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MODERN DEVELOPMENTS IN EDUCATIONAL PRACTICE

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THE NEW TEACHING

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THE NEW TEACHING

CHAPTER I

THE NEW TEACHING

By JOHN ADAMS, M.A., B.Sc., LL.D.

We may not like the popular fashion of tacking on the adjective *new* to all sorts of words, and speaking of the new theology, the new politics, the new psychology. The more severe among us may even find pleasure in demonstrating that the term when used in these *clichés* almost never describes anything really fresh ; that the more things appear to differ from their older forms the more they are the same. Still, the popularity of this use of the adjective must have a cause, and it may be worth our while to see why it affects teaching. Whether there is a new teaching or not may be an open question, but the mere fact that people are talking about it shows that it is at least desired. It is when people are tired of the present form of anything that they begin to talk of a fresh form. True, there is a type of mind that is eager for change in itself, merely as change. Some people do not think they are getting on unless they are making obvious changes in the things around them. No doubt progress in the last resort does

necessarily imply change, but it does not at all follow that this change should be of the dramatic sort that satisfies the popular taste.

Fortunately our profession is safe from the danger of violent change coming from within. Our defect is generally supposed to lie in the opposite direction; as a body teachers are said to be averse to change. Professionally we are a conservative folk, not given to running after the strange gods of mutation; we are only too willing to keep on in our old ways. But we are also a profession with a conscience of some sensibility—a sensibility that certainly does not diminish with the increase in the proportion of women who enter it. Most of us want to be up to date in our methods, and young teachers are particularly keen to "keep abreast of all the latest educational developments," if we may borrow the phrase so dear to the heart of the writer of testimonials. They are always on the look out for some new thing, and their early career is sometimes marked by a surprising series of quick changes. The outcome is sometimes a sense of doubt and despondency. Each fresh improvement seems such an advance on what has gone before that by and by the young teacher gets a little frightened at his progress because of the shade into which his present brightness casts his previous work. The disturbing question forces itself upon him: If my past methods are so inferior to my present, may it not be that my present will look contemptible when I have reached a still higher level? Then comes the doubt: Am I really making progress after all, or am I merely changing without necessarily going forward?

Take the case of the teacher who at forty-five comes

to the conclusion that his early methods were bad, and that only by gradual steps has he reached one that is, if not quite satisfactory, at least nearly so. It is natural that he should wish to communicate his discovery to those who are now at the stage at which he was when he used inferior methods. Young teachers are apt to get perturbed when such a teacher deals faithfully with them. But what they must realise is that at each stage in his progress this experienced teacher has had the same impression that he now has about his present and his past professional skill. He has always been just on the point of attaining a method that will be really satisfactory. He never is, but always to be, blest with a vision of technical perfection. In other words, the man is a living and wholesomely developing organism. His methods at any particular stage are quite suitable for him *at that stage*. He cannot, however, remain permanently satisfied with them, because he is himself advancing. It does not follow that his method at forty-five is absolutely better than his method at twenty-five ; but it is better *for him*. No doubt it may also be absolutely better, as indeed it should be in these days when methods are intelligently studied, and progressive teachers are willing to learn from each other, and to take advantage of all the help that our educational periodicals now offer. But in any case the method he has developed for himself by intelligent experiment and experience is the best for him.

The young teacher, therefore, need not be oppressed either by his less skilful past or his more skilful future, so long as he is going on developing. Changes of point of view and of method during a teacher's career give evidence of vital force. The man is not

stagnating. Each change as it occurs is an indication that he is reacting on his own environment, modifying it to meet his own needs and the needs of his pupils, behaving, in fact, as a healthy organism should. The man who begins with quite a respectable set of methods, and proceeds to apply them with mechanical uniformity all through his professional career, is soon practically dead to all progress. His methods may have been good at the beginning, and may not in themselves be bad at the end; but if they really suited him at the beginning, they cannot quite fit his case at the finish. We must change with our times. Naturally this is no argument for mere change —change for its own sake. Rather than walk like their forefathers some people would almost prefer to go on all fours. Without falling to this depth, the teacher may well become suspicious of his professional vigour when he finds himself unwilling to criticise and modify his methods.

What is true of the individual teacher is also true of the profession as a whole. Each generation evolves methods suited to its special needs. No doubt the changes in method that take place from time to time do not always introduce novelties. Indeed, some of our contemporary historians of education take a special pride in tracing almost all our recent innovations to plans suggested long ago by masters of the craft. The history of medicine indicates that there is a certain periodicity in therapeutic methods, and something of the same kind may be made out in the history of teaching. But this does not imply that there has been no real progress. Each reappearance of an old method finds it treated on a higher plane. We may not have made as much progress as we might have

done, but few critics will deny that we have made definite advances in teaching methods since the days of Plato and Aristotle, however much these giants may overtop us as individual teachers.

It will be observed that our subject is the new teaching, and not the new education. Naturally they cannot be altogether separated. It is conceivable that we could educate without making use of what is technically called teaching, but it is impossible to teach without educating. We cannot communicate knowledge without to some extent modifying character, and to that extent educating. But it is highly desirable on occasion to limit our attention to the problem of communicating knowledge, without, for the time being, considering the educational effects. In this book, for example, we are concerned with the teaching of the various subjects of the school curriculum, and we may fairly claim to be excused from discussing the educational values of the different studies, though the writers will, wherever necessary, indicate the educational bearings of the methods they describe. Their purpose is to give as full and as accurate a description as they can of the actual conditions under which instruction is given in the subjects they have undertaken to treat. As experts, they give an account of the latest developments of the teaching of their subjects, and in particular they deal with material aids—books and apparatus of all kinds—available for use in the class-room. Each expert will, of course, have to deal with the methods of his subject as one aspect of the new teaching; but in order to avoid overlapping and repetition it will be necessary to gather up here the general characteristics that warrant us in speaking of a new teaching at all. Most readers

of this book will have a special interest in one or more subjects, and will naturally turn to the chapters where these are treated ; but, as a preliminary, readers should consider the general characteristics of teaching as found in our present-day schools. They will find when they turn to their special subjects that abundant illustrations of these characteristics are provided.

Is there, then, a new teaching ? Are there such marked tendencies in the school work of the present day as to warrant us in using this term ? What follows is an attempt to show that "yes" is the answer to both questions.

To begin with, the profession has come to self-consciousness. In the experience of each individual there comes a time at which he begins to examine himself, to compare himself with others, to realise that he is a separate entity, a self. It is difficult to fix in the case of the individual the exact time at which this consciousness of self makes its appearance, and the same difficulty is experienced in dealing with collective units like a profession. But there are many indications that justify the claim that at the present moment the teaching craft has just attained, or is just attaining, a consciousness of its corporate self. When the N.U.E.T. and the Head-masters' Conference came into being almost at the same time, we had the beginning of the process that has resulted in the present Teachers' Registration Council, which, to some degree at least, focuses the interests of the more than two hundred and fifty educational associations that find a place in the catalogue annually published by the *Journal of Education*. To-day, more than ever before, the profession is aware of its own existence. It has become consolidated ; it has developed a strong craft

feeling; it has begun to take itself in hand to see what it can make of itself.

While this is true on the social and economic sides, it is no less true with regard to technique. On the one hand, the elementary teachers are rising above the somewhat narrow conception of method that used to fetter them; on the other, the secondary teachers are developing a sympathetic understanding of the possibilities of a rational technique as compared with the light-of-nature modes of working with which their predecessors were proud to be satisfied. An excellent indication of the new spirit is to be found in the large number of associations formed for the specific purpose of promoting the scientific study of the teaching of the various branches. Practically every subject that finds a place in the school curriculum has now its separate society. When we add to all this the superabundance of conferences on teaching, we feel that we have made out an unanswerable argument for the thesis that the profession has reached self-consciousness in the good sense of that term. It may indeed be held that we have proved too much, and that, in view especially of the plethora of teaching conferences, the profession may be said to be self-conscious also in the bad sense. As an extenuating circumstance it may be urged, somewhat shamefacedly, that all teachers have not acquired the conference habit.

Indeed, the evidence tends to show that the majority of teachers do not trouble themselves about the development of the technical aspects of their professional work. Once they have acquired, either by training or by experimenting by trial and error on their first classes, a sufficient mastery of the practical details of their work, they are content to rest upon their oars

and go on through life living upon their small paid-up capital of technical skill. It is the more intelligent, or at any rate the more conscientious, minority that originate and carry on professional societies and conferences. There need be no hesitation in confessing this here, for the very fact that a teacher reads such a book as this demonstrates that he belongs to the conscientious minority. No great tact need be exercised to avoid hurting the feelings of the careless majority, for there is small chance of these pages ever coming to their notice. There is the consolation that it is the minority that determine the line of progress. What they decide to do gives direction to the general movement, and teachers are to-day modifying their methods as a direct result of the conclusions reached by meetings and conferences at which they have never been present, and in which they have no interest. The society-forming and conference-attending group of teachers make up the growing point of the profession. Thanks to their activities the leaven of progress is working throughout the whole teaching body. The important point for us is that we have abundant proof that teachers as a class think to-day of the technique of their work in a way they have never done before.

Curiously enough, the first result of the spread of self-examination among the teachers is a certain doubt about the need for the present amount of teaching. There is an uneasy feeling among the more thoughtful members of our craft that perhaps we are teaching too much. It is beginning to be realised that in schools we are obsessed with the conviction that "nothing of itself will come," and we must still be teaching. Even in ordinary life there is a superabundance of what

Professor Raleigh calls "dull, explanatory persons," who never know when to stop their tiresome expounding; and in schools it is only natural that this vice should be rampant. Accordingly, it is a hopeful sign to hear teachers speaking favourably of "wholesome neglect," though the epigrammatic form suggests the false impression that the antidote to overteaching is simply the cessation from teaching. What is really wanted is a better manipulation of the incidence of teaching. In particular, the relative activities of teachers and pupils have to be revised. In the new teaching it is recognised that the pupil must play a more vigorous part than in the old. This primary principle shows itself in many of the popular demands made by what it is fashionable to call educational reformers.

The public is becoming insistent on the need for training pupils in initiative. It is complained that young people are being turned out of our schools who can perhaps carry out orders[1] with a fair degree of success, but have no independence of judgment and no power of originating new developments or modifying instructions in such a way as satisfactorily to meet unexpected changes of conditions. Corresponding to this external criticism there is a growing insistence among professional critics on the need to treat pupils as not mere recipients, but as active participants in the work of school. We are told that more and more must be thrown upon the pupils themselves: they must be made increasingly responsible for their own education. With all this no fault need be found, and

[1] Though even this is challenged, as is shown by the complaint of employers who report to the London County Council that there are very few ex-secondary girls who can take ordinary instructions or write a letter.

it will be admitted indeed by those who know best the actual work done in our schools that this point of view is more honoured in practice than outside critics are aware of. It may be remarked in passing that one of the minor trials of the more alert teachers of to-day is to be admonished by press and platform to do things that they have been doing for years.

The success of the responsibility system is hampered by the elementary fact that a great proportion of pupils do not *want* to learn. Outside critics too often write as if schoolboy nature had changed, and pupils no longer creep unwillingly to school. The increased public interest in education is not without its effect on the tone of the pupils, but it is not even yet sufficient to change juvenile human nature. Sometimes it is taken for granted that the pupils are eager to get as much good as they can out of the school course, and all that is needed is to have the teachers convinced that more freedom should be allowed to the initiative of the young folks. The practical teacher knows that a large part of his time is taken up in devising means to stimulate them to take any active share at all in school work. But even so, the newer methods are quite different from the old. The progressive teacher no longer assumes the attitude of one who seeks to impress his personality on his pupils, and to stuff them with the knowledge that he considers valuable. He recognises that the majority of his pupils do not desire to work, and is aware that his problem is to put them in such a position that it is unpleasant to be idle, and attractive to be active. He arranges all the school work accordingly, and in so doing comes under the lash of M. Emile Boutroux, who resents all attempts to modify the environment in such a way as to produce

by indirect means the results formerly attained by direct. For pedagogy M. Boutroux has undisguised contempt.[1] Everything must be straightforward as in the old education, and all manipulation avoided by which ingenious pedagogues seek to work upon the characters of the pupils without their knowledge. He need not greatly concern himself on this score, as only too few practical teachers have time or opportunity to undertake this manipulation; but he must reconcile himself to the fact that our new teaching does recognise the need of taking steps to reach indirectly the goal of stimulating the individual activity of the pupils.

Whatever means are taken to secure that the pupil shall do his own work, it is a principle of the new teaching that the school must take account of his point of view and his peculiarities. To use one of Dr. Stanley Hall's verbal indiscretions, the new teaching is *paidocentric:* it focusses its interests rather on the pupil than on the subject he studies. Let there be no mistake here. The spread of specialism in teaching bears eloquent testimony to the attention paid to a thorough mastery of the subject-matter to be taught. At no time was "a knowledge of the subject" more highly regarded among efficient teachers than at the present moment. But this respect for knowledge is now balanced by a respect for the means of presenting it in such a way as to minimise waste of time and effort in the process. It is recognised that in the ultimate resort a subject must be approached from the standpoint of the pupil, rather than of the teacher. Hitherto, whatever interest there was in this matter of approach had its origin in the teacher's relation to the study. Everything was regarded from his point of view. Now

[1] See his *Education and Ethics:* Introduction.

we have books[1] written specifically from the standpoint of the pupil.

No doubt this line of investigation, this consideration of how it strikes the individual pupil, is as yet at a very rudimentary stage. We have much to learn about how the pupil looks at things; but the problem has been clearly stated, and its importance recognised, so the result cannot but affect in a very definite way the activities of the new teaching. In point of fact the application has already begun, for we have a report[2] from Principal Carl H. Nielson, of Vallejo, California, describing a system in which one period of forty-five minutes is set apart for each subject once a fortnight for the express purpose of giving instruction to the pupils in how to study that particular subject at the stage at which they find themselves. Principal Nielson reports that the natural tendency is for the teachers to treat this additional period merely as some extra time for the ordinary teaching of the subject. But he has got them to realise the importance of the new point of view, and they loyally carry out his idea, while the pupils find so much benefit from the change that they do not complain, though it involves an additional period of forty-five minutes every school day, since every subject must have its turn.

All this concentration of attention on the individual pupil's needs necessarily suggests that the new teaching must adopt a fresh attitude towards the class system. Can we combine class teaching with the individual attention that is now claimed? A friendly

[1] F. M. McMurry's *How to Study*; Lida B. Earhart, *Teaching Children to Study*; John Adams, *The Student's Guide*; W. H. S. Jones, *How we Learn*; W. C. Bagley, *Craftsmanship in Teaching*, chapter viii.

[2] See *The School Review* (Chicago) for March 1917.

foreign critic supplies a starting point for our discussion when he says that from the individualistic point of view "the school exists merely because it is impossible to provide each pupil with a private teacher."[1] We have to note in the first place that the remark applies to teaching, and not to education in its wide sense. The strength of our traditional English education lies, in fact, precisely in the group system that de Hovre's saying would seem to disparage. All that is most characteristic of our public-school education is based upon team work, and therefore demands the group system. The school is thus essential to the English scheme of education; but it does not follow that it is essential to the English scheme of teaching. So far as our public schools are concerned, the team work that is of the very essence of the educational system becomes little more than a *pis aller* when it comes to teaching. The class is an economic device that enables the master to deal with larger numbers than he could otherwise manage. Very commonly the class used to be treated as a mere group of individuals, each of whom was dealt with separately, though, for the sake of convenience, they were all collected together in one room.

While it was possible in the secondary schools to treat the individual pupils as separate units, the large numbers in the elementary school classes made it imperative that in them there should be real collective teaching. The class had to become the unit, and each of the pupils had to fit himself as well as he could into the general scheme. This had its obvious disadvantages, but it also had its compensations. The overburdened class teacher is apt to think that the

[1] Dr. Fr. de Hovre, *German and English Education* (1917), p. 39.

private coach has everything in his favour. There is a best way of approaching every individual boy in the process of instruction, and the private coach is at liberty to find out that approach and use it, whereas the class teacher has to adopt an approach that will meet the needs of the average. Most teachers are willing to accept the position that under all circumstances the class is necessarily a compromise : that we must, to some extent at least, sacrifice the individual to the group. But this leaves out of account certain positive advantages that belong to class teaching. The stimulation supplied by competition may be claimed to belong rather to education than to teaching, though this is one of the points at which it is very difficult to mark off the two spheres from each other. In any case the very fact that the class teacher has to deal with many pupils at the same time forces him to vary his presentation, to approach matters from more than one point of view, to supply a particularly wide range of illustration.

In order that the duller part of a class may fully understand a lesson, much more material must be used than would be necessary in the case of the brighter pupils, and to this extent it might be assumed that the class system is wasteful in their case. But though the cleverer pupils may understand something on its first presentation, it does not follow that any further exposition and illustration are wasted. At the end of the lesson the dullest pupils have reached the minimum mastery of their material that can be accepted as satisfactory, but the abler pupils have gained a great deal from having had to view the matter from so many different points of view, and from having presented to them so many different illustrations. Their

experience has been enriched, for they have been able to assimilate all the material that has been presented, whereas the duller pupils can assimilate only those parts that happen to meet their particular needs. For example, the teacher uses four different illustrations. Of these, one or other will probably make the proper appeal to the duller pupils, while the remainder may produce no effect upon them. With the brighter spirits, on the other hand, every illustration will tell, with a corresponding enrichment of his knowledge.

In addition, we must not lose sight of the fact that on the intellectual side there is, or at any rate there may be, a collective spirit as pronounced and as stimulating as on the athletic: there may be a class spirit as well as a team spirit. No doubt most of the work of learning is an individual matter. Each must learn for himself. Yet in the hands of a skilful teacher occasions are continually arising in which the class as a unit is roused to a certain enthusiasm: there is an intellectual glow in the reactions that go on between teacher and pupils; the class consciousness is roused and there is genuine collective work. So it comes about that even in cases where the numbers are so small that the pupils can be dealt with as mere individuals, the skilful teacher will every now and again stir up the class spirit and treat his pupils as a collective unit. It is a mark of the new teaching to discriminate between these two attitudes, the individualistic and the collective, and to find a place for each.

Beginning at the youngest stage, we have in the Montessori system a scheme in which the collective spirit is at its minimum. This is probably as it should be, if we are to follow the parallel of team work; for

experience has shown that a certain maturity must be reached before youngsters can rise to the spirit of concerted action in which the individual loses himself in his "side." But Dr. Montessori probably goes too far when she maintains, as it is reported that she does, that she has rung the death-knell of class teaching. No doubt in her system the collective spirit is minimised; indeed, at the beginning at any rate, it was practically ignored. But critics, so far from regarding this as a merit, treat it as a defect. It is pointed out that one of the main advantages of school education is lost to the children who are brought up on the purely individualistic principles of the scheme. It may be that in the Kindergarten there is an excess of concerted activity, but in the Montessori school there is, or at any rate there was, certainly a defect. In point of fact, it is impossible to exclude the collective spirit in any system of education in which we deal with a group of little children gathered into one room. Marching and singing and dancing are of the very essence of life where youngsters are taught together. The Montessorians themselves are recognising the need and value of collective work, and in her later writing the founder herself claims that in some of her school exercises it has full scope.

Speaking of the characteristic "silence game," she maintains that: "This exercise develops very definitely the social spirit,"[1] and indeed goes the length of claiming that "No other lesson, no other 'situation,' could do the same." Without conceding the monopoly thus claimed, a critic may cordially agree that in this game we have a "demonstration of the co-operation of all the members of a community

[1] *Dr. Montessori's Own Handbook*, pp. 78, 79.

to achieve a common end." It is obvious that this recognition of the collective spirit is made on the educational side, and it is quite likely that Dr. Montessori still objects to the class as a *teaching* unit. Indeed, like Rousseau, Froebel, and many others, she is not enamoured of teaching in any form. In all schemes involving the principle that the pupils teach themselves under the general direction of a master or mistress, there is not much room for the class. Yet the Kindergarteners, while insisting on the self-activity and individuality of the child, retain the class as the unit of teaching. But in order that there may be the proper co-ordination of individual and collective work, they maintain that the class must be small. One would naturally expect, therefore, that the Montessori system would demand a still smaller class. But this is not so.

A London teacher, who was aided by the London County Council to take a course under Dr. Montessori at Rome, was supplied with certain questions to which she was to get answers if possible. One of these was, "For what number of pupils can a Montessori teacher be responsible, if she is to do effective work?" Dr. Montessori's reply was surprising. She said that, with the aid of an "assistant" (by which term is meant not an assistant teacher, but a young girl—one of the "motherly" sort of which we hear so much—who could look after the physical needs of the children), a teacher can carry on satisfactorily the work of a group of forty-five children. In discussing this number with Montessori teachers in actual practice—I was careful not to let them know that the estimate came from the highest source—I found that they were generally inclined to accept it as reasonable

Asked how they accounted for the greater numbers the Montessorians were inclined to take as compared with the Kindergarteners, they gave the interesting explanation that with small numbers the children in Montessori schools were inclined to want to do the same things—to imitate each other; in fact, to develop the class spirit and become a social unit.

This unexpected estimate of the number of individual separate-working pupils for which a supervisor can be responsible has an important bearing on the problem of the extension of the Montessori organisation into the upper school. This extension has been enthusiastically taken up by Mr. Norman MacMunn in his *Differentialism: a New Method of Class Self-teaching*. In his own subject of Modern Languages he found that the amount of time individual pupils had for actual practical work during a school period was ludicrously inadequate, so he divided up his classes into pairs of pupils who alternately became pupil and teacher to each other. Two sets of books are provided, one the teacher book and the other the pupil book, the boys using now the one, now the other, according to the part they play at the time. There is something appalling in the thought of how French pronunciation would fare after being dealt with faithfully according to the lights of a pair of enterprising schoolboys; but there are possibilities in this development of an old scheme of co-operation. Other subjects there are in which the method involves perhaps less danger than in pronunciation, and it is for experts to determine how far the scheme can be applied in their departments.

The whole question of partnership[1] in teaching

[1] See Mr. MacMunn's *A Path to Freedom in the School*, Part II.

raises important issues with regard to the permanency of our existing system of class instruction. At present there is certainly too strong a prejudice in favour of uniformity of results from our class work. Teachers are prone to set up the ideal that all their pupils shall do the same things in exactly the same way. The tendency is naturally more marked in elementary schools, since in them the need for labour-saving organisation is imperative. The notion of drill is prominent, even yet, and formerly was all powerful. Movements had to be executed "by numbers." A writing lesson sometimes began by numbers going up as high as ten, each number indicating a movement towards the final result of making the first ink character in the copybooks. Pens had to be held in exactly the same way by all the pupils. This craving for uniformity had really two bases, though they were not clearly separated in the minds of the teachers. These are (1) the need for smooth working of the class organisation; (2) the need for acquiring the very best way of carrying on any school work.

The first of these reasons is as operative to-day as ever before. Anything the teacher can do to reduce waste of time and to ease friction is to be encouraged, even if it involves a little loss of the pupils' freedom of action. I have heard it seriously discussed at a meeting of American teachers whether pupils should be compelled to keep time to the school music while marching to their places. There were tender souls who argued that this compulsion might do serious harm by interfering with the self-expression of the youngsters. In England, at any rate, we may take this matter as not open for discussion. Even when there is room for argument our tendency is always in

favour of a reasonable amount of uniformity, where no evil effects can follow. For example, a teacher fixes upon a certain form in which an exercise is to be set down, say in grammar or geometry. It may well be that this form is not absolutely the best, but the teacher is entitled to insist upon all his pupils adopting it, since this uniformity is a means of making his work more manageable. If each pupil is permitted to set down his results in whatever way pleases him best, there may be a slight gain in self-expression, but not sufficient to balance the additional labour thrown upon the teacher and the interference with his mode of correlating results. Wherever it is possible, however, the pupil's preferences should be respected.

