

EDUCATIONAL  
MOVEMENTS  
AND METHODS



**EDUCATIONAL MOVEMENTS  
AND METHODS**

# Educational Movements and Methods

WITH AN INTRODUCTION

BY

JOHN ADAMS

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## INTRODUCTION

HERE is something remarkable in the popularity of such composite books as this. The old-fashioned school-management manuals filled an obvious niche. They could take all school knowledge as their province, so far as the elementary schools were concerned, without fear of being challenged for attempting too much. But things have changed since books have begun to be written at the address of the secondary-school teacher. It is generally admitted that no one person can by any possibility deal satisfactorily with all the subjects in the higher school curriculum. Nobody with any sufficient equipment in modesty could glance over the Contents of the present volume and claim to be at home with all the matters he finds there noted. Yet, when the articles were published serially, they attracted a great deal of interest among all sorts of teachers, and now that they appear in book form they take their place in a regular library of similar books which, each in its turn, commanded the interest of the whole profession. That such books are read is beyond question; for there are more than half a dozen of them on the market, some of them of considerable



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age, and all of them showing symptoms of a healthy circulation.

One would have thought that each secondary teacher would have sought out some authoritative works on the subject in which he specializes, and have contented himself with these. In point of fact he does this. No self-respecting specialist can look his subject in the face unless he has mastered its academic details as well as its professional aspects. He must not only know his subject as a subject; he must also be familiar with the best methods of teaching it. To keep abreast of his subject he cannot rest content with even the latest text-books. Huxley used to say that the usefulness of a text-book in physiology did not last beyond a period of three years. Specialists in other branches lay down similar limitations, so that the conscientious teacher must stretch beyond the text-book to the *fliegende Blätter* in which the latest discoveries and inventions in his specialty are recorded. Practically every subject in the school curriculum has now a society made up of those who teach it, and a great many of these societies have a magazine or some printed record of their proceedings.

Yet between the recondite details of learned professional societies and the broad generalization of the standard text-books, kept up to date though they be, there appears to be room for books, such as this, that take a wide sweep of the whole field from

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time to time, and focus the attention of the reader on the significant changes that are taking place. It may be objected that such a wide range as is sometimes presented must tend to repel experts who cannot possibly get up an interest in things entirely foreign to their field. Some of the matters dealt with in the following pages, for example, are so specialized as to appear to have a very limited appeal; as, for instance, commercial and domestic subjects, and perhaps eurhythmics. Yet even these branches are not without interest to the teacher who takes a broad view of his work. We must not lose sight of the text, "Look not every man on his own things, but every man also on the things of others." The teacher who is not a day-labourer has to take account of the whole curriculum and the inter-relation of the various subjects.

The mere specialist is sorely tempted to over-estimate the importance of the subject that he has made his own, and, in the case of some of the more powerful subjects, to become a little tyrannical in his relations to his fellows who happen to have given themselves to less influential branches. The nobler sort of specialist, on the other hand, is willing to co-operate with his colleagues, and to recognize in the school the equivalent of a rotation of crops on the farm. Men and women of this type find a great many points of interest in matters dealt with in other classes. Accordingly, the special subjects

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that appear in the text of this book find readers among experts in other subjects. Certain of the matters that appear on the Contents list, however, do not depend on this generous overflow of interest. They have an attraction of their own for teachers as such, apart from connexion with any particular branch of the curriculum. No member of our craft can afford to be ignorant of such matters as co-education, the Dalton Plan, intelligence tests, the heuristic method, and school-government. But even the remaining rather technical chapters must have a certain general appeal, otherwise books of this kind could not turn out the success that they do. Indeed, this success is one of the most comforting symptoms of a broadening professional interest at the present time.

A book like this certainly makes a heavy demand upon its readers, since it throws upon them the responsibility of extracting the full meaning from the matter supplied, and the fact that so many people are willing to undertake this task is an indication that a certain view of the nature of education may be more near the region of practical politics than even the optimists among us are inclined to believe. What is called 'integral education' is not generally regarded as fit for general discussion, if we have in view any notion of immediate application. At any rate, it has not been thought desirable to include it in the list of subjects overtly treated in

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any of the composite texts to which reference has been made. But the idea of integral education runs through this book, and comes nearer the surface than it usually does. It has, indeed, always been hovering round the skirts of orthodox educational theory, but has hitherto been regarded as too vague to take its place in the regular ranks. It is no doubt immanent in the Platonic doctrine of education, but is too elusive there to be analysed out into clear consciousness. The Pansophy of Bacon and Comenius was big with the idea of Integralism, but it had to be worked out in much more full detail on the side of knowledge before the educational aspects could be considered. With Positivism and the Comtists it took a more definite shape, and just before the Great War it was showing signs of coming of age in the theory, and to some small extent in the practice, of the French educationists. On the side of mere knowledge, Integralism now comes within the range of the possible in education, for, after all, it resolves itself into such an organization of the curriculum that the pupil may not perhaps take all knowledge to his province, but may at least so organize his knowledge as to make it represent in a balanced way all the different realms of human attainment.

On the side of the process of education as such, however, there arises a much more difficult problem. We can save knowledge from becoming a mere thing

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of shreds and patches ; but how are we to prevent the school staff from remaining, as it is, a mere group of individuals each reacting in his own way upon separate pupils ? The ideal of the Integralists is to get the whole school staff that has anything to do with a given pupil to act upon that individual as a collective unit—*i.e.*, as an organized group that will act as a whole. The conception is a fatiguing one, and tries the patience of the practical teacher to its utmost limits. But underlying it there are certainly great possibilities. With some diffidence we may say that Integralism is on the way, since it is justifying itself at least on the side of knowledge. In reading the following pages, teachers may find it worth while to keep before their minds the possibility of such an organization of school-teaching power as shall remove for ever the possibility of the reproach implied in the remark of Lavissee that our present teaching in secondary schools provides the shameful case of the fragment of an educator addressing itself to the fragment of a pupil—and, he might have added, “about a fragment of a subject.”

From this reading into the articles a meaning that does not appear on the surface, those who use the volume will be made to realize with some vividness that they are not dealing with a symposium. Some of them may wish they were : but as it stands the book has the merit of its qualities. It has the

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clear-cutness of individual opinions. A symposium has usually the advantage of a leading spirit that controls the discussion and leads it past dangerous places. In a genuine symposium, where personalities come face to face with one another, there is real give and take, the result being a more or less finished product. No doubt the recorded summing up of a meeting-symposium owes its unity to the influence of one or more of the dominant spirits, sometimes officially appointed as scribes, and sometimes merely asserting their leadership by the sheer force of personality. A symposium consisting of the opinions of a group of people sent in to an editor is quite a different affair. He can turn the contributions into a whole by the simple process of selecting his material from what is supplied, and presenting it in such a way as to support whichever position he himself may adopt. Further, in a symposium the persons concerned should be regarded as equal from the standpoint of the matter discussed. Now it is obvious that in such a book as this the contributors cannot be held to be equal in respect of the subjects they treat. With regard to general educational problems, there is no doubt something like equality among them. But since each of them deals with an aspect to which he has given special attention, and for the treatment of which he has shown special capacity, their opinions must be valued in direct relation to the special subject for

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which they have made themselves responsible. It has accordingly been thought desirable that there should be no editing in the sense of exercising a general control over the mode of presentation of the different contributors.

A certain penalty has perhaps to be paid for this freedom. One of the most insidious dangers accompanying the production of a book of this kind may be said to be the inherent tendency of education to fall into contradictions. On many occasions I have set as a first exercise to students taking an advanced course in education the simple task of gathering from anywhere in the field of educational literature ten broad generalizations, no author to be represented more than once on the list. The second exercise was to find for each of these generalizations a contradiction from the works of some other writer on the subject. No great difficulty seemed to be experienced by the students in getting the necessary contradictions. So far as I know, the contributors to this volume have had no chance of comparing notes regarding the views they express, and yet there is a lack of anything like a violent clash of opinions. No doubt something might be made out of the opposing attitudes of Dalcroze and Montessori in respect of *teaching* certain matters, but the two views are presented with moderation, and very little skill would be required by a well-disposed editor to reconcile the

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two in a higher unity. The inherent clash between the Direct Method and the teaching of Phonetics is not shirked, and in the text a working arrangement between the two is reached.

Naturally the text is concerned mainly with the newer aspects of educational theory and practice: what may be called the growing point of the subject. Now there are two opposing tendencies in the treatment of such developments in any department of life. On the one hand we have the enthusiast of the Athenian type, who is always willing to accept any new thing at its face value. On the other, there is the grim critic with a lust for historical research who spends himself in demonstrating that whatever is suggested as new can be readily traced back to a more or less remote source. The second tendency gets more popular encouragement than the first, and in the following pages many movements are traced back to their sources, as illustrated notably by the contributions of Sir Benjamin Gott, Professor Findlay, and Dr William Boyd. But these forces rooted in the past are none the less vital in the present day, and none the less worthy of careful critical treatment. The fact that the venerable critic in Mr Fawdry's article on mathematics could trace a certain method back to the dim and distant past in no way militates against the need for the lecture at which the criticism was made. The very surprise caused by this claim for the antiquity



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of the method proves the need to take nothing for granted in our efforts to keep ourselves up to date.

It may well be that there is a certain periodicity in educational methodology, and that from time to time we may revive obsolete ways of doing some kinds of school work. But a full and fair inquiry into educational progress does seem to justify the contention that to-day there are in operation principles that were formerly recognized, no doubt, but never so clearly as they are now, and never so generally applied. No doubt we can read into the great writers of the past a good many of the newer theories of to-day, but in most cases these old writers only imperfectly understood the principle in question, and even when they had a full grasp of it they were unable to impress it upon the consciousness of their period. The ethics of re-discovery has not yet been sufficiently worked up. It is now beginning to be realized that an investigator may discover for himself something that is for him, *and for his time*, entirely fresh, even though some ingenious person comes along and proves learnedly and conclusively that the discovery had been already made. The rediscoverer is entitled to the full glory of his accomplishment, and if he can make a practical application of it where his predecessor failed he has justified a claim to be regarded as on at least as high a plane as his

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anticipator. An admirable illustration of the point is to be found in Dr Boyd's placing of Dr Montessori.

The question naturally arises at this point whether it is reasonable to speak of a *New Education*. It has become fashionable of late to talk of all manner of important but old-fashioned matters, as if they had been in some way rejuvenated. We have the New Theology, the New Psychology, the New Politics, the New Poetry, and of course we have always with us the New Art, not to speak of the New Dullness. The picturesque presentation of an old subject from a new angle is all to the good so long as we do not demand something entirely new—that is, revolutionary. It is far too simple a prescription to suggest that all we have to do with the educational coach is to turn it about and make it travel in the direction opposite to that it was following before. The problem of education is to-day infinitely more complicated than in the days of Father Pestalozzi. No doubt the fundamental principles are the same to-day as they were in the time of Plato, but the application of these principles must be mightily different from that of his period. The fundamentals remaining the same, there remains the eternal and ever-changing problem of adapting methods to meet the needs of new and complicated situations. The matter of emphasis counts for a great deal. No doubt the student of Plato would have no difficulty in finding in the

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dialogues a complete vindication of the principle that the interest of the educator should centre rather in the pupil than in the subject to be taught. Yet the modern reversion to that doctrine is none the less fresh, striking, and important. In the nature of things there was inevitably at all times a certain amount of attention paid to the pupil as such, but there is no doubt that from the time that the school subjects were worked up into a regular curriculum there has been a strong tendency to pay more attention to the subject than to the pupil, at any rate in the matter of what is technically called teaching. As I have indicated elsewhere, I was first directed to a consideration of this matter by a rule of syntax that occurs in the *Edinburgh Academy Latin Rudiments*. It runs: "Verbs of teaching govern two accusatives, one of the person, the other of the thing; as, *Magister Latinam Johannem docuit*, The master taught John Latin." The old-fashioned schoolmaster certainly yielded to the temptation of overvaluing Latin at the expense of John. Gallantly they drove their two accusatives tandem, Latin well in the front, while John lagged behind within easy reach of the whip. Things cannot be put right by the simple process of reversing the order and promoting John to the place of honour in the forefront. The tandem method must be abandoned altogether, and the team driven abreast. The process of teaching is

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organic, and its objects cannot be taken apart and dealt with separately, though for purposes of study they may be considered in isolation, just as the medical student may study, apart from one another, food-stuffs and the stomach, though in actual physiological process they are inseparable.

Dr G. Stanley Hall has invented a formidable adjective to indicate the change in point of view set forth in the preceding paragraph. It is a hybrid word, and may be described without rancour as pedantic: but it has the signal merit of meeting exactly the needs of the situation. Nearly every point in which the new education differs from the old may be fitly described as *paidocentric*. The new educator centres his interest in the pupil. To be sure he does not neglect the subject to be taught. None but the wildest crank will propose to teach a subject that he does not know. Without doubt Jacotot threw himself into this breach, and gallantly proclaimed that he could teach what he himself did not know. But practical people cannot take him seriously. Whatever other differences there are among teachers, they are agreed on this one point. Indeed, there is a sort of shorthand formula into which practical schoolmasters are inclined to throw their opinions when speaking of the essentials of successful teaching. It may be called the one-thing-neededful formula. The first part, common to all, runs: "All that the master requires is a

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knowledge of his subject, and——” At this point there is left room for the one thing needful to complete the qualification of the successful school-master: each reader is expected to finish according to his fancy. Following are four different ways in which the formula has been completed by typical men: (*a*) a sense of humour, (*b*) a knowledge of boys, (*c*) a firm upper lip, (*d*) a facility in getting rapidly bored. All this is bright and encouraging; if not very convincing it is certainly good enough in the way of epigram. The solid lesson to be learnt from it is the universality of the professional demand for a knowledge of the subject, and the vagueness of schoolmasters about the rest. Few indeed of the epigrammatists will take the trouble to read these pages. They belong to the group that has been described by a rival epigrammatist as “Teachers by the Grace of God.”

It is the second part of the formula that specially interests us here. The whole book, in fact, is a reservoir of the sort of knowledge and skill that are required to supply the one thing needful after a knowledge of the subject is secured. Not having the divine sanction granted to the epigrammatists, the plain straightforward teacher is willing to examine his domain in all its parts, and to give himself the trouble to make himself familiar with all its details. The professional spirit urges him on to acquire such a mastery of his realm that his authority

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will be recognized by sheer force of conquest. Day by day the men and women who are responsible for the education of the country are getting more firmly consolidated into a genuine profession. The time is past when the man in the street could join in at an educational conference on equal terms with trained and experienced teachers. Our craft is no longer to be entered lightly or criticized with flippancy. We are beginning to have *arcana* just as our fellows have in the other professions. Our work is being more and more elaborately organized, and has to be taken more and more seriously. All this is entirely to the good, but it brings with it new responsibilities for those within the profession. Not only must the general public give more attention to the study of education if they wish to dabble in its politics, but the professional teacher himself must expend some effort if he is going to maintain his place in a rapidly developing craft. We rejoice that even a Minister of Education is now expected to know something about the subject he administers. But the development of the national conscience involves demands upon teachers as well as upon Cabinet Ministers, to say nothing of the men in the street who love to proclaim themselves 'plain men.'

Without doubt it is this growing sense of solidarity in the profession, this quickening of the craft conscience among teachers, that is sending so many

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readers to books like this. The following pages make a double appeal, as suggested by the title with its two elements: *Movements and Methods*. This is the natural order in which they should be presented. A movement naturally produces methods to secure its ends. In a way, the methods are more particularly the teacher's business, but he is inextricably mixed up in the movements as well. Parents and administrators will always have a greater interest in movements than in methods, but parents can no more neglect methods than teachers can neglect movements. Education is after all one and indivisible, and cannot be dealt with in watertight compartments. The Dalton Plan, for example, has a vital connexion with the home organization of the pupils' studies. It is no mere matter of classroom reconstruction and internal school discipline. It enters into the very heart of the child's social, as well as his educational, life. So with the administrators. The Montessori and the Dalton Plans alike involve certain economic considerations that have a vital bearing on the cost of educating the individual school-child. Some optimistic administrators, for instance, have caught at the idea that if the new plans involve a smaller number of hours of class-teaching there ought to be an excellent opportunity of securing a substantial reduction in the cost. It is to the advantage of such optimists to get into touch with the new methods and thus find out what

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they really mean, and to act wisely in the light of what they learn. The matter needs no further elaboration. The pages lie open to teachers, parents, and administrators alike. Let them all set to, and each will find himself the better for what he reads.

JOHN ADAMS

BERKELEY, CALIFORNIA

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# Educational Movements and Methods

## I

### CO-EDUCATION AND DUAL SCHOOLS

PROFESSOR ADAMS in his recent book on *Modern Developments in Educational Practice* has emphasized the point that there is no new thing in education. "In teaching," he says, "no sooner does one suggest a method as something specially fresh than a resurrectionist expert is at hand to dig up from the history of education some hoary example of the same thing." As I am not about to suggest that co-education is something specially fresh, I stand in no awe of the revelations of the resurrectionist expert. But for the benefit of those who may be tempted to regard the question of co-education as one of comparatively recent importance I would spare a few lines of my limited space to play the part of resurrectionist myself. It is certain that the general public imagines that the education of boys and girls together is something that has been invented within our own times.

We have it on the authority of Professor Dill that

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in the schools of Greece and Rome boys and girls sat side by side ; Musonius, writing in the latter half of the first century, argues for co-education in words that would be applicable to-day ; and there is some evidence to show that several centuries later boys and girls together attended the monastery schools of the Greek Church up to the age of sixteen or seventeen. It was, perhaps, only in medieval times that completely separate institutions for boys and girls became the recognized system. To trace the development of these separate institutions and assign the causes of the separation would take us too far from our main subject ; it is sufficient here to repeat that in discussing this 'new development' we are but arguing once again a question that has been repeatedly discussed throughout the history of Western Europe.

Schools in which boys and girls are educated more or less in connexion with each other have long been familiar to us in various forms. They include small rural schools where boys and girls are taught side by side in the same classroom, schools where boys and girls are under the same roof and the same head, but are taught separately, schools where there are separate classes and separate heads in the same building, but where common use is made of laboratories, art rooms, and halls for drill. In the North of England and in Scotland mixed schools are, in fact, very common.

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It was the alleged cheapness of educating boys and girls together that attracted the attention of many of those engaged in administrative work, especially in connexion with the new secondary schools. The Mixed Schools Committee of the Headmasters' Association, in its report on co-education in secondary schools, states that it has not seldom been assumed that these schools were founded for reasons of economy. As a matter of fact the assumption is in some cases correct, and it may be taken for certain that in places where there are not sufficient pupils for separate schools for both boys and girls mixed schools will, for reasons of economy, continue to be established.

Mixed schools, however, are not cheap. The estimates of the governing bodies of the secondary schools in Middlesex for the year 1922-23 show an average cost of maintenance per pupil of £25 9s. 6d. for girls' schools, £29 2s. 2d. for boys' schools, and £30 5s. 8d. for mixed schools. Out of ten secondary schools for girls in the county, not one has an average cost per pupil of £30; out of twelve schools for boys, six have an average cost per pupil of over £30; out of twelve mixed schools seven have an average cost per pupil of over £30. I think it will not be possible to advocate or defend mixed schools on financial grounds except when the numbers are small.

In areas of small population the mixed school has another undeniable advantage in addition to

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economy. The age range of the pupils, say from five to fourteen in an elementary school, means ten 'year groups.' The bigger the school the fewer of these groups need to be taken at the same time by one teacher; the work of grading and classification is simplified and rendered more effective.

One argument that has been put forward for co-education schools is that they are *natural*; this does not apply to schools where the girls sit at one end of the room and the boys at the other and the stern eye of the pedagogue follows them on their homeward march to see that the dividing line is preserved. The dual school is unnatural and possesses most of the faults of the single school without its virtues. The education of the individual is the product of three factors—the world, the school, and the home. The family is, for us, the basis of society. As his Majesty the King has recently expressed it, "The foundations of national glory are set in the homes of the people." On the model of the family many institutions have been fashioned, and the claim of the co-educationist is that the school, whether day or boarding, shall be fashioned after the same model, and be, in fact, a largely developed family.

Let us accept, for the moment, the supposition that a school can be modelled upon family life. Then it follows that as the mother is sometimes the real head of the family, even during the life of the

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father, so we must be prepared to see women, as well as men, appointed to the headships of mixed secondary schools. The report of the Mixed Schools Committee, to which we have already referred, does not appear to contemplate this as a possibility. It only goes so far as to say "that in every mixed school there must be a woman of high qualifications and high ideals, keenly interested in, and loyal to, co-education, as *Senior Assistant Mistress*." So far, few experiments have been tried of appointing women as heads of mixed secondary schools, and we are curious as to what would be the attitude of boys of seventeen and eighteen toward a school of which the head was a woman if the practice became common. There would probably be much prejudice both on the part of the boy and the public to be overcome, but if the family idea is to be offered as an argument for the mixed school it must carry with it the possibility of women heads of such schools. And, of course, the staff must be of both sexes, preferably in equal numbers. Such failure as is alleged in America against co-education would appear to be due to the fact that American schools are largely staffed by women. There is no doubt whatever that a boy needs, especially during the adolescent period, the influence of an adult of his own sex.

