the whole corps was, results considered, as cheap a corps as any in the line. The police force is a corps of men with a fair elementary education, who learn the drill better in a quarter of the time of the ordinary rank and file of the army. "I estimate," said he to Colonel Sir E. Henderson, the chief of the Metropolitan force, "two regiments of your police as equal to three regiments of the Guards." "You do us injustice," said the Colonel, "we are worth more than that. I say that, results considered, notwithstanding the higher pay, the police force is the cheapest force in the country." This result of improved education was not disputed, whilst the general economical conclusion was that the mixed physical and mental training of children would add one-third to the civil force of the country, and more than one-third to its military power.

In a paper which he read at the United Service Institution on this topic, he cited evidence to show that if ships were worked with men selected for their intelligence they might be worked more safely with one-third less of force. He carried the investigation farther, to show that by the application of these conclusions a considerable reduction might be effected in the expenditure on military force. This information went decidedly against long barrack detention, which, without occupation, or with only sham occupation, did not improve, but diminished discipline. And in a speech he made on the subject at the Society of Arts, he supported Sir Henry Coles' proposition in favour of a volunteer force like that of Switzerland, but with amendments.

His proposition was that as much as possible of military drill should be transferred from the productive juvenile or adult age to the non-productive infantile or school age; that after that time encouragement should be given for volunteer exercises in the use of weapons, on afternoons, in the cadet stage, and after that further encouragement should be given for military exercises in the adult stages. He ascertained, on good military authority, that an average of one hundred hours of exercise in the year would suffice for a person to acquire and maintain skill in the use of the rifle. He proposed to get this by a double pay, or the day's pay of the policeman, for two hours of exercise on the Saturday, enlisting men on the condition that in case of a serious war they would join colours, and for the time go on foreign service.

Remembering the axiom of Napoleon, that "in military service, whilst physique is as one, morale is as two;" seeing that in volunteer competitions the fast and the intemperates always went down before the temperates, he would only enlist for this volunteer service men of good moral character, would admit no convicted drunkards, no uncertificated bankrupts, still less ticket-of-leave men, such as are found in the ranks of the army. The uniform of the volunteers would thus be a certificate of moral conduct and trustworthiness for civil work and social position. On inquiry amongst the volunteer corps he was assured that on such conditions a double number of volunteers might be obtained, and a more efficient force than had been seen on the battle-field since the time of Cromwell's Ironsides, for India and the colonies. This improved quality of force would be

obtainable at a greatly reduced expense, if one day's double pay were given as against the seven days half-day's pay. It would work out altogether at about half the existing army expenses, including a fortnight or three weeks' exercises—required by Sir John Burgoyne—as an acceptable "outing" for those who could be spared.

Sir Joseph Whitworth, an ally of our author in sanitation, was led to examine the economy of small arms and its effect on war; as of his small three or four-pounder gun, which, with a shell that opened with the fire of a company, had with a covered fire a range of five miles. "What would I not have done with such an arm," said Lord Clyde, "if I had had it in India." Other implements are now being introduced by mechanists which will require thoroughly skilled and educated force to wield them. There is the improved Gatling, and there is an invention, the Maxim gun, which promises to give the fire of a whole battalion. "Dieu aime les gros bataillons" was the French maxim; but he loves them no longer. The great battalions, even our own squares, will all dissipate under the new machine guns, and the whole of the military tactics will have to be altered to an extent which baffles the old tacticians. The battle will be decided by science, skill, and capital; in other words, by the new education.

CHAPTER VII.

EDUCATION OF THE YOUNG FOR MILITARY SERVICE.

TO promote the system of physical training in combination with mental education for the army is one of the most striking efforts in the labours of our author. In the last chapter we had a glance at this fact, but what was there said was the barest outline of the argument which has been in various essays wrought out. In an address delivered before the Social Science Association on February 1st, 1867, the expediency of the introduction of the military drill and of the naval exercises in the school stages of the elementary school, and of the employment of soldiers on civil works in time of peace, was freely developed and expounded. The address itself is so clear and forcible I shall select from it the more important of its passages which bear no condensation, and shall present them in the first person as they were spoken by the author himself.

"The principle of the chief measure which I have to propose is an old one, involved in the old practice of the kingdom, when every local community, every parish as well as burgh, was required to exercise the whole male population, beginning with the very

young, in military exercises and the use of the bow. I propose to change the commencement of military exercises from the productive adult to the non-productive juvenile, or to the earliest of the school stages,—and to provide that, in all the elementary schools throughout the kingdom, aided by the State, the boys shall be trained in the military exercises and appropriate gymnastics. I may support this proposition by the evidence of the results obtained by long and practical experience in elementary schools in different parts of the country, and by the testimony of intelligent non-commissioned officers who have been engaged in training recruits. These officers all agree that the earlier they begin this training the better they succeed; that they do in infancy what is difficult to do at a more advanced age, and what they cannot do at all with many men in the adult stages. In the infantile or school stage, we have, as material, to bend the tender twig; in the juvenile stage, we have to straighten the crooked stick; and, in the adult stage, we have often to reform the gnarled oak. The open-air exercises of the drill-master, when properly managed, are greatly preferred by boys to the desk-work of the school-master.

"In the district schools or orphan asylums where it has been applied, and I more particularly allude to the Children's Institution at Stepney, where the military and naval drill have been long combined with great advantage—and where they are left to themselves to choose their occupations—full sixty per cent. volunteer for the royal service; about one-half of the sixty per cent. for the army, and one-half for the navy. It is common for the trained lad,

when he joins the army, to be asked by the non-commissioned officers, who observe his ready movement, 'from what regiment he has come;' and when he says that he has been in no regiment at all, to be told bluntly that he is lying, and that he is a deserter:—since it is not in the corporal's conception that such good drill could have been acquired except in a regiment.

"As to the expense of each species of drill, the services of one drill-master, that of a pensioner, usually are found to suffice for as many as five hundred boys. It takes about three months to finish a lad off well in the rudimentary military drill, at a rate of a penny per week, or a shilling per head for three months' training required for the military drill. It would, however, be worth while to improve these exercises by introducing special gymnastics; but as the military drill is at present conducted, it may be stated that about fifty lads may be got well through the military drill in the juvenile stage, at the expense of keeping and drilling one recruit from the plough-tail in the adult stage. If, therefore, by the general adoption of this system the result was only to get two volunteers out of each half hundred so drilled in the infantile stage, or if the time of training several militia men be saved hereafter in the adult stage, the public would be repaid. By the measure I propose the discouragement to volunteering constituted by the drill, which is acknowledged to be very serious by its irksomeness, and the ridicule attached to awkwardness is removed. By removing the drill to the infantile stage, a powerful encouragement is given. The lad, when he has arrived at the time to make his choice

of an occupation, has the temptation of a service for which he is already in a great measure prepared. On the civil side he has the discouragement of having to undergo a training for some handicraft, or a period of apprenticeship; and on the military side, the encouragement of a service for which he believes himself to be quite ready. The practical result is, as might be expected, that a large proportion from well-trained schools do volunteer for the military or the naval service. Considering these conditions, we may be quite sure that the result of the expenditure in the infantile stage will be a highly remunerative and extensive eventual amount of volunteering.

"Assuming that the exercises given in the school stage are made general and thorough, amongst the whole of the population in the school stage, the measure will reduce the time and expense of the drill for the militia, supposing, as has been proposed, that compulsory ballot for the militia should be restored and extended. With the increased disposition to recruitment, it will moreover associate education and an advanced quality of recruitment. Whatsoever may be the military arrangements superinduced—the extension of the militia ballot, a positive conscription for the adult stages—it will be of advantage to have the drill and exercises carried out as thoroughly as possible, and completed as a foundation for them in the school stages. Further, by this early training, besides the predisposition for volunteering for the regular army, we get a population which may be readily put in line for any defensive purposes. If the body of the people were well trained in the school stage, the British people would step out of civil life, and fall

into rank and act together whenever it might be necessary in any part of the globe. I was once present at a discussion with some distinguished military men, when our home force was at the lowest, and when it was assumed that there might be an invasion in a few days. The question was what might possibly be done. One measure proposed was, to impress an army of navvies, and use them to throw up earthworks in the way of the invader; and next to impress all who had game licences, who numbered forty thousand persons, and were presumed to be practised shots, and to line the earthworks with them. But by the measure proposed of the general training of the population, all might be not only placed behind earthworks, but be brought out and wielded in the open with regular troops. What such aptitudes would have been to the civil populations in India will suggest itself for consideration. In China, the clerks in the factories had to be drilled *extempore*.

"But there are considerable advantages in combining naval exercises with the military drill in the same school, by the use of a mast and sails, in the exercising or playgrounds, on which a very large proportion of the naval exercises may be given.

"In the first place, the naval training varies the exercises, and increases the interest in them among the boys; it varies the gymnastics, and adds to the useful physical and mental qualifications imparted. If it be made the foundation of a sea service, the previous training in the military drill is of advantage to the sailor as well as the exercises of seamen are of use to soldiers to enable them to lend a hand for naval service.

"Several years ago, I endeavoured to call attention to some evidence as to the results of military exercises in the half-time or district schools, which received much consideration from some members of the Government, and from many noblemen and gentlemen interested in the volunteer movement, as well as in the military policy of the country. Lord Elcho took the lead in the formation of an association for the promotion of the practice of military drill in the public schools. The object of the association was soon accomplished as respects the chief of those schools, and as part of the volunteer movement; but at that time influential opinion did not carry exertion farther. General Shaw Kennedy, Sir De Lacy Evans, and other distinguished members of the military profession, however, then sanctioned the conclusions from the evidence which I submitted, as to the importance of the general application of the principle to the training of *all* the youth of the country. Since then the evidence which I collected and published has attracted attention in the United States, and has been cited in support of a movement there to get naval and military exercises taught in all the elementary schools. Three governors of New England States have, in their messages, directed the attention of the state legislatures to the subject, and I believe that the principle is in progress of practical adoption there. I have no doubt that it will be found extensively necessary amongst populations of advanced industrial conditions.

"But in connection with the subject it is proper to direct attention to the experience of the special value of military and naval exercises

for the physical training of the population for civil industrial occupations; even if we were to suppose that the British people were to enjoy perpetual peace in the colonies, and in their contact with barbarous nations, as well as at home.

"It is proved that these exercises give a much needed physical, as well as moral, training—a training which adds to their productive power and value for all sorts of civil service. I have obtained the conclusive evidence of large employers of labour, that four drilled labourers are equal in efficiency for ordinary labour to five that are undrilled. But considerable improvement has of late been made in physical training, which adds to the efficiency derived from the old military drill.

"The leader of the improvement in England is Mr. Maclaren, of the gymnastic establishment in Oxford. I have visited the gymnasia at Aldershot and Chatham, where the exercises of his preparation have been introduced, and I have collected the opinions of non-commissioned officers conducting them as to the addition these improvements make to the efficiency of men for ordinary labour. The non-commissioned officers well knew what ordinary labour was, and, at Aldershot, the opinion was that the difference in efficiency was as three to five; at Chatham it was as four to six. I obtained similar evidence in France, from employers of labour there, some of them Englishmen, and the general conclusion was, as stated, viz., that this physical training, in the school stage, will give to three the efficiency of five.

"The naval and the military drill, the practice

of moving together, pulling together, lifting together, develop the capacity for united action, which is as important for civil as it is for military service, and which goes far to make up the gains in efficiency already achieved. To these gains is to be added the important gain from the sanitary element of the prolonged duration of the improved working ability derived from the increased health and strength, by the substitution of out-door exercises for part of the wasted sedentary occupation in schools commonly ill-ventilated and crowded.

"In the civil and economical aspect of the question, it may be perceived, that if we get by the labour of three the produce of five, we get an important surplus produce to compensate the capitalist or the consumer of produce, for the increase of wages, which in my view of the future of our labour market must necessarily be maintained.

"On extensive inquiries of large employers of labour abroad, as well as at home, I have established the fact, that British labour has not hitherto been, as a rule, dear labour; whether it has been made dear with the very high recent advances I cannot say; it probably has in some instances. But, as a general rule, it may be averred that two British labourers or mechanics are equal in efficiency and productive value to three continental labourers—to three Germans, three Swedes, three Danes, or three Normans. If by this efficiency in labour, the food, the clothing and the housing of a third labourer is saved, that is to be regarded as so much capital to be divided as extra wages, or as extra profit to the employer. The effective productive power of

the populations is as three to two. *Tant vaut l'homme, tant vaut la terre.*

"It would need a separate paper to develop the vast economical advantages which shall give to the existing relative superiority an advantage in a proportion of two-fifths. I am compelled to reserve much recent evidence and information, illustrative of the chief propositions submitted, as well as on the means of overcoming some apparent difficulties in details, which I do not overlook.

"If the evidence is re-examined, as I should desire it to be, the conclusion as to the amount of civil advantage to the children by the drill in the earlier stage will be fully established. But there are moral as well as intellectual advantages proved to be derived from the early physical training of children.

"The physical exercise in the military drill is a visible *moral* exercise in all that is implied in the term discipline, viz., duty, obedience to command, order, self-restraint, punctuality, and patience. There is good and bad elementary moral education, as shown by the outcome, and especially by the outcome of the half-time system of education; but the half sedentary or intellectual and dogmatic education, and the half physical, has now been proved to be far more successful than any other system yet known or practised.

"The outlay required to obtain these results might be set down in round numbers at under £100,000 for the military drill alone; but including, at all our seaports, the naval drill, I estimate £150,000 per annum for the physical training of three-quarters of a million of male

children within the school ages would suffice; or if by payments for tested results, about four shillings per head. Now, by this expenditure, an amply-paying number of recruits of an improved quality would certainly be produced in the juvenile stage immediately, as well as eventually in the adult stage, by such domestic events as now induce enlistment.

"In these expenses I include some special provisions for the treatment of those lads who volunteer direct from school, before they may have attained the requisite army standards of size. Such trained boys are found to be of greater aptitude and value than most boys, as messengers; and an increasing amount of intermediate service might be found for them in public as well as private service in that capacity. If a system of telegraphy be connected with the post, as in Belgium, France, and other states, as I hope may soon be done, a considerable number will be required to carry telegraphic messages, for which they might be used until they are of a size to be drafted for the army. So far as relates to one small section of the numbers contemplated—the orphan and destitute children, if the question were left to such local discretion as that of the majority of poor-law guardians, it would not be carried out. The guardians themselves being generally local employers of labour, have reluctantly assented to the introduction of military or naval exercises, and indeed, have often positively resisted them, on the ground that they lead to such an extent of recruiting as to interfere with the local labour market, and that they—the guardians of this or that particular union—are not called upon to provide soldiers for

the government or the country. The general public interests, however, must set aside these narrow views, which are wholly erroneous, even as respects their own labour market: the increased general efficiency of the trained labour more than making up for any reduction in numbers by recruitment. As a compensation for the interests affected by free trade, a large sum of money is annually voted by Parliament in aid of the local rates. I begrudge all such grants in aid of the local rates, for I know that, as administered, the ratepayers derive little benefit from rates in aid. They pauperize, as it were, the local administration. I have no hesitation in declaring that, for the prevention of pauperism, the expenditure proposed would be best applied in the mode I suggest, that is to say—in largely augmenting the efficiency of the labour of the country. As an administrative rule, grants from the public funds should only be allowed to be expended by officers under direct public responsibility. The expenditure for teaching the drill might, I conceive, be fittingly supervised by the Council of Military Education, who have in charge the education and training of the children of the army elementary schools. The council might direct the local organisation of the exercises of the children of neighbouring schools, according to local circumstances. The existing special institutions, such as the school of the Royal Military Asylum at Chelsea, and the naval institutions in which children are kept, might be made model training schools.

"By some persons the proposal to impart military aptitudes to the male children of all the elementary schools receiving public assistance, or virtually to the mass of the juvenile population, was viewed with

distrust, from its possible abuse in times of civil commotion. The answer to the objections made in this feeling might be in one word—Prussia! The security against abuse, such as that apprehended, will however be found in the quality of the intellectual and moral teaching by trained and competent school teachers, in combination with the physical training, the secure result of which admit of direct proof from practical experience, as displayed in evidence already laid before Parliament. A great lesson imparted by military exercises is the importance of subordination, and a rational respect for leadership, by sedulously promoting and enforcing military training in the juvenile stages of the whole population. As described by Bishop Latimer and Roger Ascham, the Plantagenets and the Tudors well knew what they were about. The bishop thus describes our early national practice, in a sermon preached before Edward VI.:—

"'The art of shooting hath been in time past much esteemed in this realm. It is the gift of God that He hath given us to excel all other nations withal; it hath been God's instrument whereby He hath given us many victories against our enemies. . . . In my time my poor father, a yeoman, who had no lands of his own, only he had a farm of three or four pounds by the year, at the uttermost, was as diligent to teach me to shoot as to learn me any other thing; and so I think other men did their children. He taught me how to draw, how to lay my body to the bow, and not to draw with the strength of arms, as the other nations do, but with the strength of body. I had my bows bought according to my age and strength; as I increased in

them so my bows were made bigger and bigger, for men never shoot well unless they be brought up in it. It is a goodly act, a wholesome exercise, much esteemed in physic. In the reverence of God let it be continued.'

"As an economical question, it may be urged that, in augmenting the productive power of the country by improved labour, we may augment the defensive, economical, or money force of the country.

"There is one topic of the recent recommendations of the Royal Commissioners on which I have to submit some observation—namely, that wherein they recommend that the soldiers should be taught some industrial occupations. Now, on this I have to observe that it is proved practically that the physical training in the school stage, giving the use of hands, arms, eyes, and legs, is giving aptitudes for *all* industrial occupations.

"I have no doubt, however, that much may be usefully done in teaching industrial occupations to the men who are untaught; but more, I apprehend, may be done in giving opportunities for the exercise of trades to those who are already taught, who, as returns show, are in large proportions in most regiments.

"In the course of an examination of the poor-law administration in some town parishes, in which cases were presented of claims to relief, either of discharged soldiers or pensioners, or of militia men and their wives and children, I came across one parish marked by the absence of that class of cases. I expressed surprise of the fact of there being no soldiers on the pauper roll, and I asked how that was. The answer was that there were soldiers in the parish, but they

were 'old guardsmen,' who were not paupers but self-supporting labourers. The observations of the parish officer upon this was to this effect:—'You will perhaps know, that in the guards the men were allowed to work, and were let out to do such work as they could find. They became accustomed to work in various ways, and support themselves, and when discharged they did not come upon the parish.'

"My attention was arrested by this fact. I made further enquiries on the subject, and I learned, to my surprise, that the practice had been discontinued, for reasons that appeared to me to be utterly inadequate, viz., that wheeling barrows and doing things of that kind made the men round-shouldered and somewhat spoiled their 'set up' for parades.

"On this, it may be observed, that if it made them round-shouldered it made them strong-shouldered for war. Unless I am misinformed, the corps of sappers and miners, in the musketry exercises and in military efficiency, have been of the first in the army; though on parade they are, perhaps, with heads bent and shoulders bowed by stooping over the work-benches, the worst in their 'set up.' I might adduce much professional testimony to show that, for officers as well as for men, occupations in civil labour in peace augments the aptitudes available for war. It is very generally agreed that the opposite doctrine was disposed of in the pitched battles of the seven weeks' war, and that, in great part by men recently called into the ranks from the plough, the forge, or the desk; in short that it was crushed at Sadowa. In respect to officers, experience in India has proved that those who have been most engaged in civil works or service

in time of peace are the most efficient for war. The costly experience of the severe civil war in the United States showed that success in war in the higher commands depended on scientific training, and its exercise in civil works during peace. Experience drove all the inferior commands to the scientific corps or the 'West Pointers,' and of those almost without a single exception to men who during the peace had been occupied not in the routine of barracks or camps, but in railway work, or one sort or other of civil work or civil service.

"The return of some of the most eminent generals on the confederate side to civil occupations, as also the quick reabsorption of the private soldiers on both sides into productive occupations, are noteworthy phenomena, confirmatory of the policy which I have indicated of the employment of soldiers in civil works in time of peace. By our own excellent volunteer force, it may be anticipated that the like economical results would be obtained. In respect to officers, it was declared before a committee of distinguished officers, of our War Department (when it had been recommended that the engineer officers should be employed on public works of civil construction), by way of illustration, that the late Captain Fowke would be the more efficient for military service by reason of his employment in civil works; more efficient, that is, than if he had been exclusively occupied in 'military duty,' *i.e.*, possibly stationed at some fort on a mud flat, engaged in dreary, weary sentinel work, year after year, without any exercise of his talents, or reasonable prospect of real service, or of relief from a dull barren routine, against which

the best minds revolt. It is a complaint in the French army that the rule which makes an officer quit the service who engages in civil work, deprives the army of the best talents, and leaves to it only the tail of the competition. And the like principle is no doubt applicable to the ranks.

"From an officer in the Swedish army I have obtained particulars, which I submit for closer examination and consideration, as to the systematised letting out of soldiers for civil labour in peace.

"In the cities, especially the seaports, the guard-house is an office for letting out men for civil work of all kinds. If a ship suddenly arrives, and the men are wanted to get out the cargo, the owner or the captain sends to the guard-house for the number he requires. If several are wanted, the corporal will serve as a foreman, or a sergeant's guard may be required, and the sergeant himself will go and act as a foreman, and the work is done and the men get extra pay for it. Loads of wood are received, and soldiers are engaged to cut it up. If a merchant has extra copying work to be done, he can send to the guard-house for men to do it. The government offices, when pressed, get men from the ranks as extra copyists. When dinners or festivals are going on, soldiers are sent for who can be recommended as waiters. Some cavalry men are at times engaged as extra drivers, and to take care of horses. There is always a good supply of spadesmen, and a great force of men, and officers too, are sent to do railway work. Officers and men are employed (as I have contended for railway reform they might be extensively employed in England) as porters, ticket takers, station masters, and railway managers.

Three-fourths of the force was in one way or another very constantly engaged in miscellaneous services, to their own satisfaction and profit, as well as to that of the State and to that of private employers.

"The employment of pensioners as commissionnaires may be referred to as an excellent example of such regimental service for miscellaneous civil employments in towns, as also the occasional liberation of soldiers for harvest work in rural districts. From what I collected of the experience in Sweden, one great advantage of such labour to the employers was that they got a responsible service. If the soldiers misconduct themselves redress is easy, and is given by the officers. On the part of the men, the artisans if labourers in fluctuating occupations, they had the army to fall back upon when work was scarce. In the Royal Hussars, there are tailors and shoemakers, who working at their trades during the greater part of the year, take to the Hussars as a social position, and are well content to fall in at times for exercises. On the side of the army, the practice induces a better order of service. The Swedish army is now admitted to be one of the finest in Europe, and worthy of the followers of Gustavus and of Charles XII. Here, I apprehend, if the practice of employing soldiers in civil work were systematised, it would induce a higher order of recruitment, and it would tend, as it certainly did in the instance of the 'old guards,' to which I have referred, to prevent the disbandment of a military force and the creation of a force of wretched dependent paupers.

"The systematised extension of the practice in our seaports and manufacturing towns, would, I

conceive, be beneficial to the extent that it would diminish the inducement to keep up a wretched class of labourers, hanging about in idleness, in waiting for occasional occupation; at times highly paid, and spending their excessive earnings in drink; and at times in destitution and misery and in dependence, when married, on parochial relief for the support of families.

"The pecuniary economy to the public from the systematised civil employment of soldiers in Sweden is considerable, and it is probable that the greatly reduced cost per head of some armies on the Continent, as compared with the cost in England, may be due in part to this practice. I have been informed of the employment of soldiers in civil works in other continental states; in Austria, as many as twenty thousand at once in railway construction; but it has not been in my way to enquire and inform myself as to the particulars in respect to them. I submit, that it would be an important subject for a responsible and particular enquiry as to the way in which practical difficulties in details are obviated.

"In respect to teaching men industrial occupations and spade-work in the camp, I believe that a great deal may be done in it; and I can speak confidently and with wide practical information as to the sanitary works. I once stated, in a paper submitted to Earl de Grey, the expediency of having the various modes in which sanitary principles have been applied, some successfully and some otherwise, carefully examined, in order that the best civil works should be clearly ascertained and distinguished and set forth in aide-mémoires or practical manuals

for the use of engineer offices, for the better direction of such works at home and in India.

"As productive power and the demand for labour and the prices of labour increase, the abstraction of labour becomes more onerous and injurious. The cost of maintaining, for one year, each of the three millions eight hundred thousand men now kept in the standing armies of Europe, in barracks, in camps and cantonments, would drain and render more productive eight millions of acres of land; or would drain and put into improved sanitary condition the habitations of six millions of families, and reduce their sickness and death-rates by one-third. The year's cost of each regiment would suffice to make one mile of railway. It appears to be an important sign of the times that economical views on this subject seem to be spreading in France, and that the extent of the standing army there is felt to be detrimental to the progress of the country in population and productive power; and so much is this felt, that it appears to be found necessary to reduce the demands for an extended conscription to limits which, if it were confined to adult levies, would be suitable to a defensive rather than an aggressive power. The like reactionary feeling against extended levies and old military policies appears to be gaining ground in Germany.