This brings us to the second basis on which the claim for uniformity is founded. Here we come upon what may be fairly called the expert's fallacy. We are all apt to get wedded to the particular way in which we do things in which we claim special skill. No doubt it often happens that our way is really the best way, and sometimes we are able to demonstrate that this is so. When this is the case we are entitled to insist upon our pupils following our method exactly. But too frequently we are tempted to make our pupils follow our lines merely because we like those lines and find that they lead to satisfactory results. We are all familiar with the method of the teacher of the violin or piano who first asks his new pupil to show what he can do with the instrument, and then tells him that the first thing he has to do is to forget all that and begin at the beginning on the true plan. It has been remarked that the hardest lesson for the clever teacher to learn is to let the clever pupil be clever in his own way. To make a boy adopt a particular form of exer-

cise because it is the most convenient for the school, and is not in itself bad, is legitimate enough, but to make a boy adopt a particular method which he dislikes in favour of one that cannot be shown to be intrinsically better or more convenient in practice, is educationally unjustifiable. The new teaching recognises the right of the pupil to do things in his own way within reasonable limits.

On the whole, the modern tendency is to revert to something not unlike the conception of a class entertained by the highest type of public-school master. Within the limitations already mentioned, the old elementary-school conception is now discredited, even in the elementary schools, and the problem that remains is how far a satisfactory compromise can be effected between the ideal of individual instruction and that of teaching pupils collectively. Curiously enough, the experience of the Montessori people coincides with that of the public-school master. In both cases the instruction is mainly individual, though carried on in the presence of other pupils who are not at the moment actively employed ; and in both cases there is a tendency for the pupils to resolve themselves on occasion into a genuine class unit. The master with his small advanced class very often dealt with them pupil by pupil. The others looked on, no doubt, and there was always a sort of mild collective reaction. The master was to some extent teaching the class through the individual. Now and again, however, especially when the master was a man of personality, there would rise a vigorous collective spirit that showed itself in the rapid give and take of question and answer. In ordinary class teaching, in fact, there is always a sort of rhythm of

collective reaction—a kind of alternation of integration and disintegration of the class spirit. Sometimes the teacher deliberately arranges the alternation. He demonstrates a principle in Mathematics on the blackboard, for example, and then sets his pupils to work out certain exemplifications. The first is the integration beat, the second the disintegration beat. But the same is true in the ordinary course of class teaching, even when the teacher thinks the class spirit is awake the whole time. No doubt it is never entirely absent, but it has its fluctuations, and the wise teacher does not fail to recognise the alternations.

The tendency in the new teaching is to recognise definitely the two kinds of teaching, the individual and the collective, and rather to emphasise the individual. It is at present an open question whether it is possible to revert with safety to the method of the old Scottish parish school in which pupil after pupil came up to the master's desk, did his little bit of individual work, and then went back to carry on his studies on his own responsibility. The development of the specialist system, even to some extent in the elementary schools, will remove the need for such an exaggerated form of individual teaching. In the future we shall probably have the class system pretty much in the same form as it now exists in secondary schools, but there will be an increase in the disintegration periods, and in all probability this difference will be deliberately recognised: both teachers and pupils being aware of the change from the disintegration to the integration period, or the other way round.

One important effect of the changing view of the nature of class teaching will be the modification of

the text-books. Time was when in the case of the vast majority of teachers the text-book dominated the situation in many subjects. It held the position of authority, the teacher being regarded, and regarding himself, as its exponent. As in the case of the original "texts" in Law or in the Classics, the teacher's business was to make plain to the pupils whatever was set forth in the text-book, whether the subject were mathematics, science, or history. Too often he became a mere examiner, whose function it was to make sure that the pupils had mastered the contents of the prescribed books. It was possible for parents to complain, without too wide a stretch of the truth, that the pupils had to do the learning at home, or at any rate out of class hours, and that all the teacher did was to see whether this learning had been successful.

The inevitable reaction towards the beginning of the twentieth century deposed the text-book from its place of power. The teacher was called upon to do his own teaching, to supply his own material, to get along with a text-book that was merely an aid, not an authority. Sometimes, indeed, the revolt went so far as to eliminate the text-book altogether. In the teaching of history, for example, the teacher was expected to prepare his own material and to present it to the pupils in the form of a compromise between a lecture and a lesson. As any one versed in professional human nature would expect, the bias was all towards the lecture; so we need not be surprised to find that the critics changed their ground, and said that whereas under the old conditions the pupils had to learn their lessons in private and say them off to the teachers, under the new the teachers

learn their lessons in private and say them off to the pupils. In actual practice the violence of the change was masked by the manipulation of note-books. As the teacher said off his piece the pupils had to take notes, usually under official guidance, and in this way each pupil made for himself a text-book of his own. Put in this crude and disagreeable way the change hardly seems an improvement, but in reality it marks a great advance. It is one thing to "get up" in a more or less mechanical way the material to be found in a text-book, it is quite another to learn a subject from the actual teaching of a living person and then to set down in clear notes the matter one has mastered.

No doubt everything depends upon the nature of the teaching, and the mode in which the note-taking is carried on. A mediocre teacher will probably do better work by using a good text-book than by making up a sort of temporary text-book of his own, which is afterwards to be boiled down into the manuscript text-books of his pupils. On the other hand, it is almost an ideal system to have a capable teacher passing his subject-matter through the alembic of his mind, transferring the results to the alembic of the pupil's mind, and finally getting it crystallised out into what ultimately appears in the pupil's note-book.

With regard to the actual note-making, the teacher is in a strait between two dangers. If he allows the pupils to exercise their own discretion and set down matters as they appear to them, there is a strong probability that the note-books will be full of errors in mere facts, and will certainly not present matters in their proper order or in their true perspective. On the other hand, if the teacher prescribes the order and dictates the form, there is the danger that the

pupils will lose the fundamental advantage promised by the system, which is the encouragement of initiative and self-activity. In itself this is no new problem. Those masters of teaching technique, the Jesuits, had full discussion long ago of the merits and defects of the "dictation" of notes. Their final decision was against dictation, and the modern teacher will do well to give their decision due weight. To be sure, the modern notes are not quite of the same kind as the Jesuits had in view. The abundant supply of of text-books has radically modified the problem: the modern teacher has the alternative of modifying the text-books or giving them up altogether.

There are two main kinds of text-books, according to the attitude the author adopts. One set are written from the point of view that regards the subject-matter alone. The author sets out to present his material in the most logical order possible. He is concerned with his facts and with their relation to each other and to the whole subject; he does not trouble about how they will strike the person who reads the book. Let the teacher see to that. Others put in the forefront the consideration that the book is to be read by pupils who have a certain amount of previous knowledge, and no more; who have a certain average mental capacity; who work under certain more or less known conditions. Naturally this type of text-book must also take account of the logical arrangement of the subject-matter, but the writer of such books is ready to sacrifice logical arrangement if the best mode of presentation to the pupils he has in view demands the sacrifice. Naturally there are all manner of degrees between the two extremes. At the one end you have the rigid treatise on a subject

that is drawn up quite regardless of the nature or special needs of the reader who may use it. At the other extreme is the book of the self-educator type, written entirely from the point of view of the person approaching the subject, without any other aids than the book itself.

In the latter type of book the writer often drops into the second person, and addresses his reader directly. This seldom happens in a regular school text-book, but there is a growing tendency that way. Of late, text-books do all they can to help the pupil on their own account, and it is interesting to note how their authors sometimes manipulate their matter in such a way as to help the pupil without interfering with the prerogative of the teacher. The point may be illustrated by a comparison of any of the rigid Latin grammars with a book like the Rev. T. K. Arnold's *Henry's First Latin Book*, bearing its sympathetic motto from Lily, "He shall be brought past the wearisome bitterness of his learning." This little book is almost self-interpreting, and by a diligent pupil, really anxious to learn, could almost be treated as a self-educator. All that is wanted is a key to the exercises. Still, such a book may be very usefully taken as a text-book by a teacher who does not share the prejudices of Mr. Stelling in the *Mill on the Floss*, who saw no need to remove the "wearisome bitterness."

The truth is that there is no possibility of writing for the ordinary pupil such a text-book as shall render a teacher unnecessary. The real problem is how the teacher may be best utilised in the interests of the pupils. No doubt the less the pupils rely upon the teacher the better: a teacher has been really

successful only when he has, by skilful preparation, enabled his pupils to do without him. Thackeray says somewhere that the first principle of wooing is to make oneself indispensable to one's mistress. In teaching, the first principle is precisely the opposite. The manipulation of the text-book is one of the teacher's main ways of enabling the pupil to do without him.

The diminished cost and the increased effectiveness of multifolding processes have given a demonstration of the probable line of development of the text-book. Each teacher with initiative wants to make a sort of subsidiary text-book of his own. He selects the book that contains the greatest amount of matter expressed as he prefers it, and sets about supplementing this by means of his multifolder. The next stage is naturally to discard the text-book altogether, and to supplement oral teaching and demonstration by a liberal use of the multifolder. But there is a serious amount of labour involved, and that of a rather mechanical kind. The next step should therefore be to revert to a new type of text-book that may be elastic enough to meet the needs of different teachers. The problem is to combine in a text-book (1) the sort of notes that an intelligent pupil makes during a satisfactory lesson, (2) the matter that has appeared on the blackboard during the lesson, and (3) the stuff that the teacher has felt it necessary to multifold for the use of his pupils. Some enthusiastic teachers at present do prepare by instalments such a multifolded text-book. At the end of a course of lessons each pupil then possesses a text-book that to him is one of special value. When it is suggested that such a book should be printed as a general text-book, the obvious and

reasonable answer is that though it is admirably suited to the needs of the teacher who drew it up, it does not necessarily meet the demands of other teachers. Is the conclusion, then, that each teacher must go on producing his own text-book and painfully multifolding it? At before-the-war rates such a scheme was not altogether impracticable, for at a comparatively small cost such a text-book could be printed in each case. The pupils could have been made to buy it at a price hardly, if at all, greater than that at present charged for a bigger book containing a good deal of matter that is not regarded as necessary by every teacher.

Till cheap printing is again available, there will probably have to be a sort of skeleton text-book in the various subjects, embodying only the absolute essentials of the subjects, and provided with certain blank pages on which official and well-organised notes may be copied in by the pupil. This book should supply the dry bones—the skeleton of the subject; it will be the teacher's business to provide the flesh and blood, not forgetting a good supply of connective tissue. Above all, the teacher must undertake the responsibility of breathing into the whole the breath of life. The text-book of the present is lifeless enough, but its skeletal successor will not have even the semblance of life. The selection of what is to form the irreducible surd in each subject will be a matter of great difficulty. We can picture energetic disputes among the specialists, though probably not so energetic as one would like. A mark of the new teaching is the growing interest in the technical aspects of the teaching of subjects we have to deal with in schools.

The existence of the "subject societies"—the Eng-

lish Association, the History Association, the Modern Languages Association, and the rest of the long list—is one of the most hopeful signs of the times. So far from fearing the disputes of the specialists about the contents of the standard text-book, we should welcome all the discussion that can be stimulated. It would be a natural and useful function of the subject societies to determine the text and form of the standard treatise or treatises in their branch of study.[1] Probably the result will be a split into sections, each producing a text-book suiting the needs of its supporters. This would by no means be a regrettable circumstance, as in all probability it would be possible to agree upon a small universal text that could be embodied as the basis of each of the differentiated types. In this way each branch of study would have the advantage of an authorised minimum text and a choice of fuller texts, each representing a common point of view. No doubt there would still be a few teachers who could not find their special needs supplied in the general texts, and who would therefore have to fall back, as before, on their multifolders. No harm would follow. People of this kind form the growing point of their department of teaching, and their influence would be in favour of maintaining life within the recognised texts; for it must be realised that the established texts would have to be subject to periodical revision in order to keep them in touch with developing opinion in the profession.

One of the most striking characteristics of the new teaching is much more developed on the other side of the Atlantic than in England. This consists in the dissatisfaction with our present methods of estimating

[1] Cf. the work of the Classical Association in standardising the terminology of their subject.

the results of our teaching. It is not merely a matter of external examinations. Discontent with these is no new thing; and if this were the point at issue we would have to claim for English teachers greater rather than less interest as compared with our American friends. It is not so much a question of what other people think of our work, as of what we think ourselves. Teachers are no longer content with general impressions of the result of their work; they demand some standard by which it may be estimated. Put into technical terms, it may be said that they are dissatisfied with a purely subjective standard and are seeking for an objective one. I have already dealt with this subject [1] in a more or less abstract way.

But since then we have had very practical developments in connection with the testing of the ordinary school subjects. We have now objective scales of ability in Arithmetic, in Handwriting, in Reading, in Spelling, in English Composition, in Drawing, in Language ability. It is not difficult to see how a set of standard tests could be drawn up in such a subject as Arithmetic in its more elementary processes; but when it comes to Handwriting, and when Professor Thorndike presents us with a series of standard specimens by means of which any given piece of handwriting may be appraised, we have grave doubts. There is first of all the difficulty of determining the standard specimens; and then there is the difficulty of saying to which of these specimens a given sample of handwriting corresponds. In each case the personal "general impression" is involved. To standardise this general impression, Professor Thorndike took a thousand

[1] Presidential Address, Educational Section, British Association, 1912.

samples of handwriting, ranging from the best to the worst in the three highest grades in the American public schools, and submitted them in turn to forty schoolmen whom he regarded as competent judges. These, acting separately, were invited to arrange the specimens into eleven grades according to merit, the determining feature being a combination of the qualities of grace and legibility. The number eleven was chosen because previous experiments had shown that this was the number of groups into which specimens naturally fell. Each judge had to make his arrangement four different times, the specimens being shuffled after each classification. The average of the four results determined the place of each specimen. Thus, if one was placed twice in Group 4, once in Group 5, and once in Group 6, it was ultimately ranked as 4·7. Next, the averages for the whole forty judges were pooled, and the average of these gave the final place to each specimen.

Then followed the selection of typical specimens, resulting in a group of fifteen grades—numbered from 4 to 18—which form the Thorndike "scale." In some of the grades the scale contains more than one specimen (Grade 16, for example, contains four), since the specimens, though regarded as of the same value, differ materially in style, and it is necessary that teachers who use them should have the advantage of choosing a type that is nearly of the same style as the specimen to be tested by the scale. Assuming, as we are entitled to do, that the judges were capable, honest, and interested in their work, we may admit that we have here an approach to an objective scale. There is, of course, the usual objection. Such a scheme involves the assumption that when we take a large number of cases the

errors that occur neutralise each other. Of this we cannot be sure, so the result is far from reliable: yet the scale is at least a step towards the establishment of a satisfactory standard.

The difficulty in applying the writing scale is great, but when it comes to finding and applying a scale in such complicated matters as English Composition, the case becomes wellnigh hopeless. The scale of standard specimens of composition cannot be applied in the same direct way that is possible when dealing with handwriting or arithmetic. Even if the teacher agrees with the order assigned to the ten specimen compositions that make up the Hillegas scale, he can hardly feel much confidence in placing a given piece of composition into its proper place among the ten. There are far too many elements to be taken into account, and if each specimen to be tested must be analysed so as to make the necessary comparison with the standard at all points, it may be said that after spending so much time and thought on the specimen, one could make the necessary judgment without the introduction of a complicated scale. Yet it may well be that after a few comparisons the mind gets into the proper attitude for judgment; and though each new specimen has to be analysed, the process will become easier with each case. The main value of the scale may, in fact, turn out to be the training of the teacher mind to judge according to certain more or less fixed principles, "by creating," as Thorndike says, "in the minds of teachers a mental standard to be used in even the most casual ratings of everyday school life." This rationally critical attitude, then, is one of the most marked characteristics of the new teaching, both in regard to special subjects[1] and

[1] For an excellent account of our present state of advancement in

to the general attainments and capacities of the pupils.

Professor Alfred Binet made quite a dramatic beginning of the standardisation of school subject-matter and pupil intelligence when he supplied his *Ready Reckoner of Instruction*[1] and his *Metrical Scale of Intelligence*.[2] Both of these have been severely handled by the critics, and it must be confessed that Binet has laid himself open to attack at many points, as is only to be expected in the case of a pioneer; though, on the other hand, his work is not so novel as is sometimes suggested. After all, his *Ready Reckoner* is nothing more than a tentative and deliberate application of a principle that, for better or worse, had been in operation for many years as part of the English and Scotch codes for elementary education. Long before his *Barème d'Instruction* was heard of, the "standards" of the British education codes were in full operation, and were beginning to have an objective reference. People not connected with schools at all were getting into the habit of speaking of a third-standard or a fifth-standard boy as representing a definite grade of attainment. The "standards" had acquired the right to be so called.

In the matter of intelligence, as opposed to mere attainment, Binet made a nearer approach to breaking new ground; and though his scale has been riddled by the critics, he has at least the credit of a deliberate attempt at establishing a working standard of comparison. His weakness lay in the narrowness of the

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the testing of the ordinary school subjects, see *The Scientific Measurement of Classroom Products*, by Chapman and Rush. Boston, 1917.

[1] *Les Idées Modernes sur les Enfants*, p. 27.

[2] *Ibid.*, p. 126.

basis on which he built his scale. The large numbers that form such an important element in the American schemes are lacking. By multiplying the number of experimenters and of children experimented upon we cannot wholly eliminate error, but the plain teacher certainly shows a distinct preference for investigations that have a very wide basis. He may not be aware that experimenters fall into two opposing camps on this matter of numbers *versus* technical skill in experimenting; but even if he did, he would no doubt remain true to his faith in numbers. This belief in the quantitative is widespread, and becomes strengthened if the quantities can be represented by mathematical formulæ.

The longing of the new teaching for objective standards finds a notable satisfaction in the various correlation formulæ that enable teachers to establish, with all the authority of mathematics at their back, comparisons between different school subjects, and between the methods of teaching them. Even the plain teacher can apply Spearman's "foot-rule,"[1] though he might be sore put to it if called upon to justify its claims to be regarded as authoritative. It cannot be denied that there is a certain danger in using formulæ of this kind, for plain people are very apt to regard as final and irrefragable whatever can be reduced to mathematical symbols. It is sometimes forgotten that the material that is handed over to the mathematician must be supplied by human intelligence, with all its possibilities of error. No doubt the formulæ do their work honestly, and grind out results

[1] *British Journal of Psychology*, vol. ii. p. 89. The subject is very simply and clearly treated in C. W. Valentine's *Introduction to Experimental Psychology*, p. 134 ff.

that are true for the material supplied; but the material itself needs to be tested. In the ultimate resort we cannot eliminate the human element. "Personal impression" may be reduced to its minimum, but we can never entirely rid ourselves of it. All the same, the correlation formulæ have introduced a process that is of the utmost service in settling points of debate. Given certain data we can rely upon the results. The state of mind produced by this certainty induces a new attitude to school problems, and imparts to the new teaching a tone that clearly marks it off from the old.

Hitherto we have been dealing with aspects of the new teaching that on the whole are favourably regarded by the great body of the profession. Now it is necessary to face a charge very commonly made that recent tendencies are in favour of what is contemptuously called a "soft pedagogy." Many teachers are almost morbidly sensitive on the subject of making work too easy for their pupils. All this special consideration for the individual pupil, this clearing away of difficulties and misunderstandings, this recognition of the claims of every member of a school class, all tend, we are told, to effeminacy. Some of the stalwarts of the profession are inclined to think that the new teaching has a tendency to coddle the pupils, to remove all incentive to effort, to provide for them a "primrose path." But there is really no danger. The "royal road" is as unattainable to-day as it was when the hoary proverb was in its first youth. There will always be plenty of difficulties to brace up our pupils. Surely there is no need to supply artificial obstacles after the manner of those who arrange steeplechases and golf courses, or even deliberately to retain diffi-

culties that at present exist. The maintenance of our absurd weights and measures has been over and over again supported, apparently in all seriousness, on the ground of the excellent training involved in struggles with such troublesome items as $5\frac{1}{2}$ and $30\frac{1}{4}$. When all artificial difficulties have been removed, there will always remain an irreducible surd of troublesome elements that will give full exercise to all the energy and determination available among our pupils. When the young people have been taught to study, and thus to avoid waste of effort, there will always remain the great mass of legitimate difficulties that no man can remove. If bunkers and hazards did not exist in our school course we might have to follow Voltaire's suggestion about God, and invent them ; but of difficulties in learning there will never be a lack.

The place given in the new teaching to interest is always a source of suspicion among the old guard of teachers.[1] They ask : "*Why* should teaching be made interesting ?" The world, they say, is not so arranged that everything is made interesting for people, and therefore it is better that the schools should accustom youngsters to face the uninteresting, so that when they go out into the world they may not be unprepared for the troubles that lie before them. But this statement about the world is not quite accurate. Only people who are prepared for suicide have any right to say that the world is uninteresting. People may, if they like, say that it is unpleasant ; but that is a totally different thing. In the world, no doubt, we have to do a great

[1] The spirit of the new teaching, on the other hand, finds expression throughout the new *Cambridge Essays on Education* in a persistent demand that pupils must be interested in their work and encouraged to *enjoy* it.

many things in which we find no interest; but this does not prove that our lives are uninteresting. Precisely the same thing holds in school. In order to gratify our interests we have to undertake a great deal of what is correctly called drudgery. The new teaching does not seek to eliminate drudgery, nor to make everything interesting in itself. Its aim is to give a meaning to the whole of school learning—to supply an answer to the question that lies at the back of the mind of all intelligent pupils, and must be suggested to the mind of those less gifted: "What is it all about?" The new teaching does not seek to free the pupils from effort, but to encourage them to strenuous work; does not seek to get rid of drudgery, but to make it tolerable by giving it a meaning and showing its relation to the whole learning process in school, and to the whole process of living in the world.

CHAPTER II

ENGLISH

BY THE EDITOR

PERHAPS the most characteristic feature of the new teaching of English is the recognition that the Direct Method is as essential in dealing with the mother tongue as it is in dealing with foreign languages. Speaking broadly, there are three stages in the history of the treatment of English in our schools. (i) At first the mother tongue was not taught at all. It was taken for granted that when a pupil came to school he could speak English sufficiently to communicate easily with his teachers and with his fellows. But no attempt was made to increase his knowledge of his own language. Indeed, the tendency was after a time rather the other way. Restrictions were placed upon his use of the mother tongue lest Latin should suffer. (ii) By and by it was perceived that in order to expound the niceties of the Classics it was necessary for the pupil to have a more critical knowledge of his own language. Accordingly, a certain amount of attention began to be given to English as a sort of auxiliary. As time went on, the claims of English to a firsthand treatment began to be generally recognized. But the resulting methods were dominated by those that already held the field in Latin and Greek. The mother tongue was taught grammatically, after the analogy of a language

whose grammar was fundamentally different from its own. (iii) Gradually it began to be realized that if English is to be taught as a means of communication, the best approach is not through grammar. Doubt began to be thrown upon the assertion in the text-books that "English Grammar is the art of speaking and writing the English language correctly." It dawned upon people that those who spoke and wrote the most effective English were not those most familiar with grammar, and the growing recognition of the need for an easy and accurate means of communication increased the desire to guide the teaching of English into ways that produced most economically the result required.

From the nature of the case, English inevitably takes rank as one of the most important, if not the most important, of all the school subjects. Mr. H. G. Wells goes the length of saying that: "The pressing business of the school is *to widen the range of intercourse.* It is only secondarily—so far as schooling goes—or, at any rate, subsequently, that the idea of shaping, or, at least, helping to shape, the expanded natural man into a citizen, comes in."[1] As the mother tongue is obviously the first and most direct means of intercourse, it naturally takes first rank among the teacher's tools. It was only to be expected that at first the method of sharpening the tool should be that to which teachers were accustomed in their work, and after all there is nothing wrong with the study of Grammar. So long as it is kept within bounds,[2] and above all restricted to its proper stage in

[1] *Mankind in the Making*, p. 214.

[2] How many teachers know the meaning of such terms as Gnomeology, Monology, Epoage, and Senteology? Fortunately

the school curriculum, it is in itself an excellent school subject. Once the pupils have acquired the necessary experience of the language as a working system, a going concern, they are in a position to examine it in a more or less scientific way. The postponing of grammar studies to a comparatively late stage in school life is one of the most striking recognitions of the elementary psychological truths that underlie the principles of teaching.