One of the reports of the United States Government advocated co-education on the ground that it is *impartial*, affording one sex the same opportunity

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for culture that the other enjoys. It cannot be denied that men and women differ in their outlook upon life, upon the relative values which they set upon different actions and principles and in their general attainments. It is quite beside the point to argue from exceptional cases of specially gifted men or women. We are not suggesting that in any subject or in any direction men are superior or inferior to women. Women have not in the past been architects or engineers, but this does not prove that they are incapable of successfully following either of these professions. Of one thing, however, we may be pretty certain, and that is that houses built by women architects will, on the whole, differ from those built by men. One has only to hear an intelligent woman's criticism of the habitations designed for her by men to realize this.

Now if there be a woman's point of view in literature, history, or art which differs in any way from that of a man, then the boy or girl who is educated entirely by men or by women must miss that point of view; similarly, if there be any difference in the kind of influence exercised by the adult members of the two sexes upon younger people, then a co-education school is the only one in which both points of view can be preserved and both kinds of influence exercised. Hence there is some foundation for the claim of the United States Government that only in co-education schools can

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one sex receive the same opportunity for culture as the other enjoys.

This argument is presented, in somewhat different form, by the Mixed Schools Committee, which urges that as education is the preparation for the full life of the citizen, boys and girls can only be prepared for common citizenship in surroundings common to both. Each gains advantages from the other, for each sex brings its own peculiar gifts to train for the life of the citizen. Obviously, if there is any difference in these gifts the only way in which their benefits can be impartially shared is by offering to each the opportunity of sharing them during that time when mind and heart are most responsive to impressions and ideals.

It is possible that there are many people who would be willing to accept the above views, but, either from inherited prejudice or from well-reasoned conclusions, are opposed to co-education in practice. There are many things that are theoretically sound that are not workable in practice. There are always certain incalculable human factors that are not and sometimes cannot be taken into account by the devisers of schemes and the propounders of theories.

One of the objections that has been raised by those who dislike the idea of co-education schools is that the general level of scholarship would suffer, especially as far as the boys are concerned. The answer to

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this is, in the first place, that though boys and girls may be educated together it does not follow that they will follow exactly the same curriculum. In some subjects a common syllabus is found practicable; in others the division of classes into sets prevents the omission from the time-table of subjects specially suitable for either boys or girls. In the second place, so far as examination tests are any guide, it would seem, from our experience in Middlesex, that the system tends to develop the capacities of both boys and girls to a higher degree than when they are educated separately. The results of the Matriculation and General School Examinations of London University show fairly uniformly, year after year, that girls do very much better in mixed schools than they do in schools devoted entirely to their own sex, and that boys do equally well and often better in mixed schools.

There are many who have feared the moral results of co-education during the adolescent stage. They willingly assent to the suggestion that it may be desirable to bring up the two sexes together in the earlier years of school life, but they refuse to believe that they can be brought up together during later years without grave moral dangers. This is, of course, a matter that can only be tested by experience. The Headmasters' Mixed Schools Committee is quite emphatic; it says that the dangers anticipated from the mixing of the sexes



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have proved more imaginary than real, and that in practice the actual results have been the very opposite of what was anticipated. Moreover, the members state, though they might find it difficult to collect enough definite evidence to prove the case, that during the War, when the gravest question affecting the young men of the Army was one of sex relationship, the boys educated in mixed schools best withstood the grave temptations of the camp.

Evidence from America, as given in the Reports of the Moseley Commission, would seem to support the view that no evil moral results follow. But the advocates of co-education must not attempt to prove too much. It is said that the principal of a very important high school in one of the large towns of America assured a visitor that in the whole of his school no youth ever looked at a girl because she was a girl. The assertion is ridiculous and, if it were true, would be deplorable. We have not the slightest doubt that there are as many juvenile love affairs in mixed schools as elsewhere, but it is quite possible that they are less likely to lead to undesirable results under a co-education system than under any other. The available evidence from all countries where co-education is the practice goes to prove that, on the whole, intercourse between boys and girls is freer from exaggerated forms of sentimentalism, is in fact more natural.

It is sometimes alleged that discipline is harder

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in a mixed school, but this is not the general opinion of teachers who have had experience of both systems. Further, it is stated that exceptionally good teachers are needed; personally, we think that exceptionally good teachers are needed in all types of school, and that if they cannot be thus described they are probably more or less useless anywhere.

It has been held that the boys will become less manly and the girls hoydenish. Professor H. E. Armstrong on his return with the Moseley Commission said, "It seemed to me on the occasion of my former visit—and the impression was confirmed during my recent visit—that the boy in America is not being brought up to punch another boy's head or to stand having his own punched in a healthy and proper manner; that there is a strange and indefinable feminine air coming over the men." Mr C. W. Fletcher reports, "One professor told me that in his opinion it effeminized the men too much—occupations and sports in which women could not join were dropped, and men took their exercise in dancing instead of cross-country running."

It is really very difficult to offer any opinion on this matter, for the evidence is not very decisive. If it be true that in America the men are becoming more effeminate, the result may be due not to being educated with girls, but to being educated almost entirely by women; there are far more women teachers than men in the States. The Mixed

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Schools Committee points to the record of enlistments, services, and sacrifices of their boy pupils during the War ; but no class of society and no type of school was found wanting ; from the navvy to the prince there were sacrifices and services.

I have said little of dual schools ; it seems to me that wherever boys and girls are to be educated together it should be real co-education. The dual school is open to every objection that can be urged against the co-education school and has few, if any, of its advantages. There is room in this country for many types of school, and our educational atmosphere is, on the whole, favourable to experiment. Co-education is still on its trial, but the results so far obtained are of such a nature that it seems likely the final verdict will be for and not against the system. One striking fact is that teachers who have had experience in mixed schools are almost unanimously in favour of them.

B. S. GOTT

## II THE DALTON PLAN

### INDIVIDUAL WORK

**T**HE enthusiasm with which the Dalton Plan has been received in this country is very significant, and the reason can easily be explained. Every thoughtful teacher has long felt that in the normal class or form system there is a serious, if not an insuperable, difficulty of getting into sufficiently close touch with the individual pupils to secure adequate results for his efforts. The New Psychology, moreover, with its improved methods of investigating the mental make-up of the child, and by means of intelligence tests of estimating native ability as distinguished from educational achievement, has increased this feeling of unrest and has intensified the desire of the teacher for the solution of the problem of individual work with large classes.

It is claimed that in the Dalton Plan a solution of this all-important problem has been found, and though the time may not yet be ripe for a final judgment, it must be admitted that the evidence so far obtained as a result of many important

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experiments which have been carried on points clearly to the justice of this claim.

### INTRODUCTION OF THE PLAN

Miss Helen Parkhurst, to whom we are indebted for the introduction and elaboration of this new type of school organization, is emphatic in warning those who decide to give a trial to the Dalton Plan that the scheme she outlines is not one which should be regarded as final in every detail, but one which may require modification to meet the needs of the individual school. This is clearly stated in her book, *Education on the Dalton Plan*, published by Messrs George Bell and Sons. The statement is as follows: "I have carefully guarded against the temptation to make my plan a stereotyped cast-iron thing ready to fit any school anywhere. So long as the principle that animates it is preserved it can be modified in practice in accordance with the circumstances of the school and the judgment of the staff." It would have been fatal to the movement to have insisted upon the bare 'take it or leave it' principle. To refuse freedom to the school and the staff in a system based on the freedom of the child would be absurd. The initiative of the teachers in suggesting improvements in the details of the Plan may be of the greatest service in securing complete success for the introduction of what should prove to be a very notable advance in educational procedure.

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After carefully studying the details of the scheme, and after full discussion between the headmaster and his staff, unless there is a very definite desire on the part of all concerned for the introduction of the Dalton Plan the idea of attempting it should be abandoned. There are many difficulties in the way, and unless there is real enthusiasm and a firm belief in the new method the experiment would be doomed to failure. Under no condition should any pressure be brought to bear upon a school to introduce the Dalton Plan; the proposal must come from the school.

### WORKING OF THE PLAN

In brief the Plan is as follows: the staff draw up schemes of work for each class or form suitable for a year's course. In doing so many staff conferences should be held so that the different subjects may be properly correlated and so standardized that the claims of the various elements in the curriculum may be adequately recognized. The year's work is broken up into monthly assignments, which are worked out in some detail and helpful notes given to enable pupils to attack each subject in the best way possible, and information is given as to textbooks and books of reference to be consulted. The success or otherwise of the scheme will largely depend on the care and efficiency with which the assignments are prepared. Good assignments are

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vital elements in the Plan. From year to year the assignments will undoubtedly improve as the result of experience gained of their adequacy and the time necessary for their fulfilment.

The pupil, after a careful study of these assignments, contracts to do the work involved, and with a full knowledge of what is before him he settles down to his month's work with a definite sense of his responsibility and a vastly increased interest in school affairs.

For more than half the school time, frequently the whole of the mornings, the pupil is free to work at his subjects in the order he prefers, always keeping in mind that within the month it is necessary for the completion of his assignment, that in each subject he must satisfy his teacher that the necessary work has been carried out. The clever child may, however, complete his assignment in less than a month and the dull, backward child may take more than this time. Thus in the same class or form the backward child may complete only eight assignments, whereas the super-normal child may complete as many as fifteen. Each child goes at his own natural pace, and should he be absent from school for days or weeks he, on his return, goes on with his assignment from the point at which he left off, and there is therefore no gap in his knowledge as is frequently involved in a similar case under the old system.

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Under the Dalton Plan the classroom becomes a laboratory, and to emphasize this Miss Parkhurst prefers to call it the 'Dalton Laboratory Plan.' It is a special feature of the new organization that the children doing history, for example, should carry on their work in the history laboratory, their geography in the geography laboratory, and so on. In the history laboratory will be found the text-books, books of reference, illustrations of historical interest of various kinds, and, above all, the history specialist ready to answer questions and give what Froebel called "the necessary guidance," which he considered to be the true function of the teacher. The pupils can thus get solutions of difficulties they have encountered, or, better still, obtain indications of how they may find the solutions themselves. A child having decided that he will now give some time to geography goes quietly to the geography laboratory, where he finds the geography specialist, maps, globes, books of reference, and any material he requires for the study of the subject. This freedom of the child to pursue the studies in the way his interest suggests is a most valuable element in the Dalton Plan and is rarely abused. To waste time would be sheer folly, as the requirements of the assignment in each subject are ever before him. The knowledge, moreover, that to get on with the subject in which he is most deeply interested can only be done when he has satisfied his teacher in the



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less favoured studies before passing on to the next assignment is a powerful incentive to give sufficient attention to his weak subjects.

It is absolutely necessary for the successful working out of the Plan to secure adequate means of testing the progress made by the children. For this purpose each child has his own progress graph for each element of the assignment as estimated by the teacher. The teacher has also his own graph for showing the progress made, and thus he can not only see at a glance how a particular pupil is getting on, but also how he compares with others taking the same assignment. The method of testing varies from school to school and also with the stage of development reached. The younger are naturally more liable to overestimate the progress made than the older children, and the personal equation of the child is taken into consideration. The more intimate knowledge of the child acquired by the teacher under the Dalton Plan reduces considerably the necessity for frequent examinations on which time might otherwise be wasted. A high standard of efficiency in recording the progress of pupils will, however, always be required, as any failure in this direction would invalidate the new method.

The number of lessons for oral discussions or definite class instruction which all members of the class or form are required to attend varies with the subject and the stage of progress. These meetings

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afford excellent opportunities for dealing with points in which difficulties have been frequently experienced and also in opening up new branches of a subject and emphasizing any important principles involved. The subjects of the curriculum which are not 'Daltonized' also give occasions for the class to meet as a class or in larger groups.

### THE POSITION OF THE TEACHER UNDER THE DALTON PLAN

The most important change, especially in elementary schools, is that the teacher gives practically the whole of his time to the subjects which he is specially qualified to teach. This not only is far more interesting for the teacher, but it also enables him to concentrate his reading and to study the bearing of his particular subject on other related subjects in the curriculum. The fact, moreover, that the assignments for which he is mainly responsible represent a definite whole, and that there need therefore be no overlapping or want of continuity such as that which so frequently arose under the old system, is a gain the extent of which it would be difficult to overestimate.

The attitude of the teacher to the pupil is completely changed. His lecturing is reduced to a minimum, and there is far less definite teaching. The children do the work and simply come to him for assistance and advice. The teacher no longer

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pursues the child ; on the contrary, the child now pursues the teacher. This change of relationship results in a much healthier attitude of the pupil to the teacher, to whom he goes as a friend to ask for assistance. This more intimate acquaintance on friendly terms is of great value, and is fully recognized by teachers who have had experience in working under both systems.

In the early days of the introduction of the Plan, life certainly becomes more strenuous for the teacher. The preparation of the assignments, if they are to be really effective, makes serious demands upon him. He has the satisfaction, however, of knowing that the more energy he expends in making them thoroughly efficient the less expenditure will be needed in the work of preparation of future assignments.

One of the advantages is the greatly improved sense of comradeship with his pupils, so that when they become genuinely interested in their work there will be no difficulties in the matter of discipline, and entries in the punishment-book will be very rare occurrences.

### SUB-NORMAL AND SUPER-NORMAL CHILDREN

It has already been pointed out that the sub-normal child has great advantages under the Dalton Plan, because he can work at his own pace. Though during his school course he will cover far less ground than the super-normal child, he will leave school

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in a far better condition than under a system in which he was consistently at the bottom of each class and naturally much depressed at his constant failure to compete with children of brighter intelligence. His outlook under the new Plan is completely changed, and having a job to do in his own way and in the time natural to his ability he finds pleasure in school life. In some schools where the assignments are divided into minimum, median, and maximum sections, he moves along the most suitable line suggested by his teacher. The super-normal child, who has received far too little attention in the past, can travel at a good rate under the plan and can pass from assignment to assignment at his own pace. Between these two types is the child of average ability, who will follow the median course and generally complete his assignments in monthly instalments.

### THE ADVANTAGES OF THE DALTON PLAN

References have frequently been made to advantages under this form of school organization. The chief points may be summarized as follows :

1. The natural cultivation of the 'will to learn.'
2. An increased interest in school life due to the children taking a more active and intelligent part in their own education.
3. The development of a greater sense of responsibility in consequence of the children's possession

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of freedom to work along lines determined by themselves.

4. The more harmonious and intimate relations between teacher and pupil, and the disappearance of any necessity for the employment of disciplinary methods.

5. The special opportunities offered to children of widely different types of mental ability.

6. The social effect of children organizing their own work, forming sound judgments, cultivating resourcefulness, and co-operating with others as a preparation for after-school activities.

7. The solution of the problem of the child absent from school for a period.

C. W. KIMMINS

### III

## THE MONTESSORI SYSTEM

THOSE of us who in our youth made our first acquaintance with educational history in the illuminating pages of Mr Quick's *Educational Reformers* were left wondering why there were no great educators in our time. Our successors of to-day have no such cause for wonder. Besides a number of lesser personalities doing pioneer work, they have Dr Montessori filling the rôle of the great educator in the grand manner. In her schools the miracle of mental and moral quickening which has always marked inspired effort at the comparatively rare periods when education broke away from the routine has once more startled the world and made people think of the potentialities of the schools if rightly ordered. And, recognizing the advent of a genius, scholars and men of affairs have not been slow to do honour to Dr Montessori and her methods. Most important of all, there has gathered round her a band of disciples believing in her with an almost religious devotion, while many people who would hesitate to describe themselves as disciples have been set thinking and working on fresh lines by the stimulus she has given. By all

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the approved signs, Dr Montessori is destined to rank among the educational immortals.

The recognition of Dr Montessori's outstanding position, however, does not mean that we must accept any or all of her teaching, any more than we accept that of Pestalozzi or Herbart. But it does mean that the educators of our time have found in Dr Montessori a special power and virtue which makes it necessary for us to scrutinize with proper care and respect the contribution she is making to the theory and practice of the schools, in order, so far as may be, to assimilate that power and virtue. That is to say, we must approach Dr Montessori in much the same fashion as we do the great teachers with whom we have agreed to rank her, and attempt to distinguish the permanent elements in her system from the inevitable errors. It is not an easy task, this anticipation of the judgment of posterity, nor is it altogether a kindly one, since it means looking forward to a time when the peculiar methods of Dr Montessori may be as antiquated as, say, the teaching devices of Pestalozzi, or the gallery of David Stow. But it must be done as best as we can do it, if the full value of the new thought and practice is to be extracted for the benefit of the schools.

### THE MONTESSORI PHILOSOPHY

Some of Dr Montessori's disciples, trying to express what is fundamental in her teaching, have

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linked her up with Bergson, suggesting indeed that she has given educational substance to an intuitional philosophy like his. But this does not really carry us far toward the determination of what is distinctive about her teaching. There are, undoubtedly, Bergsonian elements in her thought, as was to be expected, considering her sex and time; there is no less prominent a materialistic philosophy connected with her medical experience, which appears most plainly in the stress she lays on the senses and their special training. But neither Bergsonian intuition nor medical materialism explains her system.

Truth to tell, general formulæ do not take us anywhere near the secret of Dr Montessori. Even those she has employed herself are not very enlightening. The claim made by her and embodied in the Italian title of the work known to the English public as *The Montessori Method* is, that she has established a scientific pedagogy totally different from the empirical performances of the common schools and from the no less empirical views of her predecessors in reform. What she asserts is that she has based her methods on the exact observation of children's behaviour under free conditions, as no one has ever done before, and that all the apparatus she has invented has been subjected to the most rigid scientific tests. But nowhere does she condescend to give the detailed record of her experimentation



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which would enable others to check her results, as a scientist would certainly have done. In point of fact there does not appear to be any essential difference between her procedure and that of Pestalozzi a hundred years before her. So far as she has succeeded in producing didactic material of real value, it seems to have been by the old-fashioned method of trial and error, in which the intuitions of a fresh and ingenious mind have played the main part. Dr Montessori's 'science' is to be sought in the rather arid and unhelpful tables of her *Pedagogical Anthropology*, which she happily succeeded in forgetting in the evolution of her working methods.

Alternatively, she has defined her method as one of auto-education; and the term has found favour as applicable not only to her special system, but to derivatives like the Dalton Plan. Up to a point it is apt enough. The main trend of her endeavour has been to shift the emphasis from teaching to learning. The idea is not new—it goes back at the nearest to Rousseau—but she has restated it and given it a new significance by throwing the child on his own resources in ways calling forth an effective educational reaction. Nevertheless, the phrase 'auto-education' must not be taken too literally as a summary statement of the aim of her system. The child undoubtedly educates himself when he absorbs himself in the Montessori material or in any

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other ; and there is a profound difference between his attitude to such material and his attitude to lessons which he learns perfunctorily at the prompting of teacher or parent. But the phenomenon of absorption, important as it is, should not be interpreted in such fashion as to obscure the fact that in any learning process the relative material comes through hetero-education. If the direct influence of the teacher's personality disappears with the use of prepared material, the influence of the person who prepared the material has not. In the Montessori scheme, indeed, the pupil's mind is as much controlled as in the ordinary methods. It is rather naïve of Dr Montessori to fix with a rigidity exceeding that of any ordinary teacher just what *she* considers the pupil should learn, as well as the exact method of learning, and then call the process auto-education.

### METHODS AND PRINCIPLES IN GENESIS

It is probably a mistake to expect Dr Montessori or anyone else to be able to sum up her system in a phrase. It is really too complex for that. A clearer view of its underlying principles is to be got from the consideration of its genesis, seeing that it was only as the method developed that its author herself seems to have become aware of these principles.

Her starting-point, as every one knows, was in the experience acquired in the training of defective

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children. Her striking success in an unpromising field suggested the modification and extension of the methods in the education of normal children. She carried over to this new sphere certain guiding ideas: (1) that the basis of all later education is the right training of the muscular system and the senses; (2) that this is best effected by a carefully arranged sequence of exercises with specially prepared didactic material; (3) that these exercises should be carried through at the individual learner's own pace; and (4) that activities (like knitting, for example) which depend on a co-ordination of several actions, are to be prepared for by a prior training in these actions.

At this stage, it is to be noted, most of the distinctive features of the method were lacking. There was individual education, of necessity, but only the barest rudiments of auto-education and spontaneous development. With the application of the method to normal children came several discoveries of considerable importance for the subsequent evolution of the method. One that surprised Dr Montessori into fruitful reflection was due to the observation of a little girl of three who was busy taking out a set of wooden cylinders and replacing them in their holes. Wholly wrapped up in her self-chosen task, the child repeated the performance forty-four times, paying no heed the while to external distractions. Here was something new. Evidently the common opinion

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regarding the instability of children's minds was at fault. Given the right conditions, they were capable of a deep concentration of attention. Following this up, Dr Montessori watched other children in their occupations, and came to the conclusion that every activity which satisfies a need of the child's nature and comes at the right moment of mental growth produces just such a concentration, and has the happiest effects in quietness and orderliness of mind. Henceforward she sought to define by actual trial the most helpful stimuli and their proper sequence, and her test was the power of evoking this deeply satisfying response.