"A correspondent of distinguished judgment and of wide information in the United States, alleges as against the economical policy of large standing armies, that after all, they of the Northern States, by keeping up only an inconsiderable military force—by leaving the entire adult population free to the development of the productive resources of

the country, by leaving their capital applicable to production undiminished, and their economical power of sustaining a war intact, although they were wholly unaccustomed to arms, were taken by surprise by an organised rebellion of the slave states, where the white population were generally accustomed to the use of arms,—they, after all, came out of their great contest better than we, with our standing army, came out of our long war. He also urged that they would sooner be clear of debt, and, being free of slavery, would be endowed with augmented power of production and wealth, and enabled to purchase, to the greatest extent, the new appliances of war for a people better prepared, by intelligence and early school training, to wield them.

"Be this as it may, and accepting this statement merely as an illustration of the economic principles applicable to this subject,—if the present condition and the probable future of our own labour markets be duly regarded,—I believe that excessive irritation and disappointment will attend any extensive efforts to get by compulsion, or by any extended militia ballot, or by measures of the nature of a conscription, service of the requisite quality, at a lower rate than it may be obtained by volunteering. The end will, I apprehend, be only attained hereafter by a careful consultation, in future arrangements, of the industrial interests of the country. This will, I submit, be the best done on the largest scale by transferring all military exercises and training to the greatest extent practicable to the non-productive, or juvenile, stage of life; and by facilitating and encouraging in the

adult stages the occupation of soldiers everywhere, during time of peace, in productive industry, whether private or public. I submit that we may most befittingly set to other nations an example in this respect, and that we have a common interest with other populations in getting such example followed."

CHAPTER VIII.

EDUCATION FOR THE AGRICULTURAL CLASSES.

A CHAPTER on the education of the agricultural classes forms another part of the work of our author in this department of his public labours. He deals in the present chapter with the primary education of the classes under consideration; the grand point of his argument being that, if the children of agriculturists were grounded in the elements of a fair education, they would be able to do more and better work in a shorter time than if they were left in the ignorance in which, during the greater part of his career, he has been so unhappy as to find them. In the introduction to this study he starts by expressing that the primary education, and the secondary education, needed for the progress of art and science amongst the agricultural classes, involve specialities so distinct from those for the general population, or from the town population, as to require a separate report upon them. And, as a justification of his title for dealing with the question, he mentions that he does so upon much collected experience of school teachers who have testified to wide differences in intelligence in different agricultural districts, accompanied by differences in the value of labour. School teachers in the southern

counties, Hampshire, Buckinghamshire, Sussex; and also in northern counties, Lancashire and Yorkshire, rated the power of learning, or the *receptivity*, of children in the northern counties as three against two in the south. Agriculturists who had worked farms in the north and in the south gave testimony as to similar differences in the intelligence and the efficiency of the labour of the different districts. They had to pay a third more of wages to the Lancashire or the northern labourers, but they got the work as cheaply and more quickly done. Two of the more intelligent northern labourers were found to be equal in efficiency to three southern. Northern agriculturists—Scotch—tempted by the lower rents, have visited southern farms with the view of taking them; but when they have examined the condition of the available labour, they have considered that unfavourable difference to be more than equivalent to the reduced rent, and have declined to take them. The southern labourers had inferior habits of working, which they could not or would not change. Besides requiring three to do the work of two, they required more expensive superintendence, and incurred more expense for repairs in working machinery. An accomplished and improving agriculturist from the north undertook the work of a new sewage farm in the south, but he found he could not do it with the labour there, nor get on until he got his labourers from the north. The northern labourers were, however, still susceptible of improvement by education, and especially by discipline, in early drill and gymnastic exercise.

After stating these facts with some others of a preliminary kind, in which the condition of the

French peasant is compared with the English, and the difficulties the English agriculturist has had to contend with in introducing machinery for agricultural purposes is defined, the question is directly entered upon, of the means for practical improvement. "How," the author asks, "may the required conditions of a quickened intelligence, of increased bodily aptitudes, and of imparting to two the efficiency of three, be best brought about for the agricultural population?" The answer is, that a large commencement may be earliest and best effected through the administrative machinery of the Local Government Board. That Board has in its charge, in the various institutions throughout the country, some thirty thousand orphan and destitute children. Their administration, as stated, has supplied the example creating an interest in naval and military specialities. It may well be required to face about and create an equivalent retaining interest in the speciality of the culture of the land. To this end educational works on agriculture would alone be required for the instruction of children, with some specialist teachers, and a few specialist inspectors.

The district institution buildings, already constructed, have very good capabilities. They have more or less of land attached to them which might be utilised. They have all steam-engines, and in some of them the boys who are put to practise stoking might have special and scientific instructions provided which would render them first-rate aids to the engine men on the farms. The institutions have large kitchens, and bakeries, and laundries, and some have dairies, all of which may be made good places of training for girls in farm

service. In most important respects they are capable, with little expense, of being made model elementary schools to the adjacent schools in the agricultural districts for primary instruction, and the greater part of them are paid for by the land, so their fruit may be said to be due to the land.

It may be anticipated that in local re-organisation there will be, in conformity with independent representations, the restoration of the principle of administration of Poor-law organisation, which the commission of inquiry of 1833 agreed with the author in proposing—viz., the classification and treatment of classes in separate houses for each class, or in separate houses with special economical treatment for children. On such a principle the whole of the thirty thousand children under the jurisdiction of the Local Government Board would have the benefit of further improved adaptation to required specialities.

The children of the ratepayers in the board schools, and in the other common schools, can rarely obtain so good an intellectual teaching as is obtainable in the district and larger half-time schools now maintained out of the rates; while of physical training in systematised gymnastics, there may be said to be none at all. But in some of the northern districts the administrators having bethought themselves that the ratepayers might be permitted to participate, through their children, in the advantages for which they have paid, their children have been admitted to the half-time schools as day scholars. This is of considerable advantage, as it serves to fill the classes and augment the power of grading; and it is an advantage that may be widely extended with

the progress of educational organisation. At present, large numbers of children find only schools available which, whatever may be the school organisation, are to be regarded solely as assemblies of unwashed children, with dirty clothes,—dangerous centres of children's epidemics.

In the district half-time schools, there would only be children who, dressed in clean linen, have undergone regular head-to-foot ablutions, assemblages in which children's diseases of spontaneous origin are abolished, and in which the death-rates, though further improvable, are not one-third of those of the children of the school ages of the outside population. The outside children would enter a school with such incessant, interesting occupation, as to leave no room for the moral contamination of idleness. In the common small school, the child can only get a short direct lesson from the master, and has a long time of painful waiting. In the other he has no vacant time, and is always occupied—it may be, agreeably. The advantages of the district half-time model schools could not fail to be soon appreciated by the agricultural classes.

In support of these recommendations the author had the evidence of one of the industrial schools, under the management of Captain Rowland Brooks, at Feltham, in respect to the special direction in such a school for the formative training of children for agriculture. Captain Brooks concurred in their practicability, and adduced a very complete proof for their accomplishment. It struck some one that some of the boys at Feltham might do for a farm in Wales. They were sent, and answered so well, that farmer after farmer applied for others, and

soon between two and three hundred were doing well, some of the elder ones having got to occupy farms themselves. The change in the direction of these schools, if the industrial were added to the Poor-law schools, would of itself add a powerful contingent of some forty thousand or more youths, trained bodily and mentally, for the advancement of the agriculture of the country; and that too with a reduction of the common expenses of teaching and training.

Passing from primary to secondary education, the author contends that the schools he has proposed would supply better materials for the service of those trained in the superior agricultural schools, the provision of institutions for which are statistically extremely inadequate. Mr. Chalmers Morton estimates that in England and Wales there must be, in ordinary times, as many as ten thousand changes of occupations of farms every year. In all these it may be assumed that the application of superior science would be attended by some advance of production. But to supply this demand, what is the provision of some hundred students at Cirencester, and of all the agricultural colleges of England and Ireland put together? How many of these appear to give leading expositors to influence practice at the agricultural clubs, or successful competitors with prize farms? On the Continent greater encouragement is given by the State for providing superior agricultural instruction. A recent report of the Royal Agricultural Society of Scotland gives a discouraging account of the little support given anywhere to the colleges for superior agricultural instruction in this country. This may arise in part from the scientific instruction

being too high to be very practical, at least in the estimation of practical farmers. But the little effect of the superior instruction on the Continent as well as here is certainly in great part due to the general want of preparation for it at the base,—viz., the want of elementary instruction in the labouring hands who are to apply it. For all the specialties required in improved elementary instruction, however, time is required to be saved out of the common course of such elementary instruction.

Unfortunately, the primary principle of education, the capacity of the recipient, *the mind*, is not understood or regarded. By tests—as conclusive as tests for any physical results—it has been made out that the receptivity of the minds of the great mass of children for direct instruction does not exceed three hours daily; but now attention is required for five and six hours daily. Teachers are required to put quarts into pints, or gallons into quarts. As a consequence it is a common observation that, after leaving school, children have forgotten the greatest part of all they have learned. There has been a waste of what has been laboriously put in. If more is to be put into the pint, the question is, what is to be left out of it? There is a strong declaration that spelling ought to be changed, or left out in the infantile stages. Mr. Pagliardini, who was for many years a teacher at the St. Paul's School, and has examined the subject, declares that by spelling reform, out of the five millions which the public pay for primary education, two millions might be saved. Far too much importance is attached to spelling. Frederick the Great was a scandalously bad speller; Bonaparte never spelt well; His Majesty George III. would not

have got through the fourth standard. One of Pope's lady correspondents writes to him that, though he may sometimes find too many letters in her words, she hopes he does not find too many words in her letters.

Mr. E. Jones, of Liverpool, a very experienced teacher, and a strenuous advocate for spelling reform, says that "last year the total cost of public elementary schools in England and Wales, from all sources, was over £5,000,000. This amount has increased, and is increasing. How large a part of this is wasted upon spelling! This is the Department's method of teaching thrift and economy to young England; this the method of teaching elementary science, by retaining the most unscientific instrument ever invented by human perversity. What is the net result of this £5,000,000 spent upon education yearly? Simply this, that 80 per cent. of the children of the country pass the limit of the school without reaching the third standard; and 50 per cent. without reaching the second standard." The late Lord Derby used frequently to drop the "h" in pronunciation, as did the Prime Minister Sir Robert Peel, and as do some of the foremost men of the country—in Lancashire and Yorkshire particularly. But a great part of the labour of the inspectors, and the time of the school, is getting it inserted in the children's speech. Much time is also expended in expelling provincialisms, the retention of which may be defended on social grounds. Mr. Tito Pagliardini tersely and justly observes:—"Now, after seven years of painstaking, laborious work, spent almost exclusively in spelling, but sufficient to instil the elements of most useful knowledge into children's

minds, and give them a thirst for more knowledge, what are the officially stated results? That out of 2,741,300 children on the books of the inspected schools, only 19,349 could read with a certain fluency and expression, giving less than one successful pupil for each of the 22,000 certified teachers. Was it, then, for so unsatisfactory a result that the people of Great Britain met enthusiastically all over the country, claiming education as a right for every child in the realm, and consenting to be taxed that national education should become a living fact?"

In France there is an agreement to ease elementary education by reforming the old spelling.

Mr. Bettenson, a representative teacher of the British Schools at Maidstone, remonstrates that the new proposals "do not include one to meet the worst evil of the present system,—namely, that school-life ought to be made as attractive as possible to the child; its whole career at school is one of perpetual worry, and no less is it to the teacher. . . . Of all the subjects in the world," he complains, "the one which must be taken, if any be taken, is that of English grammar, with its mass of dry, bewildering technicalities, every atom of which will be forgotten within three months after leaving school."

As to arithmetic, school teachers assert that if they were allowed to teach it on the decimal system, they would teach it in half the time now occupied, and impart a better habit of mind by it. And so in respect to the metric system, Sir William Thompson, in his address to the British Association at York, said in reference to it, "To it we are irresistibly drawn in all scientific and practical measurements,

notwithstanding the dense barrier of insular prejudice made detrimental to the islander." Why, then, should not the child be left to go on easily, and pleasantly, and quickly with these systems until he leaves, and has to take up duodecimals in the work of the farm?

There has been another general mistake in national education, in not considering the infant school as the primary stage, as the most formative stage, and as the stage that may be made to save nearly two years of school life. All these savings of time by improved methods, added to the two years' saving of time, which the school teachers declare they can make, if left to their own desires, with their existing methods, except as to classification, make out a saving of nearly half the present school time in imparting an equivalent amount of quickened and really better instruction, and in graded schools, with a greatly reduced cost of teaching power. In fact, three children at least might be taught well at the cost now expended in teaching two badly. This saved time might be applied in the day schools to the earlier liberation of the children for productive industry in the field or the farm; or for imparting a superior secondary instruction up to the needs or desires of families for their sons to the thirteenth year.

Several manufacturers, who have had experience of the working of the half-time system, in preventing over bodily work in the mills, and in manufacture, as well as over bodily work in the schools, have manifested an anxiety for the introduction of that system into agriculture. Of these the late Mr. C. Paget, the member for Nottingham, was one. He introduced the system on a farm on his own estate;

and gave a very favourable account of its working, as others have done, to the Agricultural Educational Commission of 1861. If those experiences be examined, the results will be found to be decisive. There was only one point of difference; namely, as to the comparative eligibility of the distribution of the half-time service on alternate days or a half day. But the experiences of the latter and more correct plan appeared to preponderate, as in manufactures, both in respect to the quality of the labour and the quality of the instruction.

To the evidence afforded above our essayist adds the opinion of those who are best able to form a judgment as to the immediate results of the present system of school teaching of the agricultural communities. He objects, through the teachers, to the administration of the Code by the present system of annual examinations, and deals some weighty blows at the administrations, as will be seen in the following selections from his argument. Towards Mr. Mundella, who, at the time when the essay was written, was an all-potent official supporter of the annual payment system, he was fire with fire.

The school teachers declare emphatically that, apart from all questions as to the modes of payment, they would not, if they were left to themselves, work on the methods of classification enforced by the Privy Council.

They allege that, if they were left free to use their own methods, they would often save two years of school time to the pupils.

Now, why should they not be left free? The official answer appears to be that the annual examination is deemed to be requisite for the attainment of

results as a security. But effectual results are not attained. The work done in private schools has been better done than in the inspected schools. The teachers' statement appears to be confirmed by the practice in Germany, where, under the system of the final or leaving examination, annual preparations for examinations being forbidden, the children attain to the same level from two to three years earlier than under the practice in England.

The Privy Council security, by annual payments on annual examinations, is, in fact, in stages towards the attainment of the final result. But what have the public properly to do except with the final result? The leaving examination should partake of the character of the entering examinations for the scientific corps, in which no heed is taken of the previous methods of instruction, however obtained by the competitors. To illustrate the case, what would Mr. Mundella say to the public department which issued to him a contract for his manufactured stockings, if, instead of confining the examination to the final result in the manufactured article, a Government inspector should inspect at each stage:—First, how the wool was carded; next, how it was spun; then, how it was dyed; and, again, how it was woven; and should, moreover, require that the inspector—who was not a manufacturer—should see to the order and discipline of the manufactory where the work is done? What he would say to such an administration may be said to that which he sustains, at the expense to the public of the two years' payment, of thirty shillings per head on the four millions of children taught, and to them and the parents of eight millions of years of productive industry; to an

administration which goes on with a production two years behind time; and, to an outcome of undeniably bad articles, in the shape of upwards of one hundred thousand criminals who have passed through the schools.

The school teachers, who take measure of the inspectors, declare that these inspectors themselves were, when appointed, unacquainted with the art of teaching and that their primary education had generally been of the worst, as evinced by the necessity of cramming, to repair the bad primary education in all the schools through which the inspectors have passed. The teachers admit that most of the inspectors in time have obtained competency, though it has been at the expense of the teaching, but that some of them have not even yet attained it.

Nevertheless, the leaving examination proposed may be conducted with entire security by any of the inspectors, as it is confined to the results, and requires no technical skill as to the various methods of teaching by which those results have been obtained. The services of the inspectors would then be reduced to the annual or other periodical examinations of those who claim to have attained the fourth or other standards; and to the adjustment of the claims of teachers to compensation, where the pupils have changed their schools. The alteration of the method of payment might involve some financial trouble, but it should not on that account be retained at some millions of expense to the ratepayers.

The *Schoolmaster*, which is the organ of the school teachers of the United Kingdom, expresses intense surprise that the new Code is entirely silent on the subject of physical training; and that there has been

no recognition of the greatly increasing demands for it.

The fact is, that the subject is to be regarded as entirely out of the knowledge and present competency of the Department, to deal with it effectually, it being a topic of special sanitation. The officers whose services are first required are the local Medical Officers of Health, who should periodically inspect the schools, take order as to the health and physical condition, detect the premonitory symptoms of infectious diseases, follow the children to their homes, and give instruction as to their treatment at their homes. In respect to all the district schools which are under the direct control of the Local Government Board and the union houses, such order is taken with the effect of the almost entire abolition of the children's epidemics of spontaneous origin in the union houses, and with advanced physical training in the case of the half-timers.

By recent examinations, it is made out that the death-rate prevalent amongst the elementary school teachers, is twenty per thousand; that is to say, a rate in selected lives four times greater than the rates now prevalent amongst the police or the Royal Navy, apart from the accidents and casualties due to those services. The elementary school teachers' death-rate, originating chiefly from the foul air of disease arising from the breaths, skins, and clothing of children, crowded together in small, ill-ventilated rural schools, or in class-rooms, involves the loss of over one hundred and fifty teachers annually. Moreover, each preventible death denotes an average of twenty cases of preventible sickness, and with each case of sickness an average of two-and-a-half weeks' loss

of service during sickness and convalescence. The estimated total money loss from these excesses of sickness and death is upwards of £90,000 per annum. The effect of the half-time principle, as denoted by large increase of attendances of children from reduction of sickness, would lead to a proportionate reduction of these losses.

By following the examples of the application of the principles here set forth, beginning first with an extended application of the principles in the district schools and in other schools that are under the charge of the Local Government Board, it is demonstrated that three at the least may be trained and taught well at the common cost of educating two badly. By these improvements more agricultural children may be got through the fourth standard by their tenth year than by their twelfth or thirteenth year under the present plan, and may then be set free for productive industry.

Objections are raised to giving more than what is termed the primary instruction in rate-aided schools. But these objections are hardly tenable in giving within the period, which is now accepted as the primary period, the instruction to the farmer's children, for which, as a ratepayer, he largely pays, and which he cannot get elsewhere. The farmer's son might, by his thirteenth year, be liberated for the work of the farm, with good freehand drawing, with mensuration, with agricultural account keeping, with botany, and with some of the science for which Sir John Lubbock pleads. The farmer's daughter might participate in the advantages of advanced physical training, and exercises in domestic economy,—true accomplishments largely needed.

A stronger interest in the agricultural pursuits, such as the French agriculturists desiderate, may be ensured to countervail the interests and enticements of the town. In such new interest must be included a general advance in the usual wages, and if we give to two—as it is the effect mainly of the bodily training to do—the efficiency of three, we shall thereby save the food, the clothing, the lodging, and the board of the third person.

The essay on the education of the agricultural classes closes with a summary of the ultimate advantages which ought to accrue to the labouring populations.

The extension of the use of labour-saving machinery in agricultural districts must be carried out, as it is in the manufacturing districts, by more intelligent, more skilled, and more trustworthy hands,—by men of more trustworthiness, and of a higher social and moral position, to whom higher wages, consistent with that position, must be given, and which may well be afforded out of the large savings which their services will effect. The half-time schools are now attended by marked proportions of advances to middle-class positions in life. On the whole, their experiences will, when examined, justify the conclusion that by reducing what is proved to be reducible, ineffective, or injurious in mental training; by imparting what is required in physical training; by directing instruction to the specialities of agriculture, and to the arts and sciences available for it; the interests of agriculture and its production will be greatly augmented through a more intelligent, better educated, and better working population, and through

a counter-interest created and countervailing the present attractions of life in large towns.

The question, primarily, is one in the interests of employers, but it may be also dealt with in the interests of the wage-classes engaged in agriculture, for their advance in intelligence and usefulness, and for their consequent advancement in wages, social position, and general prosperity.

CHAPTER IX.

THE SCHOOL CHILDREN OF LONDON.

IN the metropolis of the world, the author of the original library which is under our observation in these volumes has passed the greater portion of his life. In this metropolis, in all its parts, he is at home. He has a liking for seeing London and its inhabitants under every condition of life, and much of what he has written takes its colouring from the impressions he has formed while thus occupied. This fact is singularly borne out in respect to his observations on the children of the metropolis, and on the best methods that can be adopted for their physical and mental advantage. In my perusal of the numberless essays which I have had before me, the training of the children of the metropolis has cropped up so often that it seems to me to have been constantly in the mind of the writer when he has been treating on the social development of the people. But the best essay, as well as the latest on this topic, is one which he wrote in the year 1882 under the title "The School Children of the Metropolis." This essay may be said to embody in brief summary the mind of its contributor, derived from more than half a century of observation and research. After com-

menting on the character and value of some physical exercises for children which he and I had witnessed together, he speaks in commendation of the Swedish system of training.

In the advanced practice in Sweden with urban children, every child on its admission into the school is diagnosed by the medical officer, who gives a prescription of the specific exercises to be applied. There are large reasons why this example should be followed in this country. In the army, recruits are diagnosed for the preservation of military force, and in infancy the same should be done for the preservation of civil force, by preventive and curative physical training. In the lower urban districts, too, large proportions of children are presented whom a Spartan policy would relieve of a painful existence to themselves and the community; but who, as we can now show, in the district half-time institutions for orphan and destitute children, generally of the lowest type, may be well preserved by sanitation, bodily exercise systematised by industrial training. Under these benign influences the children's diseases of spontaneous origin are almost banished, and the sickness and death-rates from them are not now one-third of those generally prevalent amongst the children of board schools, whilst, excepting idiots, full ninety per cent. of the children, by their improved aptitude—through which the efficiency of three is given to every two—for industrial occupations, are got into productive service.

In the primary schools of Holland, some of which the author visited with the chief inspector of primary schools, all the children were particularly clean. If in the girls' school the head mistress observed any

child to whom the duty of head-to-foot washing appeared not to have been performed, she directed a *bonne* in attendance to take out the child to a proper apartment, and examine it, and give it the requisite cleansing with tepid water. If the work had to be repeated with the child, it brought discredit on the mother for neglect, and was rectified.

London board schools are deficient in the appliances for the performance of a service which would be a much larger factor in sanitation than is supposed by school managers, and one especially beneficial for the children of parents too many of whom have not, in the present condition of water distribution, really the means of providing for personal cleanliness at home. The schools are deficient in tepid swimming baths, such as most district schools are provided with. We do not compare in this respect with some foreign schools. The Rev. Joseph Maskell, Master and Chaplain of the Emmanuel Hospital, Westminster, in an account which he gives in the *Journal of Education* of a visit of examination he made to the primary schools of Belgium, observes: "I was struck with the neatness of dress and the cleanly appearance of the female children. I saw many signs of poverty in pinched faces, in patched and mended garments, and in coarse texture of dress, but the children were invariably neat and tidy. Every school," he says, "has now its gymnasium, with a special teacher and special times of practice, as part of the regular curriculum. So much importance is attached to gymnastics in Belgium that there is a monthly publication devoted to the interests and operations of this class of teachers, the *Gymnastique Scholiaire.*" There is also regular medical inspection of

the schools. The same should be carried out here.

By the first general Board of Health it was provided, as one of the duties of the medical officer of health, that there should be a regular inspection of the school children; and, on the detection of a case of incipient infectious or contagious disease, he was directed to see to the removal of the sick child, to follow it home, to watch its treatment there, and to attend to the sanitary condition of the home and its amendment. But this service still remains to be applied systematically. Had it been carried out, it would have stopped the greater number of those epidemics which occasion the closing of schools, for which teachers are asking for compensation for the losses of their fees consequent on the closures; it would have reduced the heavy death-rates prevalent amongst teachers, death-rates four times greater than amongst seamen in the Royal Navy. The sanitary service required for the schools would have gone against a total loss, as estimated by medical officers, of more than fifty thousand lives in the school stages of life in Great Britain. As respects the physical exercises in the board schools, Miss Lofving has represented that the long-time system of education occasioned so much obstruction that she could not continue her services efficiently or to her satisfaction, and she has consequently retired, leaving any continuance there may be in the partial school exercises of girls to an inferior service. At the same time, mothers complain before magistrates of the injury it does to them by depriving them altogether of the earnings of their children for the support of their families.

The subject is then further illustrated by the suggestion that the civil schools might act for physical training as good schools for the military service. The War Department, on the invitation of the King of Sweden, sent a commission to examine the system of physical training in use there. The reporter, Captain H. Armit, of the Central London Rangers, reported highly and favourably of it, for the gain of civil as well as military forces. The gymnastic college there, he stated, had branches in all the principal towns of the country. "By this means the civil and the military schools are connected. A link or bond of union exists in the instructors, who are also sent from the military establishments gratis to all State schools throughout the country. The result is that the whole Swedish population has by degrees been trained and disciplined by means of the Ling system of extension drill, and has thus been accustomed to work, when assembled in large or in small numbers, with an exactitude and a precision of motion hardly credible." He spoke of "the many and great benefits which it conferred upon a people, by strengthening the system of the weak and of the robust alike, by infusing health and vigour into the mind, and by teaching to all the value of and the necessity for the existence of discipline amongst all classes of the community. In truth, the Ling system has made of Sweden a disciplined nation. The introduction of the system would," Captain Armit says, "cost the taxpayer nothing beyond the salaries paid to the instructors, as no appliances of any sort are required. On the other hand, recruits for the army would present themselves, not as untrained men, but as men proficient in every essential point

necessary to form a soldier except the rifle exercise, which latter would not take long to teach them. They begin by the eighth year." It may be added that with a far less favourable climate, the general death-rate in Sweden is about three per thousand less than the death-rate in England.