A characteristic tendency of the new teaching is exemplified in the efforts being made to correlate the teaching of English Grammar with that of other languages ancient and modern. The Joint Committee for the Unification and Simplification of Grammatical Terminology, which is made up of representatives of the Associations of Head Masters, Head Mistresses, Assistant Masters and Assistant Mistresses, as well as of the Classical Association, the Modern Language Association and the English Association, has issued a Report that has been generally approved by inspectors and teachers, and is likely to have an excellent effect on the organization of the teaching of Grammar. There is no suggestion of the revival of the rigid and mechanical grammatical drill of the old style, but the new teachers are realizing that since there is a place for the study of grammar it is highly desirable that the best use should be made of the time devoted to the subject, and that the results should be utilized in the most profitable way. What the Joint Committee urges

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no English teacher is likely to be able to tackle successfully the following problem from a seventy-year-old text-book on Grammar: "Now monologise the following exercises exactly according to the preceding specimen. Be particular to give the doctrine especially of the cordiction of the agnomeclads."

is that the study of English Grammar should serve as an introduction to the grammatical structure of foreign languages. Hitherto the grammar of each language has been treated as a thing apart, and the pupil has had to learn as many grammars as he has studied languages. By the use of a common method aided by "parallel" grammar text-books, the teacher is now able to carry to each new language the paid-up capital amassed by the study of languages already begun. Naturally English Grammar forms the base of the pyramid, and the new teaching is specially anxious to secure such a revision of the current presentation of English Grammar as shall provide an effective preparation for further linguistic studies. The Joint Committee is at the time of writing carrying on a vigorous campaign to promote the general adoption of its terminology as the first stage in the process of establishing a complete co-ordination of the teaching of English with the teaching of other languages. The spirit of the new teaching in English is well exemplified in the series of articles on "The Rediscovery of English" that have appeared in the *Times Educational Supplement*, and that will no doubt be issued immediately in book form.

While the new teaching of English recognizes that the only method of acquiring the language is by using it intelligently, there remains the problem of how that use can be best manipulated by the schools. To begin with, there are the two distinct ways in which the language may be employed, the oral and the written. The oral, again, may be said to have two branches, speaking and reading; for, at the elementary stage at any rate, reading is treated in school as an affair of voice, since it is generally understood to mean reading aloud. But it is just here that the new teaching makes

one of its most useful appeals. It complains that only one aspect of reading has hitherto been attended to in schools, and that the oral method usually followed has pernicious consequences when the pupils come to use reading as a means of acquiring knowledge or stimulus from books. A marked characteristic of the new teaching of English at the earlier stages is the encouragement of what is called "silent reading."

In dealing with the rudimentary stages of acquiring skill in reading it cannot be said that the introduction of phonic or phonetic methods is anything new.[1] The old-fashioned text-books on school management are full of elaborate discussions of the relative merits of the alphabetic, the phonic, the phonetic and the look-and-say methods. The fresh point raised by the new teachers is whether reading should be begun by oral methods at all. Recent studies on the psychology of the process of reading appear to support the view that by beginning with the uttered sounds in reading, the pupils are handicapped in silent reading by a set of lip movements and muscular tensions in the larynx corresponding to the incipient vocal expression of the sounds represented by the printed words. Teachers are sorely puzzled how to get rid of this handicap. Even the look-and-say plan does not bring relief, for in this too the words have to be named.

The new teaching is only feeling its way here. Among other suggestions offered is the proposal to begin our attack on English with writing instead of with reading. It is argued that in the development of the arts writing in some form or other must have come

[1] The learned in such matters refer the origin of phonic methods of teaching reading to a certain Ickelsamer to whom is attached the date 1534.

before reading, since we cannot read till something has been written. But even systems which (like the Montessori) teach writing before reading, do not get rid of the tendency to lip movements and other tensions, for whether we learn words by writing them or by looking at them in print, we still acquire the bias towards an incipient utterance, since we have to name the words in any case. The same applies to the most direct method of all, the method of learning words by associating them with the actual thing they represent or a picture of it. Indeed, it seems impossible to avoid naming words at the beginning stages. Accordingly, teachers are inclined to make the best of the situation by recognizing that reading must be taught in the first instance in connection with sounds, and that at a later stage it is necessary to secure skill in the rapid extraction of meaning from the printed page by what is now technically termed "silent reading." It appears to be one of those cases in which a certain amount of scaffolding is necessary in the first stages, even though it may be dispensed with afterwards. One of the best ways to get rid of the troublesome scaffolding appears to be to cultivate rapidity in getting at the meaning of a printed passage. The new teaching is accordingly paying great attention to the speed with which silent reading can be carried on. Experiments are being conducted to discover the time taken by the ordinary pupil to cover a given amount of ground, and tests are being applied to ascertain the success with which the information contained in the pages read has been assimilated. It is admitted that certain important problems are involved, not the least of these being that of "skimming."

On the other hand, it is recognized that reading aloud

has a value of its own,[1] since reading is not always used as a mere means of extracting information. Accordingly, the manipulation of sounds comes to have an important place in the newer methods. Things are at present, no doubt, in a very confused state, but there is at least the desire to organize the teaching of phonetics in such a way as to get value from the study all along the line. There is obviously a great waste just now. In many cases pupils learn the art of reading by means of a more or less complicated phonetic script, which is discarded as soon as skill in reading is acquired. By and by, in the higher classes in English, another phonetic script is introduced in connection with the study of the sounds of the language. In well-organized schools this same script is used in connection with the study of foreign languages ; but all schools are not well organized, and it is possible to have pupils struggling with two sets of phonetic symbols, one for English, the other for French. Sometimes a pupil is unfortunate enough to have to face still a fresh set of symbols when he takes up shorthand.

Obviously the new teaching cannot rest satisfied with this state of wasteful complication. So we are not surprised to find attempts being made to unify the whole subject by the introduction of a scheme of notation that will meet the demands of all the stages of study. Why should not the preliminary phonetic signs used in the Infants' Room form part of the system afterwards to be used in higher English and in modern languages ? The symbols of the *Association Phonétique Internationale* are at present widely recognized and used. Why should they not be adopted throughout our schools ? It may be that some modifications

[1] For examples see pp. 102, 135, 146.

are necessary to make them quite applicable to the new demands to be made upon them. But the results would be well worth the additional labour. Progressive teachers, indeed, are inclined to go a little farther and ask that a genuinely comprehensive system of symbols should be contrived so as to meet the demands of shorthand as well as those of ordinary language teaching.[1] This opens up enormous possibilities of development, and very probably the teaching of the near future in English, modern languages and stenography will show a marked advance in economy of time and effort.

With regard to the teaching of composition the characteristic of the new teaching is the throwing of the emphasis on the matter as contrasted with the form. It goes without saying that neither matter nor form can receive exclusive attention: they are inextricably bound up with each other, and any attempt to separate them is futile. Yet it cannot be denied that in the past the emphasis has been mainly on the form, and the matter has been regarded as in itself of no great consequence. Witness Locke's criticism of the methods adopted in theme-writing in his day:—

"And here the poor lad who wants knowledge of those things he is to speak of, which is to be had only of time and observation, must set his invention on the

[1] For example, Professor Findlay and Mr. W. H. Bruford have just (end of 1917) published a pamphlet called *Sound and Symbol*, in which they describe a piece of research carried on at Manchester in the correlation of sounds with the various notations, in particular the correlation between shorthand script and the symbols of the international Association. They adopt the Oxford Shorthand as the most suitable for their experiments, but for the teacher of English the important point is not the particular script adopted but the possibility of a unification of the various methods of correlating sound and symbol.

rack, to say something where he knows nothing, which is a sort of Egyptian tyranny, to bid them make bricks who have not yet any of the materials. And therefore it is usual in such cases for the poor children to go to those of higher forms with this petition, 'Pray give me a little sense'; which whether it be more reasonable or more ridiculous it is not easy to determine."[1]

The new teaching practically adopts as a fundamental principle that the ideal state of the pupil in a composition lesson is to want to say something. When the pupil is brought to this state the battle is practically won. When he wants to say something, he will find a way to say it, and the teacher's part is so to deal with this expression as to improve it. The truth is that from the pupil's point of view stress should be laid upon the matter, while from the teacher's standpoint attention has to be concentrated on the form. We have seen that one of the fundamental principles of the new teaching is the introduction of the notion of immediately recognized purpose in all school processes: nowhere is this principle more definitely realized than in the composition lesson. When the pupil has the definite purpose of making himself understood he does his best to express himself, and as his mind is given up to the ideas he wants to express, he is not troubled by that self-consciousness that so commonly accompanies concentration on the mode of expression. In composition as in morals we want "a mind at leisure from itself," and this is best attained when the subject-matter occupies the first place. It follows, therefore, that composition oral and written is involved in all the subjects that the pupil studies at school; and thereby

[1] *Thoughts on Education*, § 171.

hangs a tale of struggle that leads up to a problem with which the new teaching is still at grips.

In the school curriculum the teaching of English has two main functions: (i) to prepare pupils to use the language as a means of ordinary communication—in this aspect English is treated as a tool; (ii) to provide a body of culture material—in this aspect English is cultivated more or less for its own sake, and the emphasis is laid upon content: English Literature stands out prominently here. In fact, we have the distinction drawn by Lord Avebury between knife-and-fork studies and those culture studies that for want of a better name we may call dinner studies. English is obviously either a knife-and-fork study or a dinner study according to the aspect emphasized. Now so far as English is a knife-and-fork study it is the common business of every teacher in school, whatever the subject he is responsible for. To a certain extent this is recognized in schools: that is to say, the teachers of other subjects (for shortness let us call them non-English) admit the need of having the English tool well sharpened because of its utility in their subjects, but unfortunately they are unwilling to accept their responsibilities in the matter.

An instructive struggle took place in America. About a quarter of a century ago the non-English teachers complained that too much time was given in the curriculum to the mother tongue, and asserted that English would come naturally through the teaching of the other subjects. It was argued that all that was necessary was plenty of exercise in speaking and writing the language in the course of their other studies, along with a limited course of more technical training in style and English Literature. The result was a

diminution in the time given to English. Years passed, and a generation of non-English teachers arose that knew not the old arguments and promises, but did know that the English of their pupils was not by any means what it should be. They began to complain, but on examining the time-tables they found that in the time at their disposal the English teachers could hardly be expected to do more than was being done. Then the ingenious plan was suggested that every exercise written by a pupil should be regarded from two points of view—as an exercise in the particular subject, and as an exercise in English. The suggestion was that the Botany or the History teacher should first of all mark the exercise from the point of view of History or Botany, and that the exercise should then be handed over to the English teacher for alteration and repairs. The English teachers welcomed the recognition of the double nature of school exercises, but they drew the line at being asked to become the Gibeonites for the rest of the school staff. This leads to a very pretty problem in which there seems to be a good deal to say for both sides. The botanist may say it is no part of his business to teach English. He may even wax modest, and say that he is not qualified for this work. But the contention may be dismissed, inasmuch as he is called upon only to deal with English so far as it is necessary to secure clear expressions of botanical facts. After all, let him remember that science is only a well-made language. On the other hand, he cannot be expected to *teach* grammar or spelling or style. Yet a great deal can be done by the attitude the non-English teachers adopt towards these matters. Some assume the altogether reprehensible Gallio attitude, and contemptuously make it clear that they care for none

of these things. All that is really wanted from the non-English teachers is the moral support of respecting these matters and indicating errors by a blue or red pencil mark. The pupil must be made to realize that English blunders count all the way round, and not merely in the English class-room. To be sure, in one respect they have this fact dinned into them in connection with examinations. For here English is twice, or rather many times, blessed. The candidate gets value for his English in every subject he presents for examination. Good English compensates for quite a fair proportion of lack of subject knowledge. In a written examination a good command of English with a poor command of, say, History or Botany, is a safer examination combination than a good mastery of Botany or History and a poor command of English.

Though the American teachers of English rejected the overtures of their colleagues, there is something to be said for the proposal, if it is supplemented by such an increase in the staffing of the English department as makes the extra work possible. There would be the resulting benefit of purposeful writing of English for the sake of the subject concerned, and not of mere exercise in expression. The business of the English department is to teach English as English, and therefore to bring to consciousness the process of expression. There is a certain advantage, therefore, in having exercises written from a totally different point of view, though no doubt the fact that everything he writes will sooner or later come under the scrutiny of the teacher of English will necessarily have an effect on the pupil while writing it.

Keeping to the recognized range of English, the new teaching is marked by the place it gives to oral

composition. In the older schemes, composition nearly always connoted written work. Now the subject is recognized as including spoken as well as written communication. Oral composition is now begun at the earliest stages in school, though it is not always known by that name. Matter is provided that naturally provokes questions and counter questions, and draws answers sometimes from the pupil, sometimes from the teacher. The interest in such talks is centred not on the form of speech, but on the subject-matter. Pictures are presented and discussed. Interesting and provocative objects are examined and talked about, comparatively easy problems [1] are suggested, and their solution sought by the joint efforts of teachers and pupils. Inevitably the pupils speak more or less in the style of the teacher, for imitation secures that they do their best to speak like him. In any case, they get accustomed to talk for the sake of the subject-matter, and to make themselves understood. Naturally the teacher must occasionally correct bad expressions ; but this should be done in moderation, and in no case should corrections bulk as the important part of such lessons. Everything but the subject-matter ought to be treated as incidental. As the lessons proceed, pupils should be encouraged to make more or less consecutive statements. This must be secured by a

[1] For example, the question is put : Why do the owners of heaps of coals that are left lying in the open air have them whitewashed ? The natural answer is that the whitewash serves to preserve the coals. But investigation shows that coals do not deteriorate in the open air more than indoors. "A more cheerful appearance" was suggested by one pupil. But the rest agreed that a coal bing could hardly make æsthetic claims under any circumstances. Insistence on the exposed position of the coals sometimes leads to what seems to be the real reason—to prevent stealing, since any coal removed from the surface leaves a tell-tale black gap behind.

gradual change in the incidence of attention, one boy being called upon for a more complete account of some part of the subject. No reference need be made to the fact that each sentence must be complete. This can be secured by expressing doubt about the subject-matter every time an incomplete or badly constructed sentence is used. The old-fashioned fetish that insisted upon pupils always replying to questions in complete sentences, had no doubt the defect that it led to quite unnatural forms of expression. In good English we do not always answer questions in complete sentences. But the complete-sentence craze had the more serious defect that it called attention to the mere form, while the matter itself is what is interesting the pupils.

Out of this discussion-method in which teachers and pupils both take part, there naturally arises, through a gradually increasing extension of the amount of speaking demanded at a time from each pupil, the exercise of independent exposition. A pupil is called upon to describe an object, explain a passage, relate an anecdote. Of these the easiest is the telling of a story, since the time element is a great aid in the arrangement of the matter. But the advanced guard of the new teachers are not content with mere narrative. They demand genuine consecutive exposition. For example, Mr. H. Caldwell Cook gets his Littlemen—all the world now knows that "Littleman" is the term applied at the Perse School to any boy under thirteen—to give ten-minute lectures to each other on subjects that interest boys.[1] He maintains that his method does not in any way tend to priggishness, though the style of the young lecturers is severely criticized by their fellows.

[1] *The Play Way*, pp. 80 ff.

Interest centres in the subject-matter, and anything (such as humming-and-hawing, repetition, trying back, broken construction, obscurity) that interferes with this receives immediate and severe condemnation.

While the lecture method as practised by pupils is still in its infancy, the method of dramatization is of venerable antiquity, but is being modified by the new teaching to meet modern needs. Even the repeating, with proper expression, of words prepared for them by others is a help in the training of expression. By throwing himself into his part the young performer learns the value of words, without thinking of them as mere elements in a school exercise. But when he is set to find words for himself to express the emotions suitable to a given set of circumstances, the pupil makes a distinct advance on merely delivering his lines. Mr. Caldwell Cook goes the length of getting his pupils to write plays for themselves. But, while still keeping to the oral teaching of composition, we find that the new teaching exercises the pupils by setting them to act a scene from history, supplying for themselves the words they think suitable to the persons they represent. This more or less regulated "gag" is found to be an excellent exercise in composition. The attention is concentrated upon the circumstances of the case, the pupil throws himself into the character he is personating, forgets all about mere composition and lets himself go. Before the self-conscious stage this exercise is useful, but beyond that it is apt to lead to a species of pedantry, though even here we have the compensating advantage that the pupil begins to study the powers of language from a very practical standpoint.

When we begin to compare oral with written methods

of teaching composition, we are apt to be led into establishing a false antagonism between the two. They are not to be set up against one another as rivals, but rather accepted as supports and complements of each other. Here we come across one of those practical investigations into method that are among the best features of the new teaching. As the result of a paper read by Professor Clapp before the National Education Association at Chicago in July 1912, the Illinois Association determined to test the truth of some of the statements he made in dealing with "The Amelioration of Conditions in the Teaching of Composition." He had pointed out that the excessive labour of theme reading, now so generally complained of, could be considerably lightened by the proper use of exercises in speaking, and had declared that the results obtained would be better, not only because the training would be broader and more practical, but because the technique of writing would be more carefully handled.

It was agreed that a number of High Schools should give two distinctly different kinds of courses in composition in the second semester of the first year. One squad was to have written exercises only, while another was to be served with a combination of two-thirds of oral composition to one-third of written. At the beginning of the semester, in the middle and at the end, all pupils, in all sections, were to be given written test exercises, and their papers, after being graded on separate sheets by the teachers in charge, were to be forwarded to the committee for examination. The teachers were also to report in detail concerning the conditions surrounding the experiment. The same work was prescribed for all the schools, and of the thirty

that undertook the experiment twenty-three carried it out in full and made a report.

The conclusions strongly support the contention that a large amount of time should be given to oral exercises in the High School. The combination sections at the end of the semester were better in thought—showed more vigour, freedom and interest—than the writing sections. They were more competent in point of grammatical and rhetorical structure. They were no worse in spelling and punctuation, and they were better in handwriting. The writing sections had deteriorated in penmanship during the period. The committee felt justified in recommending that oral exercises be made a regular part of the High School English work throughout the four years. In the first year, two-thirds of the themes should be oral, in the second year one-half should be oral, and in the two following years one-third should be oral. The committee also calls upon school authorities to allow time in the daily session for conference on oral exercises to the amount of five minutes for each pupil per week.[1]

Admitting the value of oral composition, most teachers are inclined to give it more play at the earlier stages, and to depend more on written work at the later. But what is of at least as much importance as the quantity of work is the quality of the results. Oral composition produces vivacity and vigour, and forms an excellent auxiliary to written work, but cannot by any means take its place. It cultivates a different style, and in particular develops a different vocabulary. One of the first lessons the teacher of English has to learn is that his pupils have three vocabularies—the reading,

[1] See "The Illinois Experiment" in *The English Journal* (Chicago) for April 1914.

the speaking and the writing. At the early stages of the preparatory school there is only the speaking vocabulary, gradually the reading vocabulary is developed, and finally the pupil attains a writing vocabulary. In the upper forms the reading vocabulary is by far the largest of the three, and the speaking vocabulary the smallest. It goes without saying that these vocabularies overlap each other. The reading vocabulary includes practically all the words that belong to the other two. A certain group of words are hardly ever used except in colloquial speech. These, along with the words necessary to carry on the ordinary communications of life and our usual conversation, form the speaking vocabulary. Obviously when our speech becomes formal, as in the case of public addresses or technical discussions, the speaking vocabulary approaches the written. Letter-writing bridges the gulf between the speaking vocabulary and the writing vocabulary, for in letters we use many of the colloquialisms of everyday speech. But when it comes to formal written work we use many words that we would never think of using in ordinary conversation. The pupil's reading vocabulary includes all the words at his command. Every word he can say or write may occur in his reading, but a great number of words occur in his reading that he would never think of either saying or writing. Some of the complaints made about the barrenness of the Public Schoolboy's vocabulary are based upon a failure to recognize this distinction. They take into account only the speaking vocabulary, and the complainants ride off on the quip that after "rippin'" and "rotten" with "putrid" as an afterthought, the boy's language gives out. The truth is that the boy understands an enormous number of words in his reading that he

would never use in his writing, and very many words in his writing that he would never think of using in speech. What would we think of a schoolboy who used the word *nevertheless* in his ordinary talk! Yet we take it as a matter of course in his essay.

An important part of the work of the teacher of English is the enriching of the vocabulary of his pupils. The boy comes to school with a speaking vocabulary that must be taken as the datum of the problem of English teaching. It is home made; and this consideration leads us to another classification of vocabularies from the teacher's standpoint. The home vocabulary and the school vocabulary are sometimes quite different. In the case of pupils from an educated home the two vocabularies practically coincide, but in other cases there is wide divergence; and in cases where there is a patois in common use, the vocabularies are practically distinct. In extreme cases the school-speaking vocabulary has to be built up from the foundations, and the only satisfactory method of building is by use. Pupils learn to speak by speaking. So with the reading vocabulary: the great means of enriching it is by getting the pupils to read extensively. In a broad way it may be said that the writing vocabulary is derived from the reading by a process of selection. The pupil will naturally never use a word in writing that he has not met in his reading. Nowhere is the new teaching more differentiated from the old than in this matter of building up the writing vocabulary. The old schoolmasters laid great stress on lists of words. They produced treasuries of words, gardens of words, forests of words. They treated words as the botanist treats collections of plants. In his un-

regenerate days even the genial Comenius produced a set of exercises with an accompanying vocabulary, the boast of the whole being that the same word was never used twice in the exercises. Our new teachers have given up this static view, and are all for the pupils learning the meanings of words by observing how they are used, and by themselves using them. We no longer go to a dictionary or a thesaurus for a suitable supply of words. We limit ourselves to words that we have met with in actual use.

It is true that Kipling tells us that when he was making his name as a writer he "dredged the dictionary for adjectives." But this did not mean that he used the dictionary, as an ignorant man might use an encyclopædia by reading it through in order to get knowledge he did not possess. Kipling used the dictionary as a means of recalling to mind all the adjectives that were available to him, and making his choice of the suitable one in the light of his previous experience of their meaning. Teachers of foreign languages are strongly opposed to the use of the English-foreign part of the dictionary, and the newer teachers permit this use only on the agreement that the pupil shall take no word from the English-foreign part that he has not seen in actual use in the foreign language. A quaint old writer[1] gravely dwells on the ease with which a knowledge of the animals of the world could have been attained had we been privileged to study them in the convenient condensation of Noah's Ark. Our newer teachers recognize that the only true way to know the animals is to study them in their natural surroundings. The vocabulary is to be enriched by a wide ranging over the works of very

[1] Isaac Habrecht of Strasbourg.

different authors, rather than by the museum study of words in a collection. The dictionary is to be used for purposes of clarification and verification, and perhaps for this particular purpose the new teaching hardly uses it enough.

In written composition as in oral the new teaching puts purpose in the front. Pupils are no longer asked to write in the air, on such subjects as *Death*, *The Seasons*, *Courage*. An attempt is made to get them to regard their writing as having a definite purpose, and as being addressed to a definite person or group of persons. Accordingly, the letter form is frequently adopted, and wherever it is possible to make an actual use of the letters it is excellent. There is always something very windy about writing a letter at large, for by the conditions of the case a definite person is assumed to exist, that the pupil knows does not really exist. Letters from one pupil to another are popular in the new teaching, and it is often contrived that some point of common interest to the two boys is discussed in this way. No doubt it would be much more interesting for Jones to lean over two desks and talk it out with Robinson, but the next best thing is to put it all down on paper. From the pupils' point of view it is, at least, a good second best as things go in school. A criticism of something that has been done in class is an excellent form of exercise, for the pupils often really want to say what they think of certain happenings. A synopsis of a speech given to the pupils is less attractive, but has at least the charm of dealing with something real. Yet reality is not so essential as the elements of purpose and meaning. Purely imaginative writing has great attractions for young people, because they feel that they are making

sense even though the facts described are known not to have happened. It is true that in the last resort the story the young writer weaves does represent a certain sort of reality. One of the great charms of imaginative writing is the freedom from all the restrictions imposed by lack of real knowledge. Pupils glory in the absolute freedom of being able to "say what they like." The wiser teachers, however, limit this freedom by permitting one major impossibility, and insisting upon all the rest being strictly in accordance with the ordinary laws of nature. For example, if the pupil is invited to write the "Reflections of a Tramway Horse," he is entitled to assume that the quadruped can speak, but all the adventures he describes must stand the test of conformity with common sense and the laws of real life.