With this discovery of the capacity for attention in true learning went the conviction that the didactic material by means of which the weaklings had been helped to learn could be used to direct their more fortunate fellows in self-learning. The solid insets (referred to above), for example, turned out to have the power of fixing the attention of children round about the age of two and a half, and leading them first to a conviction of their own mistakes in the use of them, and thereafter through unwearying repetition to perfect mastery of the requisite actions. Generalizing such experiences, Dr Montessori sought to make the various pieces of apparatus which she had invented for sense-training and in preparation for everyday actions satisfy the innate needs of a particular stage of development,

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and be so constituted that the children would be led to overcome their difficulties without any obvious adult intervention.

With this, again, was connected the idea of freedom as a necessary condition of healthy mental growth. Not needing any more assistance than can be rendered by a discreet directress, who limits help to seeing that the right material is available and to such occasional guidance as a careful study of the individual may suggest, the child is free to grow up in his own way. At any rate he is not spoiled by the misshaping which is so apt to result in the ordinary system of education when grown-ups seek to force children into their ways of life without regard to the children's own.

When the sense-training of early childhood is nearing an end the Montessori pupils turn to reading and writing by methods developing out of their previous exercises. And then is seen a new phenomenon—the 'explosion' into reading and writing when the children, plodding along the path marked out for them, suddenly find themselves with these wonderful abilities. This experience, according to Dr Montessori, is in no way peculiar to these school arts. It is the way of all education. "We await the successive births in the soul of the child," she says. "We give all possible material that nothing may be lacking to the groping soul, and then we watch for the perfect faculty to come, safeguarding

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the child from interruption so that it may carry its efforts through."

Once the method for children under six had been established Dr Montessori proceeded boldly to experiment with the school subjects regarded by her as suitable for children from six to eleven. In the outcome she produced extensive and elaborate material for the learning of grammar, reading, arithmetic, plane and solid geometry, drawing, music, and prosody, for details of which the reader must perforce be referred to *The Advanced Montessori Method, II*. Regarding this it need only be said that it is all very ingenious, and that some of the apparatus in arithmetic and music seems likely to be found of real service beyond the bounds of the Montessori schools. Here the point of special note is the modification of the conception of auto-education which is implicit in this extension of the original method. The idea of a spontaneous interest that is persistent enough to carry the learner through to the end of his task is still fundamental, with which, as a matter of course, goes the personal choice of the task to be attempted and the individual determination of the time and rate of working. But nothing is said at this stage about self-correcting apparatus, for the obvious reason that the self-correcting requirement simply cannot be met over the greater part of the school subjects. Further, as the difficulty of the work increases, the self-effacing director of the

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earlier stage gradually becomes a person very like the despised 'common teacher,' explaining the use of the apparatus and helping the pupil over the harder bits of the subject. Altogether a most satisfactory development !

### ESSENTIAL TRUTH IN THE SYSTEM

From this survey of the Montessori system in genesis we return to the question from which we started. What is the essential truth and the essential error of the system, the truth and the error that really matter ? Or, putting the point more crudely, what are people going to be thinking about it all fifty or a hundred years hence ? On this, at any rate, everybody is agreed : it was the success of the Montessori method within its own sphere which focussed with effectiveness the widespread belief that the class method of education stunted the mental growth of the boy and girl constituents, and set many teachers on the quest for new methods of dealing with large numbers of children on an individual appeal. Further, most of the seekers have followed the lead of Dr Montessori (1) in avoiding extraneous impulsions to learning ; (2) in trying to tap some deep spring of spontaneous interest in connexion with the immediate task ; (3) in letting the individual pupil work at the pace proper to his talents ; and (4) in directing and controlling his work, not by direct orders and

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instructions, but by some less personal method (like a graded set of apparatus). In view of this, there seems little doubt that Dr Montessori will live in educational history as the leader and exemplar in the movement for individualized learning.

### ESSENTIAL ERROR IN THE SYSTEM

But what about her own special methods and devices? Here forecast is much more difficult. If I may venture on the uncertain ground of prophecy, I should be inclined to predict a similar fate to that of every system requiring special methods and devices, not merely because all such systems have their day and pass, but because the Montessori system, as a system, seems to me to have certain fatal defects inherent.

These defects are in the main defects of curriculum. In the first place, the idea of sense-training in infancy and early childhood, as the precursor of ordinary education, rests on a psychological fallacy. The assumption underlying this part of the system is that the sensations being simplest in mental analysis come first in order of development and need of training. This is nothing but a revival of the old faculty psychology which ever and anon lures education away from reality after the will-o'-the-wisp called mental discipline. Here a double mistake is involved. The senses develop *pari passu* with the whole mind and need no special training



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in childhood. And in so far as they need training at any stage, it is not to be got in the artificial isolation accorded to it in the Montessori plan, but as part of a more comprehensive experience.

In the second place, the practice of preparing for whole activities by drilling in the elements results in children getting instruction out of relation to the concerns of their life as children, both in the first and in the later stages. Why, for instance, teach children of four and a half to write when they are going to have no use for writing for many a day to come? Or why teach children of six or seven a detailed scientific grammar, which answers no practical or intellectual need either at that age or possibly at any age? Again, why load the minds of children between six and eleven with an elaborate knowledge of geometrical facts and relations? Why should these little folks be constrained by Dr Montessori's ingenuity into an interest in parallelepipeds, ellipsoids, dodecahedrons, the cube of a binomial? Not this road, assuredly, lies the pathway to freedom in the schools. Dr Montessori and all her associates who mistake absorption in stuff of this kind for education have not learned the lesson, taught long ago by Rousseau, that the child is not a little man, but a young human with distinctive interests of his own.

In the third place, the omissions of the curriculum are as surprising as the inclusions. Skill subjects

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which can be converted into a series of graded operations, and knowledge subjects with a practical aspect, predominate. The appreciation subjects which cannot be taught in childhood or at any time of life without some intrusion of the teacher's personality—subjects like history, literature, art, and religion—are either passed over altogether or are introduced perfunctorily at the tail of some practical work. And the reason is plain. There is not, and there cannot be, any Montessori method in the things of the spirit: which, apart from anything else, is the condemnation of the system as the complete educational system it sets out to be.

But, it may be asked, is Dr Montessori's method not separable from her curriculum? Conceivably it might be. In actual fact it is not. By Dr Montessori's choice the Montessori system is Dr Montessori's system and no other. Her whole attitude in this matter is most uncompromising. She has made it quite clear that she will only accept as allies and helpers people who are prepared to receive her doctrines and methods with uncritical faith. So far she has refused to share with others the authoritative exposition of the system and the practical development of its details. Instead of encouraging teachers to modify and adapt the system to the infinitely varied conditions of educational work—as the author of the Dalton Plan has so wisely and generously done—Dr Montessori has

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jealously kept her scheme her own. The result is unfortunate, both for education at large and for Dr Montessori. Nursemaids might be content to work the system on these terms. Teachers, as educated men and women, certainly will not. And in the last resort the success or failure of any educational system depends on the teachers.

WILLIAM BOYD

## IV EURHYTHMICS

WITH teachers in Great Britain the term 'eurhythmics' has come to stand for the special mode of treating music invented by Monsieur Jacques Dalcroze, and in this paper we shall limit our use of the term to the Dalcroze system. Anyone is, of course, entitled to use the term, for it is just the English of a fine Greek word meaning 'good rhythm'; to be strictly in order one can speak of Dalcroze Eurhythmics. M. Dalcroze at first described his method as *Rhythmical Gymnastics*, for it is based upon movements of the limbs and trunk. But this term was misunderstood; people thought of it as a variation of Swedish drill or as an accomplishment like calisthenics, whereas Dalcroze is a disciple of Plato in pleading that "the entire life of a man stands in need of right rhythm."

As a musical composer and a teacher of the piano in the Conservatoire at Geneva, Dalcroze many years ago felt the need of harmonizing the entire human frame, with its muscular and nervous reactions functioning along with the impressions of sound gained from the rhythms of music. In his work on *Rhythm*,

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*Music, and Education*<sup>1</sup> we can see how the system gradually developed from a gymnastic technique into a complete scheme by which the child can find his way not only into the use of his voice in singing and his hands in playing, but to an intimate sense of form and expression in his whole behaviour. It is a commonplace to say that schooling is out of touch with life ; the alienation is due to the traditional bias toward what is intellectual and academic. While the world outside the school is seeking for expression in the arts, our curricula are still concerned mainly with the processes and products of reason. Life to the artist is *movement*, the expression of the inner self through the bodily organs ; he seeks a large place for handicrafts, for music, and for dancing, because these studies, especially in children, are the readiest mode by which the young can find expansion. Rhythm in any branch of art stands for the most apt and appropriate mode by which sensations of sound or colour or form can be taken in and thereafter given out in what we call art.

Thus eurhythmics can be grouped with gymnastics or physical exercise since, more than most forms of art, it gives scope for motor activity or for movement. The normal condition of civilized life involves severe repression, both at school and at home ; and physical drill, while it expands to some extent the energies of blood and muscle, soon

<sup>1</sup> Chatto and Windus, 1919.

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becomes conventional, a mere exercise leading to nothing beyond itself. A eurhythmic exercise, on the contrary, while giving plenty of physical exercise, acts like a game of football—it takes the attention away from the bodily frame as such and leads the child to use his limbs for a higher purpose, for the expression of his musical mind.

The defence for this association between physical exercise and music, or rather for the subordination of the body *to* music, rests on nature, on the fact of experience. The child desires to relate movements of limbs to sensations of sound; to hinder this desire is to create a condition which the psychologists call repression. At first the infant makes this correlation in haphazard fashion; he dances, or gambols to sounds, responding to the rhythms of a violin, a waterfall, of the wind sighing in the trees: his actions are of infinite variety and yet, since he is receptive and imitative, many of them are reproductions of what his eyes have told him, as he sees other people move. A visit to the pantomime will busy little children for weeks with efforts to reproduce the movements of a clown, both in dance and in song. Some teachers are inclined to halt at this point; misled by a creed of freedom or individuality, they hesitate to teach the child a method by which he can raise his first efforts to higher levels. They fear that any mode of teaching, *i.e.*, of direct instruction, will savour of repression. They are slow

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to realize that grace and symmetry in the physical life depend upon teaching quite as much as on the acquirement of style in language. Just as in the art of speech we supply our children with the forms, the style adopted by society, with a technique which they learn from oral and written composition, so in all the arts no progress can be made from "the unchartered freedom" of infancy to the refined expression of the growing mind apart from the discipline of system. And just as these arts of language are acquired, or should be acquired, in association with ideas and sentiments which possess vivid interest, so with the rhythms of the body: they are cultivated along with the effort to realize the rhythms of music, so that the attention of the learner is not focussed on himself, on his own appearance or form, but on the melody and harmony that springs from ordered sounds.

The importance of this last point can scarcely be exaggerated, for the body-mind is instinctively disposed to display itself, to find satisfaction in the mere achievement of graceful form. The child learns at a very early age how delighted his elders are to see him dance with charm; thus it is fatally easy for him to be perverted from the true aims of art by turning his performance into a show. This explains why so many serious folk distrust the efforts of educational reformers to make the dance an instrument of education: they know how readily the instincts of self-display and self-assertion, the love

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of pleasure in movement, can master youthful minds ; in their fear of perversion and degradation they would rather leave the mind empty of interest and power in these arts.

The unique service which Dalcroze has rendered to education centres in the reconciliation he has made between these conflicting principles. He has invented a system which turns the children's dance into a serious study, using limbs and trunks as an instrument by which music may enter into the mind with lively but also with ordered expression. This is not the place to describe the steps of this system in detail. M. Dalcroze himself has given many demonstrations in public during the last ten years, and his pupils follow his example ; it is only by witnessing such a lesson to children that we can grasp the value of it. A prescribed plan is laid down for representing with arms and feet the various time-values and note-values that are contained in a piece of music ; the learner obediently accepts the code just as he accepts the staff notation or the tonic sol-fa as a written description of the same rhythms. In both cases the plan is a convention, a necessary agreement by which order can be introduced for the common benefit of all who share the experience ; in both cases the system might have been devised otherwise. There are, for example, systems of music in Eastern countries based on sound relations which are foreign to our ears, but some system we must follow.



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Dalcroze himself claims no infallibility for the scheme which he has elaborated; all he urges is that his series of exercises does achieve the result, firstly in enhancing the musical capacity of his pupils, and then in providing a congenial mode of approach to those fundamental sources of rhythm which lie deep within our physical frame. No one else has attempted this great task. Since it works so effectively in laying a foundation for acquiring these two arts, we can only be thankful for the skill with which the master has evolved the details of his method.

The only effective criticism would be to challenge the necessity for uniting the two so closely; we might question whether the rhythms of the body ought to have so intimate a relation with the rhythms of sound as is implied by Dalcroze Eurhythmics. There are a few teachers of the dance, *e.g.*, Laban of Stuttgart,<sup>1</sup> who seek to make a severance, teaching a system of dance technique that requires no further help from music than is afforded by a drum or metronome to beat the time. And there are many musicians who resent the proposal to bring dancing so near to music; they themselves learned music (except when acting as conductor) without giving freedom to bodily movement, and hence are loth to believe that they have missed something of which a new generation of learners should have the benefit. In theory and logic one can accept the criticism:

<sup>1</sup> Rudolf Laban, *Die Welt des Tanzers* (Walter Siefert, Stuttgart).

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each realm of art must claim to live in its own realm of sensuous experience. Yet the human being is one life, and every part of the organism finds satisfaction and completion of function by sharing its rhythms with other parts. Historically, among the people as distinguished from the connoisseurs, music, dance, poetry, have always stood in close relation, and the child is of the people, simple and unified in structure, biding his time in the elements of rhythmic experience until with later development he is ready to separate the various arts and practice each of them in its own sphere.

These considerations fix for us the time and place that eurhythmics should find in the school curriculum. The child is ready for it about the age of six (taking a rough average) at the period when he is taught to 'read' in the staff or tonic sol-fa notations. Reading notes on the staff is indeed easier to a little child than reading the symbols of an alphabet, for the movements of the eye on the lines of written music are easily related to variations of tone and time and the corresponding variations in position of arms and feet in the Dalcroze scale. The ideal plan, therefore, is for the teacher of children aged six to eight to take the time allotted to singing and to physical drill, making one combined course of these two subjects and teaching eurhythmics as a part of the course. Eurhythmics can, of course, be acquired at any subsequent period; teachers both of music

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and of gymnastics learn something of the art after they are grown up, in order to increase their power in music and in physical expression : but the golden time for acquirement is at the close of infancy, when the frame is still plastic and the mind has become alive to the intellectual discrimination involved in the process.

It will be seen that such a course of instruction goes far beyond the learning of action songs, which have lately come into fashion. During recent years there has been much talk about rhythm ; books are offered to teachers containing pieces of music set to words, along with precise directions as to the movements which a group of children should learn in order to dance the music on a stage. We cannot say that such exercises are absolutely harmful, for if the movements are well selected they do help children to an appreciation of bodily rhythms, just as the purely imitative learning of songs helps children to appreciate musical rhythms. In both cases, however, the child is not given the substance of instruction : he is left to be content with the immediate satisfaction of a performance, lacking any power to advance toward an independent mastery of his art. The discipline of a system, which at first seems to restrict the pupil's freedom and spontaneity, is the gateway to the higher freedom of the artist. Dalcroze makes it very clear that his system of exercises is only designed as such a gateway. In the

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higher branches of *plastique* the student of eurhythmics is able to give his own interpretation to any piece of music, either classical or operatic, which appeals to his power of imaginative expression.

This brief outline of the aims of eurhythmics shows that its promoters are aiming high. Educators have come to realize, very acutely, that the rhythmic powers of children have been neglected, but they have been unable to see how to supply the lack. Art with the adult population has come to be largely a matter of mere receptive enjoyment, of amusement for our senses, jaded with the noise and bustle of the workaday world: we treat our children as if they, like ourselves, could be satisfied with such inactivity. We take them to music-halls and cinemas, where they sit still. They are taught to *appreciate* music when they need much rather to *make* music. Neither for children nor for adults can art be mastered on such easy terms: power can only be attained by personal exercise, by training limbs and ears and eyes along with concentration of mind on art productions. Realizing the truth of such psychology, Dalcroze presents us with a scheme of art education which will in the first place put new life into the study of music and will thereupon enlarge our outlook over the whole scheme of instruction in the fine arts.

For readers who desire information as to the teaching of eurhythmics in England it may be added

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that the London School of Dalcroze Eurhythmics, 23 Store Street, W.C.1, represents the Dalcroze method in this country, training teachers of the system, conducting demonstrations, and establishing centres for classes in various parts of Great Britain. There is also a Dalcroze Society, which unites teachers, musicians, and artists in extending the influence of the system and discussing the larger principles on which it is based. M. Dalcroze himself presides over a training-school in Geneva, and there are a number of other centres on the Continent and in America engaged on the same task. One of the most interesting developments is witnessed on the Continent, where schools of training for the opera offer eurhythmics as a part of their training in music and in gesture : it is greatly to be desired that our British schools of dramatic art will see the wisdom of following this example.

J. J. FINDLAY

## V

### THE DIRECT METHOD IN MODERN LANGUAGE TEACHING

**I**T is recorded that in a most insalubrious spot at Ypres, known to the Tommies by the picturesque and significant name of 'Hell-fire Corner,' a warning notice-board had been set up bearing, in large letters, the words, "Man, have you your gas-mask?" Underneath this question some wag, with that irrepressible and grim humour which characterizes the British soldier, had written the answer, "No, but the gardener's uncle has my pen."

It seems a little startling at first to find that one of the present generation, young enough to be on active service, should be able to remember the tortuous, disconnected sentences of the old-fashioned French exercise. We have travelled far since those days, and yet they are not so very distant either. Be it said, in passing, that even these old sentences of the 'gardener's uncle' type had their good points. With their aid the grammar was hammered in, point by point, by means of copious examples and constant iteration—the only way in which grammar can be successfully mastered. As to the possibility

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of sustaining the pupil's interest while restricting him to such barren subject-matter, that is another story.

There must still be schools in which the old-fashioned French course is in use, for some of these relics of a bygone age continue to be printed. They treat French or German as a dead language, make no provision for oral practice, and look upon everything as subservient to grammar, instead of regarding grammar as a means to an end—correct speaking and writing. They dwell long and lovingly upon such facts as that *travail* takes *s* in the plural when it means 'breaks for shoeing horses,' and urge the pupil to commit to memory lists of exceptions such as *bail*, *corail*, *émail*, *plumail*, *soupirail*, *travail*, *vantail*, *vitrail*, which form their plural in *-aux*, and such interesting curiosities of language as the fact that while *le mousse* means 'the cabin-boy,' *la mousse* is the equivalent of 'moss.' On such out-of-the-way points as these examination questions used to be set, and many pupils became quite proficient in scoring marks by answering them, though they could not express the simplest thoughts correctly, either orally or in writing, in the foreign language.

There was need for reform, and reform came from Germany. It was heralded by Vietor's trumpet-blast, *Der Sprachunterricht muss umkehren*, and the principles laid down by the reformers were eagerly adopted by enthusiastic teachers. England, as was

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her habit in educational matters, at length followed Germany's lead and the Direct Method became the fashion, and, indeed, for many ardent reformers, a veritable cult.

What were its principles? Twenty years ago the reformers would probably have shown greater unanimity in their answers to this question than would be the case to-day. There are varying degrees of directness, and experience and observation of results have led many to modify their method in some of its details and to depart from the uncompromising rigidity of the early days.

As the name implies, the leading principle of the Direct Method lies in the endeavour to get the pupil to form a direct association between his concept and the foreign word, without the intervention of the mother tongue. Thus, he must not be told that *la montre* is the French for 'the watch,' but he must be shown a watch, or a picture of one, and be taught to associate the word *montre* with it. This seems at first sight psychologically sound, but we must bear in mind that he has already formed an association between the same concept and the word 'watch,' and that this association has, through long and frequent use, become what the psychologists term 'inseparable.' Before, then, the object or its pictorial representation can suggest the word *montre* it will bring to his mind the word 'watch,' so that the English equivalent will always be present



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to consciousness whatever steps we may take to prevent this. It is only after a long period and repeated use of the foreign word that the new association can be formed and gain sufficient strength in any way to rival the old. It would seem, therefore, that when the pupil first meets with the foreign word it does not really matter much whether we give him the native equivalent or show him the object. The quickest way to enable him to grasp the meaning will be the best. After that, the word should be used in context as much as possible and English kept in the background as far as is practicable.