In contrast with this system of physical training in Sweden, our author dwells on what he considers to be the defects of the London School Board. On a review of the London School Board it appears that the prevalent majority of the members have not attained to the knowledge of the economy of health and force, nor of employing the most effective means of attaining it. They would not give more than half the salary to the professor of physical training that they gave to the head teachers of a very defective system of mental training. The school drill review, for which the Society of Arts gave a prize, nearly fell before an opposition of a member of the wage classes, on the ground that it tended to foster a military spirit, in ignorance of the greater fact that it promotes an industrial spirit, and actually raises wages. The schools have been conducted on the common policy of rearing two colts to obtain one working horse, which, when raised, has only a limited existence of two-thirds of a healthy period of working ability. Instead of obstructions being removed, and physical training made complete and prevalent in all schools, it has been left to go on in secondary, inferior, and comparatively ineffective conditions.

Leaving the difficulty of physical training, affecting most deeply the children of the wage classes, allusion is next made to the experiences bearing upon the

ordinary conditions for mental training in the board schools.

Those who have given earnest study to primary education are aware that the highest training power should be the most sedulously applied, specially with the lowest classes, in the most formative period of life—the infant school stage. In the United States great progress is making with the infant schools and the Kindergarten, both highly popular with educationists there, who reckon from them a saving of two years of school life. It is to be borne in mind as a primary object that all saving of time that can be effected in the earliest school stages is gain of time for the ultimate or secondary stages, beyond which, owing to the time now occupied with primary education, the wage classes cannot afford to keep their children. It is generally agreed that in order to secure the greatest formative power of teaching, the service of ladies should, if possible, be engaged, on account of the greater degree of influence they are capable of impressing on the manners of the children. It is stated by a member of the Board, who has paid special attention to primary schools, that even now not more than one-half of them have yet attained what is deemed a fitting and effective condition in their appointments. Miss Lofving expresses her regret at finding that, where the highest teaching power should be applied, she generally found that the supposed least expensive, not to say the most indifferent, was given.

As respects the next school stage it is usual to put forth the advances made in the passes of the School Board children; but it is omitted to state at what expense of time and of money those passes

have been obtained. The orphan and destitute children who have been at the board schools, but who are afterwards sent to the district half-time schools, are found, as a rule, to be in mental attainments far behind the children of the same ages and school attendance who have been exclusively at the half-time schools. In the board schools very few obtain the fourth standard by their tenth year, the great majority only by the eleventh, twelfth, or thirteenth year. In the district half-time schools the mass of the children have got through that standard by their tenth year, and in one of the largest by their ninth year, and this with the lowest type of children. Mr. Marsland, of the Anerley School, declares that if he had children of the type of the Lancashire or the Yorkshire children, he would undertake to get them through the standards in half the usual time, by a judicious combination of mental and physical occupation. But a larger foreign national experience may be cited—namely, that of Prussia, where children are taken into school only by their sixth year, and are passed with more than the British equivalent of the fourth standard by their ninth year. Miss Clough, the principal of the Newnham College, Cambridge, was at pains to get over the demonstration of a method, now spreading through Germany, of teaching reading and writing in less than half the time now occupied in the board schools, but she failed in getting due attention to the subject. Experienced teachers have declared that if they were left free to use the decimal system, they would teach arithmetic in half the time now occupied with it, and impart a better habit of mind and preparation for higher studies, without detriment to the power of the

pupils in taking up the duodecimal when they entered upon their technical occupations. Eminent teachers are agreed as to the uselessness of teaching grammar in the earlier school stages. Some School Board teachers have, moreover, indicated that if they were left free to use their own course with children of different capacities, the quick and the slow, they would, with the ordinary British methods, and within their own period, after the infant school period, save full two years of the common school life. They verified this by what they had done when their course of teaching was free.

The essay is brought to a conclusion by adverting once again to the economical results which would follow upon the plan the author has been advocating so earnestly. "Consider," he says, "the waste of two years of school life to each of half a million of children—of one million of years of school life miserably misapplied. Consider the waste of earnings! Consider also the gain of years of school time by efficient administration in the infant school and Kindergarten period. The expenses of teaching power in the board schools should not be more than double that of the large district schools,—the expenses of which are under one pound per head,—paid for inferior teaching power, at higher salaries, than the stated average of the board school salaries, and with the expense of drill masters and masters of manual exercises included. It is true that it is not the Board, but the Code, which is responsible for this miserable waste of time, the children's earnings, and the rates. But the Board is held to be responsible for making no exertions to rouse the attention of

Parliament to a double expenditure of the rates with inferior results."

In this required reform Paris is taking the lead of London. The half-time principle has been recently adopted by the Municipality of Paris for its primary schools, and has also been adopted in the new educational code for all children engaged in agriculture and in manufactures, which class includes the great mass of the children of France. Its systematized extension in England was recommended by the Commissioners on the Factories and Workshops Regulation Acts.

On a review of the work of mental training in the board schools, it is observable that it displays a lack of knowledge respecting the very basis of a sound system—namely, of the limits of the mental receptivity of children. It ignores the facts that the receptivity of children of the average ages is generally exhausted, by direct simultaneous class teaching—the only effective teaching—in less than three hours, and that all sedentary constraint beyond three hours is followed by most miserable and detrimental waste of time and money. Where the limits of the mental receptivity are unknown, undistinguished, and disregarded, the very foundation of the efficient and economical administration of educational funds is unknown, and the consequences are displayed in wearisome efforts, as it were, to get quarts into mental capacities of pints, and of gallons into quarts, with prolonged sedentary detentions for this foolish purpose, and with grievous bodily as well as mental injury.

One fundamental rule that would in itself effect an entire change in teaching, with adaptation to the

mental receptivities of children, would be that no lesson should be allowed to be given that had not been found, in different classes and conditions of children, to sustain the attention of all to the end by its own interest. Then a policy of sedulously accommodating learning to earning, in the case of the poorest of the wage classes, would take the place of the common policy, now carried on, to a most grievous and pernicious extent, of sacrificing earning to learning.

CHAPTER X.

PHYSICAL TRAINING FOR TRADES UNIONISTS.

AN opportunity offered for the advocacy of physical training of children in the manufacturing districts *apropos* to some of the labours of the Congress of Trades Unionists in 1885. The *Times* was, in the first instance, the chosen organ for the expression of our author's views, but he afterwards tendered them to the unionists themselves in a communication eminently characteristic. In this essay the object enforced is civil drill on the military basis, to so improve the training of children as to enable them to meet the unceasing demands for more fitting labour in arts, manufactures, and commerce. The argument is stated in the following terms:—

"Let a trade unionist consider what the military drill itself will do for his son. In the first place, it improves his walk, and enables him to move from point to point quicker, with the same amount of force. Let the difference of the set-up and movement of drilled and undrilled boys be observed. The drill makes the boy tread more evenly, and saves shoe leather. School teachers, who have been trained in the military drill, state that they find they now save a pair of boots a year by not treading unevenly as

they used to do. The even tread saves trousers by throwing up less mud upon them. These life-long economies will be comprehended by mothers through the tailor and the shoemaker. Trades unionists may slight them as not being in accordance with their policy of doing "what is good for trade." But the drill conduces to qualities of a high moral order and value denoted by the term discipline, patience, order, self-restraint, prompt and exact obedience. Children so trained learn to move quickly together, and to pull together, and exert force with fewer hands. If anyone will go into the large Lambeth Poor-law School, which is a well-drilled school, he will see in the quickness of changing classes, with order, the qualities displayed in the large manufactory which make the children worth more, because they earn higher wages. Employers have declared that the volunteers so drilled are worth several shillings a week more than the undrilled. On pressure, and mainly for the qualifications for civil work, the Privy Council was got to make an allowance for a drill-master in schools. There are now more than a thousand of the National, as well as the board schools, in which the military drill is introduced, and all the education inspectors bear testimony to the improvement produced by it on the education of the schools. There is, however, drill and drill. Drill-sergeants were generally taken for the schools because there was no one else to be got, but Professor McLaren, of Oxford, has made large accepted improvements on the ordinary drill, which have yet to be introduced into all schools. In the large district Poor-law schools, in the industrial schools, and in reformatories, now comprising upwards of

forty thousand children, all of which schools are based on the half-time principle, it is necessary to call in the aid of workmasters, such as carpenters, smiths, shoemakers, tailors; sailors, for exercises on the ship's mast; farm bailiffs, for exercises in tillage on the school farm; stokers, for work at the steam-engine; teachers, for teaching, and for the girls' work at the laundry or in cooking. Aptitude to the hands for whatsoever industrial work may turn up is thus imparted. On a recent visit to the large Manchester Poor-Law Half-time School at Swinton, the master confirmed the conclusion from practical experience, that the general result of the half-time principle, so worked out, will be to impart to two the efficiency of three ordinary labourers, for productive industry, and with proportionate augmentation of their money value as labourers. It is necessary to give such amounts of practical instruction in these institutions in order to clear the subjects from hereditary, vagrant, or pauper taint, which exist in upwards of ninety per cent. of children of the lowest type in the towns. But it is a training beyond what can be got by farmers or middle-class persons outside of the institutions. It is to be noted, that the cost of the mental training power and of the physical training power together, at higher salaries, is not above one-half the average cost of the teaching and inferior training given in the long-time schools. It is about £1 per head per annum. Of this about one-third may be set down as the cost of the physical training, or, including swimming lessons, about a penny-halfpenny per week. Every member of the wage classes may be directed to the conclusion, from existing experiences, that, by the payment of about

a penny-halfpenny per week for four or five years, an increased value may be imparted to his son of one-third greater efficiency, and of proportionately augmented wages for the whole of a prolonged life. Thus an offer to the district school at Anerley for the artillery had no effect, for no boy would volunteer for the army. Immediately the boys leave school they get such wages as 12s. a week, and as they grow older and stronger they have an early prospect of 24s. a week and more as wages. At Manchester some of the lads become foremen very early in life.

"In mental improvement these half-time schools of mixed physical and mental training are also generally in advance of the long-time schools, which are almost solely for mental training. Children who have been in the half-time schools from infancy get through the fourth standard, on the average, by the age of about nine years and a half—children, be it borne in mind, of the lowest type—and at half the annual cost of training as well as of teaching power of the long-time schools, where the children do not, on the average, get through the fourth standard in less than ten years and a half, or eleven years. This may be ascribed to the fact of these district schools having the children always in hand. But the like results are obtained at large graded open schools for day scholars, such as the one at Faversham. Of the pauper children in the parish schools of the metropolis, formerly examined under the Poor-Law Commission of Enquiry, only a small minority reached inferior places; the rest were found on the streets as beggars or vagrants, or in the prisons as delinquents. Excepting idiots, or the bodily disabled, ninety per cent. of those trained in the district half-time schools

are accounted for as going to the good. The sanitation in these institutions is also pre-eminent. Lord Cranbrook, speaking in favour of the boarding-out practice, stated that the death-rates were only eight in a thousand. Our information gives more than that. Amongst children brought into the half-time schools without any developed disease upon them, the general death-rates are under three per thousand from the results due to diseases of spontaneous origin within these institutions, or about one-fourth of the death-rates of children of the same ages of the outside general population.

"It is to be observed, as a great recommendation of those preventive physical exercises that contribute so largely to the happiness of infantile and juvenile life, that to prohibit the enjoyment of them becomes a punishment. At the Manchester School Board those who are remiss in their attendance at the mental work are not allowed to join the physical exercises. At one district school, where there was the mast drill, the master only allowed the good boys to go upon the mainyard arm, and his very best or favourite boy to be mastheaded.

"With the progress of physical training, the number of desertions from the district institutions has progressively diminished.

"We find, however, on examination, largely increasing serious demands for special sanitary organisation, for the prevention of the deterioration of the physical condition of the general population. Lieutenant-Colonel Moody, of the recruiting service, states in his last report that four hundred and twenty-eight out of every thousand of recruits applying for enlistment were rejected on grounds of bodily unfitness for Her Majesty's service. Let the trades unionists consider that this extent of unfitness for military service represents an amount of defect amongst children and persons of their own class which renders them inferior for the endurance of productive labour, and for earning of wages in the civil service.

"There are, again, other largely increasing demands for the sanitary service of prevention in the juvenile stages of life. In the last census for the United Kingdom, there is an enumeration of thirty thousand blind. But Mr. Brudenell Carter and other specialists hold that, by competent attention in the infantile or elementary school stages, a large amount of this suffering—some assert two-thirds—may be prevented. The census shows there are in the United Kingdom one hundred and twelve thousand lunatics. Physicians, the heads of the asylums, declare that, as a class, the insane are of very low physique, and that by early physical training a large proportion of their calamity may be averted. The late Dr. Guy, who was for a long time the chief physician of the Prisons Department, suggested that it ought not to be overlooked that, as a class, the population of the prisoner class, amounting to twenty-eight thousand within prison, and forty-seven thousand at large—who chiefly keep up that population—is of low physical and low mental condition; and that a great deal of punishment is in fact inflicted, on conditions almost of insanity, which early and good physical training would largely reduce. The attention of the Swedish Government has been given to special measures of sanitation for the reduction of the masses of evil arising from defective physical train-

ing. At Stockholm every child on its admission to school is diagnosed by a first-class specialist in sanitation, who writes a prescription for the remedy of any special defect he may find as beyond the ordinary preventive exercises. If a child is very flat-chested, he prescribes an extra dose of those exercises which open the chest, and he gives the prescription to an appointed specialist, who is charged to see constantly to its due application. The lead of Sweden in this branch of preventive science is being followed in other States on the Continent, and in Belgium especially.

"Such facts as have now been supplied suggest a number of propositions. But the first step is to recommend to the Government the appointment of a college for the physical training of boys and one for girls, commensurate with the colleges for mental training, but distinct from them, and under the preventive health service. Some of the funds from the lapsed charity bequests for the benefit of poor children might fairly be applied to this purpose.

"The trades unionists should be invited to send deputations to visit the schools where the drill and other exercises are given, and to take their wives with them to see the treatment of the girls and infants there. Their support may, surely, be anticipated to measures for the extended application of what they will witness,—the better promotion of the health, strength, and working ability, for the advance of the earnings of their children.

"The resolution of the trades unionists for an increase of the sanitary inspectors may be regarded as displaying an opening perception of the importance of sanitary organisation, in which they are the

most deeply interested. But most important contribution to the principle adopted at the School Teachers' Congress, of the priority of the concrete over the abstract, comes from the United States, where it is applied in the most formative period of life—the early infantile stage. At the kitchen garden school, a table is provided with toy cups, spoons, saucers, and apparatus, which the children are taught to take on and off. They have also toy brooms with which they sweep the room. Every motion is to the music of the piano and the song, to their great interest and delight; they are taught to receive and to deliver messages. For the boys, there is a farm garden, and a table with a stratum of soil, over which there runs a toy plough, then a toy drill to deposit seed, and a toy reaper to remove the crop. The chief agricultural operations are also to music and to song. These concrete and visible operations are completely understood by the children, and interest them; whilst abstract dogmas are not mastered nor retained, and do not influence their action. Mothers of the single-roomed or mud-hovelled cottages, come and complain that their little tots of children tell them how things ought to be done, and set them to rights, much to the interest and the amusement of the father. It is ever to be regarded as an important object to contribute the cheerfulising influence and the joy of childhood to the cottage, in place of the depressing effect of any homework, in repulsive and generally profitless abstractedness.

"The half-time principle has been well introduced in the elementary schools of Paris. It has been claimed as the idea of the First Republic obtained from Rousseau. The acceptance there of the princi-

ple under that belief would be excellent. We, however, knew nothing of it when the principle was introduced in England under the Factories Act, as a means of protecting children against overwork, and of securing to them the benefits of education of which they were previously deprived. As a fact, moreover, the First Republic did nothing with the principle, nor was anything done with it until quite recently in France; indeed, the educational authorities appear to have failed to perceive that it will be inapplicable to the small communal schools of France or of any other country under such local organisation, and that it can only be carried out with efficiency and economy by the organisation of large graded schools, and by the simplification and the reduction of the time now occupied in mental instruction.

"On the operation of the school drill or military organisation, an economist may submit that by the transference of as much as possible of the military drill, from the productive adult or juvenile stages, to the unproductive, earlier or infantile stages, important public economies may be achieved. The military trainers all declare, that they obtain in the very infantile stages (for they can begin with extension motions at five or six years of age) a better drill than they ever do or can get afterwards. The tendency would be, in principle, the augmentation of that great volunteer force of a quarter of a million of men, of whom the trades unionists may observe the great majority are of the wage classes. The superiority of the quality of this force over our own barracked force, or over any conscripted and unwilling, and, therefore, inferior force, will be found to be incontestable. Our volunteers now beat the

regulars in competitions as artilleryists, for Lancashire volunteers certainly would not require forty shots to bring down one Zulu, or fail at long ranges, or require to be brought so close that it is impossible to miss the aim, as has been displayed by the regulars. In any case, whilst other nations are advancing with exercise of the military drill in their elementary schools, would it be right for us to stop such exercise in ours? The trades unionists may be assured, that with our great free volunteer movement, and with force of such high quality, they need be in no fear of any forced conscription."

CHAPTER XI.

THE ECONOMICS OF EDUCATION.

AMONGST the various arguments advanced by our author in favour of education for the whole nation, one of the most powerful is that which rests on the economical aspects of education, and of the different ends of the culture of man. This topic so repeatedly turns up in his writings, there is some difficulty in selecting out the passages in which it is dwelt upon with most force and most originality. On the whole, I think I find it placed in the strongest form and clearest light in an address delivered before the National Association for the Promotion of Social Science on the opening of the session 1869-70. We were at that moment looking forward for the work of the school boards throughout the kingdom, and for "the establishment of a system which should secure the education of every child in England and Wales." This was the motto of the National Education League of Birmingham; and our author, expressing the hope that Scotland would be equally aided, seized the occasion to comment on the results of "a complete system of education which shall embrace the primary instruction of all children, without exception, in reading, writing, and arithmetic." The Education Union of Manchester added

to this desire, "that the education of the children of the working classes should combine industrial training with attendance at school, as under the provision of the half-time system, that is, half time attendance at school, and half time attendance at work."

Both theories were in happy position in regard to the thoughts of the writer of the address which is now before us, and on both there is stated, under the different heads subjoined, those parts which deserve to be most carefully culled and epitomised.

MAN AS A SUBJECT OF CULTURE.

"The late extensions of constitutional government on the Continent appear to have brought men of influential position more closely in contact with ignorance, and impressed them more seriously than heretofore with the need of extended and complete systems of education as means of social and political safety and progress. The report of Monsieur Duroy, the late Minister of Public Instruction in France, on a general system of free national education is the most able State paper to be seen on the question. Austria, it is stated, has adopted a most liberal measure of national education. The existing systems of popular instruction on the Continent are being examined, and their chief radical defects are in course of correction. In North Germany, application is being made of the half-school time principle, of three hours' daily instruction in school, as a security against over bodily work in the field, and against over mental work and sedentary constraint in the school. It is provided there that no child

shall begin work until he is twelve years of age, and has been six years at school; that no child from twelve to fourteen shall work more than six hours daily, and that he shall attend school three hours daily. In France, a decree has been passed for the introduction of military drill and gymnastic exercises in all the Lycées, which comprehend 40,000 pupils. In Holland, this has already been done for all the secondary schools, and from experience of its advantages the opinion of the school inspectors and public opinion is moving for its extension to all primary schools.

"At this time, I submit, we may look back and consider the aspects in which people of the lower class have hitherto been chiefly regarded for culture, and contemplate the past opinion of the dominant powers and their results to aid the judgment, at the present educational crisis of the starting-points to be taken up for the future.

"By the theologian—though not of the school of Luther, or Knox, or Whately, but by the hierarchy claiming infallibility—man has been chiefly regarded as an immortal soul, whose culture was to be exclusively diverted to the world hereafter, but with a prostration of the understanding and of the will to what is proclaimed to be honour and glory to God—by the yield of tithes and offerings here. An Education Commissioner of Italy informed me that in an extensive district, which swarmed with monks and banditti, there were not above 5 per cent. of the population who could read and write; but they had been taught their credos, and that was considered to suffice. By its fruits shall this hierocratic culture be known. The seats of its longest and strongest

influence—Rome, Naples, Madrid—are now those of the most ignorant, the most licentious, the most beggarly, the most untruthful and degraded, the most savagely and unchristianly revengeful and bloodthirsty populations of Christendom. If there be now in our own cities a quarter occupied by a population sunk in filth and in squalid misery, ignorant, passionate, and dangerous,—to be treated successfully only as children for the purpose of beneficence, but for peace and security, to be distrusted and guarded against as enemies,—it is precisely the population reared under that dominant hierarchical culture. Other opposite, exemplary, and truly Christian results may be adduced as having been produced by the earnest religious culture promoted by other religious denominations, but it would be wrong to overlook the outcome of *that* denomination which irreconcilably opposes itself to the proved means of educational improvement proposed by the Minister of Public Instruction in France, to the advance of successful neutral educational improvement in Holland, and to the continuance of the successful improvement made in Ireland.

"By the monarch, man was chiefly regarded as a 'subject,' 'untaught, uncomforted, ill fed; to pine daily in thick obscuration, in squalid destitution, and obstruction. This,' says Carlyle, 'is the lot of the millions, *peuple talliable et convenable à merci et miséricorde.* In Brittany they once rose in revolt at the introduction of pendulum clocks, thinking it had something to do with the gabelle.' As to teaching, it sufficed that, being clothed in coloured cloth of a few sous the ell, the subject should be taught to

turn to the right and the left, that he might fight for the honour and glory of the State, '*Et l'état c'est moi!*' said the *Grand Monarque*. The outcome of this culture is displayed by the economist Vauban, and is pictured by La Bruyère, as it subsisted immediately before the French Revolution; and I need not point out the extent to which such conditions, with as little regard for them, subsist at the present hour.

"By the politician in our times—by the politician who rejected the power of understanding, by reading as a test for the exercise of the franchise—man has been chiefly regarded as a voter, who may be excited in any way, led by the ears, or moved by beer, to vote for the support of the party, amidst the madness of the many for the profit of the few. By the politician of both colours it was declared that the unschooled and unreading would make good votes—and that sufficed. The outcome of this politician's work is seen in the spread of corruption wider and deeper at each change, and in such vile political and social demoralisation as has been unveiled to scandal in Europe, in various inquiries in such places as Bridgwater, by my former colleague, Mr. Chisholm Anstey, and by his able and most praiseworthy fellow-commissioners.

"But we here may now solicit the counsel of other and scientific authorities, by whom man is regarded without sinister views, purely and mainly for himself.

"By the psychologist man is regarded for study and culture as a thinking, reflecting, and reasoning animal, and by him, the psychologist, it is declared that the mental powers of attention, reception, and labour of cogitation are limited by definite laws,

which are not violated without much injury, and are often grossly violated in all our old common elementary schools. Our most distinguished psychologist, the author of the greatest modern work on the Senses and the Intellect, Professor Bain, of Aberdeen, declares that there are there the hardest heads and the hardest workers in Britain, and that four hours of steady mental labour is as much as is good for them. If four hours be as much as is good for the hardest heads of young men, the laws of mind are violated by the common scholastic requirements of five and six hours' daily mental work for the soft and tender heads of infants and growing children!

"By the physiologist man is chiefly regarded as an organism, subject to important laws for his rearing and conservation. By Professor Owen it is declared that the length of sedentary constraint of young children to five or six hours of daily desk work,—that culture of the mind without culture of the body,—is in violation of the laws of physiology, and that all excessive bodily work in the infantile stages is, during the later stages in the adults, injurious to the organism, by impairing its power and durability.

"But for successful puericulture the aid of another science, the science of the economist, which is concerned in the production of the material means—the food and clothing of the orphan, the expenses of training and teaching, and the return for the outlay—must be put in requisition to aid the science of the psychologist and the physiologist.

"By the political economist, man is regarded for culture as an intelligent productive force, and in another stage to which we are advancing, that of the general use of machinery, he may be defined, as my

colleague Jules Simon, of the Institute, defines him, as an intelligent director of productive force, valuable to the extent and quality of its yield."

Man as an Investment of Capital.