While there are always certain pupils in every class that can invent a story with fair success, the greater number need a little help. Thus it comes about that the most successful exercise in story-telling consists in giving a part of the story and calling upon the pupils to supply the rest. Actual practice shows that much the easier form is to give the beginning and middle and demand the end. It is found that to give the middle and the end leaves a much harder problem for the ordinary pupil. Yet each has its function, and both have the great attraction of calling the pupil's attention to a real problem, where certain conditions are laid down, and yet where he is left a good deal of freedom in selecting the sort of solution that will fit the case, and also please him. Some stories, indeed, rouse the utmost enthusiasm when left half told. As an illustration the teacher has only to read Frank Stockton's famous *The Lady and the Tiger* to a senior

form of girls to reduce them to a state of eagerness to get their pens in order to express their view of the *dénouement.*

In all this sort of writing, while no formal teaching is given with regard to the principles of style as such, the teacher can, at all points, make the pupil realize that the purpose of the story has not been attained if doubt is left in the reader's mind about any point, or if any reasonable question cannot be answered from the narrative itself. The incidence is on the subject-matter all the time, but the relation between form and matter is so close that justice cannot be done to the matter without attention to the form. A time comes, however, when it is necessary to give attention to the form as such. This naturally arrives in its completeness at a late stage, but is gradually being introduced all the way up the school. Occasional exercises in form may be given at early stages, but this should be done only in cases where the subject-matter is supplied by the teacher, and is not of great intrinsic interest.

The older teachers used paraphrasing largely for this purpose. Now, in the hands of a skilful teacher, paraphrasing can be used with excellent effect, because he will choose passages that may be transferred from one particular style of writing to another. But too often the exercise is bad, for the obvious reason that if the passage is excellent literature, as was often the case in the old exercises, all that the pupil could do was to turn good English into English that was less good. The whole principle of *le mot juste* is flouted in every such exercise in paraphrasing. The main advantage of paraphrasing may be obtained from an exercise in translation, though it must be admitted that in this case we have not the lesson that is always

learned from an analysis of an admirable passage in the mother tongue. It is for this reason that another form of paraphrasing is objectionable, the form in which a piece of slovenly English is set. In the highest forms this application of the "awful example" may be used on very rare occasions, as a means of pointing some definite criticisms ; but we usually find that more than sufficient exemplification of errors is to be found in the work of the pupils themselves. Perhaps the best form of paraphrasing consists in the turning into good English of a description given in some dialect important enough to be treated with respect, and yet different enough from current English to leave scope for a complete change of expression.

When it comes to the actual marking of written compositions the new teaching takes a firm stand against the grinding methods of the past, that oppressed generations of toiling teachers. "Writing in" corrections is frowned down. Let the pupil see to that. The teacher is encouraged to prepare a careful list of conventional marks, after the pattern of the symbols of proof-readers for the press, and to leave to the pupil the task of reading his own proofs. In the University of California, for example, where the students run a co-operative store for the supply of books and apparatus, the writing-pads on which compositions are written are provided with a table of some forty conventional correction-marks with their meanings, so that master and pupil have the minimum amount of trouble. It is true that the more fundamental question may still be raised : Should compositions be corrected at all ? Some teachers maintain that the important thing is the writing of the exercise, and that in the course of a few months the student is himself in a position to correct

his own themes. One master of my acquaintance, for example, systematically keeps the unread essays of his form for four or five months, and then returns them to their authors for criticism and amendment. He maintains that they learn more from this than from the teacher's meticulous correction of work as it is presented.

The new teaching is not quite ripe for this extreme measure, though it is not unduly shocked at the proposal. It recognizes that the time element is of the essence of the problem of correction, and that short range and long range have each special advantage. No doubt the sooner a composition is dealt with after it has been written, the more interest the correction arouses. The pupil still remembers vividly the difficulties he experienced in the writing, and is accordingly prepared to appreciate whatever guidance the teacher can offer for future work. It is for this reason that some teachers move about among their pupils while actually engaged in writing their themes and discuss with them in whispers the sentences they have just set down. On the other hand, the lapse of time sufficient to let the pupils forget what they have written enables them to come to the exercise again with a fresh eye. For self-criticism it is certainly better to adopt long-range correction. The wise teacher will accordingly combine both ranges so far as he finds it possible, but he will lay the burden of the work upon the pupil in all cases. His business is not to save the pupil trouble, but to make him take trouble. On the other hand, the policy of heaping up unmarked exercises in a cupboard is indefensible. The policy of marking carefully only a definite proportion of exercises sent in is little better. The pupil is entitled to expect that whatever

he has written will be recognized and looked at. It does not follow that the teacher is expected to spend much time over it: all that is required is that the pupil be made to feel that the exercise counts, and is part of an intelligent system. Nothing impresses upon the pupil the importance of his written work more vividly than the amount of trouble thrown upon him in its correction.

There remains the problem of valuation. On what principles is the teacher to rank the work submitted? Is there such a thing as a standard by which to estimate the work of individual pupils? Most teachers admit quite candidly that they do not think there is. The new teaching is reluctant to concede the point, and has made attempts to develop a scale by which written compositions may be judged. It cannot be said that they are successful. One scale—known from its author's name as the Hillegas—supplies ten specimen compositions, and the teacher is expected to find which of these most nearly corresponds in merit to a particular composition paper and to rank that paper accordingly. But no experienced teacher has any hope from help of this kind. The various points to be taken account of are so numerous that comparison is practically impossible. To begin with, the ten specimens include all kinds of composition, and the teacher may be called upon to determine the rank of a narrative by comparing it with an argument. To meet this difficulty the Harvard-Newton scale was invented, in which we have four separate scales, each to correspond to one of the four forms of composition recognized in the eighth grade of American schools: description, narration, argumentation, exposition. Each of the standard specimens is accompanied by a criticism in which the

merits and defects of the composition are indicated, and a comparison made to show why it is placed above the one below it and below the one above it. We have here an advance on the Hillegas scale, and further investigation may gather still more useful specimens. All this is to the good, but teachers will at the end of the day still have to depend mainly upon their own judgment and their knowledge of the local conditions and the powers of the pupils concerned. The new teaching recognizes the value of an objective standard where it can be set up, and of an approach to one where it cannot, as in this case. After all, it is not quite essential that we should be able to rank compositions in order of merit. What we aim at is to make our pupils capable of using effectively their mother tongue. The grading of them is valuable mainly because it draws our attention to certain elements in their work that might otherwise escape our notice. To make and apply a scale is an excellent exercise for any teacher. Whether a successful scale is evolved or not, the pupils get the benefit of the teacher's work.

When it comes to English Literature we find that the radical difference between the old teaching and the new is that we have passed from books about books to the books themselves. The mass of books that make up English Literature is so vast that it is not surprising that teachers quailed before it, and sought refuge in text-books that gave a summary account of the unmanageable whole. The result was that instead of English Literature the pupils were called upon to study the history of English Literature, with the result that they acquired a more or less slight acquaintance with the lives of certain authors, and a fairly clear general impression of

the sort of books they had written. The feebler teachers confined themselves to synopses of the contents of the various great books, but the more enterprising sought to bring their pupils into touch with the actual texts by means of extracts, after the manner of the University lecturer. Books of extracts were also used, but as a rule they were too short to be effective. The ordinary "Literary Reader" was roundly condemned by the more advanced teachers, and the wider scope of such books as Chambers's *Cyclopædia of English Literature* was not sufficiently utilized. Dependence was placed on the intensive study of one or two masterpieces, on the principle of *ex pede herculem*. But the intensiveness was overdone. Thirty-page texts were published, swollen into a big book containing ten times as much matter in the form of introductions and notes. Nothing is more refreshing in the history of educational method than the flood of invective these overladen texts have drawn out from exasperated teachers possessed of real literary appreciation. The explanation of the long reign of the over-annotated text lies in the fact that anybody can teach literature in this way, and in particular anybody can examine on it. Between them, mechanical teachers and more mechanical examiners have been able to keep the bad system in being, long after its dangers had been fully exposed and even generally admitted. We are not so much surprised at the long resistance of the note-makers when we realize the difficulties that lie in the path of the new teaching that seeks a more rational way. The problem is to get the pupils to read for themselves with intelligence and zest. Any one with a fair degree of firmness can cram into a more or less unwilling pupil

a certain amount of "facts." But when it comes to making the pupil take an active and interested part in the process of studying English Literature we are faced by a problem of extraordinary difficulty. The new teaching deals with it under the name of appreciation.[1] We may order a pupil to learn by heart a passage that we consider to be of great beauty, but we recognize that it would be ridiculous to order him to like it. So far as appreciation is concerned, the teacher is too frequently reduced to the state sarcastically described by Jacotot in his definition of a teacher as "one who goes about wringing his hands and saying to the pupils 'Don't you see? Don't you see?'"

Still the problem is not altogether insoluble. The teacher has at his command certain forces, some of them legitimate, others not. Perhaps the least palatable of the small-print aids to be found at the foot of a difficult page is "Note the beauty of this passage." Disappointed in his hope of some real help, the pupil is inclined to take an unfavourable view of the portion set out for his admiration. But when the master sets forth in resounding phrase the beauties of a certain bit of writing the force of suggestion acts powerfully, and is strongly supported by the desire not to confess to a worse taste than one's fellows. So we have a more or less honest endeavour to like what has for us really no attraction. The contrariant pupils, no doubt, will react in the opposite sense; but the majority of the class will be led into a more or less unwholesome acceptance of the master's view. Now it has to be

[1] Cf. *The Lesson in Appreciation*, by Dr. F. H. Hayward, 1915. The sub-title is *An Essay on the Pedagogics of Beauty*, as it includes many other subjects besides English Literature, but the teacher of English will find it greatly to his advantage to read what Dr. Hayward has to say.

recognized that it is impossible for the teacher to avoid altogether using suggestion. Whether he will or no, his whole attitude towards a particular passage is suggestive. The danger is in making the suggestion so plain as to lead to a somewhat hypocritical attitude on the part of the pupil. What is wanted is the pupil's own reaction to the stimulus of the author's words. The teacher is acting within his rights in presenting a passage in such a way as to make the strongest appeal to the known capacity and attainments of his pupils. He is entitled to prepare the ground, and to give his author every chance of a fair field. He may even claim that there is nothing wrong in his letting it be known how he himself regards the passage—though this is sometimes questioned—but he must make it clear that the pupil's decision is to depend entirely on how the matter appeals to himself, and not on how it strikes the teacher. As an example of what is regarded as a legitimate preparation by the new teaching as compared with the old I quote the following reminiscent passage from an article by O. J. Stevenson in *The English Journal* (Chicago) for February 1914.

"We were reading *The Lady of the Lake*, and the subject of the day's lesson was the opening stanza of Canto V—

"Fair as the earliest beam of eastern light,
When first, by the bewilder'd pilgrim spied,
It smiles upon the dreary brow of night,
And silvers o'er the torrent's foaming tide,
And lights the fearful patch on mountain side,
Fair as that beam, although the fairest far,
Giving to horror grace, to danger pride,
Shine martial Faith, and Courtesy's bright star,
Through all the wreckful storms that cloud the brow of War.

"It was a strenuous lesson. The stanza was torn to

shreds. Word after word was put under the microscope and examined as to its grammatical relation, its literal or figurative use, its precise shade of meaning, and its special appropriateness in the passage. I enjoyed the exercise, I believe, after a fashion, but I have a distinct recollection of my bewilderment after it was over, and my feeling that I should like to know, after all, what the stanza was all about.

"I remember, too, years later, when I came to teach the passage, with what a thrill I discovered for myself what the stanza meant, and set about to find some means of helping my class to see its simple meaning and to feel for themselves as they read it something of the pleasure that I had missed. I asked them to turn their books over for a moment and to imagine a traveller who has lost his way in the black night in a dreary mountain country. He cannot see the path, and is fearful that the next step will plunge him over a precipice into the roaring torrent below. Weary and disheartened as he is, what to him will be the most welcome and most beautiful sight in the world? The sight of the first beam of returning light? Yes, that is beautiful, but the poet says there is something more beautiful still. Look at your books and tell me what it is. Martial Faith and Courtesy's bright star. What do you think is meant by martial faith? A soldier's promise. Where does a soldier's promise come into this story? Roderick Dhu has promised to guide Fitz-james as far as Coilantogle Ford. To what does the poet compare the keeping of a soldier's promise? To the beauty of the first beam of eastern light when seen by the lost pilgrim. And now let us read the stanza again, and in reading it let us try, if we can, to express the poet's feeling."

However successful we are in dealing with individual passages as types of general treatment, there remains the fundamental difficulty of covering the immense field of English Literature, during the school course. Very naturally the question rises: Is it necessary to attempt to cover it? Can we not be content to deal with only so much of it as lies within the reach of the pupils' capacity, and can be dealt with in the limited time allowed for the subject? Even in the new teaching it appears to be pretty generally held that the pupil who leaves school at sixteen or eighteen should have a general notion of the scope of the whole of English Literature, though of course it will be necessary to content ourselves with sample work in many of the periods, while insisting upon a fairly wide reading of works from some selected period or periods. The new teaching recognizes the serious danger of hampering the individuality of the pupil by restricting his reading in English Literature, and yet cannot reconcile itself to the complete neglect of certain fields and periods. It accordingly falls back with some satisfaction on what it likes to call "browsing." This is the term that we use when we wish to look on the sunny side of desultory reading. Throughout his course the pupil is to be allowed, in an increasing degree as he passes up in the school, to read what he pleases so long as his choice is limited to authors permitted by the teacher. The hardier spirits would put the pupils for certain hours every week in a good library and allow them to read whatever they liked. A good case could be made out for this absolute freedom, if the pupils were in their turn hardy spirits and strong. But most teachers feel that a certain restraint is necessary even in browsing. And, after all, there cannot be said to be any lack of

breadth in the reading of pupils who have at their disposal all the books in English Literature that can pass the censorship of the new teacher. By this relatively free browsing the pupils in a school are allowed to read along their own line, with the result that in dealing in class with general questions in Literature it is usually found that among them the pupils can give illustrations from every branch.

It is recognized, of course, that while the browsing in school may be regulated, there is an external browsing that is not under the teacher's control, at any rate in day schools. Here emerges the problem of the penny dreadful. This kind of reading has to be clearly marked off from prurient stuff. The penny dreadful as such is usually merely sensational and silly. The injury it does is not positive so much as negative. It does not usually do actual harm, but merely takes the place of better stuff. The new teaching has not quite made up its mind here. There are teachers who say that they can easily tell which of their pupils read this kind of literature, not from their depravity, but from their wider vocabulary. Besides, there are all degrees of penny dreadfuls. When all is said, *Treasure Island* is only the best of the *genre*, and the master's *Sherlock Holmes* and *Green Mantle* belong to the same group as the pupil's *Alone in the Pirates' Lair* and *Caradoc the Briton*. Leaving out of account the *Dick Turpin* and *Wild Boys of London* type, which stands self-condemned because of its bad morals, the question remains whether sensational stories should not be tolerated because they encourage the reading habit, and may lead to higher literature. Ruskin, of all men, is called in as a witness on the side of the dreadful, since he preaches that we ought to be sincere

in our artistic admirations, and that we ought to present to the public we wish to train something within its reach but just a little bit higher than it would of its own initiative seek out. The recapitulatory theory is also pleaded in defence, and it is maintained that the penny dreadful marks a stage through which it is natural that we should pass on our way to higher things.

A strong argument in favour of browsing is that it removes the contrariant feeling that prescribed reading so often calls forth. Many years ago, at a literary dinner in London, a distinguished author dealing with the question of how it came about that modern writers had any chance at all when they had to compete with the immortal company of the Great Masters, reassured his fellows by maintaining that so long as the Immortals are set for school study the moderns will never lack a public. Browsing in a library from which the ultra moderns are excluded—not because they are inferior, but because their turn has not yet come—is the best way to give the Immortals fair play. It is sometimes objected that there are certain great authors that school pupils will never touch unless under compulsion. The out-and-out new teacher is inclined to reply that this very fact shows that these authors are unsuitable for the school age. The more cautious section are inclined to compromise and say that browsing has among its advantages the separation between works that of themselves attract and works that need the stimulus of the teacher's recommendation and exposition. But, broadly speaking, it may be truly said that the new teaching recognizes that there are certain types of literature that are permanently unsuitable for the school age, for the reason that they

demand an experience of life that is for ever impossible at that stage. It has no sympathy with the old-fashioned notion of making pupils familiar with texts that they cannot understand in order that "when they come to years of discretion" they may have suitable material at their disposal. It is recognized, of course, that pupils may profitably study books the full meaning of which they cannot appreciate till much later. What is barred is the sort of book that makes no appeal at all at the school stage. A boy may disturb his parents in the evening by his uproarious laughter over certain passages in *Don Quixote*, or gloat over the Lilliputians, while leaving to the future the understanding of the full meaning of the books. So, too, some of our poets may be read at an early stage for the mere sound and the surface meaning. But many books have no attraction at all for the young, and to force them to read works of this kind forms no part of the scheme of the new teaching.

It would be difficult to find a better expression of the attitude of the new teaching than Mr. Nowell Smith's concise statement[1] of the objects of literary studies as a part of education: (i) the formation of a personality fitted for civilized life; (ii) the provision of a permanent source of pure and inalienable pleasure; and (iii) the immediate pleasure of the student in the process of education. The Head Master of Sherborne thus turns back the new teaching to an old source, and plays the disciple to Tranio, whose "study what you most affect" has now been raised to the dignity of an educational principle.

[1] *The Cambridge Essays on Education*, p. 105.

CHAPTER III

MODERN FOREIGN LANGUAGES

By LOUIS DE GLEHN, M.A.

It is strange to see how slow our pedagogues have been to admit the claims of common sense in their methods of teaching, what inveterate theoretic prejudices have had to be overcome by those who endeavoured to press those claims. How often have reforms urged in the name of common sense been damned by such arguments as that they were not *educational*, that they were merely *utilitarian!*

In no field of teaching, I suppose, has the strife been more bitter, nor the confusion of the narrower with the wider conceptions of utilitarianism more disastrous than in the teaching of modern foreign languages. Indeed one may say it was not until Science came to the help of common sense and armed it with arguments which enabled it to meet the reactionary pundits on their own ground—that of Educational Theory—that it became possible to urge at all effectively the common-sense plea that learning a language should consist primarily in learning to understand and use the spoken tongue and lead the learner thereby to the enjoyment and understanding of the literature, as in the case of the mother-tongue. And it is thanks to the Gouins, the Viëtors, the Paul Passys, the Widgerys, the Jespersens, the Palmgrens and the long list of pioneers, who fought valiantly for this cause in the last quarter of

the nineteenth century, that to-day Modern-Language teachers, as a rule, whatever their practice, profess to follow this course, and that the British public, with its love of "labels," is demanding the brand of teaching called "The Direct Method."

Even so, the reformers of Modern-Language teaching, hampered as they were by the position of inferiority to which were relegated both the subject and its teachers, and by the appalling lack of co-ordination from which they suffered, not only as between Secondary and University Education, but as between class and class in the selfsame school—surely an unnecessary effect of our justly cherished tradition of the Freedom of the Teacher!—would probably have made yet slower progress, had not their efforts synchronized with the spread of the new principles which have revolutionized the whole of education during the last twenty-five years. These principles may perhaps be classed roughly under two main aims: that of adapting curricula and methods to the age, powers and needs of the pupils, and that of developing systematically in the pupils, by devoting greater attention to the individual, habits of self-training, and so bringing about that collaboration between teacher and taught which, constituting as it does a training in individual thought, is the condition of all fruitful study.

My object in the following pages is to give a general description of this New Teaching of Modern Foreign Languages, bringing out the distinctive characteristics of its theory and practice, so as to form a fairly complete and coherent whole. It is obvious that the complete picture is not to be seen in all schools professing to practise the New Teaching, and that the ratio to one another of the different ingredients of this

new mixture varies from school to school and from teacher to teacher, according to local conditions, teachers' idiosyncrasies and countless other things. Balance and co-ordination are difficult problems in *all* schools ; in many, far too many, they are still insoluble. To take one point only—the question of time. There are still a great many schools which, while professing to practise the New Teaching, do not recognize that it requires more time than was allotted to the subject under the old regime, or, worst of all, do not act on the now well-established principle, that foreign language teaching must be *intensive*.[1]

Such essential conditions as these I will assume in my account, as well as the following : competent teachers,[2] *i. e.* teachers that not only know their subject but have the requisite natural gifts and training for their task, suitable material—there are children who are incapable of learning a foreign language with profit—suitable apparatus, homogeneous classes of moderate size, reasonable co-ordination, not only within the language-course, but as between it and the other subjects, and reasonable external examinations, at the end —not in the middle !—of the course.

It will be best for my purpose to select the language-course as organized for the first foreign language studied, which in our schools is generally French ; for

[1] *i. e.* no second language should be begun until the foundations of the first are securely laid, and, in the Elementary stage at any rate, there should be daily lessons, however short, to ensure the frequent renewal of identical impressions, which is essential in the training of the ear and vocal organs.

[2] The supply of these is lamentably inadequate, and will remain so until proper training is insisted on, and both the University courses for Modern Languages and the professional prospects of Modern Language teachers become such as to attract the best brains to this branch of study.

that will naturally afford the most complete description of the method, especially in its initial stages, which are the most important from the point of view of the formation of right mental habits. Roughly speaking, the course may be considered as covering six years : *i. e.* from ten to sixteen, and falling into three stages of two years each—the Elementary, the Intermediate and the Advanced.[1]

The New Teaching of foreign languages has been given many names : Natural Method, Intuitive Method, Oral Method, New Method, Reform Method, Synthetic Method, Gouin Method, Berlitz Method, Conversational Method, Direct Method, Organized Method, etc.

There are obvious drawbacks to all such labels ; but the label "Direct" has the advantage, in my opinion, of expressing clearly, if somewhat roughly, at any rate the chief linguistic aim of any sound method of foreign language teaching, viz. one that will give the pupil a *real* command of the language—both of the spoken and of the written idiom—differing not in kind but only in degree from his command of his mother-tongue. This aim must be to establish in connection with the foreign

[1] It is difficult to state the length of the course in years, owing to the variations existing in different schools and in different parts of the country. Mr. Cloudesley Brereton, in his valuable report written for the L.C.C., puts the regular course at five years—age, 11–12 to 16–17. In many schools, and perhaps for the actual numerical majority of children in this country, it falls to four years, which compares very unfavourably with what obtains in France and Germany. In others, again, especially if the Preparatory stage is included, a pupil leaving at 16–17 may be reckoned to have had six or seven years. In any case it may be stated with certainty that the minimum duration of a course adequate to national demands (leaving out of count the preparation of pupils for the University) should be six years, with an average of five to six periods per week, a state of things rarely to be found at present.

language the same Direct Association between experience and expression as exists in regard to the mother-tongue. In other words, we must aim at developing in our pupils that instinctive, unerring language-sense, or *Sprachgefühl*, which we all possess in varying degrees in the mother-tongue, and which, superseding all rules, grammars and dictionaries, and resting at bottom on the Direct Association between experience and expression above mentioned, is the only sure guide in the use of a language, whether in conversation or in literature. This aim is primarily linguistic, but by that very fact it furthers the attainment of the cultural or humanistic aims of foreign language study which the New Teaching, no less than its predecessors, considers most important of all.

Now this language-sense, this Direct Association that we aim at, has its roots in the spoken tongue. Hence the most effective way of achieving our end is to make the pupils constantly hear and speak the foreign language, especially, at first, in the rapid give and take of dialogue, and therefore the spoken idiom must be made the basis and as far as possible the medium of instruction. "*Speech first. Writing and Reading second.*" Such is our motto. The ideal method is essentially an *oral* method.