The rigid exclusion of the mother tongue naturally involved an attempt to provide vocabularies written entirely in the foreign language. They not unnaturally furnished fine examples of the fallacy known as *ignotum per ignotius*. Thus, to explain the German word *Topf* by the words "tiefes Gefäss. Man gebraucht Töpfe beim Kochen. Pflanzen setzt man in Töpfe (Blumentopf)" does not seem likely to carry the pupil much farther. In the case of abstract terms the difficulty is greater; thus, "*mûr*, se dit des fruits de la terre en état d'être récoltés." Why should we assume that the learner who is unfamiliar with the word to be explained will understand the words employed in the explanation? The compilers of many Direct Method courses have recognized this difficulty and have used English equivalents in their vocabularies, but this practice

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is obviously inconsistent with the principle enunciated above.

The 'direct' principle naturally involves methods of teaching which are mainly oral. Success depends on constant repetition and individual speaking practice. This means that classes must be small and homogeneous, a condition of things now rarely met with and not likely to obtain, at any rate for a long time to come. Chorus work will not carry us beyond the initial stages, and if the pupil is to acquire the use of a language by habit, not by rule, it is obvious that he must have much more individual practice than is possible in a class of thirty devoting three or four hours a week to the study of the language. A little calculation will show that even if every minute were devoted to oral practice, no allowance being made for giving out or collecting written work, setting homework, etc., then the amount of individual speaking practice that each pupil could obtain would, on a generous estimate, be eight minutes a week, or five hours a year. In a five years' course he would have spent just twenty-five hours in speaking the foreign language, and all the rest of the time he would have been speaking, hearing, and thinking English!

What about grammar? No one, of course, can or does ignore its importance, but the Direct Methodist contends that it should not be taught in isolation, *qua* grammar, but inductively as it

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arises from the text read and in the spoken sentence. The difficulty here consists in the discursiveness of the method. So many different points confront the learner at once that he cannot grasp and retain them. If we are not to analyse grammatical constructions and reduce them to rule it means that we must meet each one a very great number of times, in varying contexts, before we can arrive inductively at the underlying principle. To do this with success we must devote as much time to the learning of a foreign language as a child does to the acquisition of his own—that is to say, his whole waking existence.

Hand in hand with the Direct Method have gone the teaching of pronunciation by means of phonetics and the use of phonetic script. It is interesting to notice that there is a divergence of principle here. Phonetics proceeds not inductively but deductively ; it is not a synthetic but an analytical method. The pupil, who is to learn to speak grammatically by repetition and habit based on copious practice, must not pursue this method with regard to pronunciation. He must analyse the principles underlying the production of the different sounds of the language, and learn *how* to produce them before he attempts to do so. He must not rely on imitation. It may safely be said that the use of phonetics (*i.e.*, the scientific teaching of sound-production, whether accompanied or not by the use of phonetic script) has abund-

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antly justified itself by results. There is no doubt that the average pronunciation in our schools has enormously improved during the last twenty years.

Perhaps the chief distinction between the Direct Method and its rivals resides in the fact that the former makes no use of translation from the mother tongue into the foreign language, at any rate in the early stages. As an advanced literary exercise it has its uses ; it must be regarded as the 'coping-stone' of linguistic achievement. It is easy to point to the disadvantages of translation. We do not translate when we use a language effectively. The habit of mental translation is one which we must try to eliminate in our pupils ; it is bound to assert itself at first. We want to cultivate the *Sprachgefühl*, to set up the habit of thinking in the foreign idiom. This will not be achieved by forcing an English version upon the attention of the learner. Again, no two languages make use of the same modes of expression or envisage ideas from the same point of view ; consequently a translation, however grammatical, will not have the true ring about it ; it will sound like what it is—English in a foreign dress.

Free composition, under due guidance and with suitable restrictions, should be practised from the start, and points of grammar may be driven home by means of specially prepared sentences in the foreign language with blanks to be filled in by the pupil, though, as regards interest, these are

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scarcely superior to the old detached sentences of the 'gardener's uncle' type.

In spite of all this, many teachers have found that, in practice, nothing can take the place of translation as a means of ensuring grammatical accuracy, and even contend that it forms the best stepping-stone to free composition worthy of the name. To look for the cultivation of the *Sprachgefühl* and the habit of thinking in the foreign tongue before the pupil has acquired a pretty wide vocabulary, and has thoroughly familiarized himself with the accidence and syntax of the language, betrays an optimism which is doomed to disappointment. Free composition does not put the learner at grips with grammatical problems which he is bound to face. It carries him no farther. He will either put down only what he knows or he will produce worthless, ungrammatical stuff. Difficulties will naturally be avoided. The English version gives him, as an exercise, certain facts and ideas which he is to express in the foreign idiom, and he cannot get out of it. As a matter of fact, it is the foreign language which is thrust upon his attention; when once he has read through the English sentence and grasped its meaning his thoughts are immediately set upon the foreign equivalent. Moreover, in simple prose, such as fairly easy narrative, straightforward equivalents do exist.

It is only in the advanced stages, when more

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abstract themes have to be tackled, that the exercise becomes a really difficult one. The chief advantages, however, are purely practical ones, and, however humiliating the fact may be, these are the ones that count. To give back thirty free compositions, however carefully the mistakes are underlined with blue pencil, does not teach the pupils much: to return thirty corrected translations and to go over the piece with the whole class is a most valuable method of instruction. More useful still is oral translation in which each pupil has the English passage before him and takes his part in rendering it into French or German. Mistakes are corrected by the pupils themselves on the spot, and the whole class works as one. Here, be it noted, no word of English need be spoken.

It would not be unreasonable to suppose that the results of some years of Direct Method teaching would show themselves in the form of better pronunciation, more fluent speech, but less grammatical accuracy in written work. The experience of inspectors and examiners tends to show that this is not far from the truth. Six years ago the Board of Education and the London County Council simultaneously conducted an investigation of the state of modern language teaching and the efficiency of the pupils in some of the principal London schools. Both reports agreed that there was need of improvement in the teaching of French grammar.

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The examiners' report on French in the University of London General School Examination, 1922, does not point to much improvement. "Section II (English into French) revealed a lack of thorough training in grammar and idiom." "In Section III (Free Composition) the essays varied very much; comparatively few reached a high standard. . . . Candidates wrote sentence after sentence, sometimes page after page, of what was simply 'broken French,' instead of applying themselves to writing carefully constructed sentences. On the whole there was very little evidence of thinking in French, and the vocabulary used was in most cases a very limited one, which was repeated over and over again in a slightly different form. A large amount of the work in French would not have been understood by a French person unacquainted with English idiom. . . . Candidates seemed inclined to throw all grammatical principles to the winds."<sup>1</sup>

Grammar must be mastered at all costs. The undiluted Direct Method is extremely attractive to teacher and pupil alike, and, in the case of a small and homogeneous class taught by an exceptionally able and enthusiastic teacher, it is capable of obtaining excellent results provided plenty of time is allowed, say five hours a week. Under average con-

<sup>1</sup> The 1923 report is equally emphatic. Such grotesque mistakes as '*à l'accompagne*' ('in the country') point to too great a reliance on oral methods, and a neglect of written work.

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ditions, however, a method which depends entirely on the formation of linguistic habits by means of individual practice takes too long. The 'natural' method of learning languages is practicable only under 'natural' conditions. As things are, we must take a short cut by making use of the linguistic experience and knowledge gained by the pupil in learning his own language and by appealing directly to his reason and grouping phenomena under general principles.

Admitting this, however, we gladly acknowledge that much has been gained for us by the reformers. We shall never return to the old method or lack of method. Modern languages must be treated as living organisms; our pupils must learn to speak as well as to write them; the teaching and subject-matter must be real and interesting from the first; mere grammar grind and treadmill exercises are things of the past.

The following method, which has been tried and proved successful, seems to fulfil these conditions. Each lesson is framed so as to teach and illustrate certain grammatical principles taken in proper sequence. It is based upon a passage in the foreign language, complete in itself, and specially chosen or constructed to illustrate these principles, which are explained at the beginning of the lesson and learnt by the class. Oral practice follows, then grammatical exercises of an enlightened type, and, finally, a



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piece of English, based on the original passage, but sufficiently different to form a real exercise, is put back into the foreign language. When such a lesson has been thoroughly worked through, the class should be in a position to write a free composition on the same subject.

It is well to work through *all* exercises orally in class before they are written. A good plan is to let the whole class write down each sentence when it has been given in correct form, mistakes being corrected by the pupils as far as possible. This ensures general attention and combines dictation with oral practice and grammatical instruction, while the act of writing impresses the correct form upon the memory—"speaking maketh a ready man, but writing maketh an exact man."

S. A. RICHARDS

## VI

### INTELLIGENCE TESTS

**D**URING the debate in the House of Commons on the 'Maynooth Bill' Disraeli twitted Peel with never bringing forward a measure without saying that three courses were open. In a sense, continued Disraeli, he is right. There is the course he has left, the course he has followed, and the course he ought to follow. Sir Henry Lucy tells us that Gladstone inherited from Peel this habit of pointing out three possible courses to pursue in reference to a new proposal, and Sir Henry calls it an oratorical trick. With all deference I venture to say that there was no trick, but that on every occasion when the statement was made there probably were three courses which would naturally suggest themselves to a person professing to look at the subject all round, and to be seeking a reasoned conclusion. Similarly, I feel sure that in our controversies about new educational proposals there are usually three courses open to us, two of them to be avoided by cautious observers of what is going on, and the third to be followed. The enthusiasts, anxious to press forward, and careless whether or not they keep in touch with the main

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army, would have us believe that their new proposal brings victory sensibly nearer. The scoffers would have us believe that "there's nothing in it." The third and wisest course is to assume that there's something in it, and to try to find out what that something is. The mere names of the distinguished advocates of intelligence tests, for instance, are a sufficient guarantee that it is worth while acquainting oneself with the principles involved, and to try to discover what remains valid after all deductions have been made.

To the natural man the very idea of measurement implies the presence of something quite definite and unmistakable that needs to be measured. Most of the measurers of intelligence disagree with the natural man. They produce their measuring-rods, and apply them with elaborate care, sometimes so as to strike terror into the non-mathematical mind, to something which they *provisionally* call intelligence. Not only do they not define what they mean by intelligence, but they declare that the question is irrelevant to the value of the tests. What they mean by intelligence is—something that it may be possible to define after the tests have been applied. Various synonyms are suggested. You may call it—the elusive 'it'—mother-wit, or *savoir-faire*, or gumption. The Civil Service correspondent of the *Daily Telegraph*, joining in the lively fray which occurred in the House of

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Commons and in the newspapers in the summer of 1923, preferred the expression 'sharpness of wits.' One might mention, as an alternative, 'on-the-spotness.' All these equivalents, by the way, are irresistibly suggestive of the dapper clerk or the keen commercial traveller rather than of the profound scholar or the long-headed man of business. A prolific writer on intelligence tests has gone so far as to identify intelligence (*i.e.*, the quality which he is bent on testing) with the 'wisdom' of the ancients. But this is surely very wide of the mark. The difference seems nearly as great as the difference between Shylock and Solomon. Wisdom is indeed the principal thing, and for that reason to test it would require a measuring-rod vastly different from that required for testing mere sharpness of wits.

But, apart from this, let us recognize that intelligence, in any sufficient sense of the term, may be a much bigger conception than is contemplated by the usual 'intelligence tests.' The phrase 'mental tests' is still more liable to misconstruction, because it seems to imply that the whole of a person's mental power or grasp is being appraised. The limitations of all tests of the Binet, and Alpha variety have recently been emphasized by Professor Woodworth, of Columbia University, who points out that they do not test ability to manage concrete things, or ability to manage people by tact and power of

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leadership, and that they do not, as so far devised, "reach high enough to test the ability to solve really great problems." Hence, he says, a person may score low in the tests and yet become a skilled workman or even a real artist; or he may score high and yet be destitute of the power of managing men; or he may, even if a genius, score no higher than many persons of ordinarily good ability.<sup>1</sup>

The advocates of intelligence tests invariably denounce, or at any rate damn with faint praise, the orthodox system of examinations. Here they have undoubtedly a great deal of right on their side. External examination, modified in some cases by an internal element, has for several decades held our higher education in its grip. It has been subjected to much criticism, and it has undergone changes for the better, but in substance it still stands where it did. The art of examining has unfortunately never received much attention, even in places where the art of teaching is systematically studied. And in the most exalted quarters—*i.e.*, among university professors and lecturers, who constitute the main supply of examiners—neither of these arts has been deemed worthy of much definite scrutiny. We need not wonder, therefore, that examinations *as at present conducted* fall an easy prey to the keen critic.

<sup>1</sup> R. S. Woodworth, *Psychology*, pp. 281-2.

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The faults of examinations are many, and some of them are inevitable, but by no means all. The chief allegation against them is that they test attainments, but not ability; book-learning, but not mother-wit; what can be 'got up' for the occasion, but not what cannot be so 'got up'; memory, but not intelligence. One might easily give a dozen extracts to this effect from authoritative books on intelligence tests. The argument is that existing examinations, though efficient enough as tests of attainment, are a very imperfect means of testing intelligence, and that a new sort of examination is therefore required which shall aim at isolating intelligence for the purpose of investigation. And this isolation, 'the new examiner' effects by setting uncommon questions upon matters of notoriously common knowledge.

It may be alleged that to set up a sharp distinction between intelligence and attainments is to commit the old fallacy of reaching abstractions through analysis, and then treating the abstractions as if they were independent realities. But the apostles of intelligence tests are not, I think, concerned to deny that there is normally a strict connexion between intelligence and attainments. A lawyer and an artisan, if equally intelligent, may possess equally large, though vastly different, stores of knowledge, and their degree of intelligence may

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be tested upon material which neither of them can very well help being acquainted with. They may shine equally, for example, at supplying missing words, provided the words be neither unusual nor technical. Let us admit, then, that for practical purposes this sharp distinction between intelligence and attainments can be defended.

But there is another and a much graver objection to 'the new examiner.' It is—and here, I think, we reach the heart of the whole matter—that he is far too apt to misrepresent and to slander the old examiner. He sneers at a system which requires candidates to reel off glibly the length of the Amazon, the height of Everest, or the date of Magna Charta—a system which, so he implies, always did and always must, so long as it lasts, exalt memory and ignore intelligence. But one would have thought that even the old examiner had got beyond that. If he has not done so, and in so far as he has not done so, the new examiner is doing signal service to the cause of education by drawing attention to the fact. There is no reason in the world, however, why the existing examination system should ignore intelligence. It may be bound indeed to ascertain whether a boy can, for example, multiply one number by another. But it may also ascertain whether he can supply the missing

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figures in such an incomplete performance as the following :

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      . . . . .
      3 7 .
      -----
      . . . . .
      . . . . .
      1 7 2 4 1
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      . . . . . 6

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The old examiner may find it necessary to ascertain whether a boy knows that cattle are reared in Devon, and that stone walls are more frequent than hedges in Cornwall ; but even the old examiner may have intelligence enough to ascertain also whether the boy knows *why* these things are so. The old examiner, by the way, must not be above taking a leaf out of the new examiner's book. The examiner in English might, for instance, test accuracy in the use of words by requiring the blanks to be filled in such cases as :

Author is to Book as Artist is to —  
Success is to Joy as Failure is to —

And there is much to be said for the opinion that the English paper is the right place for such exercises, rather than an artificially contrived budget of conundrums.

But why, it may be asked, should not the budget



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of conundrums be established as a regular part of the examination system, so that we may be quite sure that intelligence will be tested? I think there are certain rather weighty reasons why not. To place 'the new examiner' in the saddle would be tantamount to a confession that the partial failure of existing examinations to test intelligence is inevitable, which is not the case, and would help to postpone the day when examinations, if they are to be maintained in their present position at all, shall be thoroughly reformed. The intelligence testers have done great service in showing, or at least emphasizing, the difference between a good examination and a bad one. They must not on that account be allowed to claim a monopoly of intelligence testing, leaving to other examinations the task of testing stodgy book-learning. Again, if the big budget of small conundrums is to become the normal method of selecting the ablest people, or an important part of that method, we may be sure that teachers, not to speak of crammers, will in self-defence evolve a plan of meeting the situation. They will give their pupils abundant practice of a relevant kind. And in so doing they will run the risk of encouraging the most deplorable of mental habits. At an ordinary examination eight or ten questions have to be answered in three hours. At an American Army Alpha test, we are told, 212 questions had to be answered in half an hour. Such a test may be all

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very well on a particular occasion for a particular purpose, in which rapid selection on a gigantic scale was necessary. But if it became the rule the method of preparation would be a deliberate cultivation of that bird-wittedness for which, as Bacon said long ago, "the mathematicks giveth a remedy," though he might have added the essay, or anything else that means practice in close and *continuous* thinking. One may add that even if the examiner in English or mathematics or history or geography did set a large number of questions to be answered in a short time, the questions would presumably turn upon matters of moment, and would not descend (or, if you please, ascend) to the amusing trivialities which some of the intelligence tests employ, and which have their proper chance at birthday parties.

At the risk of being considered a *laudator temporis acti* I must in conclusion express some misgivings when I see certain noble minds o'erthrown, as I think, by a steadfast refusal to contemplate anything in education that cannot be measured. In the past, educational thought has leant heavily, perhaps too heavily, upon philosophy. The greatest names in the history of education are the names of men who had a philosophy of education, which is the same thing as having a philosophy of life. But the extraordinary developments of science and scientific method, and the concurrent decay of interest in philosophy, have led to a violent

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change of emphasis. As this change has been even more marked in America than in England, I am glad to be able to quote an American in support of my contention :

It may be freely conceded that the estrangement between education and philosophy has had certain compensations. The sense of freedom from tutelage and from the traditions of the past has brought to education a certain exhilaration and the disposition to observe and experiment. The conviction, though mistaken, that the problems of education could all be solved through the application of scientific method gave a powerful impetus to investigation and resulted in the acquisition of a most valuable body of organized knowledge. But in the emphasis upon statistics, methods, measurements, and practicality, the significance of ideals and appreciations has become obscured. There is a danger of overlooking the big issues in fatuous admiration of our achievements in detail. Unless we know where we are going, there is not much comfort in being told that we are on the way and travelling fast. The result is likely to be that much of our progress is but seeming.

So writes Professor Bode of Ohio University, in his recent book on *Fundamentals in Education*, and he appears to me to write sound sense. We do indeed need to get back to fundamentals, and to try to see whither our applications of scientific method are leading us. There are indications that the revival of interest in philosophy in our time is going

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to mean a revival of interest in the really big things in education. Until then our elaborate measurements are likely to remain what Mr J. L. Paton has justly stigmatized as a blind groping rather than a clear-eyed search.<sup>1</sup>

T. RAYMONT

<sup>1</sup> In his foreword to Dr O. Wheeler's *Bergson and Education*.

VII  
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TEACHING

IT is with some diffidence and even trepidation that I accede to the Editor's request to write on the subject of Reform Methods of Latin Teaching. For it is difficult for one who for twenty-five years has endeavoured to take an active if humble part in the movement to write judicially about the aims and efforts of the many teachers who in widely different spheres and with widely different methods have during the last quarter of a century attempted to solve the problem.

Nothing has militated against progress in reform of Latin teaching so much as the sublime faith of the average Englishman in the benefits accruing from a classical education even of the most old-fashioned type. The average public-school boy, however little his interest in Latin while at school, feels, when he has left it behind for ever, that after all in some unaccountable way it has made a different man of him. One such of my acquaintance always signalizes the attainment of a certain stage of intoxication by reciting the gender rules he learnt at school. It restores his self-esteem. The elementary-school

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master, the journalist, and even the writer in the higher fields of literature who has no Latin (not even forgotten Latin) often looks upon himself as a social pariah whose lack of caste may be exposed at any minute, by the cropping up of some 'tag' that he will not understand.

What is so often confused in discussion of the value of classical education is what we may call roughly the linguistic and the humanistic. Nine-tenths of the boys who start Latin in England never get beyond the linguistic side of study. More than half will leave school without reading more than a book of Cæsar and a book of Virgil. To say that such boys will have materially benefited on the humanistic side seems to me simply untrue. The study of the whole of the *Æneid* or the whole of the *Odyssey* in a good literary translation would surely have done them much more good. I hasten to add that I quite realize that great literature is always untranslatable. (As a well-known classical headmaster once retorted to me: "Where can you find a translator that will give you the full flavour of Pindar?") But I maintain that a boy who has had read to him, say, Butcher and Lang's *Odyssey* will be much more influenced by Homer's greatness than a boy who has struggled through a few hundred lines in the original which he has painfully turned into pigeon-English. As Kinglake says in *Eothen*, it was the memories of what he learnt at his mother's

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knee, rather than what had been pumped into him by the gerund-grinders, that were awakened in his heart by the first sight of the Troad. I am not now speaking, of course, about the public-school boy who specializes in classics. I am speaking rather of the ninety-and-nine who do Latin in our old country grammar schools and even in our modern secondary schools. Unless at the end of a four-year course a boy can read ordinary simple Latin with ease it is to me extremely doubtful whether even on the linguistic side the benefit accruing is in any way comparable with the time devoted to the study of the language. In the elementary stages the study of Latin consists almost entirely of the learning of accidence and the acquisition of a vocabulary.<sup>1</sup> The latter may be said to help in the understanding of the mother-tongue; the former is of the nature of a necessary evil and of no greater educational value (and of itself of less practical use) than the learning of a string of dates or the names of the rivers, capes, and bays of England. In the case of the classical scholar the sacrifice is necessary and justifiable; in the case of the boy who fails to pass even the School Certificate the study of Latin on the old method is a fetish. One of the funda-

<sup>1</sup> A classical professor at a meeting of the Classical Association once crystallized the errors of fifty years of Latin teaching in the remark, "All the schools can hope to do is to lay a good foundation of grammar on which the university professor can build."