"I venture, as a rudimentary economist, and as a humble servitor of the superior scientists, to claim a place in which I invite your consideration of man as an investment of capital, as a 'pecuniary transaction,' in relation to whom we have to consider the means of rearing him with the view to the return of the highest percentage of profit over and above the cost of his nurture as a return for that investment. I believe he will gain more by that mode of treatment than by most other current methods, that he would add to any other values he might have, and enhance his self-respect, and his estimation by others, if he could be led to consider himself in that point of view, and not 'throw himself away,' but study the conservancy of his force by temperance, and its productive application by attention and skill. Isolated facts of the material order are entertained in the way of objection; it is important that the complete facts of that order should have their position in support of progress. As a general rule, excessive sickness involves disability to work, premature mortality, loss of productive power, loss of capital. The sensual excess, occasioning enervation, which the sound theologian denounces as sin; the depredation, which the criminalist condemns as crime, the economist may condemn also, but in his view, as waste.

"In aid of moral, religious, and sentimental convictions on the subject, especially with some minds with whom those convictions require support, I would beg to submit economical considerations upon it, the which, lowly though they may be, in their esteem ought really to be taken into account on the question of national interest and duty. The public and private waste from ignorance, from ignorance of physiology, or from the neglect of sanitary culture, is enormous.

"In Glasgow, Manchester, and other hives of manufacturing industry, of all born, nearly one-half are in their graves before their fifth year, and those who survive do not last in working abilities much more than one-half the time that, with proper early nurture and continued economy, would be the full duration of their force. This waste of the national stock is as it would be with the farmer, if he had to rear two colts to obtain one working horse, and as if the horse when reared did not last in working and productive condition much above half its natural time.

"I beg to exemplify more particularly the waste actually occasioned by neglected, or by perverted culture.

"The common average expense of any child from infancy for food and clothing, cannot in any district be put down at less than 2s. a week. At fourteen years of age he will have cost £70; but at the ordinary expenses of well-managed unions, he will really have cost more than double that, or 4s. 6d. per week; and at fifteen years of age he may be considered as an investment of £180 of capital economised for production. If from that period he remain a pauper, there will be thenceforward a loss of the return of wages necessary to replace the cost

of his subsistence, and also a loss of the profit or payment to the capitalist, his employer. If the boy turns mendicant, he will thenceforth not cost less, but generally more, to the community, though the cost will be differently levied. If he turn thief, he will be maintained by the community far more expensively, for he will be maintained by spoil or in gaol. In whichsoever condition he may live, in prison or out of prison, the loss to the community for the remainder of his life, which from the adolescent stage would, according to the insurance tables, be about forty years, would not be less than about £400, in addition to the original outlay during the infantile and juvenile stages. In the educational conditions which prevailed formerly with the pauper children under parochial management, and which still prevail extensively under the ill-regulated union administration, only one out of three orphans become productive members of society, and the loss of capital to the public is not less then £800 upon every three orphan and destitute children thus reared. These educational failures, or the creation of those future objects of penal administration, correctly characterised in old English as 'wastrils,' still go on, from the default of legislative principle, at the rate of many thousands per annum. There are upwards of 20,000 always in prison, and regularly to keep up that prison population there must be more than 100,000 of them at large.

"From the examination of runaway apprentices, it appeared to be a common cause, that the work they were put to was painful to them, so painful that they ran away at the first effort. By a change of system, simultaneous teaching to large classes, which can

only be got together by aggregations of numbers, on the half-time system, and by physical training, which imparts aptitudes for labour, entirely different results are obtained, and now the children of that class are readily taken into service without apprenticeship fees, and the moral failures, that is to say, what I call moral failures, the failures to get into places of productive service, and to keep them, are utterly inconsiderable. We may now safely undertake that, give us young the children of hereditary mendicants and delinquents, and we will confidently undertake that the vicious succession shall be broken, and that they shall be mendicants and delinquents no longer, but honest labourers and producers. We can show where, with combined physical and mental training, this is done.

"This physical training under a proper elementary system begins in infancy, and in teaching children the use of their fingers, in plaiting, little modelling by the German method of the Kindergarten, which you may see at the Home and Colonial and other model schools. The instruction of the hand and eye is continued in an advanced stage by teaching elementary drawing, which is done before the tenth year and a half. The military and other naval drill teaches them prompt attention and simultaneous movement, lifting together, pulling together under, using their hands and arms and legs. Superadded to the military drill it is proved that systematised gymnastics give to three the efficiency of five for all purposes of ordinary labour.

"Let me expatiate somewhat on the economical gains specially derivable from such culture. At present, by rude and accidental circumstances of

physical domestic conditions a large proportion of our population do obtain a valuable though rude and imperfect physical training, which ought not to be interfered with, but rather accommodated and promoted. It begins with errand going, parcel carrying, dinner carrying, water fetching, pumping, the use of the broom, the shovel, and the like—all of which I regard with respect, and consider that the scholiast ought to be taught to do so too; for work, negatively by the exclusion of the vices of idleness, is to be regarded as morality. Howsoever it may arise, the fact is that with all his defaults, the British labourer may be set as the foremost in the world, except some North American or New England labourers who keep pace with him. Two English labourers are equal in efficiency to three Norman labourers, or to three Danes, or to three Norwegians, or to three Swedes, or three Germans. Therefore, though his wages may be a third higher, the result to the capitalist is the same, and he saves in time, moreover, and in labour of superintendence and certainty of result. Mr., now Lord, Brassey, who has made railways in France, in Italy, in Germany, in Russia, and in India, has told me that, with the exception of about 10 per cent. in one part of Germany, and about 40 per cent. in earthwork in India, he found the higher priced labour of England as cheap as any in the world. Other engineers have given me the same information.

"Now, what is the economical result of two having the efficiency of three. It is that you save the food, the clothing, and the house-room of the third—in fact, that you save a third capital, or create a fund, which may be divided as extra wages between the

other two, as in point of fact it is to a great extent, leaving some extra profit to the capitalist. In the generality of this condition a third population is saved, and the same economical strength maintained. I believe it is owing to this superiority of its labour that England is economically equal, if not superior to, France with her larger population. But of this extra wages, our labouring population spend some £60,000,000 per annum in stimulants, three-fourths of which they would be better without. What may not be expected from a population to whom an improved education imparts temperance and frugality; —and, more of self-estimation! Whatsoever moral or other worth a labouring man may have, the agricultural labourer may be told, for his self-estimation and care, that he has invested in him the capital of a first-rate team of horses, or of two hunters; whilst the artizan may be admonished that he has in him the capital of a twenty horse-power steam engine.

"In a national system of education, in the economical point of view, the practical maintenance, and the improvement of the economical efficiency of the stock of labour of the country, is to be regarded for the production of net economical results. We ought all to be economically elevated by a national system of training and education, so as to pass as honoured and 'discounted bills' of our several real values. For this purpose, and for all national purposes, instead of sacrificing labour to the behests of the school, as educationists commonly demand, the school teacher should be required sedulously to study and accommodate himself to the behests of labour, of domestic and other productive occupation, which he has hitherto neglected to do. It is a primary principle

of the economical reform of education, that earning and learning should be carried on as closely as possible, at the same time, on the half-school time principle. For this purpose a balance has to be maintained between body and mind, and over bodily work, and under bodily work; over and under mental work has each yet to be avoided. My colleagues of the Factory Commission of Inquiry made a first step in this direction. We laid down the principle that to work a young child the same stages as an adult was, as the physiologist agrees, injurious to the working stock of the country, and was economically as wasteful as working a young and growing colt the same stages as a full-grown horse. I had charge of the Bill, and inserted the provision limiting the infantile labour to six hours' daily task, leaving the employers to provide double sets to keep pace with the adults How, it was objected, could we prevent the child who had worked part of a day in one set, being taken in another name to another factory to work in another set during the same day? In answer, I pointed to the provision which was required as a condition to employment, that the child should produce a certificate of his having been three hours a day in a school the week preceding. Whilst this compulsory provision is a security against overwork, it is at the same time a security that three hours at the least shall be taken from the adult stage of work everywhere in favour of the growing child, and it is moreover, at the same time, a security against exclusion from education. Where the provisions of the Act are carried into operation, it has answered our efforts most satisfactorily. Under it there are fewer deformed and stunted

workmen than formerly; it has preserved the working population from much deterioration by overwork; and it has also, by the half-school time, under proper teachers, been the means of imparting an extent of elementary education in the three hours' teaching, equal to that imparted in the national schools in six hours."

Education in Relation to Inventive Art.

"The great progress of mechanical inventions, and of labour-saving machinery, now, however, reduces our advantages, in the amount of physical power and energy of our wage classes. It gives an advantage to the weaker but better educated foreigner, as an intelligent director of force, *i.e.*, of machinery. The English labourer has hitherto in great measure made up the defects of his education and his want of general intelligence, by his exclusive devotion to one thing, to one subdivision of labour, to the working of one machine. But now the changes of machinery more than ever necessitate changes of occupation, and the revolutions of countries will often change the seats of manufactures. An improved technical and art and science education is needful to enable the British artizan to learn quickly to direct the new forces, to enable him to change also, and to keep pace with them and advance his position.

"Educationists and the public generally are unaware of the grievous failure in intelligence of the British workman in the direction of such force as he has already to deal with, and of the great loss of life and limb that is occasioned by it. Our losses from violence amount to an average of 11,000 per annum, in England and Wales. Of these about 5,000 are

reported as having been occasioned in the use of steam power and machinery. Sir William Fairbairn has, perhaps more than any one man of science, investigated the causes of the steam boiler explosions occurring in Lancashire, and he has declared that they have for the greater part been occasioned by the ignorance or the clumsiness of the hands to whom they were entrusted, and to the want of scientific knowledge and of general intelligence. Other evidence is to the same purport. The frequency of such events, their separate occurrence, their sameness as newspaper paragraphs, brutalises us, and destroys our conception of the aggregate amount of the evil. Five thousand killed annually! Why, that is five times the annual number of men who were slain outright in the field or on the deck during the last twenty-one years of war! What should we think if more than half the police force, or all the guards, or more than four times the number of the Lords and Commons were brought together and visibly blown to pieces, scalded to death, crushed to death, and presented to the sight, with the agonised bereaved friends and relations? And yet this is one sacrifice to ignorance, bodily clumsiness from defective training, which we have to remedy. And here is another. By the absence of mothers, or by their occupation with labour—by the want of infant schools, there are about fifteen hundred children burned or scalded to death every year!

"I have spoken of the general labour and productive power of the wage classes of the country, being as three to two against most continental labour. But by the improvement of the general physical training of the population under the half-time system, we may

effect an improvement upon ourselves, by imparting, as is proved, to three the efficiency of five, for all purposes of ordinary labour. Such an improvement of the working stock of the country, such an augmentation of its productive power, is a result which, I submit, would justify the application even of a national rate if it were necessary to obtain it, as a means of a great national economy."

In the concluding part of his argument on economics of education, the author insists that the value of land or rent rises to a greater or lesser degree with the skill of the labour exercised upon it in accordance with the old maxim, "Tant vaut l'homme, tant vaut la terre." That nothing is so wasteful of capital from inaptitude and unskilfulness, from idleness, from mendicity, from delinquency, from depredation and from spoil as ignorance. That under an improved mixed physical and mental training the capital, invested in human beings, may, by increased aptitude, be rendered more productive in every way, and the periods of working ability or its productive duration be extended. That increased aptitudes will be imparted for meeting changes of occupation on the failures of particular sources of demand. That over-burthened labour markets will be more readily relieved of redundant hands, and net wages augmented. That any increase of educational rates wherever needed will, under a correct administration, be an economy; and, that by a general and complete elementary education, on the principles stated, the productive power of the country may be augmented by one-third.

CHAPTER XII.

FAILURES IN NATIONAL EDUCATION.

WE have seen in various former chapters how urgently the half-time system of education has been insisted on. Indirectly too we have had a view of the converse, namely, of the evils of the long-time system. But there is one special essay treating on the long-time system and the mischiefs it engenders, which, at the risk of some incidental repetition, I must notice, the subject-matter being so excellent, and the information adduced so accurate and complete.

The essay which is next to be condensed is a little work published in 1881, and entitled briefly "National Education." It is in fact a *résumé* of collections of evidence, prepared for the Educational Section of the Social Science Association at Edinburgh, and much of it was translated into French, and submitted as a paper at the International Congress at Brussels. In the opening pages of the work there is set forth, in special details, a considerable number of the arguments which have already been before us. Then the "half-time system" is described, after which the evils of the long-time system form the matter of the discourse.

"One cause" says the writer, "of the little progress

made in elementary education is that information relating to it has generally been confined to the cloister, a very moat bounded by the four walls of the schoolroom. The children are seen to depart from the school, and there is very little outlook as to what becomes of them afterwards, or what has been the result of the educational work performed. I have myself derived great advantage from inquiries as to the outcome, as to the difference in results, between educated and uneducated force in the army and the navy,—where the results on masses are best seen,—in the manufactory and in the workshops, and in the fields of agriculture. On the whole, the results are favourable; education as it commonly exists, under the continuance of the present system, is worth having where none better can be got. But the long-time teaching has large physical drawbacks. The first evil is a reduction of aptitude for physical labour and steady industry.

First Live, then Learn.

"We must keep in view, as a cardinal maxim, as the first objective point in all popular elementary education, the *Primo vivere, deinde philosophari.* Long desk-work makes labour painful to the pupils at the outset. It is said, in manufactories, that their backs are stiff and that they cannot bend to work. It certainly tends with us to overcharge the labour market for sedentary service at the expense of agricultural service. It is now a subject of wide complaint in our rural districts, that the eyes of children taken into schools, under the new compulsory law, are seriously injured. We see such

a result elsewhere in the large proportion of the soldiers who are spectacled in some of the more educated States on the Continent. Then as respects females, we find that curvatures of the spine are seriously frequent in long-time schools where physical exercises are deficient. Certainly the common schools are the centres of children's epidemics, as sanitary science would expect from the massing of dirty-skinned and dirty-clothed children together for a long time in ill-ventilated rooms. This particular evil the half school-time principle reduces decidedly and immediately by much more than one-half.

"With us, and in France and Belgium, there are complaints of the increasing scarcity of competent agricultural labour, and of the tendency which the population shows to seek the more sedentary or more interesting society of the towns. This evil agriculturists are beginning to trace to the defective character of their education, which fails to interest them in rural life and rural occupations. This great and growing evil I have long perceived, and have endeavoured to point out the remedy in the application of the half-time principle, which would give part of the day to the school, and part of the day to the field, while that part spent in the field, under special teaching, would awaken more interest in the practice of the specially applied science needed there. We have complete proof of the power of creating special technical interests in the new half-time training schools for the army and the navy. The pupils there are free to enter civil life; but both at the military schools and the naval schools the great majority volunteer in the direction of their special

training, and the commandants are glad to have them. It has been proved, in respect to the navy, where many of them become warrant officers (or *sous-officiers*), that if the children had not been orphans the expense of their training would still be remunerative as against the untrained or ill-trained hands, the sons of fishermen, to be found in the seaports.

"An American naval officer, Mr. Faulkner Chadwick, was deputed by his Government to examine the different naval schools in Europe, and he pronounced our naval half-time school at Greenwich to be superior, as a model, to any he had examined on the Continent. It is superior as tested by the outcome. On such experiences, and some direct agricultural experience, I could confidently undertake that the grievances of which the agriculturist party complain, of the want of interest in their service created by the common education, admit of a complete remedy by the competent application of the half-time principle.

Moral Failures from the Long-time System.

"A darker feature is yet to be noticed in the present long-time system in England and elsewhere, in the extent of the moral failures that are overlooked by confining the view to the scholastic results and four walls of the school, and disregarding the real object of attention,—the outcome. The criminal classes with us, of whom there are about a hundred thousand at large, sustain a population of some twenty thousand always in our prisons. In our small army there are some twenty thousand court-

martials yearly, and a number equal to a fourth of the British force at Waterloo has passed through the prisons annually. I specify these failures in the army the more particularly, because the outcome of the army half-time schools demonstrates, that by a general application of the principles there in operation, no such extent of failures as those displayed in the outcome of the common elementary schools could take place. Two-thirds certainly of our soldiers have partaken of an education not materially inferior to the long-time education, of the extension of which under a compulsory system our Education Ministers are boasting.

"The education of some of the prisoners is set down as superior. In the criminal returns of the metropolis there are more than a thousand clerks, forty-two lawyers, besides a considerable number of other persons who have necessarily received a middle-class education. The governor of one of the prisons told me that the greatest rascal he had in custody could write out Our Lord's Prayer in seven languages. My functions have been that of a civil administrator, having to deal with the civil officers of the different religious denominations impartially; and it is just to state, as respects some of the religious denominations, that the effectiveness of their teaching is marked by the extreme rarity of the appearance of any of their flocks amongst the criminal classes. It is equally due to the chief half-time schools to state that the appearance of their pupils is not less rare.

"On an inquiry as to the outcome of some middle-class educational institutions, it was shown, that the failures of their pupils from misconduct, disqualifying them from suitable service, averaged twenty per cent.,

whilst the like failures of the pupils of low parentage, in good half-time schools, does not average more than two or three per cent. The average had formerly been as high as sixty per cent. among pupils taken from the same classes. The like failures of long-time school systems are denoted by later observations of the outcome in America and on the Continent. By some political writers the elementary school system of America was held forth for imitation; but its outcome is now regarded as fraught with great failures. 'What a terrible satire upon our boasted school system is denoted by the word "educated,"' says the *Philadelphia Times*. 'Nine-tenths of the young criminals sent to the penitentiaries have enjoyed school advantages, but three-fourths of them have never learnt to do an honest stroke of work. Our children have their poor little brains crammed full of all kinds of impossible knowledge of names and dates, and numbers and unintelligible rules, until there is no room left to hold any of the simple truths of honour and duty and morality which former generations deemed more important than all the learning of the books.'

"Professor Dr. Robert T. Dabney, Principal of the Hampden Sidney Seminary, U.S., observes: 'That where the State school system,' *i.e.*, the elementary school system, 'is in its infancy, as is evinced by the sparseness and poverty of the endowments, the greater penitentiaries and almshouses are few and small; but when the observer begins to admire the magnificent endowments and palatial buildings of the public schools, he is also struck with the number and vastness of the prisons. The two kinds of structures go together.' In France it is now found

that the largest contingent to the delinquent population of the prisons is the outcome of the State schools for orphans and foundlings.

Disposal of Juvenile Delinquents.

"Public attention has recently been strongly directed to the question as to the disposal of juvenile delinquents; and upon it I asked the manager of one of the district half-time institutions whether he had had cases to treat of the description of one kind of habitual criminality brought prominently before the public? He stated that he had, and that in a few months a large alteration in their character had been effected by the physical and industrial training on the half-time principle. If, say, a hundred of cases of that character were committed to his charge, what proportion, I asked, could he undertake to send to the good? He answered confidently that, with fair support, he would undertake to send full ninety per cent. of them to the good; a large reverse of the proportion that prison discipline returns to the bad! The manager of longer experience in a larger institution in the metropolis would undertake to send ninety-five per cent. to the good.

"The distinct formative effects of physical and mental training, in the efficient half-time training schools and institutions, and the reversal by them of the ordinary outcomes from the common long-time schools, especially in the eradication of incipient criminal habits, are owing to differences of conditions which it is important to note.

"In the long-time schools during the time the boy is kept there waiting under restraint his mind is

absent from lessons, which are commonly so uninteresting as to be repugnant to his voluntary attention; his thoughts are away on cricket, or some sort of pleasurable play, and he generally only returns upon call to the lesson as a task to be got rid of. Under the restraint of separate confinement in a prison, the mind of the young criminal cannot, as shown by his action on his release, have been occupied with compunctious visitings, as justice commonly assumes; but his thoughts are of his ill-luck under the wide chances of escape of which he has had experience during all the time he has been at large before detection, and of how he may have better luck when he gets out. He is exhorted to be good: but the child of the mendicant or of the delinquent does not see his way to doing other than he has done before; and why should he while he feels his inaptitude of hand and arm for industrial work?

"Under the common conditions of restraint, in the district schools, in the industrial schools, or in the reformatory schools—all of which, comprising some thirty thousand children, are now of necessity conducted on the half-time principle of varied physical and mental teaching—the pupil is placed under entirely new and opposite conditions, by which bad thoughts are excluded, and good thoughts induced and impressed from day to day by practical work, from the like of which he may hereafter get something good.

"The didactic teacher cannot look into the mind and see what effects, or whether any, have been produced by his precepts. But the drill-master or the workmaster does see, in act and deed, the

primary moral principles of attention, patience, self-restraint, prompt and exact obedience, in outward and visible action. The general result is that the pupil gets interested in what he does, and does it with a will. Hence the reversal of the long-time and small-school system, which, from the greater proportion of the parish schools,—as I ascertained in London,—sent sixty per cent. to the bad, now sends eighty per cent. of children of advanced and hardened stages into the industrial schools and the reformatories, and at the Feltham school sends eighty-five per cent. to the good, and in the district orphan asylums, working on the lower and less hardened ages, sends ninety and ninety-five per cent. to the good—largely to the good, as the returns show, in getting even second-class places.[1]

"The teachers agree that what is now done could not be done by them on the common long-time system, and is only practicable with the factor of

[1] "The last return, from the Orphan School at Liverpool (1880), 'shows 88 per cent. of boys and 84 per cent. of girls whose conduct was *known* to be satisfactory. Of boys only 1 per cent. was *known* to be unsatisfactory. The remaining 11 per cent. covered those who had either left their places or been removed by friends, and of whom nothing certain can be fairly stated except this, that they were generally heard of at various times, and for the most part were found to be going on satisfactorily. Of the girls 3·8 per cent. were not satisfactory, but of these 2·8 were in their situations. Of the remaining 12·2 per cent. the same remark applies as in the case of the boys.' At Manchester, for several years, there has been a very thorough visitation of the half-time children in service, of which a report is presented to the committee half-yearly. In 1880, of 94 boys 1 was unsatisfactory, of 70 girls 2 were unsatisfactory. It is to be noted that on official investigation of the half-time schools, an important proportion of the pupils are found to have attained middle-class industrial and social positions."

physical exercise on the proper half-time principle. In the district schools children who have been criminals are occasionally brought in; and, from the experience in relation to them, the masters find that, instead of the bad affecting the good, the good predominate and affect the bad. Previous imprisonment is regarded as detrimental. On comparing the results of different institutions, considerable variations in the outcomes are observable, indicating differences of management, which, removable by an improved administration, would add considerably to the advance now obtained. In 1841 I was at pains to get out the poor-law administration of different educational conditions on workmen and on soldiers and sailors. The conclusions obtained as to the soldiers and sailors were, that two tolerably well-trained men had the efficiency of three that were utterly untrained; facts highly valuable. But the practice was not continued as it ought to be, and its revival for these half-time schools will be of great benefit. If, however, the half-time principle receives its due extension, which is held by the most experienced teachers to be only a question of time and the improvement of administration, the great mass of the failures which these institutions are required to deal with will be obliterated.

"Objections are made to sending children to these several institutions,—the district and the industrial schools and the reformatories,—on the score of the expense of their living. I know that the district schools admit of improvement in economy by improved central organisation and administration; but, taking all the institutions as they are, they will be found to be means to a great economy of the

immediate waste of mendicancy and delinquency, and also of a large economy by cutting off the hereditary successions of a wasteful population living on spoil, and by reducing the heavy cost of penal administration with which the country is now charged.

"Action on the half-time principle of mixed mental and physical training, as applied to the destitute classes, may be set forth as actions by the State in its parental position, on the old Hebrew maxim that 'He who does not teach his son a trade teaches him to be a thief.' The prisons, now filled with delinquents, may be said to be filled with the victims of the neglect of that great maxim.

Bad Manners from the Long-time System.

"There is yet another point of serious failure, extensively displayed in the outcome of our small common schools, and indeed of almost all our long-time schools, namely, that our children frequently have bad manners and speech. It is the observation of Mr. Mozley, the Inspector of Poor Law Schools, that 'defects of general intelligence go along with defects of manner.' To judge of this, we must try and see what our foreign neighbours say against us on this point. Speaking of the Anglo-Saxon generally, M. Dupont White says, 'He approaches you as if he would fight you, and looks as if he would rob you.' They complain of the *peu de delicatesse* in our ways. There is certainly great difference in the outcome of different schools, due chiefly to the different manners of the teachers. Military drill and discipline reduce much ruggedness and ameliorate the common manners; and this result might be further improved by the application of precepts set forth in the elementary work on *la petite moralité chrétienne*, taught with marked effect in some of the schools of France. The very popular pictures of common schools, of the mischievous tricks and annoyances of the children, and sly evasions of the master's control, are pictures of failures, which good half-time systems tend to correct, especially when the discipline is in the hands of fitting and well-mannered teachers, and when the infant-school organisation receives special attention.

Outcome of the Long-time System in University Training.

"For some time past the superior scientific instruction given in most of the German Universities has been pressed upon attention for emulation in England. But an examination of their common outcome will modify opinions in relation to them. In some of our manufacturing towns where the living languages have not been taught in secondary education, the better educated Germans have been engaged to conduct foreign correspondence; and there they are carried along in the British course of business. But that course is more efficient than that of the German mercantile classes. By an eminent German member of a commercial house in London, who had been in business in Berlin, I have been assured that the transaction of business is about one-third quicker in London than with the higher educated classes in Berlin. The scientific and

scholastic attainments in the German Universities are certainly very complete and superior; but the pupils are frequently detained there until their thirtieth year. My direct knowledge of the outcome in applied science, derived from sanitary engineering work, enables me to state that they are put to disadvantage as compared with the British engineers, who leave their schools earlier and get into practical work sooner. Stephenson left his school at fifteen, and other of the most distinguished engineers—and such early advances in the scientific professions are now common in England—were as early or earlier in the field.