This is one of the specific points where science has come to the help of foreign-language teaching. For the results of psychological research prove the important part played in the acquisition of language by auditory impressions and motor activities (*i. e.* the cumulative physical experience of hearing and articulation). The oral method therefore enlists in its service two more mental associations than did the old-fashioned method of teaching foreign languages, which relied mainly

on the visual experience derived from the written or printed word.

But this is not all. That language-sense (*Sprachgefühl*) of which I have spoken—the sense for an exact correspondence between thought and expression—is most subtly linked with the physical experience of hearing and articulating living speech, wherein, by dint of repetition, a direct association is established between certain groups of speech sounds and certain physical, mental and moral experiences.

This brings us to a second distinctive principle of the ideal method, one which, equally with the first—the oral principle—is determined by the aim formulated above. This second principle is that, to ensure the direct association just mentioned between experience and expression no rival speech sounds must intervene. In other words, the moment the experience in question is clearly apprehended, the mother-tongue must be banished: *i. e.* translation as a means of *assimilating* new language-forms by practice is barred.[1] If our

[1] This categorical statement requires some explanation. It expresses an ideal, an ultimate aim. Only fanatics would maintain that the mother-tongue is never to be used in the foreign language lesson, as is done I believe in Berlitz schools. But it makes all the difference, in practice, whether the teacher aims at avoiding its use whenever possible or at allowing its use whenever it seems necessary. The important point is to do nothing to develop or encourage the *habit of translation*; and in this connection it should be noted that the danger to be avoided is the *intervening* of the mother-tongue between the foreign expression and the idea, not, in Mr. Kirkman's happy phrase, its "*supervening*" (vid. *The Teaching of Foreign Languages*, Clive), which of course is unavoidable, and may often be welcomed as proof that the correct direct association has been formed. It is obviously in the *interpretation* of new material that it is most difficult to avoid the intrusion of the mother-tongue, and while most teachers are agreed that it must be banished from the processes of *assimilation* and *reproduction*, there is much divergence of practice in that of *interpretation*, some aiming

pupils habitually make use of translational methods in learning and practising new language forms, they will naturally have a tendency to translate when they subsequently hear and read them or want to use them. If, on the other hand, we carefully banish translation from the learning and practice, they contract the habit of Direct Association, which will tend to make them *understand directly* what they hear and read, and *express directly* what is in their mind, provided it is within their linguistic range. In other words, the means employed for driving home new linguistic material must be as *direct* as in the acquisition of the mother-tongue, instead of introducing the mother-tongue as a regular link between expression and experience, and so keeping them apart.

Thus the term "Direct Method" is justified not only by the aim which it keeps in view, but by the means it employs to achieve it.[1]

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deliberately at eventually eliminating the mother-tongue altogether from this part of the work, whereas others make a point of using it freely or at any rate of testing comprehension, *after* the interpretation, by careful translation. But practically all reform teachers are agreed that the old-fashioned continuous *Construe* as a means of interpretation must be abandoned, as leading to the habit of reading off the foreign text in English, and very bad English too. In the teaching of Grammar, again, there is much difference of opinion, some agreeing with Jespersen that here too the mother-tongue can gradually be eliminated, while others insist that in so abstract a subject its use is essential to clearness. My experience is that Jespersen is right, and that only those teachers who aim at the complete elimination of the mother-tongue from *all* parts of the work, as well as from the normal class-room intercourse with their pupils, discover the countless subtle tests of comprehension which make this ideal attainable without any sacrifice of efficiency.

[1] M. Firmery (Inspecteur Général) says in *la Revue politique et parlementaire* (Oct. 10, 1902): "La méthode directe est, par définition, celle d'après laquelle on enseigne une langue directement, c.à.d. sans l'intermédiaire de la langue maternelle." Is not a term that satisfies the logic of the French good enough for us?

But there is a third principle of method which follows from the conception that the acquisition of a foreign language by a child must follow the lines of his acquisition of the mother-tongue, and which is closely connected with our first principle, that *Speech* must take precedence of *Writing* and *Reading*. It is in sentences that a child learns to talk, or at any rate in groups of words that imply a sentence. We think in "*sense-groups*." The single word is a lexicological, not a psychological, unit. It follows that our speech unit must be the sentence. "*Pas le mot mais la parole.*"

These three principles must inspire and guide all our teaching—they are the test by which we must determine whether to accept or to discard any particular device or instrument of teaching or of study.

But, at the very outset, we encounter a practical difficulty. This development of right habits in the practice of the mother-tongue—Nature's method—is mainly subconscious, and, thanks to environment, is practically a continuous process.

It is out of the question to reproduce in a school the favourable conditions under which the mother-tongue is learned—we can only count at most on six lessons a week for our work, and that in competition with the extremely active development and constant intrusion of the native "speech-centre." Is not this fatal to the working out of our principle? No—and for this reason: when the child begins French, he is no longer the same merely impulsive little animal he was when he was learning his mother-tongue. He has begun to exercise his various powers deliberately and consciously, he has imagination and, above all, curiosity. If, therefore, we can somehow

inspire him with a strong desire to speak French, we have got material of such a quality to work on as will enable us to save a great deal of time. By calling into play the pupil's will and reason, and by the systematization of Nature's haphazard method into a graduated and organic whole, we shall find it possible to compress into a relatively short space of time an amount of work—the "*translation of experience*"[1] into speech—which the same brain in babyhood took months to perform.

On the other hand, the child's vocal organs are still pliable, his impressions vivid, and his subconscious mental processes as active as ever—all which means that imitation and learning by heart will offer little difficulty. In a word, we have caught the child in the nick of time for realizing in our method that highest ideal of education—the co-operation of conscious and subconscious activities—of Reason and Instinct.

Now it needs but little reflection to see that the application of the three principles I have enumerated means a complete reconstruction of our conception of language-study; it means that in the foreign, as in the native language, the power to use it is not the *outcome* but the *condition* of all fruitful observation and classification of its phenomena; it is one more example of the vivifying principle of all modern educational reform: the Particular must precede the General, the Concrete the Abstract, Practice Theory. *Erst Können dann Kennen.*

There will, of course, be this great difference in our method as compared with Nature's method of teaching the mother-tongue. In the latter several years are spent in accumulating subconsciously the

[1] A phrase used by Gouin; see below, p. 88.

material for future conscious observation and classification—though even here, as is well known, conscious "induction" often takes place very early. But in our curriculum the two processes will occur at every step. At every step the acquisition of "particular" language forms by means of imitation and repetition will be followed by the induction therefrom of general laws to act as guiding principles—i.e. *short cuts to knowledge.*

In other words, Nature's method is for us an inspiring principle rather than an exact guide.

Let me give an example of what I mean. The child speaks fluently before it begins to read. Our pupils begin to read when they can as yet say but very little indeed. But the principle is observed, and not only in the first stage of learning, by making them realize the language first as sound, before showing them the written symbols, but also throughout the subsequent course of study, by making them continue to regard all writing or printing as implying speech sounds. Or, again, take the inflections of the verb. Our pupils are led to make helpful generalizations from the very beginning just exactly in the measure that each forward step in the use of the verb makes possible. The first is one concerned only with sound, viz., that *je*, *tu* and *il* (*elle*) are as a rule followed by the same form (I am, of course, only speaking of the Present tense), and that *nous* and *vous* are followed by the endings *-ons* and *-ez* respectively. Later on, when spelling is learned, further laws will be discovered, and so on.

This *inductive* teaching of the laws governing the structure and use of the foreign language constitutes our fourth principle of method, and with the other

three I have mentioned must determine the working out of the method in practice, if we wish to do this consistently.

The merit of language teaching understood in this way is that it does justice to the two aspects of language, the artistic and the scientific, each with its peculiar discipline or training in self-control.

The observance of these four principles of *Method*, the practice of this twofold *Discipline*, will be assumed throughout the more detailed exposition of the course, which I now proceed to give.

Pronunciation.—Before we begin the linguistic course proper there is a question which forces itself upon our notice.

Our first duty is to teach our pupils to speak. Therefore the foreign language must first be presented to them as sound, and we may only pass on to writing and reading when the habit of considering the foreign expressions as speech-sounds, not as written words, has been firmly implanted. This means that the first portion of the elementary stage must be entirely oral. But what of the pronunciation? For each successive day of study implants more deeply habits of pronunciation—good or bad, as the case may be. Therefore it must be our aim from the very first to get that pronunciation absolutely correct.

It is important to realize that this *can* be done, provided we do not rely on mere imitation, where the only check is the ear, but teach the pronunciation by a wise application of the results of the science of Phonetics: *i.e.* our pupils must learn what speech sounds are and how they are produced, and add to the checking power of the ear the constructive power of deliberately placing the vocal organs in certain

positions so as to produce certain sounds. This is the only way to counteract the instinctive tendency to assimilate the foreign speech sounds to those of the mother-tongue.[1]

The introduction to Phonetics will therefore take place in the very first lesson, and will be, of course, in and through the mother-tongue. It is obvious that in so brief a survey I cannot go into the details of this phonetic instruction. Various methods of procedure are in use in our schools, though there is general agreement on the necessity of a scientific treatment of pronunciation. Some teachers make little or no use of phonetic script, connecting from the first the "nomic" or ordinary spelling with the sounds taught phonetically, using the symbols of the phonetic alphabet merely as a convenient means of isolating, visually, each sound. Others use phonetic script for reading purposes, but do not let the pupils write it, introducing the "nomic" spelling fairly early or even simultaneously with the phonetic. Others, again, of whom I am one, hold that a more or less prolonged period, during which all reading and writing is done in phonetic script, is the only effective means of securing a correct pronunciation in class teaching. The objections usually urged in criticism of this procedure, apart from the statement that it is not necessary —a point that cannot very well be decided without careful experiment under identical conditions—are that

[1] This is an instance of the way in which a rational method of teaching systematizes Nature's subconscious processes and by making them conscious makes them educational. Moreover, a physical exercise like the production of speech-sounds is a material for observation and analysis more congenial to young children than the abstractions of grammar. The task is adapted to the age of the brain.

it takes too much time and that it spoils the pupils' "nomic" spelling later on. To this I reply, that, as I hope to show, it is time well spent, and that experience shows the second statement to be contrary to fact, when the transition from phonetic to nomic spelling has been systematic and properly graded. Indeed, I have heard that even in the case of English the spelling of phonetically trained English pupils is actually better than that of those not so trained. The main advantages of phonetic script may be enumerated as follows :—

First.—The fundamental argument in favour of its use is that it compels attention to the *oral* aspect of language in the initial stage of study, when we want the pupils' powers of attention and reasoning to be concentrated on establishing the direct association between experience and its expression in speech-sounds; and it enables us to conform to the important principle of teaching "one thing at a time."[1] For, while affording us the advantages of reading and writing, it is in effect a simple, almost mechanical means of isolating *pronunciation* from *spelling* and of maintaining the precedence of the *spoken* over the *written* word. In view of this precedence it is important to inculcate from the first and to maintain throughout the course of study the habit of distinguishing between the two aspects of writing—the *phonetic* and the *nomic*.

Secondly.—It compels the pupil to go mentally through that process of sound analysis, which, as the

[1] I need hardly say that this phonetic training will not form a sort of preliminary purely technical stage, preceding the learning and use of the language. From the first, except for the necessary daily sound-drill, phonetic and linguistic practice will go hand in hand, based on the living spoken tongue, every sound group being carefully decomposed into its phonetic elements.

volume of material increases, it becomes impossible to go through *viva voce* in each case.

Thirdly.—For purposes of *revision*, *learning by heart*, *pronunciation drill*, it is the best substitute for the teacher, after the phonograph—and even in using the latter it is well to follow the phonetic transcript.

Fourthly.—The use of the phonetic alphabet in testing the pronunciation of a class by means of dictation cannot be overrated. The larger the class, the more difficult it is to test this. There must be a great deal of unison work in order to give each pupil the maximum of practice, and although the teacher no doubt becomes very expert at detecting errors—as does the conductor with his orchestra—still "litera scripta manet"; in a phonetic dictation each pupil *must* commit himself.

Fifthly.—I must not forget to mention also that the use of phonetic script has the excellent effect of keeping the teacher himself up to the mark in the matter of pronunciation, and we all know how necessary that is.

But one of the greatest advantages of phonetic transcript, and one which is as yet hardly realized, is the use to which it can be put for what may be called *auto-dictation*, especially in the elementary stage, after the introduction of nomic spelling.[1] It goes without saying that it is of the utmost importance from the very beginning of that stage to train in our pupils the habit of observing spelling, and to this end

[1] Hence the great value of elementary reading-books containing a phonetic transcript of the whole or a considerable portion of the text, like F. B. Kirkman's *Première Année*, Dent's *First French Book* by W. Ripman, Mackay and Curtis' *First French Book*, Calvert's *Oral French* (Rivington), Lady Frazer's *Emile and Hélène* (Macmillan), Miss Batchelor's *Premier Livre de Français* (Clarendon Press).

the home-revision of every new portion of text taught in class should include the learning of the spelling. But here the teacher encounters a serious difficulty. Left to themselves the pupils do not always use the best means of learning the spelling; above all, they tend to use the eye to the exclusion of the ear, and to use the English names of the letters. Now, if they have a phonetic transcript of the passage to take home, and are told to dictate the passage to themselves from this transcript after learning the nomic spelling of it, and to show up the copy next day corrected by themselves, it is a strong inducement to them to carry out the teacher's instruction to base the learning of the nomic spelling on the pronunciation, represented by the phonetic transcript. Of course they must be penalised for mistakes left uncorrected, and they have to be trusted to do the whole thing honestly, and to use the French names of the letters. But that I consider to be an advantage from an educational point of view, and one which is rather characteristic of the Direct Method. We have to trust our pupils in so many ways! And it is best to tell them so, and make them feel their responsibility towards us and, above all, towards themselves.

The Elementary Stage: Series and Object-lessons.— We now turn to the consideration of the linguistic course, which, as we have seen, must begin as soon as possible in the phonetic stage.

Since our aim is the power of self-expression, "the translation of experience," we can have no hesitation in determining the scope of instruction, the language-content of the elementary stage. It must, by definition, be coterminous with the child's own sphere, our pupils must "do and dare, be and bear" in the

foreign language, *i.e.* while repeating the foreign expressions for that particular experience.

The language-content possessed by the ordinary child of ten may be roughly divided into (1) the expression of emotion, (2) naming and description of objects, (3) the expression of actions and sensations which, upon examination, are found to belong to various normal series of actions and sensations—"happenings" that occur in a necessary order, viz. the chronological, so that in them the logical order corresponds exactly to the sense-order or order of experience.

It is to Jean François Gouin, whose remarkable but often irritating book, *The Art of Teaching and Studying Languages*, every language teacher should read, that we are indebted for this "serial" classification of language. He was also the first, I believe, to distinguish between the *objective* and the *subjective* aspect of language, according as it is the direct expression of the speaker's feeling or merely the statement of his observation, and to make a point of using expressions drawn from the subjective language alongside his "series," as a kind of running commentary on them —a distinction which is absolutely ignored by the grammarian.

For memorizing purposes, the value of Gouin's language-series in the acquisition of a foreign language cannot be overrated.[1] The necessary order

[1] Here is Gouin's Series of the Pump, belonging to the general category of Water. Its own general aim or end is the fetching of water from the pump, and is subdivided into three subsidiary ends: (*a*) Going to the pump, (*b*) Pumping the water, (*c*) Carrying the water back to the kitchen. These work out as follows (dots indicating steps that are omitted for brevity):

(*a*) The maid takes hold of the pail by the handle. She lifts up

of the several actions—the particular "means" to the general "end" in view—the inevitable way in which the verbs for these actions call forth around them a crowd of words, nouns, pronouns, adjectives, prepositions, adverbs, the meaning of each of which is unmistakable owing to the context, finally the perfectly natural and indeed often inevitable repetition of many of these in successive actions—all this tends to fix in the memory all the linguistic phenomena concerned—vocabulary, inflexions, constructions—with the minimum of effort, in the minimum of time. Above all, we are indebted to Gouin for having readjusted the hierarchy of the parts of speech by putting the verb first, and for having helped to lay the foundations of "stylistic"[1] and of linguistic psychology, by insisting on the fact that the correct meaning and use of words cannot be learnt from grammar and dictionary, but only from the living context of complete sentences forming part of an organic whole.

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the pail. She goes across the kitchen. She opens the door. . . . She sets down the pail under the spout of the pump. She lets go the handle of the pail.

(*b*) She puts out her hand. She grasps the pump-handle. . . . The water rises in the pump. It runs through the spout. It falls into the pail. . . . It rises higher and higher. It fills the pail. The maid lets go the pump-handle.

(*c*) The maid bends down towards the pail. She takes the pail by the handle. . . . She turns her back to the pump. She leaves the pump. . . . She goes into the kitchen. . . . She sets down the pail, etc.

The following are good examples of books in which French is taught by the systematic application of the Gouin Series Method: Duriaux, *Study of French* (Macmillan), and Swan & Bétis' various books of series, published by G. Philip & Son.

[1] The name given to that conception of language-study in which the systematic study of the resources of a language as a means of expression, rather than of its grammatical phenomena, is the primary aim and guiding principle.

But we will not, with Gouin, attempt to press the whole of Life's experience into Series, not that it would be impossible, but because it would be unpractical and deadly dull! Are we to wait until we build a house to name the floor, ceiling, walls, etc., of our class-room? Besides, who would bear out Gouin's statement that to the child the whole of his experience is built up of series? Which of us has not seen a child of two or three put up its finger to point at persons, animals and things, and say, "Man," "Bird," "Dog," "Chair," etc.? In short, there are many things which it is more natural to talk about independently of a series of actions and to treat rather as constituent parts of a whole or as members of a logical group or family, united by some common factor such as place, use, origin, etc.

It is therefore wise to have, by the side of the series, object-lessons, in the widest possible sense of the term. (1) Series of actions expressed in words; (2) the naming, description and definition of objects; and (3) giving vent to one's feelings by the way—such are forms of language, the habitual channels through which we convey to our pupils the necessary materials for the building up of their "foreign soul."

Let us see how this will work out in practice.

We may say at once that the "subjective language," or expression of one's feelings, will take care of itself in the elementary stage, if it be allowed its legitimate place during the lesson and in the class-room, especially if, as recommended in the footnote on p. 79, the teacher aims from the first at making the foreign language his normal means of communication with the class.

Exclamations and other expressions of personal feeling may intervene at any point of the lesson, and a judicious teacher will know how to prevent them from interfering with the main teaching, and will build up in this way quite a large stock of language, which *all* his pupils will *understand*, while their power to use it, to make it pass from their "passive" to their "active" vocabulary will depend on their several powers. It is interesting to notice how readily this "subjective" language is picked up even by the duller pupils, just as it is in the mother-tongue, a fact probably due in part to the exceptional tone of voice in which they are uttered: *e.g.* Goodness gracious! Oh dear! Hang it!—not to speak of stronger expressions. This applies to all expressions of praise and blame, pleasure and pain, and to many commands and prohibitions.[1]

Turning now to the Series, it is obvious that they form a perfect instrument for teaching verbs—by far the most important part of the inflectional phenomena to be assimilated in the elementary stage. On what principle shall we select and construct them? It follows from what I have said above that we must combine two desiderata: keep within the range of the child's experience, and at the same time so construct the series that they shall contain the requisite material for the inductions most urgently needed.

In solving this problem common sense must be our guide. It is evident that our principle of selection must primarily be the naturalness and usefulness of

[1] *e.g.* Aïe! Oh! que j'ai mal! Quel bonheur! Allons donc! Oh! là là! Sapristi! A-t-on-jamais! Tiens-toi tranquille! Veux-tu bien? Ah bah! Tiens! tiens! Parbleu! Dame! Je suis désolé d'être en retard.

the series, or individual verbs. Thus we are confronted with the necessity of introducing our pupils to all the conjugations at once. The moment they stand up, they will have to use a reflexive verb, and one whose stem varies according as the stress accent falls on the ending or not. Is it not madness? And the moment they move they will have to say: "Je vais—nous allons—il va—ils vont." Are we not letting ourselves in for a hopeless confusion in these young minds? Not a bit of it. The confusion is for us who know the grammatical scheme of the conjugations. We must place ourselves at the point of view of our pupils. The process for them at this stage is not one of comparison and classification of verbal forms, it is one of fixing in the memory certain isolated word-groups or sentences as the expression of certain definite actions actually performed by themselves or by others, the connection for them between these various sense-groups is not one of form but of content. So much so, that they will often not notice, unaided, similarities of inflection which seem quite obvious. The new sounds, however regular or anomalous they may be to us, brand themselves on their memories in proportion to the vividness and frequency of their own sensations, of which they become the necessary accompaniment.

Of course we shall, in obedience to our second, the formal or grammatical principle of selection, so arrange our series that they shall contain examples of the chief laws of conjugation, which we intend to make our pupils extract, by induction, from the series later on, when these have been thoroughly mastered.

It is doubtless open to the teacher to construct and to apply this instrument of the Series in various ways.

It appears under some form or other in most Reform French Courses. But it seems to me that we hardly realize yet all that we can get out of it in the elementary stage, not only for purposes of vocabulary, but for laying the foundations of that *stylistic* scheme of language which with us is to take the place of the deposed Queen Grammar.

Now, since action is to accompany the spoken word, our "content" is supplied, and limited by the scope of the class-room; but that scope is far larger than one would at first blush imagine, especially if we call in "make-believe" to our help. It is quite large enough to include all the important verbs in every-day use.

It is convenient to have one fundamental, all-important series, to form as it were the bed-rock of a scheme whereby one may teach bit by bit the conjugation of all verbs, affirmatively, interrogatively, negatively, and negative-interrogatively, in their most important tenses—present, past-indefinite, imperfect and future, as well as the imperative mood.

For this series a sequence of actions should be chosen, which recurs naturally every day, so that the association of speech with action may eventually become automatic. There are plenty of devices to prevent its becoming mechanical.

Take, for example, all the various actions that may be performed between the two extreme points of *standing up in one's seat* and *sitting down again.* It is easy to construct from them one primary series, variations on which may afterwards be invented to any extent.

Suppose we take for this primary series the going of a pupil (or two pupils) to the sound-chart to point to

the sound-symbols, while they are sung and recited by the class, and all that is done until he is once more seated at his desk.

It is well that such a series should from the first form a complete whole, and, as every series is capable of almost unlimited compression or expansion, this presents no difficulty.

But it is essential in the elementary stage to do as much as possible of the work in unison, in order to give the pupils the maximum of practice in the time at our disposal, and in order to give confidence to the weaker ones. Most series, however, can only be enacted conveniently by one or two pupils at a time.

How are we to reconcile these conflicting claims?

The instrument of "Question and Answer" solves the difficulty, and becomes the natural method of communication in the triangular dialogue, between Teacher, Pupil and Class, which henceforth, throughout the course, will provide a safe channel leading from the known to the unknown, keeping everybody interested and occupied.

Such a "Blackboard series" might begin by the four actions: (*a*) Nous nous levons, (*b*) Nous sortons de nos bancs, (*c*) Nous rentrons dans nos bancs, (*a*) Nous nous asseyons, the master giving the corresponding orders: Levez-vous, etc., and asking each time: Que faites-vous? Between (*b*) and (*c*), in obedience to the master's orders, a pupil goes to the Blackboard and points to the sounds as explained above.

Gradually we build up the complete series, with orders given and questions asked by the class in unison.

Ordre.	*Question.*	*Réponse.*
1. For one pupil :		
Lève-toi.	Que fais-tu ?	Je me lève.
Sors de ton banc.	„	Je sors de mon banc.
Va à l'estrade.	„	Je vais à l'estrade.
Etc.		
2. For two pupils :		
Levez-vous.	Que faites-vous ?	Nous nous levons.
Sortez de vos bancs.	„	Nous sortons de nos bancs.
Allez à l'estrade.	„	Nous allons à l'estrade
Etc.		

When this simple form has been mastered we introduce the other persons in answer to the teacher's question : Que fait-il (elle) ? Que font-ils (elles) ? and to the pupil's question : Que fais-je ? or the two pupils' question : Que faisons-nous ?

Eventually we have the following triangular dialogue.