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mental objects of all reformed methods is to make the subject truly educational at all stages, so that even if Latin is learnt for only two years some at least of the benefits of classical study may be obtained.

It may be wise to begin with an historical retrospect of the movement. Briefly we may take the last few years of the nineteenth century as a starting-point. For ten to fifteen years many schoolmasters were working simultaneously, but independently, and the first fruits of their experiments were several elementary text-books of greater or less novelty of method, which appeared at the end of the old century and the beginning of the new.

The beginning of co-operation was marked by the holding, during the years 1911 and 1912, of two Summer Schools at Bangor, under the guidance of Professor E. V. Arnold and Dr W. H. D. Rouse, and the subsequent formation of the Association for the Reform of Latin Teaching in 1912. In 1913 the new Association had its first official Summer School at Cambridge. In that year attention was confined to teaching by the Direct Method. Two hundred teachers assembled to see for themselves this method, and to some extent its results. The Association was particularly fortunate in being able to call upon the masters and boys of two famous schools, and Dr Rouse, Mr W. H. S. Jones, and Mr R. B. Appleton of the Perse School, and Mr W. L. Paine and Mr

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C. L. Mainwaring of the Whitgift School gave demonstrations of teaching with their own boys.

Then came the War. From 1914-1918 the work of the Association was suspended, and two of the most inspired of its leaders, Paine and Mainwaring, fell. For a time its fortunes wavered, but the survivors held together, and under the guidance of its late secretary, Mr N. O. Parry, it has now established itself with a membership of three hundred, an annual Summer School, and a magazine of its own. No teachers desirous of getting first-hand knowledge of reform methods of Latin teaching can afford to remain outside its ranks. Such will find a ready welcome, an enthusiasm, and withal a catholicity of spirit, and a practical and workman-like desire to contribute to the solution of the varied problems of their work. The president is Mr F. R. Dale, D.S.O., Plymouth College, and the secretary is Miss F. Moor, 45 High Street, Old Headington, Oxford.

The Association is generally considered by the outside public to interest itself solely with the Direct Method. While it is true that probably the majority of its committee consider this the ideal method of Latin teaching, the interests of the Association are by no means confined within such narrow limits. Many of its members would more truly be described as believers in oral methods of teaching, and there are few of those who advocate

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the Direct Method in its purity who do not modify their theories in actual practice. It has been, so far, assumed (and some there are who have girded at the assumption) that Latin teaching was, and is, in need of reform. The urgency of the question was due mainly to two factors, first to the extreme conservatism of the older generation of classical teachers, which had stood in the way of the normal evolution that had taken place in the teaching of other subjects, and, secondly, to the great limitation of the time devoted to the subject consequent upon the greater attention bestowed on science, modern languages, and English.

Of the conservatism of the old school of classical teachers I will give but one instance. When many years ago the Classical Association was considering the adoption of the reformed pronunciation, I ventured, as a young and timid schoolmaster, to point out, at the annual meeting of the Association, that the 'new' pronunciation would make the learning of quantities automatic, and that the young pupil would no longer have to remember that what he called 'rōza' had a short *o*. The very distinguished headmaster of one of the chief schools in Scotland rose in his wrath and anathematized me for wishing to make the language easy and to lessen its disciplinary influence. The benefit of teaching a boy to mispronounce a word for the purpose of making a language difficult may strike the modern

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teacher as remarkably problematical, but a solid phalanx of classical big-wigs supported the contention. Most of the hostility to reform methods of Latin teaching is due to misunderstanding on the one hand, and over-enthusiasm on the other.

Much adverse criticism has been passed on the work of the reformers by bishops, professors, and schoolmasters, who do not understand the objects or methods of the reformer, and have made no attempt to examine either his theory or his practice. They maintain, for example, that the new teacher "does not believe in grammar," and that his pupil picks up his Latin as a Swiss waiter picks up his English.

If any reform teacher were foolish enough to believe this method of acquiring Latin possible he would have a rude awakening. As a matter of fact, such methods have never been advocated. The systematic study of grammar is as essential with the new methods as with the old. And this all schools of reformers recognize. But grammar becomes the systematic co-ordination of facts of language already made familiar by usage. It is the critic of our speech rather than the model by which we speak. It comes after the lesson and not before it.

For the misunderstanding of their methods the reformers have sometimes themselves to blame. It is not to be wondered at that when the conservative teacher saw the word 'conversation' he thought

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that it referred to desultory talk on twentieth-century matters. The new term 'oral practice' is much more accurate. It consists in the reading aloud and discussion in Latin by means of question and answer of a passage of classical Latin. Such 'oral practice,' which is possible, *mutandis mutatis*, at every stage of learning Latin, does much more than merely to give fluency. It imparts a sense of reality. Latin ceases to be a dead language. The pupil learns that the Romans really were live people who spoke to one another (and wrote) in words that can still be used and that still convey a meaning. Another cause of hostility to new methods has been the occasional assumption of ill-advised enthusiasts that nobody learnt Latin well by the old methods. This, of course, is contrary to fact. Practically all our leading classical scholars of England to-day were brought up on the old method pure and simple, and so long as their scholarship is venerated only the fanatic would claim that the method whereby they learned their classics is incapable of good results.

But this is far from saying that the methods of teaching in vogue for the last two hundred years are the best to-day. For the conditions are changed. In few schools in England to-day do 50 per cent. of the pupils reach the comparatively low standard of the matriculation of, say, London or the Northern Universities. And in very few schools in England

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do 5 per cent. of the pupils who begin Latin go beyond matriculation standard. Methods which gave good results when every boy was making the classics the be-all and the end-all of his education may be (and in the opinion of the reformers are) quite impossible under modern conditions.

Nothing has astonished me more after discussing Latin teaching with teachers of every school of thought for a quarter of a century than their invariable optimism with regard to results. When I hear panegyrics of the humanizing influence of a first-hand acquaintance with Latin literature, I think of Smith major. When I hear of what an average boy of twelve can do in his first year by this or that method, I think of the public-school boy of sixteen who at the end of four years' teaching suggested to me that *regabo* was the future of *rego*, and that the Latin for "Brutus is a sailor," was *Brutus est nautam*, "because *nautam* was the object." I think of the long Latin prose I have seen, written by a Cambridge Senior Local candidate, which did not contain one Latin word. Nothing has, I believe, so stood in the way of progress as the inability of teachers to see things as they are, a malady from which, I fear, certain reformers suffer almost as much as the most crusted conservative. For the purposes of this article I have just been re-reading a contribution of my own to the *Classical Review* written in 1908. The only statement there

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made on which experience has caused me to modify my views is one with regard to what an average boy can learn in eighteen months. I do most earnestly beg *all* teachers to test their claims by comparing them with their own results.

Put briefly, I believe the error of the old teacher was in thinking that language could be taught better by the intellect and rules than by instinct and practice. The old teacher dealt with words. He turned Latin words into English words. Doubtless, at long last, he got past that stage, but there were years of preparation before he ever appealed to the language sense.

Let me give a few examples of what I mean. If ever there was a word that could not be considered alone, it is the preposition. And yet how did we learn the cases governed by various prepositions? By rhymes of the form "*A, ab, absque, coram, de,*" etc. How much simpler to have learnt a few phrases—*a magistro, coram latrone, de gustibus!*

Or, again, irregular genders. Again, by rhyme without reason. We did not, in fact, learn the gender, but—a very different thing—rules to give us the gender when we applied them. They were perfectly efficacious unless we forgot whether the rhyme consisted of exceptional masculines or exceptional feminines. And yet exceptional genders can be learnt, directly and quite systematically, by committing to memory such lists as *uno pede, pons*

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*sublicius, in manus tuas, arbor nuda*, to which the pupil can refer whenever in doubt.

Or, again, the principal parts of irregular verbs. Compare the ease with which a boy learns "*Veni, vidi, vici*," so as not to be able to conceive of any other possible form for the perfect, with the dull grind of *vinco, vincere, vici, victum*, learnt by ear through constant and wearying repetition. And how often this aural memory refuses to function when it is most wanted!

The claim of the reformer is that Latin, like all other languages, can be best taught by direct association with the things and actions with which it deals. To take a very simple case. The boy who has got up on the command "*Surge*," and walked on the command "*Ambula*," and sat down on the command "*Conside*," will never forget the meaning or form of the words.

Such monkey-tricks are, generally speaking, confined to the early stages. But a boy who has answered in Latin a question asked in Latin about a passage in a classical author, is in just the same position as the boy who associates *ambulo* with the act of walking. He will, at a later stage, use *utrum . . . an* and *sive . . . sive* quite correctly, without perhaps even noticing that in both cases in English we use the words *whether . . . or*. Similarly with *cum* and *quando*, *qui* and *quis*, *si* and *num*. This does not by any means imply that his instinct should

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not be fortified by his reason. His syntax will be the systematic arrangement of things, appreciated, though perhaps vaguely, by instinct. The object of the reformer is the ready understanding of classical Latin, and the ready expression of our thoughts in classical Latin without the interposition of English.

What this means will, I think, be understood from the following incident, which I have related before. Many years ago, an Oxford examiner came down to inspect a form of my own at the end of its first year's Latin. The form was an unusually good one, and I looked forward with confidence to a glowing report. On the departure of the examiner, I asked the form how they had got on. "Not very well," said one boy, "we couldn't understand him." "He spoke too slowly," added another. On my expressing astonishment at this complaint, a third boy remarked, "He read a sentence as if it didn't mean anything."

Out of the mouths of babes and sucklings! He spoke in words, and my class were used to sentences. An old schoolmaster once remarked to me, on hearing Latin read out at a demonstration class, "That is the first time I have ever heard a Latin sentence read *in anger*."

An important detail on which, I believe, all reformers are agreed, is the desirability to change not only the amount of grammar taught, but also



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the stage at which it is learnt. If a man wants the genitive of *supellex* let him learn it in the sixth form, or even at the university. The old plan was to devote the first two or three years to the acquisition of all the minutiae, especially of accident, which might conceivably be required by a senior classic. Memory is stronger in the early years, said the old teacher: let us devote those years to a firm foundation! But in most cases the firm foundation to-day would be destined to bear no superstructure whatever. To have the slightest possible hope of attaining our ambition, that an average boy should be able to read and understand fairly easy, straightforward Latin at the end of his fourth or fifth year of study, we must confine our attention to absolute essentials.

Personally, I am not, and never have been, a believer in whole-hogging Direct Method, which means the abstention *as far as possible* from the English word. I believe that the simplest, shortest, safest method of teaching a new passage of Latin is to read it through once or twice with an even exaggerated sense stress and word grouping, and then to translate the difficulties into English. Direct Methodists tell me that by so doing I vitiate the whole principle. The question is a psychological one, but I believe the simplest way of letting a boy know the meaning of *equus* is to tell him that it means a horse. I then use the word so often that

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almost immediately *equus* suggests the animal and not the word. Whether the Direct or Oral Method will better suit the individual teacher depends principally on his personal temperament. In any case, no teacher can afford to neglect the opportunity of becoming acquainted at first-hand with new methods of Latin teaching. Whether or not he intends to put into practice the Direct Method of teaching, there can be no doubt that a training in its principles will be of the greatest value to him.

It is difficult for one schoolmaster to map out a course for another. Conditions, hours, capabilities of pupils, the personality of the teacher, all vary so much that it is eminently desirable that each man should map out the course he thinks best suited to the requirements of his own school.

It may, however, be useful if I very briefly say what my own practice has been, and to give the outlines of a course by which the ordinary boy may at all events pass the School Certificate at the end of his fourth year, *i.e.*, at the age of sixteen. Truth compels me to confess that even this humble standard is by no means always reached in my own case; on the other hand several boys have reached the higher standard of matriculation at the end of the third year, some few even with distinction. The first year is devoted to the acquisition of a very restricted apparatus of accidence and syntax. The accidence consists of the first three declensions of nouns, the

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personal pronouns and the present indicative the imperatives and the infinitives of the four conjugations (with *capio*), and the verb *to be* in the three simple tenses. The syntax consists entirely of the use of the cases, especially of the accusative for the object. Such a small amount of grammar could be learnt parrot-fashion in a fortnight, but the ability to write out paradigms and to use without hesitation the forms they contain are two very different things. The above amount of grammar, small as it is, is quite sufficient to enable a boy to read simple stories in Latin, to answer in Latin questions asked in Latin on the subject-matter of those stories, and to translate accurately and without hesitation simple English sentences into Latin. In this way a comparatively large and ready and accurately learnt vocabulary is acquired, and the boy is given a taste and liking for Latin which will stand him in good stead in after years.

The aim of the second year is to enable the pupil to read the easier passages of Cæsar. Much has been said and written against the suitability of this author for the elementary stages. My experience tells me, however, that the advantages outweigh the disadvantages. The vocabulary is restricted, and with the exception of the passages in *oratio obliqua* (which are either omitted or turned into *oratio recta*) the language is not difficult. Each lesson consists of five parts—(1) *Præparatio*: simple sentences

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based on the *Lectio*. (2) *Lectio*: a short passage of simplified Cæsar, Book I. Both of these are carefully graded, and no constructions are admitted until they have been systematically studied by the pupil. For example, all deponent verbs occurring in Cæsar are changed to non-deponents in the earlier lessons. When the deponents are reached all these changed passages will be studied with the verbs in the original forms. (3) *Interrogatio*: questions in Latin on the subject-matter of the *Lectio*. (4) *Grammatica*: grammar drill on points of grammar arising in the *Lectio*. (5) English-Latin sentences based on the *Lectio* and previous *Lectiones*.

Various points of syntax are introduced quite systematically, and constant revision of vocabulary is insured by using all our old material over and over again as new constructions are introduced. By the end of the second year the upper 25 per cent. of the pupils are able to revise the whole of their work by translating and retranslating the whole of the *Helvetian War* in the original text with the solitary exception of passages in *oratio obliqua*.

Such boys (roughly a quarter of the whole) will then join the fourth-year boys and read the two set books for matriculation. The ordinary boys will, however, content themselves with the prose book set for the *following* year. Practically half the lesson will be taken up with the reading of this book. First, the chapter will be read once or twice in Latin

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without explanation. Great care is given to the reading on the part of the master, who endeavours by careful phrasing and even exaggerated emphasis to make the meaning clear. If necessary he will paraphrase the words of the text into simpler Latin. The class will then construe aloud in turn, the better boys helping the duller ones. The master will then read the passage aloud, the better boys listening, the others having the use of their books. If any word or phrase is not understood by any member of the class he must ask for further translation. Then will follow either an *interrogatio* by the master, retranslation on the blackboard by the class as a whole, retranslation of simple sentences from the text in writing by each pupil, or the reading aloud with intelligence of the passage by a boy.

Other lessons or parts of lessons during the third year will be devoted to the learning of definite accidence and syntax. The subject-matter and vocabulary of these will, however, be drawn from the pupil's own reading. In the first case all teaching will be oral. Dependent statements will be simple statements in the first case, which are made to depend on *Magister (Discipulus) dicit*. Similarly, simple questions will be asked by the master to be repeated by the pupil in the form *Magister rogat* (or *rogavit*). Clauses of purpose will be practised by answering such questions as *Cur ad ludum venis?* When proficiency, accuracy, and readiness are acquired

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orally the teaching is established by the translation of sentences on paper. Much of the tragic failure of modern methods of teaching arises from forgetting the old proverb, *Littera scripta manet*. The old-fashioned teacher relied almost entirely on writing; the new teacher generally does too little.

During the third and subsequent years much stress is laid on the translation of connected prose Latin into good idiomatic and virile English. This side of the work may quite legitimately be transferred to the English period. If teachers fail to recognize the difficulty of translating even a chapter of Cæsar into good idiomatic English they will learn the truth by the simple expedient of giving a version in English such as a good boy would give as a construe, and asking for a version free from traces of the original Latin. In order to set a high standard it is well to conclude with reading aloud the best English translation of the passage that is procurable.

Fourth-year work is on much the same lines. Two-thirds of the time is probably taken up with work directly connected with the set books. Connected Latin prose divorced from these is, I believe, too difficult for this stage. Its place is taken by retranslation and free composition on subjects dealt with in the set books. Short English sentences are useful practice in construction as long as the vocabulary is familiar. The impression to avoid is that English

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may be turned into Latin by the turning of English words into Latin.

Accidence and syntax are revised by the learning by heart of numerous examples previously met with and collected under their respective headings in the grammar. Thus twenty sentences, each containing a final clause, may be learnt as one night's homework. Five may be read out in English for retranslation, thus saving much time during the lesson and reducing to a minimum the time taken by the teacher in marking.

Occasional translation at sight of short passages well within the powers of at least the best boys will be a useful exercise in the power to tackle a piece of work unaided. Generally speaking, twenty to thirty minutes is quite long enough for this work. For the lower half of the class much of the time spent on trying to make out the meaning of a difficult passage is absolutely wasted, and the boy is discouraged by his failure.

In much that is controversial and problematic, one fact stands out beyond dispute. The reform methods are exhilarating and joyful. For the teacher, indeed, they may be even more physically fatiguing than the old, because the mind is kept alert and at high tension. For the fatigue of a dance may be greater than that of a tread-mill. And similarly with the class. They will work as hard as they did before, and even harder. But it will be a work of

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keen interest rather than the dull grind of drudgery. No longer shall we bear the reproach that boys come to us as eager, joyful children, and leave us as disillusioned, joyless youths. Whether they will know more or less *may* be debatable: I don't believe it is; but perhaps *how* they have learnt may be, after all, the one thing that matters.

FRANK JONES



## VIII

### COMMERCIAL EDUCATION

COMMERCE is, according to the *Century Dictionary*, "interchange of goods, merchandise, or property of any kind"; the word is "used more especially of trade on a large scale carried on by transportation of merchandise." Education is, on the same authority, "the imparting or acquisition of knowledge, mental and moral training, cultivation of the mind, feelings, and manners." Commercial education is, therefore, the imparting or acquisition of knowledge, the mental and moral training, the cultivation of the mind, feelings, and manners, pertaining to trade or suitable for those who undertake the interchange of goods, merchandise, or property of any kind.

This, the strict definition of commercial education, contains or implies nothing derogatory, nothing of the feeling of contempt suggested in the use of the phrase "Business is business." It suggests rather that moral outlook, that uncompromising honesty, that has earned for the English trader his world-wide reputation: "The Englishman's word is his bond."

The reputation, or rather the ill repute, that

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commercial education has had to 'live down' is almost as old as mathematics. Students were urged to study arithmetic as a pleasure for its own sake and not merely for the sake of gain. Plato is recorded to have considered calculation a vulgar and childish art; and Theon of Alexandria, a philosopher of the fourth century, wrote: "The science of numbers is the mover and the guide to truth. It is not to be studied with gross and vulgar views, but in such a manner as may enable the student to attain to the contemplation of numbers, not learning it merely for the purposes of selling, or of dealing with merchants or retailers, but for the improvement of the mind."

Let us then adopt this definition of commercial education and set aside the slur cast upon it by the bad reputation of those business men who stoop to shady transactions. We must next consider how commercial education differs from other types of education.

All education aims at developing the best that is in the pupils, at showing them how to learn, and at teaching them, so far as that is possible, how to live. Commercial education is limited; its aim is specialized; it seeks to inculcate especially those qualities, moral and intellectual, that make not only good men, but good commercial men.

What, then, are the most desirable qualities for commerce—the qualities of the men who have

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secured the world-wide reputation of Great Britain as a business nation? First and foremost, honesty—then a sense of responsibility, self-reliance, and judgment, initiative and courage therewith, and shrewd judgment of persons and affairs, and ability to think, which gives foresight. Such training can be given through a variety of subjects, but through none better than those that will be of practical use.

As pupils are being trained for commercial life, the education is definitely vocational; as the subjects taught are those that will be of use in business, the education is technical. Though, however, it is vocational and technical it is largely humanistic. Wherever man has 'wants' that he himself cannot supply commerce steps in to supply them, and this commerce is the subject-matter of Commercial Education.

Various subjects form parts of this subject-matter; some of them are usual school subjects, but viewed in a different light; others are technical commercial subjects the basis and atmosphere of which are wholly new to young students. In the one part are English, history, geography, mathematics, science, and languages; in the other is a big range varying widely in type and difficulty with the age at which the students are to commence commercial life. At one end of the range are shorthand and typewriting, at the other insurance, banking, transport, shipping, and the work of other highly specialized callings.