"At Owen's College, Manchester, and University College, London, there are classes of students who are really half-timers—that is to say, who are part of their day or in the alternate day in the manufactory or the place of business, and part of their time in the college. The late Sir John Rennie challenged me to give an instance of one man, who had done any of the *works* to which the country owes its greatness, who had come out of the long-time University courses anywhere. In the Royal Engineers, where there is too much time wasted in the cloister studies, officers are in responsible charges five or six years before they would be after leaving the Universities in Germany. For the middle and the higher classes, as well as the lower classes, the maxim *Primo vivere, deinde philosophari*, is becoming more and more pressing for a closer formative education for remunerative service. As a matter of fact, those who are earliest out and amidst practical applications distance those who remain the latest in the University.

Outcome for Good Manual Work.

"The outcome of the elementary education on the Continent, which has been commended for imitation, commonly presents similar results. At Zurich the whole of the instruction, the elementary instruction especially, is held forth as an example for imitation. But I know that English artizans have obtained such wages as five shillings a-day for the same sort of work as that at which the native Zurich hands earn only three francs a day. The late Mr. Brassey told me that at only one small part of Germany did he get his work done as well as by the British workers whom he imported, and paid about one-third more of wages than the long-time schooled German workers received. The great majority of the existing schools are only parochial and small, whilst the correct half-time principle requires that they should be large, with special formative appliances of gymnastics, grounds, and swimming baths, for physical training. The majority of the schools are parochial, and contain an average of about a hundred children, mostly under single masters, or single masters with a pupil-teacher.

"The mastery of a new principle for application in public administration, as I can state from experience, requires much time and labour; and our higher political arrangements commit large branches of administration to changing party political chiefs, who come utterly unprepared to deal with the subject-matters of their departments (of which I could give amusing, yet sad instances), and who usually leave before they can become fairly acquainted with them,

even if they have time to spare from party political questions. Under such official conditions, the permanent officers of departments, instead of working up to superior knowledge, work down to distracted attentions, to apathy, and antipathy roused by any troublesome new work, until they learn, as Dickens says, 'how not to do it.' The obstacles to the general application of the principle are, as I shall show, very serious, and need great determination, and strong special agencies to overcome them by new local organisations.

Maternal Long timers and School Half-timers.

"We have numerous mothers of small means who are compelled to act as schoolmistresses in the education of their own children. The mother of this class has her *crèche* on her lap, her infant-school pupil, and also her primary and secondary school pupil beside her, and she can only give to each a lesson in its turn, while she has to maintain order with several before the turn of each comes. In education she is of necessity only a "long-timer." I have heard a wearied schoolmistress of this class observe, what a pity it was that for the purpose of education children were not born all at once, in litters, so that they might all be of one class for education, and receive simultaneous class lessons. The single schoolmaster of the village school has an assemblage of pupils of these disparate ages, families, capacities, and conditions to deal with, and to get on he must have usually six classes, to each of which he can give only direct instruction, the only effectual instruction, for about one hour in the day, that is one hour to

each class. Whilst one class is being taught, the others must go on with their preparations and wait for their turn to be heard, and the master has meanwhile to repress impatient irritability and maintain order amongst them, whilst he is giving his lesson. The half-timer, who is taken into the single-mastered school, has to take his chance of getting one hour of direct teaching. In such institutions the half-timer does not get on very well; but in the larger and fitting schools, where the aggregation of numbers enables segregations and classifications to be made, there would be one master to each of the six normal classes, who would give the one class simultaneous class-lessons. The pupil in such a class has no waiting; no time is allowed him for anything but attention to the master and the lesson set by him. He is as a soldier in the ranks under the command of the *sous-officier*, and has to keep pace with the rest. The pupil under these conditions receives as much attention as he could do under a single tutor.

"I have gathered from school teachers of experience in different parts of England, and also in France, that the receptivity of different tribes or races differs considerably; that the receptivity in the northern counties, as in Lancashire for example, is as three to two greater than amongst children of the southern counties; but that even the receptivity of these northern children of the elementary school ages is exhausted in less than three hours of direct simultaneous instruction, even if it be made, as it ought to be made, interesting to them. The half-timer, as we call him, is in reality more than a double-timer, in respect to the amount of instruction

which he gains under simultaneous class teaching in the graded school, as compared with the pupil under instruction in the village or the single-mastered school."

From this point the author solicited particular consideration to a statistical analysis, made up from official experiences, of progressive applications of aggregations of pupils, for segregation and simultaneous class teaching. He directed attention to the progressive gain of time, accompanied by gain in quality, as denoted by increased salaries to the teachers, with increase of teaching power; by progressive reduction of expense, with the training of more than two pupils well, and with a gain of productive time to them, at the cost of teaching one pupil ill on the common system.

In education this principle would serve for the attainment of the great improvement needed in the quality of the teaching power, on the profound maxim, based on the imitative nature of children, "As is the teacher so is the school."

"The wider and closer observation of experienced school inspectors," he added, "goes with my own, as to the great influence of the schoolmaster's or the schoolmistress's social position (which commonly involves manner), beyond similar methods of school teaching. 'As I go from school to school,' said Canon Mosely, 'I perceive in each a distinctive character—which is that of the master. I look at the school and the man, and there is no mistaking the resemblance. His idiosyncrasy has passed upon it. I seem to see him reflected in the children, as so many fragments of a broken mirror.'

Choice of a Teacher.

"In the choice of a teacher there should be sought that appearance of health which denotes equanimity of temperament; cleanliness, neatness and propriety of dress, a fine-toned voice, and a patient, firm, yet quiet, kindly and engrossing manner towards children—such a manner as you would like to have impressed on your own child. One who is in weakly health, implying bodily irritability and mental suffering; one who is pained by children's free, natural expression of a joyous nature, and who has no sympathy for it, is unfit for teaching; as is one who is of a coarse, harsh, and impatient manner, whatsoever may be the completeness of his scholastic knowledge. The requisite qualities of manner and person for school teaching are very rare with us amongst men; they are less rare amongst women; but they are, from social position, frequent amongst ladies, and the most observant inspectors have agreed in the importance of special measures for obtaining the services of ladies for the most formative stages of life—the infantile stages. Good infant-school teachers have represented to me the importance of applying the service of ladies to the earliest stages of life—for the wage classes that of the *crèche*—of which I think there can be no doubt. Other considerations also render it desirable that the service of female teachers should be applied to higher ages than at present in this country, as is done successfully in America; and that the place of teacher should be made eligible for ladies, especially in the infant schools. The principle of administrative con-

solidation enables better payment to be made for the improvement of the quality of teaching power on the half-time principle; lessens the strain of teaching, even with double sets on the same day; and reduces the relative expenses in the large schools, as compared with the small schools in which the greatest defects in manner, from inferior teaching, are mostly found."

CHAPTER XIII.

STICK OR NO STICK.

WITH a will of his own which no one can deny, the master in education who now commands our attention has insisted that in training the young gentleness should be combined with the strictest discipline. This view has led to an expression of opinion from him, the possessor of the ripest experience on the matter now living, that corporal punishment in schools for children of every class is an utter mistake as well as a wanton cruelty.

In the London School Board, when I was a member of it, we had the subject of corporal punishment on for debate. One of the speakers in favour of corporal punishment adduced the proverb, "Spare the rod and spoil the child." In reply I ventured to ask if even proverbs might not be allowed to change with time, civilisation and modifications of human views, and if, therefore, the change of the proverb into "Spoil the rod and spare the child" might not, under this nineteenth century of a dispensation, which has transformed so many Judaic sentiments, be a decided improvement? I added also, that the world would call even a weak man a coward, and cut him if he beat even a strong woman; but that it said nothing

of a very strong man beating severely even a feeble child, a perversity which seemed to me to indicate an insane state of mind on this question.

Both these ideas struck our author as in strict accordance with his own more matured views, and he waited the opportunity of saying a word of his own on the same subject in his own way.

The opportunity came in January, 1885, on the occasion of the publication of a report in the *Times* of an unmerciful beating of two children. He addressed a letter to the *Times*, entitled as indicated at the head of this chapter, "Stick or No Stick." The letter, bearing date January 14th, 1885, I publish in full, with one or two additions by its author.

"I perceive from educational returns and from discussions at educational meetings, and from continued cases before magistrates of charges against teachers, of assaults upon school children, that the question to be put of 'stick or no stick' is in continued agitation as a question of school discipline.

"I beg to be allowed to state some experiences that may serve to elucidate the question.

"Some years ago I met the late Lord Fitzhardinge in society, when I complimented him on being an advanced educationalist. 'What do you mean?' he said, 'I have nothing to do with schools.' 'No,' I answered; 'but you have, I understand, set an example in your education of horses that may serve for the education of humanity. You have forbidden the use of the stick.' 'That is so,' he replied. 'If I see a groom beat either horse or dog I dismiss him. I must say, however, that in some twentieth case we meet with a depraved brute who is only to

be subdued by physical force on a conflict, but in allowing the use of the stick nineteen out of twenty horses are spoiled.'

"We had in Poor Law administration a convocation of head school-teachers, at which the question of 'stick or no stick' was considered, when a conclusion was arrived at in accordance with Lord Fitzhardinge's doctrine. It was pleaded for the use of the stick that some twentieth case was one of extreme depravity which could only be subdued by strong force, but for the rest the stick should be taken from the hands of the pupil-teachers, and only reserved in the cupboard for very special occasions.

"A friend, Mr. Blackburn, however, displays an advance upon Lord Fitzhardinge's practice in the education of horses. He declares that the twentieth case spoken of by his lordship is in itself the result of bad early training. When Mr. Blackburn meets with a case of this kind, of a horse of bad education, instead of a furious flogging, he Rareyfies him, that is to say, he gets him into a condition of extreme inconvenience, and imparts a feeling of gratitude for getting the horse out of it. Mr. Blackburn looks carefully to the education of the colts in the infantile stage. He forbids his grooms not only not to beat them, but not to swear at them, or to speak to them in other than kind and gentle language. They are taught to attend and to act upon gentle speech. It is pleasant to see them come up to him and follow him in the field and put their heads over his shoulder. The carriage whip is only used for guidance, or to remove a fly. Others, I am told, follow the like course with entire success as to horses.

"The best of our district half-time schools have advanced with the like success to that of the entire disuse of the stick in the education of horses. Mr. Hillyer, of the Central District half-time school at Hanwell, who during the last twenty years has had 20,000 children of the lowest type passing through his hands, says that he has not used the stick twenty times during that period. Mr. Marsland, of the North Surrey District half-time school, has condemned entirely the use of the stick. There is one point on which I think it highly important that the education of children should be brought up to the good education of the colts—namely, in the use of the most kindly and gentle language to them. On visiting a common school you will hear the teacher 'rend the common air with angry and horrid speech' to them, which is in itself bad education. This alone makes it worth while to engage ladies as teachers for the most impressionable and formative period of life. Experienced inspectors have marked the great difference which it makes, and have expressed strong opinions of its importance. For the relief of such teachers, Mrs. Fielden, of Todmorden, has invented a sort of castanet, which is very successful for the direction of the chief movements of the school.

"It must be admitted that the disuse of the stick, or of the rod, is a large deviation from our old and yet accredited practice. Dame Pastor (*temp.* Edward IV.), in inquiring for a good tutor for her son, inquires for one, of whom she has heard, by whom he would be 'well belashed.' In some of the United States, itinerant school teachers go about with a large birch rod over their knapsacks as a sign

of their vocation commendatory to mothers there with the like feelings as Dame Pastor. Lady Jane Grey complains to Roger Ascham how severely she was flogged, and that in ways she would not mention. The stick was at that time the accepted and recognised instrument of domestic rule in the hands of the husband. In one old homily husbands are exhorted to moderation in its use, and it is laid down as a rule that a husband ought not to use a stick thicker than his thumb. Now a wife-beater is punished by magistrates, and is condemned with horror all over the country. The child-beater, however, is recognised and authorised. The instrument of punishment was continued in the hands of the teacher. In a memoir by the Hon. Amelia Murray, Maid of Honour to Her Majesty, she says, speaking of His Majesty George III., 'that he adhered unflinchingly to what he considered the path of duty,' and that he placed his sons under tutors who engaged that the rod of Scripture could mean only bodily punishment. 'The Princess Sophia told me that she had seen her two eldest brothers (that is to say, His Majesty George IV. and His Majesty William IV.), when they were boys of thirteen and fourteen, held by the arms to be flogged like dogs with a long whip.' 'Was it wonderful,' says Miss Murray, 'that the results proved anything but satisfactory?'" Asking a young Etonian recently whether the use of the birch still continued, 'Yes,' he said, 'it still flourishes; we had a duke horsed the other day, but we don't mind it.' Then of what good is it?

"There is, however, a very large distinction of bodily condition to be observed between boys of the Eton

class in the infliction of a punishment which "they do not mind," and who get their lessons very much how and when they please, and children of the class now brought into the board schools—children of the lowest physical type, frequently ill-fed, and bodily as well as mentally depressed, and incapable of bearing long hours of detention. With these latter a stripe, which the former do not heed, is a festering wound, and a long and serious injury, which mothers frequently show to magistrates and excite their compassion.

"Where a school has been changed from a long-time to a well-organised half-time school, with appliances for physical training, the non-attendances have been reduced to one-tenth the previous number. They are reduced largely from the fewer absences from sicknesses occasioned by detention during long hours amid filthy-skinned and filthily-clothed children; and by the lessons being better adapted to mental receptivity. By the reduction of these irritations, and lesser provocation of the pupil-teachers and the head teachers to use the stick, school headaches are also reduced in teachers as well as in pupils under the half-time system.

"On the whole it will be found on sufficient experience, that the stick, and the 'tawse,' and the rule of terror will have to be abandoned for the more efficient rule of kindness in the treatment of children in every stage of school life."

CHAPTER XIV.

THE INTRACTABLE CHILD.

THE view that children can be easily taught and well cultivated without being punished has often been disputed as inapplicable in examples of what are called intractable children. Here it is argued punishment must be necessary, and the following case was adduced as an absolute proof of the truth of this old and firm belief:—

"As long as there is no human Rarey, what is one to do with a boy of this sort? He is aged eight, he is a liar and a thief, has attempted to set fire to his house two or three times, has been turned out of several schools, killed a cat and a parrot, and is most incorrigible; beating has no effect on him, his mother and relatives are afraid of him, and no one can control him. Such is the problem placed before Mr. Sheil at Westminster yesterday by an anxious mother. Mr. Sheil, however, could not answer the question, and merely suggested beating, beating, and again beating; but meanwhile the unhappy parent is wondering what will become of the boy. Perhaps a week or so on a Hull fishing smack would have some moral effect on him, or he might be turned loose in one of the vast deserts in

Patagonia, or the Sahara, or Gobi, without much danger to any one but himself, and give full vent to his juvenile ferocity."

To this illustration Mr. Chadwick wrote the following short but practical as well as humane reply :—

"As chairman of a special committee of the Society of Arts, on the operation of the New Code, I have collected the most recent experiences on this special topic of dealing with refractory children. I sent the statement of the case to Mr. Marsland, the superintendent of the district half-time school at Anerley, and asked him for his observations on the case. I give his answer to it :

"'There needs no human Rarey to deal with a boy of this sort. Place him in better surroundings, give him no time to steal, ask him no questions for some time, and his habits of lying and stealing will die a natural death, much quicker than by any amount of beating. Quite lately, I had a boy with an inveterate habit of getting up in the night-time and stealing from the clothes of his schoolfellows who slept in the same dormitory. I put him through an extra course of gymnastics before going to bed, and tired nature improved his moral nature. My remedy for a bad habit is to fill up a boy's waking time with thoughts and actions of as pleasant a nature as possible, and with such a genial supervisor that the delight he takes in his new life leaves no room for his old life, and then send him to bed too tired to talk or do anything but go to sleep. Constant employment of time made as pleasant as possible never fails to alter and improve what are called incorrigible boys. The suggestion in the

article would not meet the case, unless there were added to it systematic and constant occupation.'

"Other managers of the district schools have given answers of the like tenour, but that extraordinary cases receive special observation and individual treatment. The common suggestion and the common practice in such cases as that cited is to commit such offenders (perhaps of a little more advanced age) to a term of imprisonment, and to order them to be whipped. The managers of the district half-time schools generally consider such treatment to be injurious, and would prefer taking in the children without any previous punishment whatever, and would not give any to them. Mr. Rogers, the chaplain of the Pentonville Prison, has shown that boys who had been whipped most frequently return to prison. The course is to take the child in as a presumed innocent lad against whom nothing is known or cared for. He is at once put under conditions that are entirely new to him. In the morning he is aroused out of sleep to attend to his head, to foot washing, and dressing; then he has to go with others to his breakfast; after that to the school, where with his class he is kept to the simultaneous class lesson without waiting, and to which he willingly gives himself, as it is not over-wearisome, like the lessons of the long-time schools. He may next have to fall in under the drill-master or the gymnast, and if he stumble or fail he is jeered by the other pupils, or reproved by the corporal; but he soon participates in the zeal and competition of common lively action. He may the next day have a swimming lesson, when if he does not mind what he is about, he may sink and be drowned. He may next have some naval exercise

at the mast, where, unless he holds on, although a net is spread to receive him, the shock will be very severe. Then—if he is old enough—he has to go to the workshop where the workmaster in carpentry, shoemaking, or tailoring keeps the mind, with the eye and the hand, of the pupil intently occupied. His day's occupation may be varied by freehand drawing, so useful for handicrafts, or by lessons in singing; or, if he be a very good and apt boy, by lessons in instrumental music. The enumeration of the incessant occupations may suggest severe labour; but the course is varied by 'relief lessons,' and it becomes so little irksome that an interruption is disagreeable, and exclusion from any part of it is actually felt as a punishment. When some parents exercise their right of taking away children from the district school, the children are not glad, but commonly cry at having to leave the institution, to part with their playmates or their workmates, and to go home. As the physical and industrial exercises have been improved, desertions have diminished, and the outcome improved. From morn until night bad thoughts are, indeed, excluded, and comparatively good thoughts —thoughts of doing better for themselves by work and wages, and by honest and esteemed position—are generated and impressed. The sanitary results of this course of physical as well as mental training are that the sickness and death-rates are less than a third of those prevalent among children of the same age in the outside long-time schools.

"The children are commonly brought into these institutions, and also into the industrial schools, with hands and aptitudes unfitted for any industrial occupation, and only with aptitudes for picking and stealing; but they are sent out with aptitudes for industrial occupations, and, as a general outcome, some 90 per cent. are got to the good; and in the better industrial half-time schools, where the children are older and in more hardened conditions, more than 85 per cent. are commonly got to the good, which of itself is a large and hitherto extraordinary transformation. It may be observed that the cost of teaching and training power in the district half-time schools is less than one-half that of the London long-time board schools, while the mental results are superior. It is found that the attainments of the orphan children who have been taught in the board schools are, in a marked degree, inferior to those of children of the same ages in well-organised half-time schools. It is, however, due to state that the chief teachers in the board schools ascribe a loss of full two years of school time by every child to the restrictions in teaching imposed by the Code. These, however, are topics which, it is to be hoped, will receive the attention of Parliament during the next session, and also the enormous injuries occasioned by neglect of physical training, which largely affect the moral, as well as the sanitary, conditions of children. Meanwhile, it may suffice to aver that it will be found on examination that the difficulties experienced by magistrates in such cases as the one cited are solvable by the curative and preventive course of treatment prevailing in good district and industrial schools."

CHAPTER XV.

ON CONSTRUCTION OF SCHOOLS.

SO soon as the new school board regulations came into force, the mind of our author was directed to the subject of school construction. "Never," he expressed to me more than once, "never was a more important national question at stake. If the schools that were about to rise in every district in England, were built on a bad principle; if they were of unhealthy construction; if they were so constructed as to be unsightly inside and outside, they would miss half their national usefulness. They would leave on the minds of the young as well as on the health an unfavourable impression. On the other hand, if the new schools were healthy productions, cheerful, artistic, and erected in the best and prettiest positions in every neighbourhood that claimed them, but above all were healthy, they would of themselves be lessons ever to be remembered by their scholars with satisfaction, pride, and pleasure."

Under the influence of these ideas he wrote an essay on school construction,—read at the Annual Congress of the Social Science Association in October, 1871,—of which the following is a full abstract.

Principles of School Construction.

"Now that new school boards are preparing for the construction of new school rooms, it is of importance

that they should be apprised of the sanitary defects that require amendment in the greater proportion of the existing elementary schools in this country. Medical officers of health have concurred in declaring that the common elementary schools, as now constructed and conducted, are the frequent centres of childhood epidemics. An excess of upwards of 7,000 deaths in the metropolis, and of upwards of 50,000 annually throughout England and Wales, in the school stages of life, were pronounced by them, on the observation of the working of particular schools within their province, to be largely attributable to the structural condition of the school-rooms, and to the modes in which the children were kept in them.

"The chief sanitary defects of these schools are, (1) Defective ventilation; (2) Defective warming; (3) Bad drainage and foul latrines; (4) Want of means of maintaining personal cleanliness; (5) Bad lighting; (6) Bad arrangements of desks and seats; (7) Want of proper means of gymnastic exercises; (8) Insufficient, and ill-paved playgrounds. I would submit that it is important that school boards should require, in the competition for plans, that these evils should be first specially considered.

Warming.

"I will, in the first place, treat of the warming of schools, as that largely influences their ventilation. To me it has always been most painful to observe the condition of children of the common schools in winter time, going there in cold and wet, in driving sleet and snow, frequently ill-shod, and commonly ill-clothed—kept in the school with feet

and hands painfully cold—fingers often so benumbed as to be scarcely able to hold the slates and pencils; the open fires at one end of the school, not freely to be approached, and when approached, the warming or heating on one side, "roasting in front and freezing behind," so as to give inflammations or colds from the disturbed and unequal circulation. The confinement of the children for five or six hours in such conditions, overtasked mentally, and painfully constrained bodily, are surely evil conditions requiring active intervention for their relief.

"One consequence of the defective warming is, that doors and windows are shut 'to keep out the cold.' Then comes the pernicious effect of the confinement of the children in the atmosphere polluted by their breaths and by transpirations from their skins, usually unwashed, or only hands and face washed, and from dirty clothes. As a relief, some of the windows are in part opened, and the cold air is let in for ventilation. The corners where this is done have been called "rheumatism holes." Sometimes, when the windows are kept closed, the confined air is heated to an extent that creates perspiration, even in winter time. Eruptive diseases are often the consequences of precedent functional derangements, and when there are outbursts of epidemics in children's institutions or in large schools, they frequently occur among the children grouped at one end, and the first case observed is a new comer, who has been for a time the centre of the group attacked, the infected breath having been pumped out upon the surrounding children for several days before the eruption has appeared on the new comer. Thus, in the ill-warmed schools, in which

windows and doors are kept closed to keep out the cold air, foul atmospheres, poisoned by the incipient diseases common amongst the poor, are created for the children. In some weathers and school conditions, a mother in sending her child to such schools, is sending it into a preparation of fever, or into measle-mixtures, or into small or chicken pox, or some form of disease. Children thus infected in the schools, frequently bring the infection into crowded and ill-ventilated homes, where several sleep in the same bed. If surprise is expressed at the sudden extensive outbursts of epidemics in crowded habitations, here is one contributary source of them. Compulsory attendance in ill-warmed and ill-ventilated long-time schools is commonly compulsory bodily deterioration. Such conditions also endanger, and frequently ruin, the constitutions of teachers. It is proper to mention, as respects the higher class of female schools, boarding schools as well as second-class schools, that great pain is inflicted, and bodily disorder occasioned by heads kept heated by unduly protracted mental labour, and feet kept cold by bodily inaction.

"By graded schools, as I have shown, especially by half-time schools, three children may be taught well in half the time in years, for the expense now commonly incurred for teaching one comparatively ill. The School Board for London have set an important example in the adoption of large school organisation. But such provisions entails the necessity of sanitary precautions, for if they be neglected, especially as respects the classes of children to be brought in by compulsion, considerable bodily injury will frequently be occasioned. I submit that the first object is to

improve the method of warming as involving the method of ventilation.

"Of the modes of warming, those by hot water pipes and iron surfaces are of inferior, and sometimes, when for high heats, are of pernicious effect, and are very expensive. Besides, they are apt to warm only the sides of rooms, or the upper parts of them, and to leave the feet cold, unless an inconvenient and objectionable degree of heat is created over the whole room. It is, moreover, matter of considerable experience that warming by earthenware surfaces, or stone surfaces, especially by heat diffused over wide earthenware or concrete surfaces, is more agreeable and more salubrious than any warming by iron surfaces.

"Observing some ragged boys at night grouped upon a particular street-pavement, and apparently enjoying themselves, in very inclement weather, I found that the pavement on which they were assembled was warmed by a baker's oven beneath. It is observable that market-women, with a foot-warmer, sustain very inclement weather. The like facts, which I might multiply, appear to me to lead to the conclusion that there are no means of applying warmth, that are so economical as by applying it to the feet.

"The class of facts on this topic lead me to recommend that we should adopt the practice of two empires, of Rome and of China.