Le Professeur (*ou* La Classe).—Pierre, lève-toi. Que fais-tu ?

Pierre.—Je me lève. Eh bien, camarades (*ou* monsieur), que fais-je ?

La Classe (*ou* le Professeur).—Tu te lèves. Eh bien, monsieur (*ou* mes enfants), que fait cet élève ?

Le Professeur (*ou* La Classe).—Il se lève.

And so on through all the actions. Thus do we obtain a regular system of question and answer, a mould in which we may cast any verb-series. It should be noted how elastic this system is, in spite of its grammatically rigid form. The parts may be distributed in various ways. Only one question and answer may be used, or two, or all three.

Finally, as soon as the pupils are quite familiar with the questions, *Que fais-tu ? Que fais-je ?* etc., other questions will be introduced, containing the interroga-

tive form of the actual verb, beginning with the mere interrogative form of the sentence, *e.g.*: Vas-tu à l'estrade? Où vas-tu? etc. Prends-tu le bâton? Qu'est-ce que tu prends? Où prends-tu le bâton?

It will at once be seen how such questions will lead in a perfectly natural way to the use of pronoun-objects and *y* and *en* and of almost anything one likes.

The different questions suitable to different actions provide us with a very arsenal of devices to prevent the series becoming a mere mechanical and thoughtless drill.

Only a few inductions will be required to make it quite easy for the pupils to learn new verbs in this way. In short, this "series"-scheme, evolved from the Gouin "series," is a perfect instrument for teaching verb-conjugation. When the present is secure, in its affirmative, interrogative, negative and negative-interrogative forms, the future will be introduced, in answer to the question: Que feras-tu demain? and the conversational past, in answer to the question: Qu'as-tu fait hier?

But long before that, indeed before the completion of the Blackboard series, and on its model, we shall have begun the construction, with the collaboration of the pupils, of an endless variety of school and class-room series, and the pupils will not need much driving to turn the class-room into a very stage. Very simple and crude acting will be sufficient to represent the various normal series of their daily life: Getting up and dressing; undressing and going to bed; meals; the walk to school and back; the school day; shopping; writing a letter; games, etc., and series that can be actually performed, without make-believe, on the spot, such as errands. These are the beginnings of free-composition. It is one of the great advantages of

the series system that it puts the pupils in possession of language moulds that they can apply to actual experience.

But what of the object-lessons? The old-fashioned object-lessons in the mother-tongue have fallen into disrepute—owing, no doubt, to the pedantic and often too rigidly formal spirit that presided over them. But I have already pointed out how natural and simple a means they provide in the foreign language course for enlarging the pupils' vocabulary of nouns, by teaching them the names of a great many things, the presentation of which in a series would either be inconvenient, or long-winded, or too long delayed.

But it also provides a perfect means of revising and making secure the assimilation of nouns already familiar, for it is obvious that these object-lessons must be organized so as to form logical wholes—providing the first and most natural method of classification for the noun-vocabulary, *i.e.* the classification according to meaning, which must preside over our *word-grouping* in the elementary and intermediate stages. Furthermore, the object-lessons will offer the most ready means of acquiring and practising the use of numerals, prepositions, pronouns, pronominal adjectives and the laws of concord and position that apply to them—many of which (*e.g.* the inflexion of adjectives and the division of all nouns into masculine and feminine), belong to that class of linguistic phenomena which call for special care and practice, viz. those that have no counterpart in the mother-tongue and consequently imply a new linguistic notion. They will also be the means of teaching a number of *verbal expressions*, which by their very nature do not naturally occur in a series of events or actions (such as *il y a*, *on se sert de*, *cela sert à*, *cela*

se compose de, etc.), besides offering opportunities of practising the *comparative* and *superlative*, the use of the suffixes, *-ci* and *-là*, and simple relative clauses.

Finally the noun-groups will necessarily and naturally lead to the study of *synonyms*, that most essential part of a "stylistic" language course.

And so our pupils learn to make simple definitions and descriptions of what they see, thus laying the foundations for that process of explaining the new by means of the old, which will be found indispensable when new linguistic material is to be introduced, no longer through actual sense experience (by actions, objects and pictures), but through mental representations, by the printed text.

In obedience to our fundamental principles these object-lessons must be composed in such a way as to keep within the field of the child's normal experience. Further, they must be *comprehensive*, not *exhaustive*, and come into contact with the child's life at all points without wearying him by translating the whole even of *his* experience in each domain, as some Direct Method pictures do. It is far preferable to have a numerous series of pictures, each of which presents the essential features of some fairly limited field—such, for example, as the *Leçons de Choses* of Armand Colin or of Nathan—both Paris publishers. Another important point in their favour is that they are characteristically French. To dispense with correct local colour in Direct language-study seems to me as illogical as it is unnecessary.

In the object-lessons, as in the series, the method of instruction—the bridge between teacher and taught—is by question and answer. And here too, of course, as in the series, we must see to it that the

crowning point of linguistic acquisition is reached, *i. e.* self-expression, and give our growing French "baby" the joy of realizing that within certain limits he can walk alone. New arrangements and combinations of familiar objects, real or pictured, provide ample opportunity for this.

So far I have only dealt with what might be called the backbone of the teaching, the two main channels through which the child is made to assimilate the "content" (both linguistic material and grammatical forms), of which we intend to give him perfect command, for the "translation of experience."

But, enjoyable as that part of the work is, it is really the hard work, the drudgery—by which I mean the portion of the work in which absolute accuracy is aimed at.

This question of *accuracy* is a thorny one. Under the old regime accuracy was aimed at in abstract grammar, accidence and syntax. Even then it was generally not attained except by the best pupils, and rarely extended to the application of this grammatical knowledge in the use of the language. In theory grammatical accuracy was aimed at from the beginning in *everything;* it was the scholar's ideal, applied, or rather grotesquely misapplied, to the child. We now realize that there is a kind of accuracy—correctness of idiom, of sound—the attainment of which is even more important, and certainly more adapted to the child. This is the kind of accuracy we are aiming at, and that is why from the very outset we must inculcate the habit of *speaking* everything. *All reading, even in the preparation-room, must be articulate, however low.* All writing is in *theory* dictation. "Does it sound right?" must be the first and last, but not the only test. When

my pupils make the same kind of spelling mistakes that are to be found in French children's dictations, I feel that all is well.

Grammatical accuracy must necessarily rank second. Our chief way of cultivating it must be by avoiding opportunities for inaccuracy. The pupils must feel on firm ground—that is, they must feel all along that they have *something* that they know thoroughly, and on which they can rely, and to which they can always refer, as under the old regime they referred to their declensions and conjugations. They must have the same sense of security and definiteness in regard to their model series and object-lessons as they have in regard to phonetics and phonetic symbols. They must constitute for them a kind of concrete grammar, which they will have at their fingers' ends for testing purposes.[1] Besides, it is good for their souls to have always some portion of their work which they know they *can* do without a mistake, and in which this is expected of them.

But, as I have already said, this is our drudgery, our "gerund-grinding," and, great as is the difference between it and the old "gerund-grinding," the difference between the other less rigorous aspects of the Direct Method and the old exercises and "construe" is immeasurably greater.

The singing and the reciting of *songs* and *nursery rhymes* forms an important and delightful part of language-study at this stage. Everybody knows how a tune helps one to remember words, and there is nothing like singing for detecting bad and achieving good pronunciation.

But that is not all. "Any one who has heard and

[1] *Vide* pp. 108 (top), 109 and 125.

seen it, will testify to the vivifying effect produced on the pupils by an occasional interruption of the lesson for the purpose of singing to their hearts' content a simple song in the language on which they are at that moment engaged. And it must be admitted that such singing develops in no small measure in the pupil the sense that the language is not a dead subject of study but something alive and real." [1]

Many French nursery rhymes are games, or tell a story, or form a dialogue which can be acted ; and so out of these, by the same method of question and answer with which the *series* and *object-lessons* have made our pupils familiar, we can build up short *narratives* in the first, second, or third person as the case may be, or *descriptions;* or we can construct *scenes*—far more dramatic these than our poor " normal series " ! —in which our pupils learn without effort the foreign intonations and cadences, and all that constitutes the logical or emotional accent, as well as the dynamic or tonic (stress) accent, all so important and so difficult, especially the latter, to English throats. This kind of work, by providing opportunities for the practice of familiar sentence forms with new and useful vocabulary, constitutes the beginnings of Free Composition, which must, of course, be built up orally and with the collaboration of the teacher (cf. p. 115).

Then we have *Reading*—reading for pleasure—which is one of the great delights of the Direct Method. A very, very simple text is chosen, well within the range of the class, and with good pictures if possible, and is read " for the story " only, without translation, of course, except where necessary to make the meaning clear. New words and expressions are

[1] Director Palmgren.

noticed as they occur, but not "drilled." The chief aim is to reach the maximum pace compatible with intelligent enjoyment. At the most a few easy questions will be put on the subject matter at the end of each episode. Such is the "Rapid (*or* Extensive) Reading" which all Reformists recommend as being so useful both as a kind of general revision and as an incentive to further study. It is obvious that in the elementary stage it must take place in the class-room under the immediate supervision of the teacher, and always aloud.

Note that this division of the linguistic course into two parts: the *Intensive*, to be completely assimilated by reproduction and to provide material for the first simple efforts in self-expression or Free Composition, and the *Extensive*—*i.e.* rapid reading, with conversation thereon—can be independent of the books used, given a competent teacher, who will know to which treatment to assign the various portions of linguistic material provided by the text-book in use, and above all how to elaborate and supplement the "Series," the supply of which is often meagre. Personally I prefer to have the material for *Intensive* study in a separate book or even note-book (the ideal would be a book which would be gradually built up by the distribution of its pages one by one, as they are required), in order to impress on the pupils the essentially *oral* character of the Elementary Stage, where the material to be completely assimilated should as a rule be first presented in speech, the printed or written record of it being only used for learning and reference purposes.

The Intermediate Stage: The Short Story.—There is in children another instinct that is closely allied to the dramatic instinct—viz. their passion for story-telling.

This consists, essentially, in Narrative in the Past Tense, and the sooner we get to it the better. The introduction to it will take place towards the end of the Elementary Stage.

The foundation has been laid by the running fire of questions eliciting the successive actions of a verb series or the successive events of a Song or Poem, or building up the descriptions in an Object Lesson. The successive answers, separated from the questions, constitute the Narrative or Description, as the case may be, *in the Present Tense.*

It is obvious that this separation of our two instruments of instruction—Series and Descriptions—is unnatural. But in the teaching of French it is very important as a means of laying the foundation, in *the Present*, for that all-important distinction between the Narrative (*passé composé* and *passé simple*) and the Descriptive (*imparfait*) past tenses, which is all the more difficult to teach to our pupils that it has no exact counterpart in the mother-tongue. It is a new notion.

We must therefore, while still in the Present Tense, introduce into our series, *during an action or while action is at a standstill*, such questions as: Qu'a-t-il à la main? Que va-t-il faire? Pourquoi fait-il cela? Comment se tient-il? Où est-il? etc., and point out that the answers to these questions belong to the same category as the object-lessons.

But we want to get to real story-telling, and so, before the end of the Elementary stage we make a point of introducing, besides the Future, the colloquial narrative tense, the *passé indéfini* (or *composé*), and, true to our principle of basing everything on concrete reality, on individual sense-impressions, we do this by

telling our pupils and making them tell us in turn the "story" of a verb series, which they have actually performed, for example, the day before; our object being that just as the *actual sense-impression* calls up the Present, so the *mental representation of the past sense-impression* should call up the Past Indefinite, in answer to the ever-recurring question of the story-teller's audience:

"Et puis? qu'est-ce que tu as fait ensuite? qu'est-ce qu'il a fait? qu'est-ce qui est arrivé?"

The same process, applied to the past definitions and descriptions of the object lessons, will bring in the *Imperfect*, in answer to the questions: Qu'est-ce qu'il y avait sur l'image que nous avons regardée hier? Qu'est-ce qu'il y avait hier sur cette table? Où était tel objet? Comment était tel autre? Que faisait cet homme? Que portait-il? etc.

Of course we shall make a point of immediately combining the two tenses—Past Indefinite and Imperfect—in any of the series we may have constructed that lend themselves to such interruptions of the sequence, and in the narratives (elicited by question and answer) of familiar scenes and stories told in our songs, etc., pointing out the correspondence of the Imperfects to the questions previously put in the Present, while the action was arrested, and leading to descriptions, explanations, etc., *e.g.* Où se tenait le professeur à ce moment-là? Quel torchon as-tu pris pour effacer ton nom? Pourquoi as-tu pris celui-là? the question always giving the tense required (except where the answer is contained in a subordinate clause), so that the possibility of mistakes is eliminated.

Thus armed our pupils are ready for the "Short Story," which will now be our main instrument of

systematic instruction, at any rate during the Intermediate Stage.

At first it is well to select such stories as can be presented in consecutive pictures, or, if acted by the teacher, in a series of tableaux, marking the successive *moments*, or *steps* of the story.

The series of these "moments" will form, so to speak, the design or outline of the story (*le Plan*, as the French say), as actually *seen*, in the Present.

This must be thoroughly mastered before it is expanded into a more lengthy narrative, and will of course be first presented orally, the attention of the pupils being fixed on the central event of each picture or "moment" of the scene.

Care must be taken to insist on the essential verbs of the narrative, those marking the "series" or succession of events as distinct from any purely descriptive ones that may be introduced.

The next step is the expansion of the *Plan* into the complete narrative in the Present Tense: *le Développement.*

This takes the form of the reading of the Développement, first of all by the teacher with any necessary explanations (the pupils' copies being put away), and afterwards by the pupils. The teacher is careful to point out to the pupils, or rather to help them to discover for themselves, the nature of the process of expansion—what questions naturally suggested by the "Plan" are answered, what touches are added by the narrator to prepare the climax of the story. And again, as in the "Plan," the narrative verbs, constituting the verb-skeleton, are distinguished from the merely descriptive ones. In a word, it is also a lesson in composition, attention being drawn to the different

parts of the story: "*l'introduction—l'exposition—le noeud—la conclusion.*"

The degree of expansion in each story determines the amount that can be done in a single lesson. The pupils must get the new vocabulary and grammar in manageable portions, so to speak; for it is of course of the greatest importance that the assimilation of the new forms should be perfect. So one should not wait till the whole Développement has been read, to do the hard work of assimilating the new material (both linguistic and grammatical) by "Reproduction." At every step of the reproduction, viz. after every "portion" of home work, there must be a careful test, oral and written, first with the help of questions in the foreign language, afterwards without any other assistance but that of the pictures or acting.

I need hardly say that once the assimilation by Reproduction of the model version is complete, the best means of driving home the new knowledge acquired is to vary the form of the narrative in every possible way, *e.g.* (*a*) let the story be told by one of the characters in it, or (*b*) pick out the necessary number of pupils to act the story and say what they do, as in a series; (*c*) close the picture-books and have the story told with two main characters instead of one, to bring in the plural, a useful exercise not only from the grammatical but also from the common-sense standpoint; or again, (*d*) when the subject admits of it, have the story converted into a real scene, with only the natural amount of soliloquy and dialogue. This is of course a genuine exercise in self-expression, and will require careful watching and assistance on the part of the teacher; *e.g.* (*c*) and (*d*) may be quite difficult.

We now come to the most important stage, the transposition of the story into the Past.

The picture-books are closed, and it is suggested that one of the characters should tell the story next day to a friend, or should tell it in the form of a letter—or, if it be an event of public importance or interest, it may be conceived as a newspaper article or *fait-divers*.

The importance of this stage for the beginner is obvious. This is what we have been working up to by our "Series" and "Descriptions" in the Present and the Past. Here, as there, when we pass from the Present to the Past, he must notice most carefully the falling apart of the verbs of the earlier version (in the Present), into Past Indefinites on the one hand, and Imperfects on the other, according to their respective functions.

One should, of course, as above with the version in the Present, vary the forms in which the story is reproduced. If told to a friend, for example, it may lend itself to the dialogue form, the friend asking questions or making remarks from time to time—a far easier task, of course, than the real scene in the Present—*i. e.* (*d*) above.

In the beginning—that is, with the first three or four of these stories, it is well, in transposing into the Past, to make a start by working directly from the Present expanded Version, passing on only afterwards to the model Version in the Colloquial Past and showing how the change of speaker and of occasion naturally leads to differences in the conception and composition. The object of this method of operation is, of course, to develop the power of self-expression in original composition, which we must never lose sight of, and to

which we must now begin to give more scope than was furnished by the too rigid frames of our series and object lessons. That is why we will now be careful to avoid remaining long in the domain of mere assimilation by exact reproduction and make a point of giving at once, in however slight a degree, opportunities for self-expression. One way of doing this is, instead of presenting the Développement as a ready-made whole, to build it up by collaboration in class, either working up to a predesigned model, or leaving the class to select at each step which of the rival suggestions shall be adopted.

It is obvious that we must not use all the possible variations on a single theme. We must make a choice and not extend our operations beyond the duration of the pupil's interest in the particular story. But on the other hand, the proposal of a new version, especially a dramatic one, will often reawaken it.

About midway in the Intermediate Stage the crowning point of narrative will be reached, viz. the literary or historic form, in which the narrative tense is the Past Definite (Historic). This will be introduced by suggesting that one of the old stories be written for publication, getting rid of the personal element by substituting *Un jour*, *Une fois*, for *Hier*, *L'autre jour*. Henceforth the Développement in the Present and Past Indefinite will be dispensed with—in other words, we shall not pass through the stage of personal experience—it will be assumed that we have reached the second degree of mental representation: viz. invention.

The distinction between the colloquial past tense (Past Indefinite) and the literary past tense (Past Definite) is a most important one; and it is essential that the former should be the first narrative tense

introduced, because we start out to teach our pupils the spoken tongue first. We must also consider that most of their later reading will give them far more practice in the Past Definite than in the Past Indefinite. Care must be taken that any models of narrative given in the Past Indefinite or Definite shall be clearly defined as, in the *former* case, spoken, or written in the form of a letter, diary, or newspaper article, and, in the *latter*, as aiming at literary form.

When the literary Past Tense has been mastered by repeated Reproductions of this type, the building up of stories from a *Plan*, with or without pictures, will form one of those occasional exercises in real Free Composition that test the pupils' growing command of the language, but in which they must be carefully guided and restrained by the teacher until, in the Advanced Stage, they can be given complete freedom. The "short story" for Reproduction, on the other hand, will take the form of passages, as a rule in the Past Definite, which will be selected and treated in the same spirit as the stories of which I have been speaking, only the direction will be reversed. The story will first of all be mastered in the literary form, the verbs being classified into *events* and *states* in accordance with that all-important tense-distinction, which must remain a dominant feature of all Narrative Composition; next it will be told by one of the characters in the Past Indefinite, with all the changes that this entails. Or a dialogue will be constructed presenting the story in the Present, in the form of a dramatic scene. In any case, in connection with its first reproduction, the story will generally be reduced to its simplest expression, that of a *Plan*, a good training for that very necessary and important part of the Reading of complete

texts, especially in the Advanced Stage—summarizing the subject matter in the form of sub-titles, *i.e. a table of contents*, or in that of a précis or argument, *i.e. a short summary in narrative form.*

It will now be seen why I said that the short story should be for some considerable period—say from the end of the Elementary, through the Intermediate Stage to the beginning of the Advanced Stage—our main instrument of systematic instruction, the centre of the teaching. The Intermediate Stage must be to some extent the stage of "drudgery." The Elementary Stage should point to the goal, and, by developing in our pupils, almost intuitively, the habit of "Direct Comprehension and Expression," and giving them the power of self-expression within narrow limits, provide the necessary incentive for the hard work that must follow—the mastering of the grammar and the conscious and deliberate practice of that same habit of Direct Association. The very real difficulties of this transition from the more subconscious processes of the child of ten to twelve years of age to the more conscious work of the child of twelve to fourteen find their most scientific solution in some such systematization of the purely linguistic side of the teaching, as I have described, viz. Reproduction in all its forms.

Let the reading book—a book easy enough for fairly rapid reading—provide the pleasure and the advance in knowledge of the foreign people, their life and ways. And above all, let that text be simple enough to be read in the original, with only occasional explanations and, if need be, translations. This will provide the Rapid Reading which is the main constituent of the *Extensive* part of the work. But

let the centre of the teaching, the linguistic line of advance, be made to rest on a carefully graded course of Reproduction based on passages specially selected for *Intensive* Study. It is an advantage to have two kinds of work—the one definite, carefully composed and graduated, somewhat rigid and systematic, providing the discipline in accuracy in and through the "linguistic content" to be assimilated by the pupil; the other easier, more fluid, more intuitive, providing a pleasant relaxation for the pupil, and, above all, an opportunity of realizing his growing powers of understanding and "thinking in the foreign language."

Moreover, treated as I have said, the short story provides a perfect instrument, combining all the qualities to which importance must be attached in the purely linguistic part of the study. It gives scope to the child's imagination, his dramatic and story-telling instinct. For all its rigidness, it is marvellously elastic in the modified versions, which give a chance to everyone. Whereas the high-fliers can exercise their ingenuity in adding touches of their own, the weaker pupils can fall back on the original text or in the last resort on the *Plan*. It forms a convenient frame for the introduction of definite points of grammar, idiom and vocabulary, which we wish to teach, and offers the best possible material for practice in the application of the laws of inflexion and construction induced at every step, viz. material which the pupils can handle because they are familiar with its linguistic content, and which above all has meaning for them because they have realized, *i.e.* visualized, its context. In a word, it is an inexhaustible mine for the teacher in search of suitable "home work." Finally, you get with every fresh story the

full benefit of the keenness, and consequent attention, with which a schoolboy or girl confronts anything new. It is an advantage to have each story on a separate page or card.

"Reproduction" can thus be the main channel whereby our pupils are made, consciously and deliberately, to assimilate the foreign language; it marks the line of advance as regards "content" and "form" as planned by the teacher, and provides the pupil with that necessary stock of "types for reference," which, in the Elementary Stage, was supplied by his series and object lessons, and which he must have in order to feel secure. In a word, it forms the *discipline* of the course, the strict "task" in which thoroughness and accuracy can and must be insisted on by the teacher, at any rate in the more exact forms of Reproduction.

Many teachers, instead of devising a definite course of reproduction such as I have described, find it more convenient to apply this treatment to any suitable portions of the reading-book. But I believe that in the Intermediate Stage, as in the Elementary, it pays to separate the *Intensive* from the *Extensive* work of the course, and that the use, for the former, of a graduated course of short passages, forming organic wholes, is not only the most effective but the most time-saving method of doing this.

At any rate the "reproductive" treatment of linguistic material, whatever method of selection be adopted, is absolutely essential to the true application of our fundamental principles, for it constitutes, predominantly, the means of acquisition by conscious assimilation, and yet includes within its scope all but the most creative forms of self-expression or composition.

The Advanced Stage: Reading and Writing.—If the Elementary and Intermediate Stages have followed the general lines indicated above, the pupil should by the end of the Intermediate Stage have his ear and vocal organs thoroughly trained: he should not only understand, but should (in both speaking and writing) have a fairly fluent and accurate command of the essential forms and content of everyday speech. In addition to this he should be able to read with pleasure and understanding the simpler and less abstract forms of literature. From a purely linguistic point of view he might be compared to the foreign child of ten or eleven. But this linguistic inferiority is compensated by a more advanced mental development. We can, therefore, expect him to read with appreciation literary masterpieces which the foreign child would normally read at the intermediate age of thirteen. In short, we now reap the greatest benefit of the Direct Method of language teaching—the power of reading, with *direct* understanding, what the foreign nation has contributed to the world's stock of thought and beauty expressed in words, whereas, under translational methods, the monotonous process of "construing" the text, and the *indirect* comprehension of its content, which this implies, makes the introduction to real literature a laborious business with little or no grasp of the content as a whole, and produces a distaste for it which seriously interferes with the attainment of our ultimate humanistic aim—a sympathetic understanding of the foreign nation.