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Of the former group the point of view taken is that of the business man; the teaching must be essentially practical; the mathematics, for instance, must have as its basis accurate figuring; it must give facility in calculations such as are met every day in business; it must give a clear conception of the nature and use of progressions, logarithms, and those mathematical notions on which interest, annuities, sinking-funds, statistics, and the like, depend. To young students such science is taught as will enable them at no distant date to investigate the properties of the commodities of commerce; for older students it should be the actual scientific examination of the commodities themselves. It will be closely related to the geography which will deal with the countries of origin and consumption as well as with transport and communications. The language teaching aims first at clear, concise expression in the spoken and written language; in foreign languages its next aim is to give knowledge of the manners, habits, customs, and occupations of the inhabitants, as well as a knowledge of the products of the countries in which the language is spoken, and, perhaps most difficult of all, an insight into the mentality of the race to which the language belongs.

The technical commercial subjects included in any one course depend on the age and ability of the students and on the positions they must be prepared to occupy. Closely associated with the positions for

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which they are intended are the ages up to which they can attend full-time courses. In all courses should be included bookkeeping and a subject that has been variously named, for instance, business knowledge, theory and practice of commerce, business economics. Whatever it is called it includes the practical, descriptive economics necessary to introduce youngsters to the ideas of the business world and the machinery by which those ideas are put into practice. Shorthand and typewriting are useful accomplishments, and often secure a first appointment. The usual arguments against them are that they are mechanical and that a clerk skilled in both is forced into a rut from which he cannot escape. On the other hand, many men in controlling positions maintain that every business man should write shorthand to keep a record of instructions received or given, of conversations, interviews, and board meetings.

The content of the theory and practice of commerce depends on the age and attainments of the students. The Board of Education suggested in a memorandum issued in 1919 a scheme of work in business economics for evening students. The relation of commerce to the various branches of production was considered; retail business was dealt with in considerable detail and illustrated by arithmetical exercises; the mechanism of exchange and wholesale warehouse business followed. The

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constitution of the firm, the commercial side of a manufacturing business, carriage of goods by sea, co-operation among business units, were also suggested as suitable for inclusion.

Such are some of the subjects. The manner of teaching them is no less important. Throughout, the chief qualities sought must be kept constantly in mind—truthfulness, honesty, industry, judgment, independence of thought, initiative. The science of numbers and accuracy inculcate truth; spoon-feeding, the administering of predigested mental pabulum, is wholly out of place. Constant direction does not produce judgment, independence, or initiative. Self-discipline, discipline from within, is not produced by obvious continuous supervision. Over-organization kills judgment, independence, and initiative. Suitable school life, school clubs, school magazines, all play to the score.

The subjects taught, the way in which they are taught, and the life of the school make commercial education a practical preparation for a vocation. The knowledge acquired has a definite value; and hence commercial education appeals strongly to both parents and children; it secures the hearty co-operation of both; it interests employers, who are glad to welcome beginners who have already some idea not only of what is expected of them, but also of the great machine of which their work forms but a very small part.

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No scheme of education was ever so good that it had no disadvantages. The most obvious and real disadvantage of commercial education is the limitation laid down by the word commercial. Preparation for commerce or for commercial life is only one part of preparation for life; in this part there is a great deal to be done; early specialization must be avoided; the curriculum consequently becomes overcrowded, with the result that much of what one would like to retain as a preparation for life has to be abandoned.

Reason, judgment, and efficiency have to take precedence, and it becomes extremely difficult, if not impossible, to retain music, art, and the like, that would find a place in a wider scheme of general education. Thus it is that the technical commercial school is criticized for training its pupils to earn a living rather than to live.

The crowded time-table and the captious critic are troubles shared in a greater or less degree by all types of teachers. Technical commercial education has two difficulties peculiarly its own; its place in the educational family is rather that of Cinderella; it is a late-comer; its content is unorthodox; its aim is not idealistic enough for the conventional educationists who are mainly responsible for the educational systems of this country; the best scholarship pupils are drafted to other schools. On the other hand, remunerative business employment

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is open to men and women qualified to teach in commercial schools; good teachers have left commercial schools and, on entering business, have more than doubled their incomes. The commercial school then does not get the best brains to train for commerce, and it is liable to lose the best teachers of technical subjects.

Early specialization is undesirable; sixteen is a usual age at which it is allowed to begin; in some cases a bias—rather than specialization—is allowed at fourteen, and even this is appreciably older than the age at which the junior commercial schools in France admit their pupils. Two years, therefore, is all the time available for a training which has to include both knowledge and habit. It may be enough for hard-working pupils to acquire the necessary information; even that is difficult, for such subjects as economics are wholly outside the knowledge and experience of pupils of fourteen, and almost equally those of pupils of sixteen. The atmosphere of the subject is different from anything they have tackled before; it is a subject of quite a new order. If, however, two years prove enough for the acquisition or accumulation of sufficient knowledge it is not enough to enable students to acquire business habits, to develop that judgment and independence of thought that are to be of value to them on leaving school for business. A lower age of admission, though not of



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specialization, would do much to remedy this difficulty.

If the age of admission is fourteen or sixteen the commercial school becomes, as it were, the common top to a number of schools. Such a school is not looked upon with favour either by teachers or pupils; teachers prefer to keep their best pupils, and pupils who are reaching responsible positions in their own schools do not care to become juniors in another school. The difference of attainments of students of the same age from different schools where they have been differently taught makes satisfactory classification difficult, and time is lost while classes so formed are 'getting together' and learning to work as a class. The very variety, however, brings some compensation. Discrimination and judgment are two qualities a commercial school tries to foster. A variety of pupils from a variety of types of school gives scope for practice; it gives variety of outlook; it is, in fact, an opportunity for exercising faculties that will in later life be invaluable.

This argument applies also to co-education. In business women must certainly meet men; in business many men meet women. To have worked together during the period of training gives both an insight into the strength and weakness of the other sex. A girl without brothers from a happy home with a good father, on just coming into contact with men in the workaday world, has a

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rude awakening. So, too, has the boy, especially the boy without sisters; he has probably idealized his mother, and so the whole of her sex. The introduction, the awakening, the disillusioning—call it what you will—is best got through during the period of training under suitable supervision.

The curriculum for girls, however, must be different from that for boys. In the early stages and in some subjects the same syllabus is suitable for both; in the training of pupils who are to commence work at sixteen there is little need for differentiation.

In the next age-group, sixteen to eighteen, the same language classes will suffice for both sexes, but in other subjects the parting of the ways will rapidly be reached and differentiation—different subjects or a different aspect of the same subjects—is desirable.

In France far more towns have made provision for commercial education than in this country. Not only are there more opportunities for training, but those opportunities are far more widely known. A volume has been published which in some four hundred pages discusses “*Situations Commerciales*,” “*Connaissances à acquérir*,” and “*Organisation de l’Enseignement Commercial*.”

Such a summary of commercial education in England would a few years ago have shown little but the nakedness of the land; if it were prepared now it would probably show the rapid progress being

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made, the greater attention paid to education by commercial men, and the great amount of work yet to be done. The ideal curriculum has still to be devised, and the provision increased until every one who is to be engaged in commerce has within easy reach an opportunity of being trained for the work he is to do.

To supply the wants of mankind is the work of commerce; to train men to carry on commerce is the work of commercial education.

F. CHARLES

## IX REFORMED MATHEMATICAL TEACHING

THE agitation for a reform in the teaching of mathematics began as a revolt against the authority of Euclid, whose dead hand fifty years ago still held a close grip upon the teaching of geometry in this country. England was his last stronghold. He had been supplanted in France during the latter half of the eighteenth century by Lacroix, Legendre, and d'Alembert, who introduced practical work into their geometry, accepted proofs which ignored the case of irrationals, and did not despise intuition as a means of acquiring geometrical knowledge. America followed the lead of France, and England at that time was the only country where Euclid was the only text-book.

Venerable though the figure of Euclid may have been, his reign in schools was much shorter than is generally supposed; for there is no evidence that the study of Euclid began in public schools before the nineteenth century, and it did not become general in secondary schools until the middle of that century.

We have Lord Redesdale's authority for saying

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that at Eton until 1851 mathematics formed no part of the school curriculum. He tells us that when mathematics were introduced Mr Hawtrey, the master appointed (who, by the way, was not allowed to wear cap and gown), had to examine the boys to divide them into classes. Naturally every one tried to make as bad a show as possible to get into a low set. "When my form came up," he says, "question after question did the unhappy man put—no answer. At last in despair he said, 'Can no one here tell me what twice two makes?' After a pause,

" 'Yes, sir, please, sir, I can.'

" 'Well, what is it?'

" 'Five, sir, please, sir.'"

Even in England Euclid was not without his critics. De Morgan, a voice crying in the wilderness fifty years before his message was appreciated, advocated a preliminary course of measurements, adopted arithmetical methods for the treatment of proportion, and in many places substituted Legendre for Euclid.

In 1869, at the meeting of the British Association, Sylvester said he would like to see Euclid buried deeper than e'er plummet sounded out of the school-boy's reach, and in 1871 the Association for the Improvement of Geometrical Teaching, now the Mathematical Association, was formed, and Euclid was doomed.

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The agitation for the reform of geometrical teaching was followed by a demand from the technical colleges that the engineering students, ever increasing in number, should come to them equipped with a wider knowledge of mathematics and the power of applying this knowledge to practical problems. This demand was voiced by Professor Perry, who took so prominent a part in the matter that the reforms, both in geometry and in other branches of mathematics, are known here and abroad as the Perry Movement.

At the British Association meeting in 1905 Professor Perry sketched a scheme of education for a boy who at the age of fourteen has learnt elementary trigonometry—can use logarithms, knows what is meant by speed—can differentiate and integrate  $x^n$ , has had many applications of the use of the calculus, has a *fairly* clear notion of the various forms of energy—knows about the law of work and friction—has experimented on the efficiency of machines, can calculate K.E., and now measures the strength and stiffness of wires and beams. Most schoolmasters have yet to meet this boy of fourteen—they would be well content if this standard were reached by the average boy of sixteen. Canon Wilson, who took a leading part in the foundation of the A.I.G.T. fifty-one years ago, is still alive and in harness; he has seen the reforms he advocated in geometry universally adopted, but even if

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Professor Perry had, like Canon Wilson, lived to the ripe old age of eighty he would still be complaining that the schoolmaster had not yet produced this prodigy, who will remain, I fear, a mere figment of the professor's imagination.

Broadly speaking, Professor Perry, when he came down to solid earth, wished boys to leave school with a sound knowledge of mechanics; that this might be possible it was necessary to shorten and simplify the earlier stages of the mathematical curriculum, and the doing of this incidentally led to a valuable reconsideration of the purport of mathematics as a fundamental part of a general education.

It was realized that a great deal of the manipulative work then being done was required only by the specialist; it was a tool which the ordinary boy would never use—as far as he was concerned, its mastery was a valueless possession. Having no special mathematical gifts, he found the work laborious, meaningless, and uninspiring.

For those who were to study trigonometry and the calculus such work might be necessary, but he had no hope of reaching these dizzy heights. He found the foothills hard enough climbing; when he had mastered short multiplication, long multiplication awaited him; after short division came long division; after simple fractions there were complicated fractions, terrific in their monstrosity. All these must be conquered before he reached

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quadratics. In geometry the *pons asinorum* met him on the threshold—before Book III with its attractive circle loomed Book II, while similar triangles were far away in the clouds.

In brief, the general object of the reform was to make it possible for all boys of seventeen to leave school with some knowledge of trigonometry, mechanics, and the calculus: the reform, in fact, was to make a syllabus and to adopt a line of treatment which was avowedly to be framed with a view to the needs of the ordinary boy and not solely for the specialist.

In the teaching of mathematics there are three motives to be recognized, the utilitarian, the scientific, and the æsthetic. The utilitarian motive is one which appeals most strongly to the young, and full advantage of this must be taken in the early stages. It is necessary to recognize, however, that this motive carries less justification for the teaching of the subject than is generally imagined. With the exception of a limited number of specialists most people in the course of their life use little more of their mathematical knowledge than the elementary parts of arithmetic; many competent engineers and gunners add to this little more than the ability to substitute numbers in formulæ.

From the scientific point of view algebra and geometry have greater claims to attention. In algebra we first study special cases and discover



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what is common to all; we then formulate a law which holds good for all facts of a similar nature and economize thought by framing a formula to express this law. In geometry we argue logically from given premises, make deductions, and arrive at conclusions which form fresh premises for further additions to our knowledge.

The existence of an æsthetic impulse is less clearly recognized except in the case of the more able students, but Bryce in the *Cambridge Essays on Education* says: "Perhaps some kinds of study would have fared better if their defenders had dwelt more upon the pleasure they afford and less upon their supposed utility." Mathematics, I venture to think, is one of these subjects. Professor Nunn puts the argument in another form: "Mathematics is, like literature and art, a specific form of fine human achievement, one of the cardinal modes in which man has 'found himself' and expressed his possibilities. The person who studies it in the right spirit offers himself to one of the great influences that have moulded modern civilization. For, like St Paul's Cathedral, the edifice of mathematics is at once its architect's monument and a perennial means of spiritual expansion. In this doctrine is to be found the only ground for teaching mathematics universally that can be held against hostile criticism."

Such are the considerations which have led to

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the changes in the syllabus which are summarized in the following paragraphs.

*Arithmetic.* Stress has been laid upon the use of rough checks, upon the necessity of giving results to the degree of accuracy justified by the data, and upon the meaning and use of significant figures. Commercial arithmetic has been reduced and artificial problems eliminated: less time has been given to the subject and possibly accuracy has suffered.

A more general use of logarithms has eliminated the necessity for laborious arithmetical computation.

*Algebra.* Greater care has been taken to explain the fundamental rules of algebra and to avoid the rule-of-thumb methods that tend to ruin the understanding of this subject. All the heavy manipulative work in simplifying fractions, in solving equations by special methods, and in proving complicated identities has been abandoned, and most boys of sixteen now have some acquaintance with the binomial theorem. Graphical work has found its proper place as an aid to the idea of functionality, and more emphasis has been put upon Variation from this point of view.

There has been a general loss of manipulative skill, but a greater appreciation of algebraic form; the work is now rarely mechanical, and shows more thought. It is found that the manipulative power

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can easily be acquired at a later stage by those who need it.

*Geometry* is started with an experimental course of drawing to scale, leading to the recognition of certain fundamental facts relating to angles at a point, parallel lines, and congruent triangles. Boys of twelve and a half may now be expected to make simple deductions from these facts. The next stage involves the writing of proofs of propositions and riders. Stress is here laid upon deductive reasoning, and the scope of the work is extended by the introduction of the principle of similarity.

The more able boys then systematize the knowledge they have gained and aim at the arrangement of theorems in some logical sequence depending upon a small number of axioms. For this purpose a large body of teachers desire the establishment of a fixed sequence of propositions,<sup>1</sup> but there is an equally strong objection to this course from others, who consider such a step likely to discourage independence of thought and to reinstate a 'Euclid' in another form; it would, for instance, stifle any attempt to discard the parallel axiom in favour of the principle of similarity.

Geometry, as the result of this method of approach, has become vastly more interesting and stimulating; less time is given to the learning and reproduction of propositions, and there has been a marked improve-

<sup>1</sup> *Report by the I.A.A.M. on Geometry* (Clarendon Press).

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ment in the power of applying geometrical knowledge to the solution of riders.

*Numerical trigonometry* is now learnt by nearly all, and a great proportion of boys do a fairly complete course of plane trigonometry, omitting most of the identities which used to loom so large in the earlier treatment.

The *calculus* is being read by a steadily increasing number of boys—at Harrow there are one hundred boys learning calculus, and at most public schools one would find at least as many.

It is generally preceded by a short course of co-ordinate geometry, intended to give a real grasp of the meaning of 'the equation of a curve,' together with the drawing of rough graphs sufficiently accurate to fix the position and appearance of a curve whose equation is given. This is followed by the consideration of problems which can be solved by differentiating and integrating  $x^n$ ; these illustrate many of the most useful applications and ideas of the subject, with little demand upon manipulative skill.

In *mechanics* our progress toward the ideal of Professor Perry is slow. An increasing number of boys learn mechanics, which is begun at an earlier stage, as part of the mathematical curriculum, but there are still many schools where boys leave without having acquired any useful knowledge of the principles of mechanics.

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The more modern text-books treat the subject experimentally. In statics the triangle of forces is often deferred until the simpler ideas involved in moments and machines have been acquired, the latter being considered from the point of view of their efficiency instead of being treated as weightless and frictionless.

In dynamics the use of graphical methods enables the teacher to introduce the principles of the calculus, and he is now freed from the necessity of considering all forces as constant and all accelerations as uniform.

Unfortunately many teachers still neglect experimental work, either from lack of time or owing to the difficulty of finding a place to do it in.

The poundal, in spite of Professor Perry's fulminations, still exists, and although daily losing strength shows surprising vitality in some parts of the country, judging by the number of candidates who in a recent examination gave the K.E. of a car of  $1\frac{1}{2}$  tons moving at 30 miles per hour to be some millions of foot-poundals, correct to the nearest foot-poundal, with sometimes a few decimal places thrown in as well.

The claim that mathematics should appear to have a relation to life and not be a school mind-training exercise has been to a large extent secured, and it is not to be questioned that boys are far more interested in the subject than they were before. This aspect of the reform underlies the introduction

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into some schools of the mathematical laboratory, which formed the subject of an article in *The Journal of Education* (February 1923).

The value of this work can hardly be over-estimated. It is clear that there is a very essential difference between finding the area of a surface whose dimensions are given in a text-book and one whose dimensions have to be measured. In the latter case there is a clear idea of the limitation in the degree of accuracy to which the data have been found, and it is easy to realize to what degree of accuracy the answer can be relied upon as correct: it is possible, for instance, to convince boys, when their measurements are correct to three significant figures only, that the last four of the seven they are accustomed to produce as the result of their calculation are worthless.

There is, again, the additional advantage that a mere inspection of the object in their hands will give a rough check of the accuracy of their result, and there is often a second way of carrying out an experiment which will provide a check upon the first.

Added to this, there is the training afforded by writing out, in concise and intelligible English, an adequate account of what has been done, thus bringing welcome help to the science staff, who complain so frequently of the deficiencies of school-boys in this respect.

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When the object of a reform is to benefit the average boy it is obviously necessary to secure that in so doing no harm is done to the more able student; but there is little need for anxiety on this account—the boy with mathematical gifts will flourish whatever scheme is adopted. At a large school he is soon marked out for special treatment, and although at first he is undoubtedly inferior to his predecessors in manipulative skill, he rapidly acquires this as soon as he begins to specialize.

The success of the reformed methods must depend very largely upon the quality of the teachers. The old ways were largely stereotyped; they did not encourage individuality: the old 'drive course' was evolved by a long tradition as the quickest way of learning a definite amount of mathematics, and a long tradition is seldom wrong in achieving a definite aim.

The new system requires for its success good teaching; the old would have kept its head above water however indifferent the teacher. Given a good teacher the results under the new scheme are immensely superior to the old, but with a poor teacher, old-fashioned or badly trained, the new ideas cause worse failures than before. If low divisions or sets are to be taken by non-mathematicians the new methods are doomed to failure; for they require a large reservoir of ideas and knowledge.

It must also be remembered that although the

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reforms have been adopted with enthusiasm by a certain section of mathematical masters, schools are still largely staffed by men of the older generation, some of whom are not to be weaned from the habits of a lifetime by any voice, however seductive. The conservative nature of our teaching is surprisingly shown by the small effect the reforms have had upon the sales of the older, well-established text-books. Although new books have appeared in shoals, and their circulation has been considerable, the sale of the older books in many cases has scarcely been affected.

From the universities there still comes the complaint that boys arrive without any knowledge of mechanics, and there is no doubt much room for improvement in this respect, but it is still more surprising to find that even among the modern universities there are cases in which no encouragement is given to the work of reform.

The universities can co-operate with the schools in the work of reform by setting examination papers on modern lines and by supplying schools with well-trained and enthusiastic teachers. Valuable work is being done by the department for the training of teachers at Oxford and by the Board of Education in providing holiday courses for teachers who wish to keep in touch with modern developments, but the number of teachers reached in this way is comparatively small.

The non-specialist is now introduced to a great



variety of mathematical topics which do not require much technique, but whose value lies in their ideas. These do not lend themselves to examination; there is sometimes very little to show which can be put to that test, but the interest of the boys has been aroused and kept alive at a time when, under the old *régime*, it was being smothered. For instance, in one of our public schools boys in the higher classical forms are allowed to choose a branch of mathematics which has to some extent appealed to them; some read Durell's *Modern Geometry*, one reads the section on navigation and another the section on statistics in Nunn's *Algebra*, others choose mechanics, probability, nomography, and they work quite independently with very satisfactory results.