"The Roman plans of floor warming are displayed in the remains of villas found in the chief seats of their occupation in this country. Their hollow floors were mostly made by square slabs of stone, or of large tiles, supported by stone pillars eight inches high, or a foot or more set upon a lower stone floor.

The upper floors were covered with concrete, and often ornamented by tesseræ. Some of their hollow floors in this country were evidently warmed by coal, from the remains of coal soot, in others they were warmed by wood. The fireplace, for the coal-warmed flooring, was mostly a small cylinder of red earthenware, containing a mere hatfull of coal, through which the air was led by a down-draft, through the hollow of the floor, the draft being created by an upcast flue on the side of the chamber opposite to the fireplaces, the tall chimney-flue acting as the longer leg of an inverted syphon. In some of the largest Roman constructions of this species the heat appears to have been led underneath by long, distinct channels. But in some the warming was by the diffusion of heat through the floors, amidst the uprights, which, I conceive, would be done by low heat, led slowly, but long applied.

"I am informed that in the barracks in China, constructed on the English principle of the open fires, men were frost-bitten, whilst the Chinese, with their mode, were perfectly unharmed. The Army Sanitary Commission of the United States adopted the principle of this method of warming for field hospitals. A trench, covered with wide slabs of stones, was led from one end of the tent to the other. On the outside, at one end, a fireplace was sunk at the mouth of the trench; at the other end a chimney was erected of clay, held together by empty barrels piled on end. In this way a draft was created underneath the stone floor of the tent, warming it in the most equable and agreeable manner. Americans attached to the ambulance corps applied the same principle, with complete success, to the warming

of the field hospitals in Paris. General Duff, of the United States Army, informs me that he applied the principle, by rough and ready methods, for the warming of field tents for his soldiers. The warmed floor in its proper use, however, appears to me to have the peculiar advantage of supplying a colder and thence more condensed air, a better quality of air breathed than any heat-expanded air.

"The effect of foot-warming is then to enable the body to sustain, with less discomfort, the impact of cooler currents of air. Foot-warming will, of itself, allow of doors and windows to be opened with less annoyance, and will be the more conducive to freer ventilation. Indeed, Mr. Blackburn's method of ventilating cattle sheds, by an open diaphragm along the roof, would, in some instances, suffice. In many others I would propose, in addition to the warmed floor, the introduction of open fireplaces, on Captain Galton's principle of warming with air pumped in that is fresh, as well as warm, and the more active removal of vitiated air through the smoke chimneys.

"I have long advocated the principle of floor warming, but I find it expedient to propose particular means for the purpose, which I will describe briefly later on, as architects may not have access to plans of the Roman methods of floor-warming."

Ventilation.

"Next to the foul air from overcrowding, and from the breath and from transpiration, there is the foulness arising from congregation of dirty skins as well as of dirty clothes. Medical officers who have to do the work of vaccination with children of the lower

and middle class, are aware of how small is the proportion of them who are ever properly washed, and how painful, and, at times, how dangerous, is the duty of operating upon numbers of them consecutively in confined rooms. The great sanitary success of the district orphan schools is largely due to the daily ablution of the children, and to the cleanliness maintained in the clothing as well as on the persons. On visiting the Central District school I always found the female children's pinafores most perfectly clean, as if they had just come fresh from the mangle. On expressing a doubt whether this was not a luxury of cleanliness, I was corrected by the answer, that three hundred soiled pinafores made an appreciable difference in the atmosphere. The answer expressed the sanitary principle of the importance of cleanliness—clean clothes, clean skins, clean air—as proportioned to the numbers aggregated. But the massing of numbers together, however cleanly, would be, in some stagnant conditions of the atmosphere, injurious, even if they were massed together in the open air. Troops marched in close column carry their own atmosphere with them. In epidemic periods it has been found that the proportion of attacks has been diminished by marching them in open columns, or widely apart. People faint in crowds, not from the pressure of the crowd but from the atmosphere generated by the crowd. Of course this evil is aggravated by filthy personal conditions. In one ragged school the health of the teacher was frequently overcome by the stench of the scholars, and fever was frequent and rife upon them. In self-defence he forced the boys to wash in an adjoining room; but this thinned

his school, for the washing was with cold water. Cold water washing is found to be a mistake in district schools where the children are under control. The circulation of children of the poorest classes is very low, and cold water is peculiarly painful to them;—besides, washing with water which is hard as well as cold does the work of washing imperfectly. It has been found that tepid water is necessary for the purpose. The master of the ragged school, to whom I have referred, got steam passed through the water and warmed it, and he then succeeded. The washing ceased to be disagreeable,—indeed it was made, as it always ought to be, agreeable.

"In the larger children's institutions, where children are boarded, the effects of progressive sanitary improvement have been distinctly marked. In one, where the death-rate had been twelve per thousand, the foul air from cesspools and bad drains was excluded, the latrines were amended, and the ventilation was improved, when the death-rate was reduced to eight in a thousand. Next, regular tepid ablutions, with, in summer time, cold water bathing, and careful skin-cleanliness were introduced, when the death-rate was reduced to four in a thousand.

Personal Cleanliness.

"If you go into even first-class elementary schools in England whilst simultaneous class-teaching is going on, you commonly see dirty hands held up. If you go into a school of the like class in Holland, you see very clean hands held up. There, the moral, as well as the sanitary duty of personal cleanliness, as far as I could see of it, is well maintained. The

children in the female schools are from time to time examined, and the duty of maintaining the cleanliness of their children is enforced upon the mothers. If any mother is frequently negligent, marked observations are made upon her, which are unpleasant. By due exertion in this direction, the object is very generally obtained. But there are cases where the children have no proper mother's care. In some places, the poor people are absolutely destitute of the means of cleanliness, or of proper supplies of water. Accidents constantly occur to little children; they fall down in the muddy streets, or dirty themselves in playing. To deal with these cases, there is, in well-appointed primary schools, as already shown, a female attendant on the schoolmistress, who takes the dirty children into an apartment and washes them, the schoolmistress herself being of an occupation of a quality above such service.

On such experience, it is to be insisted upon that every elementary school should be provided with a retiring-room or closet, with warm water, and with the proper appliances for the cleansing of children. It is a provision of a very great importance for the infant schools of the lower districts.

"Of the lessons that may be taught in schools, the practice of cleanliness is of the highest order. The clergy who neglect to enforce the precept, "Wash and be clean," fail in the enforcement of Christian duty. A filthy population is everywhere a low moral population, but it is futile to enforce cleanliness in the absence of proper appliances for its practice. All large schools should have one bath for teaching and practising swimming. For ordinary schools a swimming bath

30 ft. long by 10 ft. wide and 3 ft. deep may be made to suffice, and it should be constructed for about £50. But for one of the larger schools, there should be a bath 60 ft. long, 25 ft. wide, and 3 ft. deep, which should be made for about £200. In crowded districts several schools might be united for the use of one swimming bath in turns, as well as for one drill ground. The objection to such appliances on the score of expense is an objection to the means of economy, for all efficient sanitary appliances are means preventive of waste. The general economical waste of productive force in this country, as I have already expressed it, is as if a farmer, in order to obtain one working horse, had to raise two colts, and as if the horse, when raised, had only half its natural and proper working ability. The economical fact should be inculcated, that a pig that is regularly washed puts on a fifth more flesh and that flesh of a better quality than the pig that is unwashed; and that the same rule holds good with washed, as against unwashed children. Five washed children may be sustained on the food requisite for four that are unwashed, to bring them up to the same condition. Besides, the washing itself is preventive of infectious and of contagious diseases, such as the itch and other diseases.

Play and Playgrounds.

"In the proper working of a school, with a due regard to the principles of physiology, as well as of psychology, — the body, as well as mind, — the children ought not to be kept long together. The reduction of school hours to the proper time for efficient teaching, which is demonstrated to be

half the usual school time, is in itself followed by marked reductions of non-attendances on account of sickness. The children should, moreover, whensoever the weather permits, be turned out frequently into an open space or playground for exercise, and in fine weather for lessons. Much may be said for the Irish hedge-row schools, as against the dens in which English children are frequently kept.

"The common playgrounds for children are either the natural soil, which is very dirty, or a gravel, which is sharp and wasteful in the excessive wear of shoes and clothes; children fall down upon it and seriously bruise or lacerate themselves, and the sharp grit gets into their eyes or their lungs.

"In one large institution, the managers could not be induced to improve the children's playground, which was of gravel, until after the prevalence of ophthalmia, when it was flagged, or paved with York landing. It was then found that a saving of one-half the shoe-leather was produced by the new paving. But the paving with York landing is very expensive. A Val de Travers asphalted paving would be little more than half the expense, and would, with its peculiar elasticity of feel at the surface, serve much better, especially for gymnasiums. A tile paving, with concrete or celenite tiles, would be cheaper still, and these tiles, with the lock joints I have proposed and shall hereafter describe, would have the peculiar advantage of not being disturbed by "hop-scotch," or any other form of play. In Germany, smooth concrete paving is used, with considerable saving of shoe-leather. Where very good smooth paving, of the quality in question, is laid down, I do not

see the necessity of children, or at least those of the poorest class, kept in public institutions, wearing either shoes or stockings in dry summer weather. If the feet be regularly washed and kept clean, I question whether they would not be better bare at such times. In Scotland children travel barefoot to school in all weathers, or carry with them their shoes and stockings which they put on there, dry, in which there is reason.

"A closet for drying clothes should be provided in elementary schools. Captain Johnson, one of the Queen's messengers, has advocated the use of sandals for soldiers, made of matted flax, such as are in use with great advantage by the peasants in the Basque provinces. In those close neighbourhoods in urban districts, where there is absolutely no space for playground to be got, a flat roof should be constructed for the purpose, as is done with excellent effect in one large school near Long Acre.

Cheap Dinners.

"As the efficiency and economy of teaching, by a division of educational labour among trained masters in graded schools, requires the children to be gathered from wider areas than heretofore and from considerable distances, it will often be necessary to make provision of food for them. In the great middle-class school of the City of London, it has been found requisite to provide cheap dinners for those boys who do not bring their food with them in what the Rev. Mr. Rogers, the governor, calls their "nose bags." In the great metropolitan Jews' school, which provides

for 1,700 children of the poorest class of Jews, and which is, in very important respects, a model of educational administration, I found that its leading supporters, the Baron Lionel de Rothschild and the Baroness, of their own munificent educational grants, have been accustomed to bestow on that one school £800 per annum, to provide a portion of bread and some milk, to enable the very destitute and necessitous children to attend.

Light in the School.

"There is yet another very frequent and serious defect in the construction of the common schools, which requires to be guarded against, namely, the bad distribution of light. From a paper transmitted to me by the excellent sanitarian, Dr. Varrentrapp, of Frankfort, it appears that from the insufficiency of light, and from the bad distribution of light, in the schools in Germany, nearly a third of those who remain in them during and beyond the secondary stages, are subjected to short-sightedness. Professor Leibrich, the eminent oculist, tells me that the injury is always done by the front light, and that the light should always be got in from the left side, and that in towns where such light cannot be obtained, it should be got as the next best from the back of the desk, and never from the front. A great deal of distortion and of curved spine is, as Dr. Varrentrapp shows, occasioned by the wrong adjustment of seats, a topic, as well as others of the wall colourings and school fittings, beside my immediate purpose. I consider, that schools ought to have more of window space; of windows made with double or with very thick glass, which is economical as saving heat, and

is, moreover, advantageous, as lessening the transmission of sound from the streets.

Schoolroom Walls and Floors.

"For the reasons which now prevail in respect to the walls of properly constructed hospitals and cottages, the walls of schools should be made of impermeable materials, should be washable, and of a proper colour.

"The evils common to the schools of this country are transplanted to our colonial possessions. In few of these schools, as Miss Nightingale observes, 'is any attempt made at combining the elements of physical education with the school instruction, and even where this is done the measure is partial and inefficient, being confined to a few exercises, or simply to bathing.' The obvious physiological necessity of engrafting civilised habits on uncivilised races with great care, appears to be nowhere recognised, except at New Norcia (Benedictine) School, Western Australia, on the return from which there is the following very important statement. Gymnastics are stated to be necessary to prevent sickness, and the reporter proceeds: 'The idea of bringing savages from their wild state to an advanced civilisation, serves no other purpose than that of murdering them.' The result of the out-door training practised at this school, is said to have been hitherto successful 'in preventing the destructive effects of this error.'

"With the advantage of some practical suggestions by Mr. Canon Cromwell, the Principal of St. Mark's Training College, I once directed a plan of one school, with the primary requirements, to be got out by Mr.

Samuel Sharp, the architect, for 500 children, with the Roman floor warming by hollow tile floors, with solid concrete walls, and with a lavatory, but without a swimming bath and without a playground.

"The tiles forming the hollow floor may be of concrete, or of earthenware, or of slate, tongued or rabbeted at the sides, so as to fit into each other, and, when cemented, not to be easily shifted, or so as to obstruct the passage of highly warmed air or smoke, if accidentally loosened. The upright supports are made with tongues to lock in at the corners of the tiles.

"The tile and the support used as a cross-tie will serve for the construction of walls, and attain more perfectly the sanitary ends I proposed for the hollow brick construction of the walls of houses. It may also be used for roofs as well as walls, in which case iron ties are to be used to give it cohesion, and iron uprights for bearing power, on the Crystal Palace principle. If walls of ordinary construction be made with non-absorbent surfaces, there may be sometimes unpleasant condensation on such surfaces, because they will be occasionally colder than the dew point of the air. If, however, contact of the outer air with the inner part of the wall be prevented by the interposition of a layer of confined air, the inner surface of the wall will never be much colder than the air of the room, and will not, therefore, condense moisture from it. The inner glass of double-paned windows does not become covered with hoarfrost for the same reason; the inner pane being nearly as warm as the inner air, it remains clear when single panes are obscure.

"The tiles, for this purpose, may be made of

earthenware as well as of concrete, but most cheaply of concrete, which requires no burning, and most readily receives exactitude of form. With about one-sixth or seventh of good Portland cement, or with General Scott's new preparation of lime, clay, and sand, called *celenite*, tiles and the supports may be made stronger than the common building stones. For leading the warmed air in any direction, and better diffusing it on admission, in place of the upright pillars, upright tiles with rabbeted joints may be used.

"My friend the late Dr. Emile Braun, the Prussian archæologist at Berne, and Mr. Semper, the professor of architecture of Dresden, the architect of the Dresden theatre, men perhaps as highly versed in the principles of architecture as any in Europe, were of opinion that a tile construction,—if suitable tiles could be manufactured,—would be preferable to the hard burnt hollow brick constructions which I advocated, as means of getting rid of the evil of absorbent and damp walls. I concurred with them in believing that constructions on the principle of *cohesion*,—that is to say, on the principle of the Crystal Palace, only with opaque tiles instead of glass,—would in many cases have great advantages over the common construction, on the principle of *solid masses and weight*.

"The same construction might be carried out for the roof of the house. As against wet, a coating of Val de Travers asphalte, which resists great solar heats, and is uninflammable, would serve excellently, as also over much of other tile surfaces.

"It is estimated that this construction can be made with tiles of Portland cement cheaper than similar constructions with the best solid brickwork with

the usual plastered and papered walls and wooden floors; while it could be made cheaper still by one-third of celenite tiles.

"A basement floor, warmed on the Roman principle, would, at an exceedingly cheap rate, diffuse an equable and pure warmth over the upper rooms, including passages and corridors, the great desideratum in house-warming. The interior wall tiles may be made of various forms, and with any amount of art decoration that taste or luxury may require; and if of tiles, they may be made with porcelain surfaces. The permanence of such surfaces, and of the whole of the tile walls, is a means of large economy to be set against the periodical repaperings and painting, and dilapidations of the common constructions."

CHAPTER XVI.

COMPETITIVE EXAMINATION.

SINCE the year 1827, Mr. Chadwick has been an earnest advocate of the system of promotion by competitive examination. His argument on this subject was enforced amongst friends, such as the late Mr. Ingram Travers, Mr. Morley, Mr. Stuart Mill, and others, for many years before it was condensed into the form of a paper. He met with sturdy opposition from Lord Palmerston, who held by patronage, for promotion, to the last. He was also opposed by many of the friends of education, on the ground that competitive examination, as part of an educational system, is most likely to degenerate into cram and into the art of destroying the mental faculties, so as to unfit them for future work while yet the organ of the mind is in the early stages of development.

The subject, undergoing various revisions of study, was at last brought out in due form by our author in an elaborate article read at the meeting of the Economic Section of the British Association, held in Dublin, in the year 1857. At this meeting he was fortunate enough to receive the support of Archbishop Whately. Thus reinforced, he continued the campaign in favour of the competitive method, and at the Leeds meeting of the association, contributed

a second communication on the same subject. He received now the support of Lord Goderich,—the present Marquis of Ripon. But his best advocacy of competitive examination was brought forth in a third paper communicated to the British Association, this time at the Cambridge meeting in 1862. Here the whole argument was expounded in a form which may be epitomised in a few pages.

Each point as to the requirement of a public servant was put forward in the most simple and yet the most telling method. We must prepare a public servant as we would prepare him if we required him for private service. That was the preliminary argument, and that supplied, other arguments are discussed: what may be excluded safely, what must be retained.

First he took up history. A man ought, it was said, to know the history of his own country. Yes, but not in such a way as to make a range of the events and characters of some thousand years of the past and too much of the bad, the subject of competition, at the expense of proficiency in one or other of the sciences, the purer and the better.

History, as a topic, is one great field of cram, of reliance on memory, and of development; so history may be omitted. Then there were the literatures of different countries. Ought not a gentleman to be versed in polite literature? Certainly; but it is not needful that it should be the subject of competition, at the expense of proficiency in other and indisputably better and more needed subject matters of training.

Literature is another great field of cram and dodging examinations, giving opportunities of trick, yielding chances to the idle who have read for

amusement, over the diligent who have laboured for the serious business of life. The literatures might be left for cultivation to social influences, and to their own attractions and advantages as recreations. As tests, they were of an inferior order.

These two heads being dismissed as subjects of competition, there remained those which are admitted as means of mental training and superior tests of aptitudes. First in appointed order were the mathematics. It was submitted, taking them as a main test, whilst the basis of examination was made narrowest, it should be made deeper or rather longer, and that double the time should be given to it. This would have the advantage of giving the slow but sure a fairer chance against the quick and may be the superficial, and would render the examinations less painful to the nervous. Next, the experimental sciences were considered. There was an opinion increasing in strength, that greater prominence should be given to the experimental sciences, and that these, for the scientific corps of the army, should be made the chief topic for competition, and, of course, for preparatory education. The grounds of this opinion were, that mental exercises in the supplemental sciences included exercises of the faculties in induction as well as in deduction; that eminence in the pure mathematics had not been, in this country or in France, accompanied by equal eminence in the public service; that the experimental scientist was not practical, and that if it were put to a chief of engineers, or to a mechanical or eminent civil engineer in this country, which two competitors he would choose as an assistant, the one who was eminent in mathematics, or the one who was eminent in experimental sciences,

the latter would from experience be the one chosen. In support of this argument he expressed a strong preference for the experimental sciences, deduced from the failure of the French engineers, who were pre-eminent in pure mathematics, and from the failure of pure mathematics at home.

Throughout his address he carried out the same firm and discriminating policy. The object was to abolish all the artificial or, as he called it, "cram," and, without insulting any man's prejudices, to institute in place of the artificial the actual; to make the State study how to collect servants who used their hands, as well as their heads, and who knew only how to use their heads in directing their hands.

Another address on the effect of open competition of the junior appointments to the public service, read before the National Association for the Promotion of Social Science in 1871, sums up so tersely and effectively the views of the author on the competitive system, that I place it, with slight abridgment, as the concluding part of the present chapter:—

"A number of distinguished men, outside as well as inside the public service, have concurred in the active promotion of this great reform. Of the 'outsiders,' were the eminent leaders of the City Administrative Reform Association, the late lamented Mr. Ingram Travers, Mr. Peter Gassiot, and Mr. Samuel Morley. It has been the intention of those two gentlemen, and of other promoters of the change, to invite to a dinner, as is our wont in celebration of that event, Mr. Gladstone, Lord de Grey, who first obtained a majority in the House of Commons in affirmation of the principle of open

competition for the first appointments to office; Mr. Monsell, who promoted its application to the army scientific corps; Mr. Lowe, who has forcibly advocated it; and we ought also to add, the Earl of Derby, who, when at the India Office, gave the first example of a really open competition for a clerkship; and also Sir Charles Trevelyan, Sir Stafford Northcote, and later Mr. Horace Mann, who did great service to the cause as 'insiders.'

"But having achieved the adoption of the principle that every man in the country is equal in the eye of the law, and that of whatever creed, party, or social condition, he shall have a fair field without favour according to his capacity for the public service, we have now to consider the shortcomings in the application of that principle, and the advance that may be made in it by removing defects and by supplementary improvements.

"I stay to aver in respect to the two great branches of service to which the principle was first applied, the Indian Civil Service and the scientific corps of the army, the Royal Engineers and the Artillery, that sufficient experiences have falsified the predictions of the adversaries of the principle and have justified the reasonable expectations of its promoters. Of old both branches presented examples of the brightest ornaments to the service of the country. But it is undeniable that competition has raised the average of service; it has insured a more hard-working and steady average of officers, a more frugal and more moral average, a higher social average with fewer snobs With important and valuable exceptions of a few men from the ranks, the social condition of the average, instead of being lowered,

has remained much the same, and rather advanced. Members of the aristocracy enter into competition, and, with the advantages of special culture, maintain their own. The Horse Guards bemoaned in respect to the army the prospect of having the service filled with more feeble "bookworms." Earl Grey lamented this, which, he would have it, was an inevitable consequence of the scheme. Now the fact is, that the average not only exceeds the former average in mental acquirements, but, what I confess I was not prepared to expect, it turns out a better average of bodily acquirement. The Woolwich Cadets, who have a higher order of mental acquirement than those of Sandhurst, beat the latter in athletic exercises, and also beat their senior non-competitive rivals. The average of bodily attainment, with much more yet to do, has decidedly improved.

"It is proper to state that the common methods of competition are often attended with evils, consequent on over-mental work, which require correction. In the preparation for the annual rush or mental Derby day, young competitors often delay preparation until the last, when they work night as well as day, and are so exhausted that it requires some time after the competition to recover themselves for real work, and some do not recover at all, but fall back, and are not seen again, in the fore. This has been long observed to happen with first-class University prizemen.

"One important corrective of injurious excess is the system of '*répétiteurs*' as in use in the scientific schools of France, who examine each day's work, and assign marks for it, which go to an account, that is summed up at the end of the year, and determines

the position. Colonel Rifaud, the head of the Polytechnic School of Paris, told me that he had had experience of both methods, of our method and of that by the examination of the daily work, and that there could be no doubt of the superiority of the latter in making the work more steady and even, and checking the evils of excess in the rush for one final examination. I expect that, by this latter method, the competitors are kept more closely together, and that there are not such wide distances between the heads and tails of batches, or such inequalities of qualifications, as from one to three, as are commonly observable in our competitions. I am informed that in Prussia they obtain a good outcome and approach to the competitive principle by frequent and strict examinations and probations.

"Another check to injurious mental excess is by giving marks for physical exercises. Properly regulated physical exercises are more conducive to mental work, as well as to the duration of mental working ability, than men of the cloister are aware of. They have moreover a moralising influence, as shown by the effect of the volunteer movement upon young men of sedentary occupations, and in the emptying of wine houses and saloons, occasioned by the movement. At the Universities, and at some of our public schools just now, the bodily exercises may be carried to excess, at the expense of the due mental exercises. But that is by default of proper adjustment in accordance with the laws of psychology as well as physiology, both of which are flagrantly violated in our common school-courses, primary, secondary, and superior. It is true that on admission to some of our public schools a medical certificate

of a sound physical constitution is required. But that does not satisfy sanitary principle. What is wanted is continued, well regulated, physical exercise every day, to counterbalance every day's mental labour and sedentary constraint. To some of the educational institutions gymnasia are attached; but the answer given to inquiries why they are so little used is, that they 'do not pay,' that is to say, they do not 'pay,' in marks.

"At the instance of General Sir Linton Simmons, the commandant of the Royal Military Academy of Woolwich, marks are now given there for physical attainments. I submit that we ought to urge that arrangements should be made for physical exercises, and that marks ought to be given for proficiency in them, in order that they may be regulated, and duly adjusted to the mental exercises. Such adjustment is especially required in the competitions for the Indian Civil Service, for which physical training and stamina are most needed, where a man who has only a good seat at the desk is sometimes beaten in work by one who has also a good seat in the saddle.

"With important reforms in the methods, I believe it will be found that large reforms are needed in the subject matter of examination.

"Men of the cloister have conceived that if they could keep a boy or man nailed on a bench, as it were, before them, in an attitude of attention, they might go on and on all day long pouring in instruction, all of which would be received and retained. One old founder prescribed ten hours of strict daily desk work for young boys. But our recent practice of examination would show them that there are

limits to the capacity of receptivity, which cannot be transgressed without injury, and which are much narrower than they conceived. The effective working time of prize men at the University is proved to be under six hours of daily desk work. Our eminent psychologist, Professor Bain, states that at the Aberdeen University they have the hardest heads, and the hardest workers of any in the kingdom, and that four hours of daily head work is as much as is good for them. And yet such is the prevalent deplorable scholastic ignorance of psychology as well as of physiology, that six hours of daily sedentary brain work is commonly required in elementary education from little children.