This is another example of the way in which the acquisition of a foreign language on the Direct Method follows a parallel line of development to that of the acquisition of the mother-tongue, with results identical

in kind though not in degree. The habit of using the foreign language as the normal means of communication between teacher and taught makes it possible to reveal to the pupil the exact aspect and force of a turn of phrase or an expression by setting up intuitive processes for which it is essential to remain within the language.

To sum up, then, the Elementary Stage has been essentially the stage of *Speaking*, in which the *Intensive* work consisted in the expression of actual sense-experience; the Intermediate Stage has been essentially the stage of *Narrative*, in which the *Intensive* work consisted in the reproduction (oral and written), with endless modifications, of specially selected material presented both orally and in print; and now the Advanced Stage is going to be essentially the stage of *Reading and Writing* (*i.e.* the more original forms of Free Composition). That is to say, that whereas in the first two stages a constant and close connection has been maintained between the material intensively studied and the practice in both oral and written expression by means of Reproduction, in the third stage Reproduction will diminish in importance, and a differentiation will take place in the *Intensive* portion of the work, in proportion as the habit of noticing and assimilating new language-forms may be considered as firmly established.

This *Intensive* portion with its essentially linguistic aim will develop in two directions. The first will consist in the Reading and minute study of prose and verse passages, selected for their literary merit and linguistic content, an adaptation to our needs of that wonderful instrument of linguistic training that has been brought to such perfection in France—

La Lecture Expliquée. In this branch of study our object will be by developing our pupils' critical faculties to train their literary appreciation, and at the same time to extend their *active* command of the language for literary composition. But for the assimilation of the new material we shall not so much rely on immediate and complete "reproduction" as on subconscious processes similar to those that extend the command of the mother-tongue, on logical connection with previously established linguistic categories and "thought-centres," and occasionally on imitative exercises in Free Composition. The second will consist in the writing of all the various forms of genuine Free Composition,[1] often based on a preliminary oral preparation in class, in which different modes of treatment and arrangement will be discussed—in the foreign tongue, of course—and the requisite linguistic material marshalled by the collaboration of teacher and taught, in the course of which preparation opportunities will be sought of using the latest "treasures" furnished by the *Lecture Expliquée.*[2] The *Intensive* portion of the work at this stage must also include a rounding off of the classifications of formal grammar, the main lines of which have been laid down bit by bit, *inductively*, throughout the course: for example, the classification of subordinate clauses and, in connection therewith, the construction of a comprehensive scheme of the uses of the subjunctive, that important chapter of the study of French, where the "stylistic"

[1] Which in the Elementary and Intermediate Stages has been rather in the nature of a rare experiment, confined within safe limits.

[2] Most schools, instead of concentrating on Free Composition, as I prefer to do except for specialists, include Translation-Composition in this part of the course. But *vide* p. 123, footnote.

conception of language study transfigures Grammar into something intensely human and living.

But it is in the Advanced Stage that the *Extensive Reading*[1] assumes its most educational aspect. It is here we reap the full benefit of the previous preparation, and the habit of Direct Association which it has implanted, and that our French course acquires its full cultural value. For our pupils are now able to read rapidly with understanding and enjoyment great chunks of the foreign literature. We begin, of course, by introducing them to modern classics.[2] Where our primary aim is to give our pupils a serviceable and correct *active* command of the language, it is unwise to make them read seventeenth-century and even eighteenth-century works, before the constructions and usage of present-day French are securely established. This means that, with the exception of La Fontaine, who is a sort of standing dish throughout the course, little seventeenth-century and eighteenth-century literature can be read in a four to five year course (from 11–12 to 16–17) such as the majority of our children get in the state-aided Secondary Schools. The utmost we can hope, according to Mr. Cloudesley Brereton, is that when they leave school at sixteen they will have read perhaps a little Molière.[3]

It is true that, in some cases, clever pupils will reach the Advanced Stage in time to have two full

[1] With occasional writing of summaries and appreciations of the works read, which might be called Extensive Composition to distinguish it from the Intensive Composition work mentioned above.

[2] Of course many of these will only be read in the form of "*Morceaux choisis*," of which there are excellent collections published in France.

[3] Even here, however, a great deal can be done by Private Reading (*vide* below), provided the first initiation is done in class.

years in it before they leave school, and should be able to get a good deal of reading done in that time. But, broadly speaking, it must be admitted that the full cultural benefit of the course can only be obtained by the pupils who stay on at school up to 18–19. For these the Advanced Stage will extend into a real Higher Course of Study, corresponding to the new "Advanced Courses" recognized by the Board of Education under Mr. Fisher's Bill.[1]

We have therefore two distinct *termini* to our French Course: the first, ending roughly at the age of sixteen, aiming essentially at practical results, at equipping our pupils for an early start in the business of earning their livelihood. This in a sense is the more important of the two from a national point of view. It is only in recent years that what may be termed a national demand has arisen, that pupils leaving school at the age of sixteen should have a really efficient command of at least one modern foreign language, both in its spoken and in its written form, and, given proper conditions and methods, it can be supplied.

The other terminus is the standard that should have been reached by pupils intending to proceed to the University or to enter the higher branches of the Civil Service, and one which varies, of course, according

[1] The separation of the *Intensive* from the *Extensive* study in the Advanced Stage acquires an importance, from the point of view of school-organization, which should not be overlooked. It enables one to differentiate in each class between Specialists, who take the full number of periods allotted to the subject, and Non-specialists, who can take, according to their needs, various combinations of the Reading and Composition work of the Intensive or Extensive kind. It also furnishes the means of experimenting in a direction which may prove very valuable, now that we have to face the rival claims of several foreign languages—the possibility of confining the teaching to the "passive" command of the language, and so materially curtailing the course.

as they are Specialists or Non-Specialists.[1] Happily there are signs that the smattering of Old French and Historical Grammar that has been regarded as part of the specialist course in schools is falling into disrepute.[2] These are subjects for the University Course, and how glad University teachers would be to find in their students a *tabula rasa* in this respect, provided they found a real grasp of the modern tongue and a reliable general knowledge of the literature and history!

It will be still more satisfactory when our various examining bodies cease to demand from the Non-Specialists, in Matriculation and other school-leaving examinations, the power to *translate into* the foreign language and are content to test their command of the language by insisting only on simple and idiomatic *self-expression*, both *oral* and written.[3] Then we shall be able to confine the exercise of so-called "Composition"—translation *into* the foreign language—and the *Intensive* linguistic work to our Specialists, and to devote the few periods usually allotted, if any, to the Non-Specialists to a truly educational course of Reading, which will not only give them an insight into foreign literature, but will enable them to correlate the literature to the history, social, literary and political, of Modern Europe, and, by initiating them to foreign ways and ideas, help them to a more philosophical outlook on life.[4]

[1] *i. e.* pupils specializing, more or less, in modern foreign languages, and those for whom they are a secondary subject.

[2] Cf. the regulations for Part I. of the new Cambridge Modern and Mediæval Languages Tripos. [3] See below, p. 123.

[4] I speak here in general terms, for pupils who complete their school course will probably during the last three or four years be studying a second modern foreign language.

Private Reading.—No Reform teacher is worth his salt who does not aim from the beginning at giving his pupils a taste for reading privately for their own enjoyment and profit, and a foreign lending library is now an essential part of school-equipment. This requires much judgment and tact at the start. But as soon as Rapid Reading is well established in the Intermediate Stage the teacher will have little difficulty in discovering which pupils are ripe for private reading. As soon as the practice is fairly general it is a good plan to devote occasionally a whole class-period to the subject, the teacher going round the class to enquire how each pupil is getting on, make him talk about his book, etc. It is obvious that at first the book should be very simple, short, interesting and profusely illustrated. *Les Livres Roses*, published by Larousse, are very suitable for this early stage. I need hardly point out how invaluable this reading will be as a means both of strengthening and extending the command of the language. But by the time the Advanced Stage is reached Private Reading should form one of the teacher's most powerful allies in giving the pupils that cultural expansion which is our ultimate aim, and the awakening to which, in the better pupils, often takes place before the age of sixteen. It is then that each pupil will naturally adapt his reading, under his teacher's guidance, to his individual bias—literary, historical, scientific, artistic, political. Every school should take in one or more foreign weeklies or monthlies, and pupils who frequent the town public library will soon find their way to the foreign newspapers on view. I need only mention in passing the cultural value of lectures and theatrical performances in the foreign tongue. But next to

Private Reading, the most valuable expedient of all is one from which we are debarred in war-time, viz. a visit to the foreign country. Thanks to the Society for the Exchange of Children,[1] this is now within the reach of the humblest purses, and the results obtained are often quite extraordinary, especially if children are sent abroad only when their pronunciation is secure and they are beginning to feel at home in the language. One of the most far-reaching of these results is the lasting friendships that are thus formed between the families of the exchanged children.

A brief reference must here be made to Translation, and the teaching of Grammar and of History. To take the last first, it is still very much an open question, and one which is exercising the minds of history and modern-language teachers, how far, on the one hand, the foreign history can actually be taught and studied in the foreign language, and how, on the other, correlation of the language course to the history course can best be achieved, though we are all agreed that some knowledge of the building up of the foreign nationality, of its outstanding epochs and individuals, is essential to our cultural aim. But there is still much divergence of opinion as to what is practicable. In many schools even the stage of experiment has hardly begun. The following points, however, are worth noting. The whole question, of course, is largely one of time and of teaching material. In a four to five year course all that can be done is to use to some extent, for Rapid Reading, texts illustrative of the history, and, in the second and third years, books specially written for this purpose, such as Lady Frazer's and F. B. Kirkman's *Elementary Texts*

[1] Secretary, Miss Batchelor, Bedford College, Regent's Park, N.W.

bearing on French History, L. Chouville's *En Douce France*, M. Poole's *Lectures Historiques*, R. Adair's *Historical Reader*, etc.

On the other hand, Specialists preparing for University scholarships in History, Modern Languages or both [1] should have no difficulty in finding the time necessary to acquire, by private reading under the teacher's guidance, a real grasp of the history of the peoples whose languages they are studying. In French the number of excellent manuals published for French schools is of great assistance. But between these two extremes the possibilities are infinite. For further details I would refer the reader to H. L. Hutton's able and inspiring article, "History and the Modern Humanities," in the *Journal of Education* Dec. 1916.

Turning to the subject of Translation, it must not be thought that because the use of the mother-tongue is barred in the *assimilation* of new material, the practice of translation *from* the foreign language is banished from the Direct Method course. On the contrary, it is welcomed as an occasional test of *Sprachgefühl*, a pleasant diversion from the usual routine, an essentially artistic exercise in which the pupil has the opportunity of proving that he has not only grasped the exact logical content of a given sentence but has received the right impression, has perceived the particular aspect of the idea presented.

We have only to apply the root principle of the Direct Method—viz. that the direct association is the

[1] It is to be hoped that the new Advanced Courses, under Mr. Fisher's Bill, will encourage the combination of History and one modern foreign language as a special course of study, and that the University scholarship examinations will give it that recognition which is at present far from universal.

all-important aim—and the conclusion is obvious. No translation exercise must be allowed which would not conform to the definition "a translation of experience." It must consist in the translation of passages that are well within the pupil's range—*i. e.* that he understands *in* the foreign tongue — and is in fact an exercise in English style, though incidentally a test of the pupil's knowledge of French. This kind of translation exercise may be practised from the first, but it must not be frequent in the Elementary and Intermediate Stages for fear of setting up the translation habit To give a very elementary illustration of the principle to be followed in such translation, a pupil ought not to have to translate "Quand il est l'heure de prendre le petit déjeuner, Paul descend l'escalier en courant," etc., if there is any risk of the literal English version intervening between the French and the corresponding mental representations, but only when the visualization of the French is so perfect that he says spontaneously in English, "When it's time to have breakfast, Paul runs downstairs."

It is obvious that in the Advanced Stage this kind of exercise becomes a most interesting and profitable form of *final treatment* for any passage that has been studied "intensively," *e. g.* by the process known as "Lecture Expliquée," or that has been particularly appreciated by the pupils, while its application to "unseen" passages is a convenient means of testing the range of our pupils' "passive" command of the language—a very necessary preparation for school-leaving and other examinations, where this kind of test must always play an important part.

As to translation from the mother tongue into the foreign, the same principle, of course, must apply as in translation from the foreign language. That means

that this kind of exercise must not be begun before the pupil has a very fair command of the foreign language, and would be able, so to speak, *to produce the foreign version as an original free composition.* It should be begun as late as possible, indeed I almost think it would be best to drop this test out of school examinations altogether.[1] The more I teach, the more I realize the profound truth of Viëtor's dictum: "*Die Uebersetzung ist eine Kunst die in die Schule nicht gehört.*" The habit of direct association — *i. e.* "thinking in French"—must be firmly established, or the presence of the English words will begin to interfere. It is extraordinary how pernicious an influence this presence exerts, especially if the words are visible. The pupils will make mistakes that they never make when expressing themselves directly in the foreign language. That is why it is important to do the translation, at any rate at first, orally, without any English text in sight. The English should be hurled at the pupils rapidly, in complete sentences, so as to call up immediately the mental representation which is in its turn to evoke some foreign equivalent, the important thing being that this equivalent should be idiomatic, not exact; there should be, as it were, a headlong jump into the foreign language, whence a return is then made approximating gradually to the closest equivalent that the language affords.

[1] It should, at any rate, have no place in examinations of the Senior Local and Matriculation type, and many teachers complain that the necessity of preparing their pupils for this test during the last year or two of the all too short four or five years course at their disposal is a serious obstacle to the development of Direct Association and the practice of Free Composition. In this connection the Cambridge Examinations Syndicate is to be congratulated on taking the lead (in their syllabus for 1918) in instituting a foreign language test in their Senior Local in which Free Composition only is demanded.

But it should be added that there is much divergence of opinion and practice among teachers as to the amount of both kinds of Translation that is advisable in all three stages of the language course. It is one of those points on which there is much loose thinking and a matter in which extraneous factors, such as the exigencies of examinations and unfavourable conditions, are the cause of or the excuse for grave inconsistencies in method.

As regards the teaching of Grammar, it is important to guard against a certain misconception and to meet a certain criticism.

Many people are under the impression that we don't teach grammar, and it is only too true that the work of our pupils, especially those who leave school at sixteen, is marred by much grammatical inaccuracy.

As regards the first point, it is obvious that by the inductive method described in the earlier portion of this chapter we are teaching grammar the whole time, but it is only gradually that each classification or category is completed, and even so, only those that are essential to the solidity of the edifice, at the height which it has reached. In short, we work inductively *up to* and not deductively *from* the abstract generalizations of the grammar-book. We end where the analytic method began, and, as our method is essentially heuristic, it is a training in observation and in scientific method. The interest aroused by the occasional pure-grammar lessons, in which a whole or a portion of a grammatical category is tabulated, is sufficient proof of the educational value of this system.

But, and here we come to the second point mentioned above, it is in the deductive part of the business that our pupils are apt to fail us, if we are not on the

watch to insist on their developing the habit of *using* the laws they have discovered and of referring to the linguistic types or examples from which they have been induced, both when they meet new examples and when they have to "test" the language forms spontaneously suggested by "direct" mental associations. We have not yet sufficiently recognized that the Direct Method implies the training of a different kind of "grammatical conscience" from that which was the triumph of the old regime—the grammatical conscience which could turn out a passage of French grammatically perfect but "stylistically" worthless. We have to devise special exercises[1] and special expedients[2] to enlist our pupils' own interest and co-operation in the training of the "testing" habit.

This testing function of the "grammatical conscience" is the necessary corollary of our whole system of the automatic association of language forms with definite sense impressions and mental representations. It is one more illustration of the way in which our method conforms to the pedagogic principle that not Reason and Rule must be the motive-power, but Instinct, controlled by the habit of Reason.

[1] *e.g.* the so-called "research" exercises, consisting in the hunting up of various grammatical phenomena in a given passage and the collection of the uses of prepositions and of verbal constructions on the basis of the *foreign* similarities of meaning or form, independently of their English equivalents: *e.g.* demander, commander, défendre, permettre, fournir—*quelquechose à quelqu'un.*

[2] *e.g.* making each pupil keep a chart on which he enters, under suitable rubrics, the number of times he has broken important grammatical rules in particular pieces of work. Mr. E. A. Peers, M.A., of Felsted, has made most interesting and successful experiments on these lines, furnishing a remarkable example of the way in which children may be stimulated to mental self-discipline (vid. *Journal of Experimental Psychology, March and June* 1918, or *Modern Language Teaching,* March 1918).

But there is another factor in this problem of grammatical inaccuracy, and it is one which vitiates all comparison with the state of things in this respect under the old regime. The new methods have made it possible to teach the foreign language to a type of pupil that would be quite incapable of acquiring it on analytic lines, via grammar and translation, a type which is most prevalent among the pupils whose school career ends at sixteen, viz. the very ones whose work is most marred by grammatical inaccuracy. No one, I imagine, will question the value to the individual and to the nation of this extension of the field of foreign language teaching.

To sum up, the New Teaching of foreign languages is essentially an oral and non-translational method, and its various manifestations, determined as they are by local and individual restrictions and reservations, are all forms, more or less pure and complete, of the Direct Method, the only method that fits in to a consistent scheme of education deduced from the principles of modern physiology and psychology. If the reforms of method in other branches of study are right, then the Direct Method is also right. They stand or fall together. And as to which of the two will be their fate, one has only to ask a Reform teacher to know. The enthusiasm of his belief is not mere sectarian ardour. If one hears him speak about his work, the immensely varied and intensely real field of experience that it opens to that highest desideratum, *the co-operation of teacher and taught*, one is involuntarily reminded of Emerson's carpenter, who places the trunk he wants to rough hew, not above his head but beneath his feet, so that at every stroke of his axe Nature comes to his help ; by his "method" he enlists the force of

gravity and the whole universe approves and multiplies the least movement of his muscles. We are enthusiastically confident, because, when we are at work, we feel in ourselves and in our pupils the whole of Nature working with us.

This is a very different enthusiasm and a very different confidence from that of the grammarians of the Renaissance. These appealed, after all, to but a few—an intellectual aristocracy with an appetite for abstractions. It is to these grammarians that we owe the long tyranny of Grammar in language teaching.

The New Pedagogy is elaborating methods of instruction suited to a democratic age, for they bring within the reach of the many a command of foreign languages which is a tangible reality ; and it is highly significant that this should have the effect of relegating grammar to a subsidiary place, and of bringing into prominence those realistic, intuitive and creative factors which are essential conditions of all artistic expression, thus helping to restore to Art the place in Education which Plato assigned to her, and from which she has been ousted by the unholy alliance of the Puritan and the Pedant.

CHAPTER IV

THE CLASSICS

BY W. H. D. ROUSE, M.A., LITT.D., F.R.G.S., ETC.

MANY will be repelled at the outset by the suggestion of a New Teaching of classics; but what I have to recommend is only partly new. In method and aim it is a return to the most ancient tradition, in spirit also it follows the few men of genius who have given themselves to education; but it is indeed new as compared with the practice of the last forty years, especially since we have been under the German influence. Routine and pedantry have settled on our schools like a blight, and it cannot be denied that the leaders of education have refused to face the truth. The result is that we are now in danger of seeing the whole study of classics destroyed. The only hope is in immediate and drastic measures of remedy; even so the struggle will be far harder because of past negligence.

If classical study is to continue, it must be infused with the new spirit of reality which has already transformed parts of our school work. This is seen especially in the work of young children. We are no longer content to supply them with books and to hear lessons: their life is full and happy, their work is like a delightful scheme of play, not as their own games aimless and intermittent, but full of an intellectual purpose

which gradually becomes clear to them. Classics, too, must be brought into touch with their life and their natural impulses, and it must be kept there: thus only can the necessary hard work be done with a gusto, thus only can we keep them always young, but the thing is possible if we guide and stimulate instead of repressing and imposing. The boy is the centre of education; what is within him it is our part to draw out, to cultivate, to bring under control of his will, and to do this we must always imagine ourselves in his place. Imagine, then, a young boy, full of life, full of curiosity, eager to be doing something: when you give him a book full of Latin declensions, and force him to learn them, without using them in any way except to translate idiotic sentences signifying nothing, how does that appear to him? Will he not ask, What has this to do with me? Such a task is repugnant to a boy in proportion as he is intelligent; he hates it, and he is quite right to hate it; it can only be imposed on him by force, or by telling him that if he works he will get a scholarship or something of that sort. Thus his first impression of work realized by him to be intellectual is in itself repugnant, and it is associated with a sordid aim. But show him that Latin is a language in which he can express his own feelings and describe his own actions or the world he lives in; tell him that by learning it he will win the key to many stories like those of Horatius, and to other things of more value still, he is as eager to learn as you are to teach.

This implies a New Method of teaching, or rather, as I have said already, an Old Method revived, which shall be based in the nature of the boy, and shall arise out of his inborn tastes and desires. This, the Direct Method as it is called, has already been proved to be

of incomparable efficiency, and this it is that I recommend as the remedy for our present difficulties.[1]

Along with this new spirit and this new method, and naturally arising out of them, we must have a new aim to crown our classical work. This, like the others, is really old. Classics used to be studied, or at least Latin was studied, simply for its use in practical life : the Latin language was the key to knowledge. We must regard the classical languages as the key to wisdom and beauty. They have many secondary benefits.[2] Both are necessary, and especially Latin, to all who would use historical sources ; Greek is necessary for the clergyman, useful for the physician, not without value for the man of science, who without it cannot understand his own horrible vocabulary ; Latin is of the greatest possible service to all who wish to learn French, Italian, Spanish, or Portuguese. The use of these languages is also profitable to the learner, as aids to self-expression, and as a training in logic and in simplicity. But the content of the literatures is incomparable. For law and politics we have Rome to our teacher, for the whole range of intellectual life we have Greece ; the two literatures together contain a compendium of human thought and experience, profoundly useful for the statesman, the professional man, and the citizen, and within so small a compass that no man need despair of mastering it. But we have lost sight of this in notes and dissertations

[1] See : *Modern Languages* (Board of Education, Circular 797) ; *The Teaching of Greek in the Perse School* (Board of Education, Educational Pamphlets, No. 28); *The Teaching of Latin in the Perse School* (second edition in the Press).

[2] *Latin and Greek in American Education*, papers by public men and business men, edited by F. W. Kelsey (New York, Macmillan Company).

and all the pedant's bag of tricks. We must read in the mass again, as our forefathers used to do, and use our notes as a help instead of a hindrance; and we must set before us the aim of assimilating the wisdom here stored up. As for beauty, men of our race need more than some others to study models of perfect form and grace, such as Greece in particular gives; if there be any good for the soul in fine literature, here it is to be found in perfection, and nowhere else: and with it, the opportunity to ponder all those moral problems that meet us in life, as they showed themselves to a prophet like Æschylus or a philosopher like Plato. Let no one imagine that these benefits can be got through translations. Poetry loses all its essence in a translation; for the effect is produced by sense, sound, rhythm, and order working together, and when the last three are changed, the sense changes also. We can make this a part of us only by taking it in as the author meant us to do. The same is true of prose in a less degree, but in proportion to the beauty and skill of the original. Only from the original can we get the full persuasive force of Plato's inspiration, the full zest of Herodotus's good stories. The dry bones we can get in translations, but nothing more; unless, indeed, the translator serves them up in flesh and blood of his own, like Thomas North or Philemon Holland. But the unhappy truth is, that if we do not read the originals, we shall not as a nation read the translations either. That this is true may be tested by a reference to the time-tables of the new schools that have been founded since 1902; it may also be tested by the recommendations of men of science for educational reform, when, as a few have done, they condescend

to details. Without the study of Latin and Greek, the heritage of the classics will soon be no more than the fables of early Rome and a few legends of Greece.