I began this article by showing that the reformers who attacked Euclid were not breaking with a tradition which had existed for centuries, and I will conclude with two experiences which tend to show that our more recent reformers may not be such revolutionaries as our conservative friends would have us believe.

At a meeting of mathematicians a few years ago a paper was read indicating the modern methods of teaching the calculus. Upon its conclusion a venerable gentleman arose, and, after expressing his approval of the methods indicated, stated that he was surprised to hear that they were considered to be modern, for to his knowledge they were identical

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with those used in teaching the calculus to the father of the gentleman who had read the paper!

And here is a remark made by a lady whose life has been spent in touch with public schools, and for whose opinion and judgment I have the greatest respect. She referred to the work of some small boys who had come to her for help in their mathematics and concluded by saying: "When I was a girl I was taught to understand the rules which were given and to work intelligently and with common sense: nowadays boys seem to have no idea of the reasons for what they are doing, but simply work by rule of thumb."

As on many previous occasions we learn that there were great men before Agamemnon, and there have always been reformers among us, but it is only in recent years that their views have met with recognition, and there is evidently still much work to be done before they meet with general acceptance.

Detailed suggestions for the teaching of the various branches of mathematics will be found in the reports issued by the Mathematical Association, and published by Messrs George Bell and Sons. A noteworthy addition to this series has recently been made, dealing with the teaching of geometry in schools, a most stimulating and instructive pamphlet which no teacher can ignore.

R. C. FAWDRY

## X

### THE HEURISTIC METHOD

**I**T is nearly forty years ago since Professor Meiklejohn in a paper read at an International Conference on Education claimed that "the Heuristic Method is the only method to be applied to the pure sciences, it is the best method in the teaching of applied science, and it is a method in the study of those great works of art in language of the greatest minds which go by the general name of literature." Thus quoted Professor H. E. Armstrong in his paper on "Heuristic Teaching" in Physical Sciences delivered at the International Conference on Technical Education in 1897. Years before that date he was leading the way to a more natural and enlightened method of work in schools, and was so far in advance of the times that the very latest movement among science masters—the "Science for All"—may be found to have its origin in one or other of the many addresses he delivered during the closing decade of last century. In one place he says, "I have objected to the teaching of specific branches of science in schools and have contended for something more general."

But he was contending for a much greater and

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more essential principle than a mere course of work or syllabus, viz., the spirit and form of instruction—that school work should be a training which will tend to develop what are becoming known as scientific habits of mind, *i.e.*, thoughtfulness, and power of seeing, accuracy of thought, word, and deed. “To teach not mere facts, but the use of facts, and how the knowledge of new facts may be gained, and use made of them; to make our pupils exact, and therefore more truthful, observant, thoughtful, and dexterous; to lay the most solid foundations possible for future self-education; and to do all in our power to encourage the growth of the spirit of inquiry or research.” Here we have the essence of the heuristic work, a training in scientific method.

Professor Dewey in his book *Democracy and Education* says: “Since the mass of pupils are never going to become scientific specialists, it is much more important that they should get some insight into what scientific method means than that they should copy at long range and second-hand the results which scientific men have reached: students will not go so far perhaps in the ‘ground covered,’ but they will be sure and intelligent as far as they do go. And it is safe to say that the few who go on to be scientific experts will have a better preparation than if they had been swamped with a large mass of purely technical and symbolically stated information. In fact, those who do become successful men of

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science are those who by their own power manage to avoid the pitfalls of a traditional scholastic introduction into it."

The Heuristic Method is simply the continued process of allowing a pupil to grow by his own efforts by trying to reach a goal in every act he undertakes. The work is not detached—a task to be performed because he is at school. It requires the pupil to do something, to read something, to discuss something, to listen to something for the sake of something beyond—a purpose to be achieved which supplies by its interest the mainspring of all action and endeavour. The purposeful value of school work is paramount, the educational value incidental but none the less effective. The obtaining of information is part of the heuristic process whether by use of apparatus, books, or teacher—but the obtaining must be the active work of the pupil, and not the passive reception of information from books or teacher. Only so far as this information functions as part of the pupil's experience does the pupil acquire knowledge.

But "acquiring," as Dewey says, "is always secondary and instrumental to the act of inquiring. It is seeking, a quest for something that is not at hand. We sometimes talk as if 'original research' were a peculiar prerogative of scientists, or at least of advanced students. But all thinking is research, and all research is native, original with him who

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carries it on, even if everybody else in the world already is sure of what he is still looking for." The results of research are discoveries—discoveries which excite as much pleasure in the young investigator as is experienced by the most successful savant.

The Heuristic Method implies continuity of experimental inquiry—one purpose accomplished, other problems arise as a consequence, leading to fresh discussions and research, so that by a judicious selection of these connected problems a gradually expanding view is obtained of the subject dealt with. The knowledge thus gained is real, as it is not imposed from without; it is sound and always available for use in future experience when required.

An experience extending over twenty-four years of teaching on these lines in a large public school has proved the soundness and practicability of the method. However difficult it may be always to follow strictly the literal interpretation of the title, owing to conditions of organization over which the ordinary assistant master has no control, there is little doubt that for elementary work it is pre-eminently the one and only method that should be allowed in schools.

As the work becomes more advanced the pupils naturally take their own line under compulsion of external examinations, but if the foundation has been truly laid, if the critical attitude and the habit of weighing evidence, of exercising caution on accepting statements or conclusions, have been

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consistently inculcated in the early stages, they are able to deal justly with the text-books they read and the examination questions they have to answer.

There is little doubt that the purely didactic methods of teaching are largely responsible for the blind faith of so many people in the printed word, for the unthinking adoption of ready-made opinions expressed in newspapers and books, and for the extraordinary credulity of the so-called educated classes in nostrums and puffs of the advertiser, or in any statement printed or expressed with sufficient assertiveness.

Text-books exert the same pernicious influence when used as an end in themselves. If used to amplify existing ideas, to assist in the elucidation of a problem under discussion, to stimulate the reader to further inquiry, the text-book finds a legitimate place in school work. In fact, heuristic work demands wider and deeper reading than is commonly provided for. More and better books are needed in every classroom—books of reference, biographical, historical, technical, etc.—and certainly a good reference and lending library freely accessible to all senior boys. It also demands more from the teacher; he must be a much bigger reader, and a bigger expert in his subject than is usual if he is to cope successfully with the situations created under the method. It entails far more strenuous effort on his part than does the orthodox lecture and

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question system. It is not necessary for a teacher to be a walking encyclopædia, or to pretend to be one; his function is to suggest ways of obtaining information, not necessarily to give it. The teacher must be the guide, philosopher, and friend who helps the tyro to think out connexions and unostentatiously suggests, in collaboration with the pupil, the most useful line of attack on a problem. On him lies the responsibility of fostering good habits, encouraging the inquirer, and leading him to adopt all unconsciously the scientific method in every stage of his work.

It is a golden rule that what a boy can do for himself he should do, but the many difficulties besetting the way, especially in the short time usually at his disposal, make it necessary to depart at times from the strict heuristic process. Thus the conditions under which the work is carried out necessitate many bridges between the various problems tackled—bridges that are approached by discussion between pupil and teacher, the latter sometimes having to lead the way across the gap by means of historical references, or by a practical demonstration in which he is assisted by the class. But whatever is done must have the full acquiescence of the class as being a rational and reasonable outcome of its work. If statements of fact have to be made outside the experience of the pupil, they should always be made on the authority of the original discoverer, or of

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those who are looked upon as authorities and quoted as such.

It is evident that a teacher needs some training before he can undertake the responsibility of such work successfully—he should have some experience of digging out knowledge for himself, doing some original research in the subject he has to teach, and clearly understanding the significance of the scientific method. If he is in earnest and has sufficient energy and conviction he may easily qualify. When once he has grasped the principle involved he will rapidly grow in strength, possibly learning as much from his pupils as they can from him. That in itself is a feature of the method—the teacher is not an orthodox master, but a working partner with his pupils, sharing with them their difficulties and joys in accomplishments. He has rather to suppress himself, and should only use his superior knowledge and judgment when up against difficulties, choice of procedure, and direction of inquiry. On the other hand, a too literal interpretation of the title in the hands of an enthusiastic though inexperienced teacher may make the system wooden and sterile.

The Heuristic Method requires the sympathetic co-operation of the various members of the staff of a school, including that of the headmaster. In fact, the successful and complete working of the system largely depends upon the latter, for unless

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he understands the fundamental value of it, and is capable and willing to organize his school in such a way as to render the method operative, the individual teacher is seriously handicapped, and the application of the method very much restricted.

In such matters as organization, schools are usually conservative, and controlled by tradition. The only hope of effecting such a radical change as is implied by the adoption of the Heuristic Method, even in part, is by the gradual awakening of a few bolder spirits, such as Sanderson of Oundle, to the futility of the old classroom lessons, proving by the experimental method the soundness of the heuristic philosophy.

Individual teachers here and there throughout the country have adopted the method, if not in its entirety, yet to such an extent as to prove its value; others are incorporating some of its working with ordinary lecture work and making it a distinct feature of their practical work. The general drift in educational thought toward giving children a greater freedom, encouraging self-development and self-discipline, may be interpreted as the leaven working in the dough, the gradual working of the heuristic ideas through the professional ranks.

It is not possible in a short article of this kind to indicate even in outline the courses of work that might be adopted in schools. Professor Armstrong in his book, *The Teaching of Scientific Method*, has

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dealt very fully with the subject, also in an address given at a meeting of the Science Masters' Association, and printed in full in *Science Progress*. It may be of some interest, however, if a brief statement is made on the experience gained in adopting these principles in the science teaching at Christ's Hospital since the school came to Horsham in 1902.

Three years before the school left London some three hundred boys of the lower and middle divisions attended for science work in an old dormitory temporarily fitted with trestle-tables, gas, and water. A small supply of simple apparatus enabled several interesting courses of work to be carried out on purely experimental lines. It was this experience of conducting classes under these conditions that furnished the data for much of the equipment of the new Science School at Horsham.

The general organization of the school adopted at Horsham allowed a whole form of seventy-five or one hundred boys to attend for science as a body, so that within these limits the boys could be classified according to their science ability.

At first a staff of four masters had to deal with classes of twenty-two to twenty-five boys. As the work grew the staff was gradually increased until in 1911 there were seven masters responsible for the science work of six hundred boys. This increased staff allowed a reduction in the size of the classes to sixteen, a number which should not be exceeded if

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the best results are to be got from the practical work.

A graded course in physics and chemistry was drawn up by the senior science master as a guide for each of the staff, details being supplied as to the method of carrying out the work on heuristic principles. Naturally, and of necessity, a free hand was given to each master in the matter of varying the order of the work and of specific experiments within the limits of the syllabus agreed upon for the term.

Experiment, by the boys working singly, or in pairs, was made the basis of all class work; the discussion of results and observations provided in turn the sequence of experiments for continued investigation, verification, and testing. Progress was necessarily slow—only three hours per week were given to science work in school, and about one hour in the evening for writing up notes for all sets; since 1919 certain forms in the upper school have given four and a half and six hours per week to science, in the case of scholarship candidates twelve to eighteen hours.

It must be recognized that freshness and spontaneity are imperative characteristics in this method. A boy should not, if it can be avoided, repeat a course because he happens to be weak, nor should there be any break in the continuity of the work for each boy from term to term. It must be possible for

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him in a new term to carry on from where he left off in the last one. To ensure these conditions constitutes one of the chief difficulties of organization. The changes in the various sets at the end of a term due to promotions necessitates a reshuffling of the boys into new sets, and in such a way that the above conditions are satisfied.

In the lower and middle school all the boys in any one set work at the same problem simultaneously. It has been possible to make each boy work as though he himself is the centre of the enterprise, to work as though he were the only one concerned. This is necessary if the course is to be heuristic; the individual must be the inquirer, not the class. Of course class discussion follows each bit of practical work done, the results are compared, and the combined values used by the individual either for corroborating his own figures, or to indicate possible errors in his working.

Freedom of movement in the workshop or laboratory, and talking, so long as it is concerned with the work and kept within bounds, have been found useful liberties in giving reality to the work, and are seldom abused where the master is strong and sympathetic.

There is no science lecture-room at Christ's Hospital; the boys merely gather round a table or bench for these discussions, or use a set of 'standing rails,' *i.e.*, iron standards supporting a 6-inch board

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about 4 feet high, on which the boys can rest their arms or notebooks. During the hour-and-a-half period they may assemble thus three or four times, to discuss a point arising out of their work, without trouble or loss of time. The proceedings thus become constantly a reference from experiment to reason, and from reason back again to experiment.

Notes are made by the boys as they proceed with their work, and afterward these are written up fully during evening preparation in the record book. These notes are looked over by the master during the following lesson if possible, and common errors are discussed with the class. No text-books are used in these forms, only reference books.

In the upper school it is not always possible to have sets that are homogeneous in the sense that all members of the set are working at the same problem. In this case instruction notes are distributed, and the boys having had by this time some training in how to do things can manage very well, and so learn in time to depend upon themselves, while the master passes round among them to help or criticize as may be found necessary.

The character of the staff is an important, if not the most important, factor in applying the Heuristic Method to a large school. Full agreement of principles and unanimity of aim are essential. One master must be responsible for the general direction of affairs and schemes of work. The rest must be

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prepared to work in conformity with those plans and principles—not individualistic class work, but team work, a pulling together for the sake of an ideal, so that no matter into whose hands a boy falls he will find the same spirit animating all masters alike. Individually the staff should consist of specialists in different subjects, so that when the specializing age is reached the work in chemistry, physics, biology, etc., may be taken by experts.

Needless to say, whatever measure of success attended the introduction of the Heuristic Method at Christ's Hospital that success was due to the loyal and faithful support given to these principles by all members of the staff appointed. It is also noteworthy that all who have since joined the staff and taken part in teaching on these lines have expressed their full approval of its value, and have been convinced of its applicability.

The difficulty of securing teachers who are in sympathy with the method, and temperamentally suited to the strenuous efforts demanded, is probably one of the reasons why more schools have not adopted the method.

In a school, such as Christ's Hospital, which possesses great classical traditions and a very strong mathematical side the introduction of a new subject into the curriculum could scarcely have been very welcome, and it says much for the virtues of the race that we were not only tolerated, but in some quarters

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were received with goodwill. Beyond the interest of the subject itself there were few incentives to induce a boy to work at science in those days. Retention at school depended on a boy's reaching a certain form at a certain age, and promotion at that time was in no way influenced by his science work. Hence the pressure of subjects that did matter meant a withdrawal of interest from that which did not. Naturally science had to create a place for itself in the sun, and could not expect any of the privileges and prizes that had hitherto belonged to the older departments until it had proved worthy of them, *e.g.*, the coveted Grecianship, or the privilege of retention at school beyond the age of sixteen in order to study for scholarship examinations (this age limit has been raised to seventeen since 1919).

With success in external examinations came eventually a fuller recognition of the claims of science to be treated as a serious school subject. It now ranks equally with other subjects in deciding promotions; it holds a definite place in the curriculum as fulfilling an important mission of its own.

It is evident that the range and character of the work done up to the age of sixteen years are drawn on broad general lines which are in no wise determined by the requirements of scholarship examinations. They are based upon elementary



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physics, chemistry, and biology applied to all that concerns the life and well-being of man. The object is to build a real foundation of knowledge through experience, so that, no matter what may be the occupation or pursuit of the boy on leaving school, the work done will be of service because it has aimed at growth of mind, rather than storage of information.

Experience has shown that this method can be successfully used in elementary work for classes of sixteen in number up to fifteen or sixteen years of age, and that the boys so trained have given a good account of themselves whether in dealing with advanced work at school or in competition with others in the world outside. To teach a boy what an experiment really is and what it involves from start to finish is the *summum bonum* of this early work. That once understood, a desire for evidence is created and the possibility of obtaining it realized.

The Heuristic Method has, moreover, within its sphere of influence many collateral effects. Self-expression in speech and writing is an important feature; accuracy of statement is as important as accuracy of observation—the writing of notes and their correction play a considerable part in the work. It has been found as a matter of experience that science scholars have frequently shown themselves in literary work the equals of those who specialize in classics or modern languages. This is not meant

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to imply that literary attainment is due to the science work, but rather that the method includes of necessity training in English composition, and assists to that extent the more definite literary work of the English master.

It has given to mathematical work a more concrete basis, and a power of visualizing quantities which is difficult when only abstractions are dealt with—the mathematical genius excepted, and even he is all the better for a little cold douche of experience in human limitations. It has emphasized the value of much mathematical teaching in the practical applications it makes of ordinary arithmetic processes, especially of such instruments as graphs, approximations, and the calculus, which a boy has to use when working out actual values from data obtained by himself. Ideas and suggestions started during his geography lessons lead a boy to think more broadly when working at many problems in the science laboratory. On the other hand, many geographical phenomena find their explanation in the facts and theories encountered in the science school, and being real knowledge through personal contact they afford a solid foundation on which the geographer can build. At Christ's Hospital there is developing a broad spirit of heuristic teaching in many directions. The art school has for years past led the way in this respect, not only by encouraging a boy to develop the power of expressing

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his own ideas in art, but by giving him every opportunity to find out what he can do, and what his natural genius would lead him to do best. Every effort is made to work in with other subjects, and most successful has been the co-operation between art and such studies as history, geography, and classics, not by classes, but by individuals.

The manual school has a big part to play in this scheme of mutual helpfulness; manipulative skill is a valuable acquisition, and in addition the 'trial and error' training is very direct—an educative effect not easily obtained in any other way. Thus a close and happy relation exists between the art and manual school. Designs produced in one place find an extended expression and use when applied to wood and metal in the other; the imagination is enlarged, and a clear perception of the interdependence of the various school activities is brought home to the mind of those taking part in them. The value to science of the manual training is evident, as it encourages in a boy a dependence on his own powers, and increases a confidence in, and a reliance upon, his own efforts. By the introduction of a course of practical measurements in the mathematical work of certain junior forms, the mathematical staff are showing their sympathy with one of the first principles of the Heuristic Method—viz., that a boy's experience should be the basis of his learning.

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The geography school has similarly developed the same kind of work. Individuals or groups of three or four engage on their own account in an inquiry into the geography of a particular region, being simply supplied with maps, books, and statistics for the purpose. Original essays are written, and a lecture given or paper read by one of the investigators to the class. Discussion follows, and through criticism further inquiry is undertaken. The work is full of life, and an immense amount of interest is shown.

Much stress too is placed on the assistance the science school can and does give the geographers at different stages, thus helping to bring out very clearly the broad human interest in a study that far too often appears in a child's mind to belong only, and peculiarly, to the four walls of the science building.

When seriously examined with an unbiassed and unprejudiced mind the heuristic principle must be acknowledged to offer the best solution to the problem of school education of the future. The growth of recorded knowledge, the ever enlarging field of man's activities, and the ever widening gap of understanding between the infant and that which stands for the intellectual activities of modern life, throw a great responsibility on the educator. He has to decide how to deal with the amazing, perplexing, and overpowering mass of knowledge, accumulating

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even faster than he can follow. What he selects as good for his age will be out of date, possibly useless, in a generation ahead—useless, at any rate, to any particular individual. Then why teach it? It is this useless lumber, so often miscalled knowledge, which blocks the way to an otherwise intelligent development of the child as he emerges from pupilage to make the best use of his circumstances.

The Heuristic Method offers a natural and simple solution. It throws its whole weight on to the process of mind growth rather than on knowledge storing. Information is limited to what is required for the particular purpose of the inquiry. Truly the direction of inquiry and therefore the control of the subject-matter dealt with is in the hands of the teacher or other school authorities. In this sense the information gathered is imposed from without, but—and this is the crux of the matter—the recipient will for the most part acquiesce in the supply. He will be unconscious of an external compulsion in the matter of material and only conscious of the guidance which he ultimately recognizes as necessary for successful achievement and progress. Even if any particular subject is never touched again after schooldays are over, the good habits engendered are there and must always play their part in whatever direction his activities may eventually take.

C. E. BROWNE

## XI

### THE TEACHING OF DOMESTIC SCIENCE IN SECONDARY SCHOOLS

**T**HE report on the differentiation of the curriculum for girls and boys in secondary schools has drawn attention to the fact that there may be equality of education between the sexes without identity. When this is recognized it should be possible to give Domestic Subjects a more important place in the curriculum and to include it in the various school examinations. At present it is excluded from all except the Northern Universities' Joint Board and the Oxford Senior, and although many headmasters and headmistresses of secondary schools take much trouble to fit Housecraft into the timetable, the value attached to examinations makes it very difficult to give adequate time to this non-examination subject.

To understand the reason for the long exclusion of Domestic Science from school examinations one must go back to the early days of the higher education of women. The pioneers of the movement set before themselves the ideal of similar educational opportunities for girls and boys, the

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same curriculum was followed, and the same examinations were taken. It is no wonder that during the first years of the high schools Domestic Science was unthought of and Needlework was an optional subject. It should be remembered that the girls attending these schools came from comfortable, Victorian, middle-class homes where good housekeeping was the rule. It had been the custom for many centuries for girls' education in the home arts to be given at home or in the homes of those of higher rank, and the great men and women who laid the foundation for the modern education of girls saw no reason to break this tradition. They could not foresee the enormous change in home conditions which fifty years would bring, nor yet how largely the girls' free time would be curtailed by the development of games and various school activities and by the advent of the cinema and other forms of recreation and instruction outside the home. Few of the present-day mothers are able, for various reasons, to teach their daughters the different branches of Housecraft, and few girls are willing to give the time to learn the subject at home.