"The limitation of the capacity of receptivity creates a competition of subjects to be excluded. Increasing demands of professional qualifications for remunerative work are pressing for the occupation of these restricted limits of the capacity of the recipient. The needs of the useful and the productive are pressing to the extrusion of the ornamental and the unserviceable. The pupils of the Roman Catholic seminaries in Holland, where long hours are occupied in Church formularies, are found to go to the wall in competitions for the public service with Protestants, whose time has been more occupied with things mundane. The Roman Catholics, therefore, are bitter against the competitive system, which has got root, with declared excellent results to the public service.

"Increasing practice shows that it is better that the subject matters of competition should be few and narrow, that they may be deep and thorough as a discipline,—rather than wide and diverse, and therefore, of necessity, shallow. Thus, if six topics

of qualification be required for a service, it is better that four should be determined by pass examinations, and that the competition should be confined, if not to one, to two, of the most essential and the most trying. There is an increasing pressure for the necessity of living science, as also for the living languages, to the exclusion of the dead. Under existing conditions, then, competitions must be ruled by the demands of service in the field or the office, rather than by the traditions and mediæval conceptions of the cloister. The pretensions of the English Universities in behalf of the dead languages as a discipline, and the curriculum founded upon them, are disputed in themselves and challenged upon the evidence of their average outcome.

"Grim, perhaps the greatest of modern philologists, maintains that as a disciplinary instrument German is better than either Greek or Latin, and English better than German. Those who would see some of the grounds on which the pretensions of the classicists are challenged, may read an excellent pamphlet recently published at Aberdeen, on "The Claims of Classical Studies, whether as Information or as Training," by a Scotch Graduate. As president of the Economic Section, at the meeting of the British Association at Cambridge, I had to assert the claims of the vernacular, and to remind a gowned audience that they sent to the Commission of Enquiry a translation of the Latin Statutes into bad English. The claims of the vernacular and of science, of the living language over the dead, were conceded by the meeting there. But if you would judge by the outcome of the classical studies, for which so much is claimed, take the testimony of

members of Parliament, of each other, as writers or thinkers, by asking how many there are who can be recommended for the examination of an important subject for eliciting testimony, and expressing the results in logical resolutions, or expounding them, in good English, in a well-ordered report or State paper? What amount of actual creditable examples of such workmanship can be adduced? As a matter of experience in minor positions, managers of banks will tell you, that as a rule men from the English Universities with much Latin and Greek, are beaten as clerks by men from the Scotch Universities and schools with less Latin and Greek, but with more arithmetic, and more thrift for social position and advancement. To what, moreover, has the vast progress of this country during the last half century been due but to science, and its practical applications in steam and mechanical power;—to the steam engine, to railways, to steam navigation, to telegraphy, to mining, to textile and other arts displayed in the international exhibitions, and to engineering? And to which of those great improvements have the classicists or the men of the English Universities contributed?

"The course of the examinations has been very much led by the curriculum of the examination for the Indian Civil Service which was chiefly prepared by Lord Macaulay, and which bears his own impress upon it rather as a litterateur than as an administrator. If the necessities of the Indian Civil Service had been duly consulted, I am assured that the course of examination would have been widely different in important respects. As undue authority has, I think, been given to him on the subject, it

appears to me to be proper to observe that he was himself an example of the results of the species of culture to which he gave prominence at the expense of practical science—of legislative and administrative science, as well as of physical science. I am an admirer of him as one of the greatest of our writers. But as Secretary of War, he was placed in an administration which required to be thoroughly reformed, and while there he failed to bring about this result.

"On such grounds I am prepared to submit that the competitions for the public service should be framed in strict reference to the service, to what is paid for, to the exclusion of the merely ornamental; that the curriculum of education should be made to conform to the service; and, that the service should in no wise be sacrificed to the existing mediæval conceptions and practice of the older unreformed schools.

"It will follow, then, that the living language must have precedence over the dead in the examinations, and living and practical science over past or present literature.

"The mastery of the English language, and its use as an instrument, including, as it ought to include, the great subject of logic, is difficult enough of itself, as Dr. Dasent, one of the Civil Service Commissioners, shows in his evidence before the Commissioners on middle-class examination, and may well occupy the time that can be given to it. But as a subject for examination, the literatures are great fields of cram, which ought to be entirely excluded. The first commission of military education agreed with me in confining the examination to the languages alone, and excluding the literatures. It is asked whether a youth ought not to be

acquainted with the literature of his country, to which the answer is, that if he is made master of the language of his country, you give him the best means and inducement to acquire that literature as a relaxation, and that there is no time, neither is there any necessity, to impose the acquisition of it upon him as a labour. In respect to classical literatures, the fine models of composition, the poetry, what father of a family would read much of them outright to his children, and why should he be led to send his son to familiarise himself in a cloister with a species of literature which, were it brought out anew in the vernacular and sold in Holywell Street, would be undoubtedly prosecuted by the Society for the Suppression of Vice? Why should he wish to imbue his son's mind with a theology which Mr. Gladstone acknowledges to be bestial and degrading, and to do so at the expense of science which is practically needed, which is free from pruriency and from savage passion, and is elevating to the mind?

"Competitions for the public and other service ought, I contend, to be confined to what is required, and what alone is paid for commonly, the qualifications of skill in the use of instruments, the instruments of language or of science; for in acquiring these perfectly there will commonly be enough to do. What is wanted of the corresponding clerk (or secretary) is that he should write English clearly and correctly. What head of a public department, or private employer, goes beyond that to ask whether a clerk is well up in Macaulay, Byron, Shakespeare, or other author? If the service be for French correspondence, what is wanted is that he shall

understand and write the French language clearly and well; not whether he is a master in Molière, or Racine, or Voltaire. And so with all the other topics required for the practical daily work of life.

"I submit that the introduction of histories as subjects for competition is unjustifiable, as occupying time mischievously to the exclusion of paying practical science. I go into an elementary school, and hear boys examined, to show that they have been got well up in the genealogy of the Plantagenets, whereby it is proved to me that time has been wasted to the possible exclusion of the acquisition of a chapter of economic science, or of useful knowledge on the subject of the generation of wages and profits,—principles important to their own and to the public welfare. Besides, much of the popular history is objectionable for its maleficent influence, as well as for its falsehood. I remember that the impression produced in my boyhood by our popular English History was very much to the effect that Frenchmen's throats were made for Englishmen to cut. It is very likely that the popular history of France raises a similar impression towards Englishmen. I was led to regard our Edward III. as a glorious and, on the whole, estimable warrior, but recent revelations show that he was in reality a rascally repudiator, who ruined an Italian banker and a city by the repudiation of the debt for money borrowed to carry on the war in France, in which he gained his victories. What are the revelations of the foundations of history even in our own time, such as that made from the private correspondence of the First Napoleon by Lanfrey, in contrast with the heroic story of Thiers' Consulate and the Empire? But if

history were perfect truth and purity, it is nevertheless peculiarly objectionable as a subject of examination, as a field of cram of names and dates, and of exercises of memory at the expense of better things. I submit that we may claim to have our public competitions preserved from pre-occupation with the falsehoods, the passions, and perplexities of the past, and the bad; and to have the valuable and restricted time reserved for the necessities of the present, for passionless and international science, and for outlooks for the future and the better.

"I regret that the new regulations of the Civil Service Commissioners appear to be in serious contravention of these practical principles. The regulations for the competitions for clerkships give marks as follows:—

	Marks.
English Language and Literature	500
English Language and Literature and History of Greece ...	750
" " " " " " " Rome ...	750
" " " " " " " France ...	875
" " " " " " " Germany ...	875
" " " " " " " Italy ...	875

"Now it will, I conceive, follow from what has been said that the public ought to claim to have this course purged of the great fields of cram—the histories, and the literatures, and in respect to the languages, if the Greek and Latin are retained (be it observed for clerkships) that the positions of the living languages ought to be reversed.

"It may be said that the selection of any of these heads for competition is optional. But the objection is to the undue position given to them authoritatively, on which I cannot but believe that the eminent Commissioners, to whom the public are in many respects highly indebted, have been led to sacrifice

their own convictions to the influence of the public schools, and to the heads of the English Universities. But that is anyhow a sacrifice of the interests of the service to old scholastic systems, in which there is an increasing demand amongst the younger members of those same institutions to have large reforms. The provision of such a scholastic system, it may be contended, is as fallacious as a true social security as it is as an intellectual security, a fact shown by reference to the outcome of Christ Church, and other examples presented in our bankruptcy and police courts, and other public offices.

"If the plea be for the classics for the intellectual culture of clerks, that object may be directly obtained by the culture of the 'moral sciences,' that is, logic, mental and moral philosophy. I should contend for a larger position and amount for logic alone;—less the scholastic logic than the logic which leads to a clear perception of the relations and orderly arrangements of business affairs.

"To conclude—a great reform, needed in primary elementary education, is to direct it sedulously to the needs of productive service, and I consider that the like reform is needed in our secondary and in our superior education. If the Civil Service competitions are based, as they ought to be, on the general requirements of the best civil administration, they will conduce to the highest improvement of the general education of the country."

CHAPTER XVII.

PENSIONS TO SCHOOL TEACHERS.

AMONGST the various efforts made by our author for the benefit of those who are engaged in education there is one relating to aged school teachers, which calls for sympathy as well as for reasonable appreciation. I refer to an attempt in which he tried to establish an educational fund from which pensions for aged teachers could be drawn. At the time when Earl de Grey and Ripon was President and the Right Hon. W. E. Forster was Vice-President of Council, a deputation was organised to wait upon them, of which deputation Mr. Chadwick took the lead. The memorialists submitted that the establishment by government of a fund out of which retiring pensions or annuities could be granted to teachers, after a certain length of service, would not only be a great boon to teachers as a body, but would be conducive to the improvement of education generally. They thought, also, that such a fund might be maintained by a small percentage, deducted from all grants to schools and training colleges. They further submitted that, except in special cases, no annuity should be granted to any teacher who had not taught twenty years in an elementary school under government inspection. Lastly, they suggested that the

amount of the annuity should depend upon length of service, but that a service of thirty years should entitle a teacher to the maximum annuity granted.

The prayer of this petition was supported by Mr. Chadwick in a short address, of which only the following abstract was preserved:—

"It is impossible to overlook the fact that the petition was opposed to a policy which has recently been adopted in the Department of ignoring all official connection with the school-teacher, all concern as to his status, and of leaving him entirely to the care of irresponsible and changing school-managers. But it is a duty to submit that, to the continuance of that or the like policy, there stands a disastrous experience, attested by school inspectors, of the widespread desertion of the most valuable skilled elementary teachers, and reductions of the numbers of pupil teachers,—ruinous to the training colleges; a reduction of the quality of the supply of service; and, injury to the quality of the teaching of the children of the wage-classes of the country. Any one who has studied educational administration, who has visited schools, observed various modes of teaching, and traced the outcome of schools, will have noticed that, although the subject-matters of instruction are much alike, there is often the greatest difference of result, and will be deeply impressed with the aphorism, that 'as is the teacher, so is the school.' Such a one would be anxiously concerned at the reckless ignorance of a policy of discouragement, and would feel the need of an opposite policy of encouragement, in order to obtain the best manner of men practicable for raising the lowest of the

population. Looking at the qualities desirable and necessary in teachers, and knowing the prices obtainable for those same qualities in the open labour-market, it will be perceived that, at the very best, educational administration is put to a serious disadvantage in obtaining fitting teachers. But security of position and freedom from worry during good behaviour are cheap means of obtaining good service at a lower price than it would otherwise be obtained for the public. Many men give up private service, and the conflict of the open labour-market, and take the public positions at one-third less of salary, for the sake of the comparative independence of the public status, and that, too, without any dereliction of the principle of complete responsibility to a competent and impartial authority.

"The speaker proposed this principle as applied to Poor Law administration, in so far as it has been adopted to the independence of position during good behaviour, and, leaving the question of retiring pensions, which will eventually have to be conceded, insisted that the plan has produced a large number of officers well qualified to undertake, with advantage to the public, the chief responsibility for executive action. Entire dependence on changing school-managers, commonly unlearned in teaching, and often incompetent, and mostly irresponsible, is to many minds a very repulsive condition. School teachers may take a position under school managers, where there will often be zeal, though it be without skill or competency to deal with the subject. But much of the lukewarmness and some opposition to the Scotch Parochial Schools Bill is due to uncertainty,—such as that which prevails here amongst

schoolmasters,—as to their position under it, and to a repugnance to the vestral element in the local boards, the members of which may be destitute of zeal, as well as of skill or competency to judge of service. Some opposition to the proposal of school rates arises from the feeling that under such local authority as the provision for rating may bring, the teachers may be even worse off than they now are. Securities may, however, be provided to relieve them from that ground of apprehension. The measure now proposed by the memorialists would cost nothing to the Government but its superintendence. The acceptance of the measure would be a return to a policy of justice and security, and an encouragement to competent school teachers, so necessary for the advancement of elementary education."

It will be remembered by those who can recall this address that the effect it produced at the time when it was delivered was one of real thankfulness on the part of those who were most concerned—the teachers themselves. The teachers did not desire to claim any pension until after twenty years of service in one or more elementary schools, and were prepared to sacrifice the slight deduction that might be made from their salaries during their time of service if the full period of twenty years should not be completed, with other proposals of a very moderate and salutary kind. These I must leave as apart from this work; but I thought it well to give the above address for the purpose of showing the soundness of an experienced teacher on the question of pension for public service in education, and the reasons for it on the ground of educational economy.

CHAPTER XVIII.

SUMMARIES OF EDUCATIONAL EFFORTS.

IN order to condense this section of the task that is before me, I propose in the present short chapter to put together from the author's own words a few summaries, gleaned from the extended field of reading I have traversed, and which have a significance that ought not to be overlooked.

Of Primary Education.

"It is a great mistake to speak of 'primary education' in its widest generality as if it were all of a sort, and all successful. Of the accepted lower-class elementary education a large proportion is unsuccessful. Even denominational and religious education, under trained masters, as in many of the poor-law unions, is often unsuccessful; for the children are often ill-trained, and few of them get into habits of self-supporting industry.

"One great cause of these educational failures appeared, under the Poor Law Inquiry Commission, to be, that the knowledge of many of the school managers and teachers was very much bounded by the four walls of the school, and that they paid little

attention to the future necessities of the pupils, or to what service they were to be put after leaving the school. The first step for amendment appeared to be, to bring the school into good relationship towards the service in after-life for which the pupils were destined."

Fitness for Different Services.

"Inquiry into the fitness of children for different walks of life ought to extend much further in regard to children of the artizan and middle class than to those of the wealthier. It ought to be systematised into an inquiry with a view to secure that the training in each school should be most eligible for increasing its efficiency and practical success.

"Under a sound educational organisation a supervisor or, as he might be called, a rector, should visit regularly every school and learn the special aptitudes of the scholars for particular services. Such supervisor or rector could then give an opinion in respect to any scholar and his fitness for any particular duty or calling for which he may be required. In this way the best scholars would be secured for the proper places, and the success of the training in its influence over the nation would be complete."

Large Schools Best Schools.

"Large schools have great advantages if in them variety of teaching is introduced. A genius for mechanics or for drawing is lost where neither are taught. The teaching in large classes in the secondary schools might appear to be productive of a level

uniformity of results; but it does not. Practically it evolves varieties of capacities, often to the surprise of the teachers. These varieties of aptitudes would be brought forward and applied under the arrangement proposed.

The Schoolmasters and Employers of Labour.

"The head master or school-manager should put himself in relation with the chief employers of labour, of secondary or superior as well as of primary labour, whether manufacturing or commercial. He should ascertain their wants, and, where the demand was sufficiently numerous to form classes, take steps to provides them, and to obtain special art, science, or technical instruction, as it might be. For scholars destined to agriculture he would provide appropriate lessons, as well as for those destined for the arts and manufactures.

"He should regularly visit the places to which boys from the school have been sent, and inquire from employers how they answer expectations; and upon ascertaining defects of the outcome, should take steps to have them remedied, in relation to secondary as well as primary school teaching and training."

Outcomes of Endowed Schools.

"Inquiries at counting-houses as to the outcome of large endowed schools, as well as to the results of competitive examinations, are demonstrative of the worse than waste of time in those schools, from ignorance or indifference as to the actual needs for the service in after-life which ought to be provided

for in them. Supercilious objections are made to such a course, that the object of education is to do something more than to fit the pupils for the office or the shop. But for whatever else they may be fitted, they must be fitted for these if they are not to be fitted for the insolvent court, or for family paupers in long-life vicious and painful dependence as 'ne'er-do-weels.'

Selections according to Aptitudes.

"A clergyman, the son of a peer, stated to Dr. Temple, when head-master of Rugby, his intention to send his son in for a competitive examination for the Royal Engineers; on which Dr. Temple advised that the youth should be sent elsewhere for a special scientific training. Such is the advice needed by parents of higher as well as of lower condition.

"Being informed that a large machine-maker at Rochdale, who employed some four hundred workmen, had discontinued employing any other than 'half-timers,' inquiry was made of him by a member of the Council and also by a clergyman, as to the particular grounds of the employer's preference of the half-timers. He replied that he found their general aptitudes so decidedly superior, that 'if each of you gentlemen were to bring me a son of yours with a premium (presuming that they were the same as the sons of gentlemen of your class), I would not take them, and would take half-timers for nothing in preference; for I well know the difficulty there is in dealing with young men of your class. It is almost necessary to stand over them and guide their pens for them.'

Outcomes of Highest Class Schools.

"Frequent accounts are received of the inaptitudes engendered or left by the teaching in superior schools, from the heads of manufactures who require science and art in their processes; and so also from the heads of large commercial establishments. Both complain that, from great classical schools, which have their annual recitals and displays of eminent scholarship, the scholars come to the counting-house with arithmetic that is worthless; that they must re-teach themselves if they would get on; that, although they may have been taught modern languages, they have been so ill-taught that they cannot write correctly a foreign letter; and that, though they may know good Latin, there are few of them who write good English. Hence they are frequently beaten by the boy whose education has been in an infant or in a large national primary school. This unfairness as towards the middle classes will be only prevented, at all events as to the greater proportion of them, by a common start, in large primary and secondary schools, kept in close relation with the demands of art and science, the manufactory, or the counting-house, by constant communication with them from the school.*

* The above selections are condensed from a report to the Society of Arts in 1870, on educational organisation. In later papers to the same society, notably in 1879 and in 1883, other equally telling lessons are supplied, of which a few are also added, to the present chapter.

Infant School Teaching.

"By good educational organisations the required improvements in the quality of trained teaching power may be generally attained, not only without any increase, but even with a reduction of the total common annual expenses, while given amounts of elementary attainments may be imparted, of a superior quality, to three at an expense now commonly incurred for one. It follows, however, that whilst exertions should be made to extend the existing means of art, and science, and technical instruction, by institutions, by evening schools, and by colleges, for all who may now be ready for them, the great legislative and administrative policy of the country is to concentrate attention on the improvement and the extension of an improved elementary education, and to the shortening of years as well as hours of the day for the elementary training of the population of this country. To this end, exertion is required to be directed to the improvement and the general extension of infant school teaching, by which, as it is now proved, an advanced preparation may be made, so that from one year and a half to two years of valuable elementary school-time may be saved.

Earning and Learning Hand in Hand.

"Having regard to the hard necessities of common life, and the economical condition and welfare of the many, one great object for saving school-time as early as practicable, is to let earning and learning

go on, as much as possible, together. The great practical object of school teaching is not to make superior scholars, but superior artizans; not to impart to the middle classes the accomplishments of the leisure classes, but applied science and productive art for actual service. It is desirable, for the progress of arts, manufactures, and commerce, to make the school itself primarily a manufactory, and a labour mart for available service.

Brain Work and Hand Work.

"The half school-time principle, and all reductions of school-time, is conducive to this end. It is now proved that the capacity of the beneficial attention and mental labour of children is exhausted in the good primary schools in less than three hours of good sustained teaching, and that all labour beyond that is detrimental or pernicious. The combination of book instruction with physical exercise, or with actual productive avocations, is proved to be advantageous to both, and this is true of middle-class or superior as well as inferior teaching.

Compulsory Education.

"In respect to the question of compulsory education, it may be observed that the shortening of school-time practicable for teaching reading, writing, and arithmetic from six years to three, will render unnecessary a great part, if not the whole, of the compulsory action now sought for to retain the children of the wage-classes in the school to their thirteenth year. The children of the wage-classes who do

not now attend school, will have their voluntary attendance greatly conciliated by the reduction of the daily hours of teaching—on the half-time principle—from six hours' daily attendance to three, a change which, to a great extent, would enable domestic service and earning and learning to go on together. Such compulsion as may be necessary, in relation to the children of the wage-classes, may be best applied by an extension of the principle of the Factory Acts.

Degrees of School Teaching.

"Experience confirms the great old Hebrew aphorism, 'that he who fails to teach his child a trade, teaches him to become a thief.' Good expenditure, under this experience, may be set down as a means of economising two millions annually of expenditure for penal administration and ineffective repression. Finally, it is to be observed that the question of compulsory school teaching must be assumed to have relation to *good* school teaching. Of the present school teaching in England, it has been stated by a distinguished Government inspector, the Reverend Mr. Fraser, that about one-third of it is tolerably good;—that is to say, in the common accepted term of the goodness of the schools which impart the "three R's" in about six years instead of three, and that are destitute of physical training; that about one-third of it is indifferent; and another third of it utterly valueless.

Religious Teaching.

"In respect to instruction in religion, the only desire must be that it may be improved beyond that now given. Merely for industrial purposes, what is needed is the substitution of habitual liars, cheats, and drunkards, requiring perpetual, painful, and expensive supervision, by a commandment-keeping, truthful, sober, law-abiding, contract-performing, conscientious, trustworthy class, thoroughly imbued with practical Christianity, for which the clergymen of all denominations ought to be made really responsible. The system of the Faversham School Union, approved by the late Archbishop Sumner, is an admitted proof of how the anticipations of the late Dr. Chalmers may be realised,—how religious differences may be set aside, and education be placed on the basis of a common Christianity. Since 1857 this system has been in vogue in Holland and works excellently."

CHAPTER XIX.

IDEAL PROJECTS TOWARDS SOCIAL UNITIES.

WE have seen in the preceding chapters of this part of our work that its learned author has earnestly advocated the half-time principle of physical education and mental training; the application of the principle of competitive examination for the abolition of political patronage in first appointments for the public service; and various details for the protection of the young during the school life, with provisions for those who have made education a professional calling. Before I bring this part and this volume to a close, I devote a final chapter to a brief survey of certain other allied topics which are administrative and social in their bearing, and have at various times been laid before the public in numerous addresses, reviews, and specially published memoirs.

The space at my disposal enables me only to present these remarkable contributions in the briefest possible abstract. They are essentially projects, more or less elaborated, and as they have not yet come into universal operation, but are, as it were, designed for work of a future day, they admit of being put in this condensed form, as ideals tabled for after scholars to refer to at greater length, when they have become facts of time.

The Policy of Pleasurable Existence.

It was a doctrine of the older political economists, beginning with Adam Smith, that the progress of manufactories and the sub-division of labour connected with them must lead to monotony of life amongst the workers, and be detrimental to intellectual development. This belief remained current, almost without challenge, until it was disputed by Mr. Chadwick, who, after examining the matter very carefully, controverted it and maintained the opposite doctrine.

His argument, based on psychological considerations, is that after a time the mechanical work performed by the artisan becomes automatic, and that the higher faculties of the mind are left entirely free and unimpaired. If under these circumstances the mind be left uncultivated and unoccupied, it may truly, according to the Adam Smith school, be given up to monotony. But this is merely from the encouragement of a bad system. Provide the artizan with food for reflection, and his mind will soon become good company for itself. This has been proved in the case of many artizans, as in theological shoemakers, ploughman poets, and shepherd mathematicians; and it would soon become general if early and proper education led up to the results. An engraver whom our author knew, who did work for the illustration of annuals for booksellers, found variety even in this seemingly special occupation. To one employer he went in for clouds alone; to another for trees; to a third for water; to a fourth for figures. This man soon found an increase in the quantity of work he could execute with improvement in its quality.

In another instance, the author found an idle apprentice in a workshop who instead of working would read a book, and every now and then attract the attention of his fellows by his irrepressible laughter. "Come, Tom," said one of the men, "you must tell us what you are laughing at. Read it to us." The idle apprentice read from "Pickwick," and soon the laughter became epidemic, with such an improvement in the rapidity of the work that the master appointed idle Tom to be reader in general, with the best success. Mr. Chadwick told this fact to Dickens, assigning to Tom, the reader, the function, economically, of a fifer or drummer to animate, regulate, and quicken the march of production. And, the moral he draws generally is, that if all work were supplemented in this way, the monotony of artizan life would soon undergo a revolutionary change which more quickly than anything else would be preventive of revolutionary disturbances.

An Economical Analysis.

Mr. Chadwick once tried to get out an economical analysis in analogy to a chemical analysis. He tried the experiment on an economical analysis of a four-pound loaf of bread:—How much was the labour of production or wages; how much the farmer's profit; how much the rent; how much the cost of transit?