If school is to be a real preparation for life, the life of the average woman who marries and has children must be considered. A knowledge of Housecraft and Mothercraft does not come by instinct, and it needs brains to run a house

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thoroughly well; and even if hired help can be afforded for all the work of the house and for the care of the children there must be some one to organize it all.

While we have been justly proud as a nation of our English home life, we must acknowledge that we have not kept pace with America in the application of invention and research to labour-saving in the home, and that the general knowledge of cooking among the people leaves much to be desired. We are still suffering from the evil results of the industrial revolution, and a revival of a knowledge of the home arts should do much to raise the standard of living and to lower the infant mortality rate. Comfort or discomfort in the home depends not only on the amount of the weekly income, but on the knowledge of how to spend it to the best advantage. The teaching of Domestic Science in elementary schools is helping toward this, but a great impetus would be given if the subject ranked higher in the curricula of secondary schools of all types.

It may be asked what are the claims of Domestic Science as a school subject and what educational opportunities does it offer? When it becomes an examination subject and in consequence is given adequate time and consideration in the school timetable and is taught in close relation with other



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subjects, we shall learn what its educational value may become.

Hitherto it has been handicapped in so many ways that it is difficult to judge what its educational value might be if given a fair field. A brief survey will show what the main difficulties have been. At present Domestic Science takes its place in the curriculum in three different ways :

1. It may be taken as a general school subject by all the girls in certain forms.
2. It may be an optional subject.
3. It may be taken by elder girls at the close of their school life.

At first Needlework and Cookery were the only subjects taken, but by degrees Laundrywork and Housewifery were added, and now many schools include some of the following subjects : The Laws of Health, First Aid and Home Nursing, Infant and Child Care, Household Management.

Two or three lesson periods are generally allotted to the practical subjects, but many of the cookery and laundry processes cannot be carried out satisfactorily unless two hours or longer can be given. In some schools the course lasts one or two years ; when a longer period is covered Domestic Science generally alternates with Needlework. In a short course it is difficult to gain a good elementary knowledge of the various crafts and any degree of skill in them. Another difficulty lies in the large

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numbers who have to do practical work at once. When the whole form works together the numbers are too large for the satisfactory supervision of practical work, and the equipment, especially the means of cooking, seldom allows for individual work. Again, the room may be unsuitable and may be furnished and used for other purposes. Sometimes the dining-hall is used or, in these days of overcrowding, the housecraft room may also be a classroom. It is difficult to have the right surroundings for the Domestic Science classes in these circumstances. It is still more unsatisfactory when the educational side of the work has to be sacrificed to the need for help in the preparation of school dinners or of making dishes which will sell well and can be finished in a short time. When Domestic Science is taken only in one or two forms it may happen that the girls are at different stages, and quick girls who have missed a form and have no previous knowledge of the subject work with slow girls who have spent two years in a form and have had several courses. Another weakness is that the work is too isolated and is not connected as closely as it should be with other school work. It is not thought as important as other subjects, and time for homework is grudgingly spared.

In spite of present difficulties many teachers are proving that Domestic Science does much to

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counterbalance the ill-effects of a too academic type of education, and that it awakens the intelligence of girls whose talents lie in the direction of practical work. It trains the girls to apply the scientific attitude of mind to the home. It teaches good citizenship in a practical way and puts housework on a higher level. There are many opportunities for showing generosity, unselfishness, and helpfulness in the practical work, and initiative, resourcefulness, and the power of independent work are encouraged. The results of carelessness and inaccuracy are seen at once, and the girls learn that whatever the job is it must be well done; in many cases the skill they have gained leads to various hobbies, and instead of wanting some form of amusement in their free time they have always some interesting occupation.

Housecraft is a popular school subject, and enthusiastic teachers obtain good results even in the short time now allotted to it. The girls bring the necessary ingredients and materials from home and take home their finished work. Many of them practise Cookery at home and are keen to show their skill in the various home arts. Odd jobbing and simple upholstery prove very attractive, and, although only a mere outline can be given, yet it makes the girls handy with tools, capable in emergencies, and anxious to gain more knowledge for themselves. The skilled teacher when confronted with a large

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class and a small stove no longer sets the girls to work in couples, but arranges sectional work so that all parts of the stove may be used at once. She plans Mixed Courses in which practical work in Cookery, Laundrywork, and Housewifery are done by different groups of girls, and thus minimizes the difficulties of equipment. This individual work makes the girls more self-reliant and resourceful than working in couples when all are doing the same thing at the same time. But, however capable the teacher is, the best results cannot be obtained with inadequate equipment, and the importance of a thoroughly good coal range supplemented by an efficient gas cooker cannot be overestimated. Cooking by oil in country schools and by electricity in town schools should be taught wherever possible.

The subject of Needlework can only be referred to in the limits of this paper, but it is closely connected with Housecraft and concerns itself with the making of simple and beautiful things for the home and for wearing apparel. The old sewing class is becoming a thing of the past. The uninteresting specimens are discarded, and the one garment growing dirtier and more unattractive with each succeeding term is no longer the sole outcome of one or more years' work. The trained Needlework teacher *teaches* Needlework. Her lessons and teaching apparatus are designed to

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make the girls use their heads as well as their hands and to create an intelligent interest in the work. The result is that from the junior forms upward a succession of useful and attractive articles and garments are made entirely by the girls themselves. The girls know the joy of accomplishment, and they leave school with the wish and the power to plan, cut out, and make things by themselves.

Raffia-work, Leather-work, Cane-basketry, Weaving, and other forms of handwork are being introduced in the schools and are helping to develop the æsthetic side of a girl's education, but Domestic Subjects have a wider aspect than other forms of handwork. On their intellectual side their value is high, and people need not fear that a knowledge of domestic work will lessen a girl's intellectual attainments. It should on the contrary encourage an all-round development. When the domestic machinery is running smoothly it is easier to study and to find time for art and music. Others argue that a girl who is going to college does not need Domestic Science, but who can tell that a knowledge of the subject will not be necessary for her one day? The Carlyle household might have been a happier one if Mrs Carlyle had known as much about cookery as she did about the classics.

Domestic Science seems to be a fundamental

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subject, a training in which should be the right of every girl. She should be prepared to take some active share in household management, and, as she no longer acquires this at home, the school must step in and teach the subject on practical and scientific lines. It seems wise to begin this teaching in the middle school, for if it is left till the end of the school course it will be missed by many girls. The muscular skill needed for the various crafts appears to come easily to girls of twelve to fifteen and prepares the way for a higher degree of skill at eighteen or later. It is good for the altruistic feelings which should develop in early adolescence to find scope in practical work which can be of service to others. When taken with other school subjects, Domestic Science helps to make girls realize that woman's work in the home requires learning as much as anything else, but that it is only a part of her life. This middle-school course might lead to more advanced work in the upper school, taken to examination standard by suitable girls. There should also be an opportunity of taking an intensive course at the close of school life, and the knowledge gained in the earlier lessons could be fitted into a practical scheme of home management. This course is already being given in some schools and forms an excellent preparation for home life. Some girls take it between school and the training for their future career, but it is

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not every girl who can spare the time and the money for this, and it frequently happens that the class is made up of the less brilliant girls who are not destined for the university or for any special training. When Domestic Science becomes an examination subject, and when those who want to specialize in it can look forward to a university course and a degree in Housecraft, this course should become more general. When it is taken before some further training it may be necessary to continue some other special study, and girls who are leaving school for home life might also devote some time to one or more school subjects. This intensive course of Housecraft should be planned on broad lines and should include Mothercraft (wherever possible coupled with practical work in a day-nursery or infant-welfare centre), Citizenship, and Hygiene, which goes beyond the home and deals with the welfare of the community. In this way women citizens may be better prepared for their powers and responsibilities.

These suggestions are tentative, and with the development of the subject in secondary schools better schemes will doubtless be found. The success of any scheme depends largely on the teachers. Many are already teaching on the lines indicated, and the standard of the Training Schools is continually rising. Raising the status of the subject

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will also tend to produce a still better type of teacher and will encourage the present ones. It should be remembered that success in this work should not be judged by immediate results, but must be looked for in the after-lives of the girls.

JESSIE D. DAVIES



## XII

### EXPERIMENTS IN SELF-GOVERNMENT IN SECONDARY SCHOOLS

SELF-GOVERNMENT in the schools of to-day may be defined as the entrusting to a group of children of full power to determine either the whole or a part of their school life. The prefect system, therefore, is the antithesis of self-government in the modern sense of the phrase. The rule of prefects is oligarchical; only a minority even of the older children exercise responsibility, whereas in the recent experiments in self-government power is given to the group of children as a whole. The duties of prefects, again, are administrative rather than legislative; the rules they enforce are for the most part not rules which they have made themselves, still less rules which have been made by them in co-operation with their fellows. They have not very much more power of choice than non-commissioned officers in a regiment. They are chosen by and responsible to the headmaster or house-master, instead of being the elected servants of the community. The motive of their obedience springs largely from the personal tie between them and their adult superiors. It is true

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that this motive is reinforced by a feeling of *esprit de corps*, which the prefects share with the other children, but this is stronger in the house than in the school and depends largely upon the impulse of rivalry. Except where, as in inter-school matches, comparison with other schools is directly possible, it may be doubted whether 'loyalty to the school' is not a sentiment imposed from above rather than a spontaneous growth. Boys at any rate often have an uneasy feeling that a good deal of the homilies they receive on duty to the school are unreal.

Self-government, then, is not the prefect system. Nor is it merely an easy method of keeping discipline. It is perhaps not quite true that no one who has been unable to keep discipline on orthodox lines is fitted to give self-government to his pupils, for the discipline of self-government is better for both teacher and children and goes less against the grain. But it is certainly true that healthy children will resent the introduction of a system that appears to them a means whereby the adult shuffles on to them his responsibility for doing the difficult work of keeping order. Self-government must never in the mind of teacher or children be considered as a device by which the latter punish one another. They will indeed punish soberly and without rancour where they have learnt the necessity of upholding rules made by themselves for a common good which they clearly recognize. But the spectacle

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of schoolboys punishing each other appears so sensational to parents and teachers accustomed to authoritarian methods that undue importance has been attached, even by some of the experimenters themselves, to what is not the end of self-government, but only a means, albeit a necessary means. Force lurks as a sanction behind the law of the self-governing community as it does in the adult community, but the more clear the consciousness of common purposes the less need there will be for punishment.

What, then, are the aims of self-government? What results should we expect from it? In the first place it should, more than any other system, develop the power of co-operative action. This is not only (as is generally recognized) an essential part of moral training: it is particularly important in a democratic state, and especially in the vast and complex 'Great Society' of which we are members. The progress and even the continued existence of modern society depends more and more upon the responsiveness of the individual to social aims and upon his capacity to make his will effective by association with his fellow citizens in remoulding laws, customs, and institutions nearer to the heart's desire.

Secondly, self-government gives a practical training in citizenship, which cannot be attained by courses on 'civics.' A real acquaintance with the machinery of government and an interest in procedure is not derived from books. To know the

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duties of chairman and secretary, how to keep and audit accounts, how to frame a motion correctly, what are the functions of committees; to express one's own opinion and to listen to and judge of the opinions of others; to have some understanding of the vagaries of 'public opinion,' and, not least, to be able to speak intelligibly and audibly to a critical audience—the essential part of all this can be secured in no other way than by practice. I have found, too, that even the simplest machinery of self-government is a help to the teacher in making concrete some of the abstract terms of social and constitutional history, and in explaining the subtleties, for example, of Cabinet government, and of the "conventions of the constitution."

Professor Graham Wallas has defined liberty as "the capacity of continuous initiative." If this be so, we need a training in the school which will overcome the apathy and "inert receptiveness" of the democracy. I have been struck by the way in which even so keen a body of working-people as a W.E.A. branch will, partly from lack of knowledge of procedure and partly from a desire to be polite to one another, go on for two or three years re-electing their officers and committees without discussion. Contrast with this the behaviour of boys of the same class in a self-governing school, where it is the general custom, when some one is nominated, for the proposer to give his reasons for bringing forward

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that name, and in the discussion which follows the suitability of one of the candidates for a particular office may be candidly questioned by his friends.

The third aim of self-government is remedial. Many of the children who enter secondary schools are in varying degrees unfree psychologically. There is, for example, the self-assertive child, the repression of whose impulses has produced an habitual attitude of hostility to rules. His emotional life is largely wasted in conflicts with authority. This type is well known to students of juvenile delinquency; but equally important to the teacher, and more difficult to help, is the product of the 'good' home and preparatory school who depends overmuch upon the praise or blame of adults. The rebel needs to learn by experience that law is not an external command arbitrarily imposed upon him, but a means toward the realization of interests and ideals which he shares with the other members of the group. He will find that to defy his fellows is both more difficult and less satisfying than to defy a master. The dependent child will acquire self-confidence by serving the community of his equals instead of the adult superior and by exercising authority.

The scope and potentialities of self-government will vary with the group or unit to which power is given. The most suitable unit would probably be a house in a boarding-school. A house is not

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too large to be governed effectively by a meeting of its members, and life in a house provides the maximum amount of different interests and activities suitable for organization by children. Hitherto, however, no experiments of this kind have to my knowledge been made, except in small schools where there is only one house and where there is hardly any distinction between the school and the house. Another type of unit, which has been the subject of numerous experiments, is the class or form. Its defects are that the purposes for which a form primarily exists must exclude from the purview of self-government much of the social life of the children which is most real to them, while in many cases terminal promotions involve a constantly changing membership. In some day-schools, however, other activities besides work—games, for example—are organized upon a form basis. A third kind of group consists of the different out-of-school voluntary organizations—such as literary and dramatic societies, field and camera clubs, gardening societies, etc. Lastly, there is the possibility of making the whole school the unit of experiment. But unless the school contains only forty or fifty children a meeting of all the ‘citizens’ would be too unwieldy for the transaction of business. Representative machinery, therefore, would have to be adopted. It is direct democracy, however, that is most educative, and it may be that representative government

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would prove too complicated, too rigid, and too difficult to understand for it to be worked successfully by children. It would seem, then, that there are less opportunities for self-government in day-schools than in boarding-schools, though if as much consideration and money were given to out-of-school activities in day-schools as are given in the best boarding-schools much might be made of the voluntary groups and also of the form as units of self-government.

The age of loyalty and of the 'team-spirit' is adolescence, but younger children at the age of transfer from elementary and preparatory to secondary schools are not out of place in a self-governing community, provided there are not too many of them. Instead of being under the authority of older children, as under the prefect system, their voice can be heard and their vote counts equally with that of their elders.

The exact scope of self-government cannot be predetermined. It must depend upon the circumstances of a particular school and upon the antecedents of the children. As the experiment develops the sphere of responsibility will naturally grow larger, but its extension should depend upon how far the creative energies of the children can be evoked by the realization, not necessarily fully conscious, of a common end. What is essential from the first is that the children should have the power to make

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laws, to carry them out, and to enforce them. However small their initial responsibility, it should be genuine, and they should be able to make mistakes. Children have been found to take readily to the regulation by themselves of such common interests as games, indoor amusements, orderly behaviour at meals, the maintenance of quiet in the library, the tidiness of dormitories and changing-rooms, the beautifying of rooms by pictures and flowers, etc. They can see, too, the value to themselves of a 'meeting,' which not only makes rules for these common interests, but acts also as a committee of grievances, where anti-social conduct may be dealt with by public opinion after full and free discussion. Injustices may thus be remedied which otherwise, owing to the dislike of 'sneaking' to a master, might never have been discovered, or which would have been dealt with by the crude method of might enforcing right.

What of the sphere of school life not covered by an experiment in self-government? There must, it would seem, be a kind of 'dyarchy' or division of responsibility between the headmaster and staff on the one hand and the children on the other. Such a division need not, I believe, make self-government any the less real. The headmaster, for example, may lay down that on grounds of health all boys must take a prescribed amount of exercise on certain days of the week, leaving it to



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the 'meeting' to determine which days shall be devoted to cricket, which to scouting games, whether there shall be one day entirely free from organized games, and whether it is in the general interest for cricket to be compulsory on certain days for all whom the games committee may call upon to play. Such a division of power is logical and easy to understand. There cannot, indeed, be a complete divorce between the province of the headmaster and that of the 'meeting.' The headmaster and his staff must be ready to listen to criticisms by the children, even though they retain the right to disregard these. And it will avoid a conflict of loyalties if the headmaster, instead of ruling through prefects, entrusts specific duties to officers appointed by and responsible to him, and if these officers have no disciplinary powers except those incidental to the performance of their duties.

The reality of self-government, its value as 'civic' training, and the scope of its operation will be greatly increased if it can be given an economic basis. In a recent experiment in which I took part the governors of the school agreed to grant the boys an allowance every week, and parents were asked to limit the amount of pocket-money given each term. For their part the boys undertook various financial responsibilities for which the governors had previously been liable. They were to supply themselves with pens, pencils, etc., to make good minor

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breakages, to provide newspapers for the library, and to purchase or replace all materials for indoor or outdoor games which they might desire in the future. From this beginning there arose the voting by the 'meeting' of weekly taxes to meet common expenditure. A gramophone and records for dancing were bought, a quiet room for study was furnished, and a fund was started to give boys from rural areas who had never seen a large town a week in London. Estimates are presented terminally by the different committees, a finance committee assesses the amount of the necessary taxes, there is a bank managed by a boy banker, accounts are regularly audited, and a school shop has been opened.

The machinery of self-government should be simple. In the case of the particular experiment mentioned above, there is a weekly 'meeting,' which has both legislative and judicial functions. It is presided over by a boy chairman, and there is a boy secretary who keeps the minutes. Side by side with the officers appointed by the headmaster are the executive officers elected by the 'meeting,' such as the captain of games, the warden of games materials, the banker, the supervisors of changing-rooms, etc. In addition to the finance committee there is a games committee, a house committee, and, in the winter months, an entertainments committee. At first the 'meeting' had a master as chairman; there is a danger that until children become expert

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in handling business proceedings may drag, and the members will be bored. Originally, too, the committees each included a member of the staff, appointed by the headmaster to act as treasurer and as general adviser without a vote. Now the committees run their own affairs.

A practical difficulty in self-government often raised by inquirers is the amount of time required. There must, indeed, be sufficient leisure out of school for committee work, but an hour or an hour and a half in school time for the weekly meeting, with occasional emergency meetings out of school, suffices for the business of the 'meeting.' Time is gained, too, by the elimination of friction in the general running of the school.

What is the place of the staff in a self-governing community? If they attend the 'meeting,' and in so far as they are affected by its decisions, they should have an equal right with the children to speak and vote. Nor is it anything but natural and proper that their superior age and experience should carry weight in the deliberations. But there may be too large a proportion of adults in the 'meeting,' and, especially in the initial stages, there is always a tendency to follow their lead blindly. Under a system of 'dyarchy,' moreover, since there must often be questions discussed at the 'meeting' which do not lie wholly within the sphere of self-government, it is perhaps easier for the children to

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adjust their attitude and powers to the claims of adult authority, if the latter speaks through a single representative. He need not necessarily be the headmaster. On the other hand, where an experiment in self-government is being made for the first time, it would be difficult, unless the staff were members of the 'meeting,' for them to understand the new conditions and to adopt the right attitude toward the children. Attendance at meetings has been to some of us the most important part of our training as teachers. What is clearly incompatible with self-government is the exercise of 'personal influence' by adults to effect the changes they desire.

The manner in which an experiment in self-government is started will very much affect the likelihood of success. Self-government should not be imposed or suggested from above: it should arise as far as possible spontaneously. Thus the 'meeting' should grow out of informal gatherings of children and staff to discuss some common interest.

There is no space in this article to discuss fully whether self-government should normally extend to the work of the classroom. Where there is a traditional attitude of hostility toward work and toward the teaching staff, and where the life of the children out of school is over-organized and rigid, there is a *prima facie* case for some kind of self-government in the classroom. But if the relationship between children and teachers is friendly, if

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the children want to learn, and if they have plenty of freedom out of school, it is doubtful whether it is necessary or desirable for self-government to extend to work. Some subjects, of course, lend themselves to co-operative group work. In others, however, the motive of learning seems primarily individual, and the Dalton Plan, or some modification of it, is most suitable. The criterion in each case should be the maximum of benefit to the work. In-school and out-of-school activities, however, cannot be kept in watertight compartments. No scheme of self-government covering the life of the children out of school is likely to be successful if the work of the classroom is on old-fashioned lines—if there is discipline for discipline's sake, and the usual paraphernalia of marks, competitive orders, prizes, and punishments.

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