The task he found to be a very difficult one. He ascertained that whilst the rent in the loaf was three farthings, the cost of the retail distribution was three halfpence—*i.e.*, more than double the rent. These proportions generalised gave as a result that when the rental of the land was forty-five millions in England, the cost of the distribution of the products

of the land averaged ninety millions—the cost of the retail distribution being more than 25 per cent.

During the cotton famine the Messrs. Birley determined to feed some thousands of their workmen with bread. It was found that the cost of the production of the four-pound loaf of the best wheaten bread was fourpence. At that time the price of a loaf at the ready-money shops was sixpence-halfpenny, while at the retail credit shops it was sevenpence-halfpenny, with an inferiority of flour and loss of weight, making not less than double the cost of the product supplied by Messrs. Birley.

He extended this analysis on the production of bread in small quantities to wholesale production, and inferred that 11 per cent. could be saved by the wholesale method compared with the home baking. He extended his observations further to the production of animal food and to the chief articles of consumption in order to determine to what extent combination might be directed to reduce expenditure. The results led him to an appreciation of the co-operative system, long before it came into operation, and to the idea that some sixty millions of expenditure might be annually saved to the population of the United Kingdom by that system, and with work better done.

On Unity in Social Organisations.

We have already seen that the earliest studies of Mr. Chadwick were directed to life assurance and the various organisations of clubs and friendly societies among the working classes. He also devoted a great deal of time to the study of the principles or organisation and administration of the

medical charities of France, and on the administration of relief to the destitute poor of England.

These researches led him to the projective idea of applying the principle of unity of action to everything that is administrative in the State. He suggested this first in regard to the Poor Law, insisting that the administration of the Poor Law should be entrusted to one central authority for general superintendence, and the details to paid officers acting under strict superintendence and responsibility.

The principles of unity thus formularised for one service he would extend to all the services; to military organisations, to police, and to all educational public endeavours.

This said principle of unity he has recently proposed for application in the government of the country at large, on the principle of codification for national unity, following throughout the master principle of organisation laid down by Bentham, *always to do the same thing in the same way, choosing the best, and invariably calling the same thing by the same name.*

The projective ideas in this part of our author's labours are condensed by himself in his recent work on "Unity," in the following terms:—

"The conditions of a proper centralisation, on the fundamental principles of unity, of the forthcoming administrative area, are yet but little known or understood or attended to in high political quarters, and I beg to state them, as I prepared them for the then new central authority for Poor Law administration. They are these: 'That it is an authority properly constituted, as a responsible agency for the

removal of those evils in the repression of which the public at large have an interest, but for which the people of the locality are helpless or incompetent.

"As an authority of appeal in disputes between conflicting local interests.

"As a security for the correct distribution of local charges, and for the protection of minorities and absentees against wasteful works and undue charges.

"As an agency for collecting and communicating to each local authority for its guidance the principles which may be deduced from the experience of all other places from which information may be obtained. This is a service which ought to be well provided for and sedulously enforced.

"Democratic government is always denounced by a certain class of politicians as especially bad. I might show that, under the present conditions of disunity, with multiplied, unnecessary appointments of officers, with ill-assorted functions, bureaucracy, in the dislogistic sense, is at its worst, and that the best remedial course would be found in unity, when united to the functions I have recited, and when, under a central authority, charged with effective responsibilities for their application, they are not allowed to relapse, as some have been, under the old lethal official maxim for sanitation, 'Never to act until you are obliged, and then to do as little as you can,' *i.e.*, for the prevention of human misery and waste.

"I may cite, in support of my views on the evils of disunity in local administrative organisation, a clear and important display of them by Mr. Wheeler, civil engineer, of Boston, given in a paper in the October number of the *Royal Agricultural Society's Journal*,

treating on river conservancy and the cause and prevention of floods. He shows the need of local unity, with competent central aid, for the protection of agriculture from immense loss, and, I will add, for the allowance of great gain from subsoil land drainage, by the provision of proper outfalls and the direction and application of surplus water from them.

"The means of working out the results specified, of getting the local administration under complete unity, and getting future legislation under unity by one chamber, would be by a division of labour amongst separate commissions,—as by a commission for the assimilation of the administration of the laws for the protection of the public health; by a commission for the assimilation of the law and administration for the relief of destitution; by a commission for the assimilation of the penal law and the administration of constabulary and police forces; by a commission for the assimilation of the laws and administration of the law and the better application of rates for the maintenance of the roads and the means of transit; by a commission for the assimilation of the laws and the assimilation of the civil procedure for the administration of justice, as far as may be, throughout the empire. The result of examinations by competent commissioners would not fail to be a great advance in economy of the increasing amount of fifty millions of local taxes, now burthensome in great part from the unskilfulness and inefficiency of administration.

"It is now held forth as a primary object to sustain self-government (*i.e.*, the government which, as a rule, is the most expensive and the least effective), that it should be rendered interesting and attractive,

and interesting to persons in the locality to take part in it. As far as relates to the administration of the Poor Laws, much of this has been done by centralisation; by the introduction of method and order where there was chaos; and much more may be done by advancing to the condition of the Irish system, by which the proportion of painful and repulsive cases to be dealt with are greatly reduced. For education in public service, the most systematised administration will indisputably be the best. But, for the general object there are large social conditions to be considered; for, whilst the improvement of local administration renders the service required more serious and arduous, the demand upon the time of persons of all conditions becomes more oppressive and absorbing, so that it is becoming more difficult to find competent persons to undertake continued serious unpaid service. Added to these conditions are the increasing attractions of scientific pursuits and of commercial directorates to persons of leisure, which make it a rule that the few who have time to spare are those whose attention is often of least value. The increasing difficulty of getting persons to serve on common juries, and the interruptions occasioned thereby, threaten that institution in England. Hence, instead of the demands for local unpaid services being extended, it will be found that they ought to be restricted and carefully economised and aided.

"I am fully aware that for the improvement of the local government, especially that for the protection of the poorer population, the central administration will require important amendments.

"In the absence of knowledge, and of correct administration, and of its productiveness, it may be said

that the common course of agitation in this country has been for the shifting of the burthen of the rates from one description of property to another, or from the local to the general taxation of the country. The course proposed of examination and comparison would show that much larger relief is obtainable by the reduction of burthens through an improved and productive administration of them, than by any process of shifting them. The rivalry of different methods by a comparative examination would be fraught with interest and large instruction to the rated taxpayers, to the general public, and to the Legislature. The economies obtainable would manifestly be so large, as to render it an improvidence, and an economy of the oil serving to prevent friction, noise, and agitation, not to make it to the interest of office-holders, under existing practices, to assist in the furtherance of the changes required, by giving them promotion, when they can be retained, on a liberal retiring allowance in case of their displacement under new arrangements.

"In regard to the effect on the superior Legislature of the attainment of unity, by doing everywhere the same thing in the same way, as closely as may be, choosing the best, I would point to the example of the power gained to France by the uniformity of law and procedure achieved by the Code Napoleon. By that Code, or more especially by the Civil Code, an influence of attachment was gained to France, which, if there had been no disruption of war, would have gone far to have retained the voluntary connection of conquered populations, particularly that of Belgium, where the Code is still retained substantially, as it is largely in Italy and other States on the Continent.

But we may advance beyond the example of this near continental experience to the practical working of our own Code for India. That Indian Code was mainly wrought out on the lines of Bentham, worked out by his ardent disciple Cameron. The most experienced Indian administrators speak of it, so far as it has been carried, as a vast success, in producing order where there was chaos, and in giving a strong binding force of unity to the administration of that great part of the British Empire.

"Sound codification may be submitted as of increasing necessity for binding together our colonies, and for clearing away from the older colonies the great mass of different systems of law prevalent amongst them—old Dutch law, old French law, and new French law, or the law of the earlier and of the later French Codes. The late Sir William Martin, the Chief Justice of New Zealand, explained to me how unworkable he found the home procedure of the English courts, and the absolute necessity he was under of framing a new procedure suitable to the colony. It was interesting to find how closely he approximated, independently, to the procedure elaborated by Bentham for home use. I submit that the colonial experiences of the law officers may be best consulted for getting out a Code for common use, which I anticipate would, in its simple elements, serve also the best for home use. It may be anticipated that the common interest would conciliate to aid such a work.

"Sir Henry Thring, our able Government draughtsman, in his article in the *Quarterly Review* for January, 1874, on the simplification of the law by codification, suggests that the first practical step is

to establish a 'department of the Government charged with the duty of putting in shape the existing law and superintending current legislation.' I imagine that he will have had experience of the difficulty of getting Parliament to submit to any superintendence of current legislation. Sir Robert Peel expressed his experience of its difficulty when, speaking of Lord Romilly's Encumbered Estates Act for Ireland, he said, 'it was so good a measure that he really wondered how it had got passed.' In the present disunited condition of legislative procedure, it may be stated that, as a rule, no measure partaking of scientific principle is ever passed that does not come out worse than it went in. Of this the measures for the application of sanitary science, and those for the application of administrative science to the Poor Laws, may be presented as examples. Concurring in the suggestion of the appointment of a department, I would submit that it should be with the attribution of competent commissioners to make local inquiries and collect evidence as to experiences, especially from lay people, and to obtain consents to the conclusions thereon. I apprehend that they might bring from the colonies, as well as from the provinces, experiences with an amount of support that would not be given to any other work. The expense for an abundantly well-appointed commission would be a means to a vast economy of money. Our cousins of the United States have adopted our common law, and are largely governed by the decision of our judges in Westminster Hall, and often by the statutes of Queen Victoria as in affirmation of it. We might return the compliment, and probably find and invite the contribution of their

experiences for it, especially for a Code of commerce and of civil procedure.

"I am aware that the work of administrative unification, on the principles which I have tried to enunciate, as deduced from experience, cannot be expected to be done, so to say, 'to-morrow:' but I have felt that the plan of it ought to be stated 'to-day' for consideration in connection with the great questions arising on local administration.

Projected Government for Ireland.

Applying his views on unity of administration to the case of Ireland, Mr. Chadwick has recently proposed certain alternative measures for the government of that country, of the local administration of which he has a very high opinion.

I select from his paper "On Alternative Remedies for Ireland," the following extracts rendered in his own words:—

"I have a confident belief that it will be found on examination, that Ireland has really, with inferior materials for unpaid service, the best chief branches of local administration, aided by central service in the empire; *i.e.* the best poor law administration, the best road administration, and, after all deductions, essentially the best police administration. If the principle of these branches were to be extended and made general throughout the empire there would be a great gain of administrative force, with a large reduction of the burden of local rates. The principles for the administration of the relief to the destitute in Ireland were those which we proposed as more

specially applicable to the institution of the central control for the administration of the Poor Law in England. It will appear to be of importance for Ireland that this central service should be distant, unimpassioned, as well as strong.

"No measure partaking of science ever goes into Parliament under existing conditions that does not, as a rule, come out worse than it went in.

"A three-chambered Legislature must be, so to speak, a narrow-minded Legislature, producing only narrow-minded local legislation. The member of the English section or chamber says to himself, 'that measure,' if it be not a party measure, is 'only Irish,' or 'only Scotch,' and does not care about it; the Irish member says that it is 'only English,' or 'only Scotch,' and does not heed it; and the Scotch member returns the compliment on both. The first Public Health Act was regarded as 'only an English measure' by the Scotch members who, no doubt, otherwise would have prevented by a large majority the great mischief that was done by a small number at a morning sitting. The Scotch Poor Law measure was regarded as 'only a Scotch measure' by the Irish members, who could have contributed experiences from Ireland that might have preserved Scotland from the great amount of evil clearly caused there by deviation from sound economical principle in the relief of destitution. When members are led to vote upon a neutral measure, they do so usually under influence and not upon conviction. A general measure, founded upon the experience of the whole administrative area, and prepared by the best administrative service, would set aside narrow provincial views, and obtain votes

upon the perception of the widest experiences, worthy of a single-chambered Legislature. Until this is obtained, the action of the Legislature must continue to be halting, dilatory, expensive, and vexatious, tending to produce legislative and administrative disintegration. When unity is obtained by doing the same thing in the same way everywhere, choosing the best, one event for Ireland may be expected to follow, namely:—the abolition of the Lord-Lieutenancy, an abolition of which the late Lord Fortescue, after his experience as Lord-Lieutenant, declared to be most desirable. Sir Alfred Power, one of my colleagues as an Assistant Commissioner on the Poor Law of England, and lately Vice-President of the Local Government Board of Ireland, one of the ablest administrators that Ireland has ever had, has written on the evils of the continuance of the Lord-Lieutenancy. If that be continued, if separate administration of the same things be continued, it may be asked why a separate and dilatory system of legislation should be continued?

"Except under extraordinary circumstances, any legislation and administration for Ireland alone—that is to say, for one-seventh of the available area of administration—is always likely to be narrow and behind-hand, and of a merely provincial character, which must be either proportionately inferior, or excessively expensive to be equal in execution. We may wonder what would be the position of agitation from one-seventh of the kingdom against a rule which six-sevenths of the United Kingdom knew, and were well satisfied to be the best for common benefit? I would avoid as much as possible any irritating topics;

but it would be for the Irishman to say whether it would be the best for him, as for the Scotchman, to be the citizen of a small province or of a large empire; to have a wide field for service opened to him by consolidation and competition, or be restricted to a poor and narrow and inferior field."

As remedies for Ireland the author proposes:—

"1st. That of giving to the Irish labourers of the wage classes extended and complete unity, by placing them on the same footing as the English labourers, opening up to them on equal terms the free labour market, and a service market of the United Kingdom and of the empire.

"2nd. That instead of confining the Irish children to the old inferior and ungenial education and habits of a small province of a seventh of the United Kingdom, we should give them the advantage of the most improved elementary education and physical and mental training on the half-time principle, which would best fit them to enter the enlarged labour market of the empire, and to be acceptable socially, for the exercise of political privileges.

"3rd. That we should provide for the people beneficent and productive labour at increased and first-class wages by drainage works for the relief of the occupiers of the most depressed districts.

"4th. That we should provide them with improved means of relief from depression by increased facilities for emigration, or by the consolidation of the occupation of the land in enlarged areas for improved and more economical production, and for a better return in wages.

"5th. That we should provide for a properly regulated sanitary inspection of houses, of places of

work, and of schools for all Ireland as well as for England, where it is as pressingly required for the protection of the masses of the population from extensive preventable disease.

"These several measures on principles the results of much examination and experience may be presented for appreciation as a beneficent policy for the removal of the chief causes of disturbances, and in substitution of the policy of penal repression, the sole policy at present regarded, but which leaves those causes only partly affected."

Cheap Railway Fares for the People.

Mr. Chadwick's family connections with the promoters of the railway movement in Lancashire led him to observe on this subject. From the first he opposed giving up the public means of transit to private companies in the way in which it was originally done, and wrote to his friends and movers of opinion, on the Continent, against it. He preferred the mode adopted in France of putting the roads out for competition to construct and work for a term of years. France got the contracts at first for constructing and working for terms of years, generally under thirty years. These terms were afterwards corruptly extended to ninety years. Had the original principle been adhered to, the French people would now have had their roads free from a large proportion of their charges, and they would have been working more economically under unity. In evidence before a Royal Commission, and in various papers, he showed, by reference to the evidence of experts engaged in connection with the railways, that by unity at least twenty per cent. of the working expenses might be

saved, chiefly by enabling two trucks to do the work of three, two competing lines running from the same place to the same place to do the work of three at the same time and with trains not above one-third full; also by enabling a great deal of transit of goods and minerals to be worked over low levels inexpensively, or at half the price of conducting the transit over high levels. These savings, under unity, would give the shareholders—who, as a rule, have not got half the dividends promised them by the promoters—an increase of dividend of one and a half per cent.; and this although all the directorate might be allowed to retain their emoluments for life. But his doctrine of increase of production with reduced fares did not please the commercial classes, and a deputation of them in opposition to the proposal of a parliamentary train at one penny per fare per mile insisted that such a low fare, which our author urged for, would be their ruin. How far away the commercial practical men were from the truth on this matter the results of the penny a mile traffic have abundantly shown.

He advocated in like manner, similar principles of increase of production with reduced prices, under unity of administration, for supplies of gas and water; and here again his judgment has been sustained by every experiment in which it has been tried.

Model Volunteering for Military Service.

In his Poor Law service, Mr. Chadwick had as associate assistant commissioners, Sir Francis Head and Field-Marshal Sir John Burgoyne, as well as

other officers of engineers. Their talk was often of things military, in which, in regard to matters of administration, he took great part, and out of which he evolved some principles of organisation which were communicated to the public in a speech delivered before the Society of Arts during a debate upon a paper read by the late Sir Henry Cole.

Sir Henry proposed the reduction of the amount of our forces in barracks by introducing the organisation of Switzerland, where the soldiers are, for the greater part of their time, allowed to follow their ordinary occupations.

Our author supported this reduction on the ground that, after very careful inquiry, he could come to no other conclusion than that prolonged barrack detention injured rather than benefited military discipline. At the same time he would have the training and discipline so arranged that its formative stage should be in the early life of each citizen, by the introduction of military discipline into all primary schools, and by the adaptation of such discipline for civil as well as military qualifications.

He proposed also to give all volunteers double pay, or the pay of the police, for the half-day's exercise on the Saturday afternoon, with special advantage to the *élite* of them—superior shots and moral, God-fearing men—who would enlist, join colours, and go abroad for any service, long or short. One hundred hours of exercise of such an intelligent force would render it fit for any service; and composed of infantry, cavalry, and artillery, it would, after a few weeks, be as potent as Cromwell's Ironsides, and at a third the cost of the present barracked soldier companies.

Volunteers prepared after this fashion would, he contended, be equally great as pioneers for the colonies and for colonisation.

Systematic Repair of Common Roads.

Mr. Chadwick paid early attention to road administration and road construction. By his evidence before a committee of the House of Commons he did much to get an Act passed for removing the administration of roads from the parish to the union; and effected a material reduction of ignorant and corrupt administration; only a temporary expedient but sound in principle.

His later project on this subject, a project which waits still to be carried out, rests on the drainage of roads. He contends that the strength of a road lies in its drainage, and suggests the improvement of every road in the country by laying down alongside of it permeable pipe drains in the place of the common stagnant ditch drains which now exist. These permeable pipe drains, when properly laid, would serve likewise as valuable outfalls for the pipe drainage of the adjacent lands.

In regard to the laying of roads, he ascertained that whilst the wear of a road by the foot of the horse was as one, the wear by the wheel of the carriage was as two. He proposed, therefore, a road construction with a hardened wheel track of asphalte for roads of much traffic, and of highly hardened concrete for roads of lesser traffic and for the horse footway. Three miles of wheel track of asphalte well laid, would be as cheap as one mile of an iron tramway. Such a road would require no toll, because

in the end it would be more economical than the present faulty system.

The footway to a road of this kind would be made of coal tar asphalte granulated, specimens of which footways may be found in good working order near to Nottingham.

With the aid of a special committee of the Society of Arts, our author made an examination of the whole subject of laying out, paving, and cleansing the streets of great centres. In some trials made with the dynanometer in London it was found that on the asphalte roadway the drag required was 69,765; on a wood roadway, 106,880; on good macadamised road, 114,628; and on new macadamised road, 259,800. On the whole it was made clear that the horse power required for the metropolis would, under the suggested scientific improvement, be reduced by one-half; that vehicles of the tricycle species would extensively supersede horse power; while the health of the people would be improved by the absence of dust and the ready way in which the streets would be cleansed of decomposing poisonous animal matter.

The views expressed in the last paragraph on the construction of roads were expounded in another form by our author in evidence which he gave before a select committee of the House of Commons on tramways, on March 22nd, 1877.

In this evidence he explained that granite trams or wheel tracks had been in use in the east end of London, but still more in the north of Italy. These trams, though partly satisfactory, left a better system open for trial in the use of the hardest pieces of asphalte in the place of stone. The asphalte track would be more economical than the iron tram, would

interfere less with the ordinary roadway, and would be free from jolting, as there would be no joints like those in the stone tracks. Such asphalte tracks might be laid down at a cost of about £2,000 per mile.

On the Value of Public Good Wills.

A very original idea has been put forward by Mr. Chadwick on what he calls the value of "public good wills" in dealing with colonies and dependencies, and in their habits of dealing with us instead of with other nations. This idea he supports by the analogy of the private good wills of private traders and professions, who attach a rateable value to their business of so many years of purchase arising from the habit of persons dealing with them. This constitutes a good will in private life which might, fairly, extend to colonial transactions of an international kind.

Another suggestion bearing on this good will question, and, indeed, springing out of it, is that we might fairly reduce all charges incident to a separate and independent military force. In India we practically carry this out. We hold all India with some 80,000 of British and a quarter of a million of native forces. If our dominion were withdrawn and India were left to the natives, she would revert back to former conditions of hostile tribes and denominations, and would be burdened with some three millions of war costs. We hold all Bengal—which has a population of sixty-five millions, the population of all Russia—with ten thousand of British and twenty-five thousand of native forces. If the British were with-

drawn from Bengal the Presidency would be split up under conflicting war costs, and be burdened, as Russia is now, in order to hold together. Sir Bartle Frere, in speaking of these suggestions, said that he had never heard the proposition of "good will business" with our colonies, nor the economy of military protection from the mother country stated before. It was unknown to Bentham when he wrote, "Emancipate your colonies."

Administrative Diaries and Maps.

Mr. Chadwick also introduced some improvements in the executive administration of public moneys. He formed the plan that the Assistant Commissioners should keep diaries, in which were stated on one side the places visited and the service rendered, and on the other side the daily pay and expenses. A tabular collection of these diaries was produced weekly before the Commissioners, who were thus enabled to see, at a glance, the distribution, the local work, and the cost of their divisional forces. He planned maps to show more completely the direction of each force. In the case of epidemic visitations he had the death-rated places marked out, on these maps, with blue dots, in order to make the locality of the epidemic strikingly evident. An example is given in the sanitary report of 1842.

Some of these maps were very instructive. On one indicating the course of the cholera in the metropolis the lines of large stagnant sewers were marked by the clustering of cases around them. But at points where the sewers discharged into the river, the front lines of the contiguous houses displayed an absence

of marks, which proved to be due to the sweep of the tide and of the winds. Since the suggestion, Dr. Jansen, of the Statistical Department of Brussels, applies the principle by the use of coloured pins, which mark on the map the sites of cases of the epidemic type. A map with these marks upon it is placed weekly before the sanitary authority in order to direct their attention to the course of the invading enemy.

At the first General Board of Health in England the dotted maps sent in with the daily returns played an important part. When the dots showed an increase of cases of disease in any locality, force was immediately directed there to meet the evil. When the dots showed a decrease the force was reduced or withdrawn.

Reorganisation of the Civil Service.

We have already seen that our author was an early and very decided supporter of the principle of competitive examination, by an examining board, for primary introduction into the Civil Service. In 1855, in the papers presented to Parliament on the reorganisation of the Civil Service, he added some important details relating to those public servants who had been admitted. He suggested in regard to them that any officer who had proposed an improvement in practice, had given to the improvement a practical shape, and who was otherwise duly qualified, ought to have a fair share in the execution of the new device. "To him who devises," he said, "let the execution be given, by which a powerful stimulus will be supplied for the advance of the service in its due position." In addition to this proposition he

added others having references to vacancies and promotions in the Civil Service, some of which might well be reconsidered at the present hour. The more important run as follow:—

"That on the occurrence of vacancies, no new appointments (staff appointments excepted) shall be made, if it can be shown that upon a division of the salary within the office, or of part of the emoluments attached to the vacant place, the duties of that place can be performed satisfactorily.

"Second, that notifications of vacancies in any one office be made to all the rest where there are lower appointments; and that opportunities of promotion, *cæteris paribus*, be allowed to them.

"Third, that systematised reports and accounts of the service rendered for payments made by individual officers, and collectively by officers, should be required; and that those accounts, as well as the money accounts, should be regularly audited.

"Fourth, that future promotions to the classes of appointments in question, should, as far as practicable, be based on audited accounts of service rendered.

"Fifth, that the application of the proposed measures for the reorganisation of the Civil Service should, where statutory provisions were not absolutely required, be made by Orders in Council with the aid of a Special Committee of the Council."

Employers' Liabilities for Blameless Accidents.

The falling in of a tunnel from the defective construction of the Manchester and Sheffield Railway, in 1846, occasioned a great loss of life among the navvies

employed. The event incited our author to get a committee of the House of Commons appointed to inquire into the cause. Before that committee he contended that all employers of labour should be responsible for emergencies on their works, and even for blameless accidents, as they were, by law, in France. The Committee approved of his conclusions. He afterwards got the Lord Chancellor (Campbell) to bring in a bill for the sanction of this principle, but he could not get it carried to the full extent of charging the capitalist with the costs of blameless accidents, so as to let such costs be charged through the product upon the consumer. He would have charged all losses of life, as in mining and the mercantile marine, upon the capitalists, by which he would have concentrated and fixed responsibility upon those who had the best means and the strongest motives towards prevention of accidents. This would have affected upwards of five thousand deaths annually, chiefly arising from "accidents" in the use of steam and in the mercantile service.

END OF VOLUME I.