One result of the Direct Method will be a great saving of time, which will make it possible to compile a new time-table. In fact, this reform is bound up with certain other principles, without which it cannot be successful. One is what we may call the Succession of Languages. The learning of a new language needs concentrated effort without distraction; it is fatal to begin two at once,[1] for they confuse each other, and it is impossible to produce a lasting impression. A second must be postponed until the elements of the first are quite familiar. Moreover, there is a limit to the time that can be profitably given to a new language, for it is a mistake to suppose that double time gives double benefit. These matters are generally agreed, not only in principle but in detail, as we shall shortly see: but the question, what age is the best to begin with, is not agreed. Some think ten, and some twelve, the best age, and few if any would wish to begin earlier. We have made some experiments, not enough to deduce a general principle, but enough to confirm the impression of most others, that the best age is ten. We have found that boys beginning at eight, nine and ten were about on a level at twelve. To begin at nine may make the progress a little easier, but even this is not certain. Nursery French is of no use; children are apt to learn as much bad as good in that way, since their nurses are not trained teachers, and their main object is not to teach the art of speaking.

[1] Yet I have known three foreign languages begun at once, French, Latin, and Greek, by boys ten years old.

At ten the organs of speech are still flexible, and the boy can learn to make any sounds ; if this faculty be now trained, he never loses it, but if it be neglected, he loses it very soon. I believe this diminishes rapidly after the age of ten, and by twelve a good deal is gone ; in our experience the difficulty of teaching is greatly increased with those who begin at that age, and I believe that those who support beginning at twelve are unconsciously influenced against beginning earlier by local difficulties ; they are making the best of a bad job. To begin at ten also makes it possible, without pressure, to get four languages into the school course ; only three are desirable if we begin at twelve.

It is generally agreed that the first foreign language taught should be French ; its advantages over Latin at that stage are obvious, its advantages over German at any stage no less obvious.

Experience has shown that not less than one daily lesson is necessary in a new language, which should be not less than half an hour long, and for young children not more than three-quarters : it is doubtful whether a second lesson later in the day is an advantage, but it is certainly not necessary. On the whole, it seems that there is an advantage in giving two or three extra lessons in the week for the first term or year, after which they are not needed. Experience has also shown that two years' interval is necessary before another language is tried, if the best work is to be done. Of course this applies as a general rule : the clever boy will do the work sooner, and there are some who would hardly learn a foreign language in a millennium. The second language (at twelve) must be Latin, if the boy is to make anything of it, and the third Greek (at fourteen) : this leaves us the years sixteen to nineteen

for a fourth, and it is quite easy to learn enough in that time, with maturer powers, to speak, read, and write it. I repeat, these four languages can be learnt without any undue strain, and the cost for each is, speaking generally, one lesson a day.

The time saved may be judged from the following calculation. Time-tables of Preparatory Schools are shown in the Board of Education Special Reports (vi. 46–48), and there is no reason to suppose that any great change has taken place since these were published. From these it appears that boys of ten are doing French, Latin, and Greek, which are begun earlier, for sixteen school hours a week,[1] in preparation for scholarships at a Public School; the time given to classics in the Public School gradually increases, until on the classical side little else is done at the top. I reckon the number of school hours spent on Latin before the boy reaches the sixth form at 2,160; on the Direct Method the time spent is 613 on the average, and 248 is spent on Greek. It is not so easy to calculate the time usually spent on Greek, but it cannot be much less than the Latin. Thus at a moderate estimate three-fourths of the time spent on classics is saved, and it is probably much more; this time now becomes available for English, French, Mathematics, Science, and other subjects, and it is possible for the first time to give a good all-round education. In the period of special study (sixteen to nineteen), the classical boy gives about half his school time to his special study, the rest being spent on English, French, German, Mathematics, or other subjects. At the end he competes without disadvantage in the open scholar-

[1] This does not include preparation, which takes about twelve more. I use the unit of sixty minutes in this calculation.

ship examinations, which only test a part of his classical ability: for if the candidates were asked to make a Latin or Greek speech on a given theme, and to write a Latin or Greek essay at speed, and to carry on a lively conversation in Latin or Greek, those who have been taught on the Direct Method would be quite at their ease, but most of the others would not.

It is essential, however, that English language and literature should be taught, since the whole time allotted to foreign languages is filled with those languages. It is taught largely by reading aloud. The teacher of English must be able to read aloud well, to speak well, to use his voice properly. How far most schoolmasters fall short of this, is notorious; but it is an indispensable necessity, and the teacher's training ought to make the use of the voice the foundation of everything. Those of us who have not natural gifts in this direction, ought without a moment's delay to try to improve themselves. They will be richly rewarded in the pleasure of their daily work, and in the interest of their pupils. This applies to all teachers, but especially to those who teach literature; Latin and Greek are usually murdered, because teachers have untrained voices, and so bad an ear that they cannot distinguish between long and short, although they will indignantly deny it. The English teaching will also include oral and written composition. The details of this study do not concern us here,[1] but it must be mentioned as a corollary to the Direct Method.

The principles indicated above involve a new time-table, and it may be useful to suggest one which will give time enough for Classics on the Direct Method.

The unit is the period of forty-five minutes.

[1] See *The Play Way*, by H. Caldwell Cook (Heinemann).

Preparatory School (ages under ten).

French: one lesson of thirty to forty-five minutes daily for boys of nine to ten is the utmost that can be advised. If the top form of the Preparatory is parallel to the bottom form of the Upper School, and the age be ten to eleven, it may conform to that form.

Upper School.

	English History and Geography.	French.	Latin.	Greek or German.	Mathematics.	Science, including Nature Study	Drawing.	Singing.	Drill.
Form I.	13	9	—	—	6	4	2	2	3
II	13	9	—	—	6	4	2	2	3
III. B	10	6	6	—	6	4	1	2	3
III A	11	6	6	—	6	5	1	1	3
IV	7	6	8	5	5	4	—	1	3
V	7	6	8	5	5	4	—	1	3
VI.	About two-thirds of the time given to special subject; the rest given to other counterbalancing subjects.								

It is not my purpose to present a manual of the Direct Method. Some idea of it may be gathered from certain of the text-books which have been written to explain or to accompany it.[1] We are concerned here with

[1] *Praeceptor* (S. O. Andrews), *Primus Annus* and *Secundus Annus* (W. E. Paine and C. L. Mainwaring): all published by the Clarendon Press; *Via Nova* (W. H. S. Jones), Cambridge University Press; *Some Notes on the Direct Method* (R. B. Appleton), Heffer, Cambridge; *Initium* (W. H. S. Jones and R. B. Appleton), *Teacher's Companion to Initium* (R. B. Appleton), Cambridge University Press; *Pons Tironum* (R. B. Appleton), Heffer; *Perse Latin Plays* (R. B. Appleton), Heffer; *Decem Fabulae* (Paine, Mainwaring, and Ryle), Clarendon Press; *A First Greek Book* and its reader, *A Greek Boy at Home* (W. H. D. Rouse), Blackie; *Lucian's Dialogues, with Greek Notes* (W. H. D. Rouse), Clarendon Press. See also the *Classical Review:* 1907, *Latin Composition*, p. 129; *Mental Gymnastic*, p. 193; 1908, *Translation*, p. 105; 1910, *Shall we drop Latin Prose?* p. 103. The general method is described, with specimens of the result, in two pamphlets of the Board of

general principles and general results, and the details may be found in the books already mentioned. But it should not be forgotten that the method cannot be fully described in books. In particular, the extraordinary effect on the learner, in keeping his attention and his goodwill, and the quick progress, can only be estimated if one is present in the class-room.

Since our work is based on the spoken word, it is necessary to lay a firm foundation by taking the utmost care with the pronunciation, first in ourselves and then in our pupils. For ourselves it is necessary, because we have all without exception been brought up to a vicious carelessness of speech, which substitutes stress for quantity, and breaks the vowel sounds generally into diphthongs; which wholly ignores the Greek accents, and gives an alien sound to the Greek language by adding a stress when English words would be likely to have it. When no one utters a Greek or Latin phrase except by the way, as a part of an English discourse, the effect of these faults is less noticed; but when everything depends on the utterance, and when our authors are read aloud from beginning to end, it is not too much to say that faulty pronunciation spoils the whole. We have to train our own tongues and our own ears to distinguish between long and short by beating time, and attending for the nonce to nothing else; we have to train our tongues and ears to a rising tone for the Greek acute accent, and a rise-and-fall for the circumflex, by chanting or singing, and attending to nothing else until it is done

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Education: *The Teaching of Latin in the Perse School* (out of print; second edition to follow), and *The Teaching of Greek at the Perse School*, Eyre and Spottiswoode, 1*s*.

unconsciously ; and we have continually to counteract as far as we can the impulse to lay stress. The wise man will get the help of some friend, or better still some intelligent voice-trainer, to whom he may explain what he wants and may thus make sure that he is not deceiving himself. I am not making much of a trifle : it is the truth, that very few scholars know the difference between a long vowel and a short. The effect of Greek and Latin read or spoken with due attention to quantity is entirely different from what we usually hear : and very sonorous and beautiful it is.

I do not intend to give reasons why we should adopt the pronunciation of vowels and consonants which the ancients themselves used ; this has been ascertained with practical certainty, and it seems to me obviously proper to follow it.[1] It presents no practical difficulty, except for those who make their own difficulties ; and if it needs constant and watchful care, so does any other attempt to teach any pronunciation properly. Those who refuse to take the necessary care (and in fact most people take little or no care) are really not fit to teach any language at all. Most of the hard work has already been done for us by the teachers of English and of French, who have given their course of phonetics : the boys have already learnt how to make all the sounds except the Greek aspirates, and we have only to identify them. We have a great advantage over all other language teachers, in that Greek and Latin spelling is phonetic : each sound has its fixed symbol, each symbol its fixed sound, and a word need

[1] It is to be found, without serious differences, in a pamphlet issued by the Cambridge University Press, in one of the Classical Association, in Postgate's *Latin Grammar*, Rouse's *First Greek Course*, and many other modern books

never be spelt. Indeed, no word ever ought to be spelt. If a pupil cannot write on the board a new word without spelling, his teacher is at fault, and has not pronounced it properly.

In beginning Latin, it is important to have as wide a view as possible over the grammatical forms. To confine the early exercises[1] to one conjugation, or one voice, or one declension of nouns, creates an impression hard to erase, that all others are irregular. We must get into use with all possible speed, all the types of forms that are common in daily intercourse; this includes at least the present imperative and present indicative of all conjugations, and some cases at least of all declensions. These are brought in by means of the Series, an indispensable aid to teaching of the highest value.[2] The pupils learn these series of sentences quite readily, without knowing anything about conjugations or declensions, which can be tabulated after they have become familiar by use. I will give an instance which may serve as a first lesson in Latin.[3] The teacher's commands are usually understood by his tone and gesture, especially as the pupils have learnt from French what he would be at; but if not, he may interpolate the equivalent in English. The master, at the beginning, is helped by some one who may be another master, or a student teacher, or some elder boy to whom he has explained what he wants. The boys reply in chorus, speaking loud and distinctly.

Master and Assistant (*rising from their seats*). Surgimus; (*sitting down*) cōnsīdimus.

[1] It will be understood that I use this term in its proper sense, and I do not confine it to written exercises.

[2] See M. de Glehn above, p. 88.

[3] For another first lesson, see Appleton's *Teacher's Companion to Initium*.

They repeat this once or twice, then beckoning to the class to imitate.

M. Surgite (*repeated or explained until they rise*).

M. Cōnsīdite (*they sit*).

After a little practice—

M. and A. Surgimus—stāmus—cōnsīdimus—sedēmus. (*Imitated by the class.*)

M. and A. Surgimus—stāmus—exīmus (*they go away from their seats*)—ambulāmus (*they walk about*)—revenīmus—cōnsīdimus—sedēmus.

Here are all the four conjugations ; and the master may now, if he thinks fit, explain their differences in English in so far as they have been exemplified ; or he may keep it until later. In any case, the words should be written by a boy or boys on the board, and then by all in the notebooks. The same drill may be done with *surgo*, etc., the Master and his assistant doing it first, and afterwards Master and certain boys.

The next stage is to add the second person.

M. Surgite (*they rise*).

Boys. Surgimus. *M.* Surgitis. State. *B.* Stamus. *M.* Stātis. Exīte, and so forth. This may be repeated with and without the imperative, and in the singular. Lastly—

M. Surgite. *B.* Surgimus. *M.* Surgitis. *A.* (*to Master*). Surgunt, etc. After this various boys must be put on to take the place of master and assistant. It will be seen that by dividing up the boys, all can be made to practise all the forms of the series. This should be practised each day at the beginning of the lesson, until they know it all. This simple series is capable of indefinite variety and expansion ; I will give a few types, leaving the reader to divine how to lead up to them.

M. Ego surgō. *B.* (*pointing at Master*). Tū surgis ; (*pointing at each other*) Ille surgit.

M. O Balbe, surge. Quid facis ? *Balbus.* Surgō. O puerī, quid faciō ? *B.* Surgis. O Magister, quid facit Balbus ? *M.* Surgit Balbus.

Or with a case—

M. O Balbe, aperī fenestram. Quid facis ? *B.* Aperiō fenestram. O puerī, quid faciō ? etc.

Other tenses can be worked in.

M. Sedeō. Mox surgam. Surgō. Balbe, quid facis ? *B.* Sedeō. *M.* Quid mox faciēs ? *B.* (*perhaps after a hint*). Surgam. *M.* Surge. *B.* Surgō, etc.

M. Surgō : antea sedēbam. Balbe, tū surge. *B.* Surgō. *M.* Quid antea faciebās ? *B.* Sedēbam, etc.

M. Aperiō fenestram. Aperuī fenestram. Tū Balbe, aperī. *B.* Aperiō fenestram. *M.* Quid fēcistī ? *B.* Aperuī fenestram, etc.

With opening door or desk or book, coming up to the board, taking the chalk and writing, and all the ordinary doings of the day, there is plenty of scope for varying the formula and at the same time increasing the vocabulary. Certainly, every boy is kept alive and happy, and (no small advantage) they are not stooping cramped over the desks. If any one thinks this is an unworthy use of the Latin language, I do not agree with him. It is the natural use of the Latin language, and, because it is natural, it is enjoyed and not resented, as the natural boy very properly resents writing nonsense about goddesses and justice or Labienus and his legions.

Very early, perhaps in the first lesson, all the boys should have Latin names. These may be Prīmus, Secundus, Tertius, or their own names Latinized (Ricardus, Terentius, Thōmās) or translated (Sartor,

Vēnātor, Lupus); an easy way of introducing the vocative and of adding new words to the vocabulary. With a mixed class the distinction between *primus* and *prima* brings in the first two declensions. It is easy to see how simple acts may introduce all the cases in turn, and explain them without words: and before long we may begin to read.[1]

From these examples, the place of grammar in the system ought to be clear. The boys who have learnt these series know their grammar; it is an easy step to write out the paradigm and to study it scientifically. Grammar must be learnt, but it is learnt after use, and when its value is understood. And so it is all through. Mistakes are made, of course, but they are made in speech and speedily corrected; written mistakes should be very few, and it is the written mistake that remains. Those who advocate exercise-books and rote-learning are apt to assume that grammar is learnt in that way. The fact is far otherwise: Direct Method teachers would be ashamed to do no better than these do. But what we aim at chiefly is accuracy in idiom and in the instinct for the right thing. This is never gained by the majority except through speech and the habit of hearing and speaking. The progress is from accuracy in idiom at first to accuracy in detail at last, the natural order of events. Those who aim at accuracy in detail from the first do not often get even that, and they never get the other.

Another point in which we reverse the usual order is, that all new work is first done in school, the home-work being revision or some kind of test. The task of the

[1] A brilliant example of the Direct Method lesson is Dr. Arnold's *Pyramus and Thisbe* (in *Decem Fabulae*): which, as a play, is charming, as a lesson, perfect.

class is simply and solely to understand. This is a task quite hard enough for the learner; the boys help out each other, and the master is there for the rest, but their explanations are all in Latin or Greek, all practice, all to the good, and English is only used if the Latin fails. The home-work may be some grammar or text to learn by heart, or an English version of the part read. In the last case, the learner's sole task is to express the meaning, which he knows already. One thing at a time is all we do. The odd thing is that such translations are far better done than if the piece had been translated in class: they are original and fresh, and often very good. These versions are but a test for the master whether he has done his work properly, for a boy can always express what he has understood. The fear of cribs and illicit help entirely disappears; any such can be instantly detected, and it is of no use to the boy, for no crib can help him in class; nothing but skill and knowledge can help him there, and that is where the real work is done. The Direct Method destroys one of the schoolmaster's ancient bugbears.

As knowledge increases, special lessons are given on translation as an art, how to bring out all the points of a piece and to omit nothing. But these need not be many. Latin is learnt by itself, and English by itself, and the task is now to bring these two together. The piece chosen must always be well within the boy's powers; he must not be worried with new difficulties. Before taking an open scholarship examination, a few pieces of unseen translation done in a given time suffice to prepare the candidate.

If the reader has understood what the preceding pages mean, he will see that the question of Composition

solvitur ambulando. There have been many discussions in the classical world as to whether we can save time by dropping this and that: verses, of course; Greek prose and even Latin prose, say some anxious souls, desiring to save something from the wreck. The Direct Method has a better plan: to save time by teaching Latin and Greek in the classical hours, and English in the English hours, while Latin and Greek prose at least are being used all the time. A very simple solution, as surprising to others, it would seem, as was the discovery of M. Jourdain to himself. The boys have only to write down the things they have been saying, or what they have heard their master say: for, of course, he must always be a stage above his class, more full, more literary, wider in vocabulary; he must continually introduce novelties, and follow up any that promise well. Here an allusion, there a proverb, may excite some one's attention and give the excuse for something more. Occasional exercises, rare at first, will lead the boy to write better and better. When he is familiar with the elements of Latin or Greek, a story may be told to him, and he be asked to reproduce it in his own way for the next lesson. This is to be done regularly, say three times a week, in the fourth year of Latin rarely in the second year of Greek (the two stages that end the general education, after which comes the sixth form or period of special work); and rarely pieces of easy English may be set to translate into Latin. Or a few boys may undertake to prepare short Latin or Greek speeches to make before their fellows. They may be encouraged to choose subjects for themselves. Plays are another useful practice; they may be learnt, or home-made, and the reading will often provide subjects. At the end of this stage, boys are able to

write a good Latin letter, or a short story, correctly and without trouble.[1]

When the next stage begins, the special students of classics have a wide gap to bridge between the simple style and vocabulary of their hitherto exercises, and the literary style of Cicero and Livy, of Demosthenes, Thucydides and Plato. I have found the best bridge over this gap is the Summary. We read each day several pages of Latin or Greek; and for one year the evening work of the beginners is to read as much as they can again, and to produce a short summary of it, using the author's words and constructions. In doing this they are gradually to wean themselves from the book, until at last they can do the summary in large chunks without referring to the book at all. Always quality, not quantity, is asked for. Two series of these exercises are analysed in the pamphlet referred to above, where also specimens are given.[2] In this way the vocabulary is enlarged, and the literary style is gained. In the second year, one summary is asked for each week of the week's Latin work, and one of the Greek, and one piece of English is set to translate into Latin or Greek. In the third year, the summary is dropped, and three pieces for translation are set each week, prose and verse alternately. This has been found to be quite enough to enable candidates to compete for open scholarships without disadvantage, and there are not so many as to bore the learners with monotony. We find that a boy is sufficiently prepared for the open scholarship after doing twenty to thirty pieces of set English into Latin prose and as many into Greek, and the same

[1] Some sets of these are analysed in *The Teaching of Latin at the Perse School.*

[2] *The Teaching of Greek in the Perse School.*

with verse.[1] Think what a saving of time this implies! Most of the time usually spent on what is called "composition" is thus seen to be sheer waste.

The procedure with verse is different. None is attempted before the sixth form; and none then without plenty of reading first. The boys are already familiar with the rhythm more or less, having read some Catullus, Martial, Horace, Ovid, Virgil, and Homer; they know the general principles of scansion. After a few hundred lines of a verse author have been read, the boys are invited to write a few lines in imitation on some similar theme. This first exercise will show where their knowledge is defective, and what they need to be told. Then a few hundred more lines read, and a piece of English verse is given for translation, without preliminary exercises except in Greek iambics.[2] The measure of success will astonish any one who has no experience of what reading aloud can do.[3] The ear is so trained by this practice that to imitate the rhythm is easy. A few exercises will show whether any are hopeless; the rest go on.

A useful and attractive way of encouraging self-expression is to ask for a short speech or lecture. Any topic may be taken that suggests itself; some question arising out of the text, which the volunteer will get up, or anything he may be interested in. I take the following from the work of one term, none imposed from without—

[1] This does not include those done in the fourth year; but they are few, and they are very simple, not pieces chosen from English authors.

[2] Here a few lines from a dozen exercises of Damon (Blackie) are very useful for avoiding mistakes.

[3] See specimens of first attempts in *The Teaching of Greek in the Perse School.*

Κάλχας καὶ Μόψος—ἀγών· Ἀγαμέμνων· Δημοσθένης στρατηγός· Ὀλυμπία· Ἀχιλλεύς· Παναθήναια· τὰ ὅπλα τὰ Ὁμηρικά. τὰ δεῖπνα τὰ ἑλληνικά· ἐκφορὰ τῶν νεκρῶν· Ἀπόλλων· Φίλιππος Μακεδών· περὶ ὡρῶν ἐνιαυτοῦ· μέτοικοι· Εἵλωτες· Ὅμηρος· ἀγαλματοποιοὶ καὶ ἀγαλματοποιϊκή· Ἀργώναυται· φάλαγξ· Βατραχομυομαχία· ἄρχοντες Ἀθηναῖοι· Περσεύς. Gladiatores: Cicero: Comitium: de signis Romanis: oratores Graeci: M. Antonius: tribuni plebis: Sallustius: Senatus: Janus: oratio contra orationes:[1] oratio pro orationibus habendis: narratiuncula: de sacrificiis Romanis: de septem regibus: de ludis publicis: Carthago: mythologia: de libris antiquis: de oratore: Polybius: pontes Romani: munimenta.

The speeches last about ten minutes, and questions are allowed. They are often extraordinarily good, sometimes witty. One in particular I remember, of a boy who had forgotten to prepare; he gave a charming impromptu, in which he drew a parallel between his proud pedagogue and Orbilius, which was elegantly expressed and full of sly humour. Many pieces of work also give scope for acting; lawsuits may be tried again, with witnesses to be cross-examined; or Catiline driven out of the senate.

It is now clear, I think, that to base our work on the spoken word saves time and gives reality and life to the whole; I hope it is equally clear that we are free from the reproach, so often made, with so many others, by those who will not take the trouble to inquire, that we teach Latin and Greek in order to be able to talk. The opposite is true: we talk in order to teach. The talk is not baby talk or nursery prattle: it is careful and correct, and leads up to the literary style, which, like all good styles, is speech in its essence. It should be also clear from the results

[1] As may be imagined, this was a piece of fun.

that to read and discuss without translation is enough to enable the pupils to translate if they are put to it. But it must be distinctly stated that only by reading aloud, and in no other way whatever, can the student receive the author's meaning as he wished it to be received, in his order, with his emphasis, in the mood he wished to call up. Many a point I had missed in reading alone has come out clearly when I heard it read aloud; and a class thus prepared takes all the points readily. I wish there were space to give examples; I am confident that many would be new to those who read this. And it is extraordinary how words, phrases, even whole lines and sentences remain in the memory after just one reading. There was one word *στρέμμα*, "a strain," that occurred in a speech of Demosthenes; two years later this was remembered when some boy suffered this mishap. The word *mergus* called up *statio gratissima mergis* read a year before. I called on a boy to recite: he said "Bis hodie me iussisti recitare," and a friend at once rejoined, "Crambe repetita." Another, wishing to go to the dentist, said, "Licet ad dentifrangibulum progrediar?" a word which had amused him many months before. One drew on the board a human figure with six fingers; a boy called out "Sex habet digitos!" The draughtsman, smiling, "Sextus Digitius ille quidem" —of whom we had read in Livy two years before. Others will quote whole lines that have taken their fancy—O colonia quae cupis ponte ludere longo—*κεῖτο μέγας μεγαλωστί, λελασμένος ἱπποσυνάων—πὰρ ποταμὸν κελάδοντα, παρὰ ῥοδανὸν δονακῆα.* After reading Horace iv. 13, I said: "Non placet mihi hoc carmen quamvis sit odiosa haec femina"; the reply came, "Melius

erit cras nobis carmen recitandum," to which another rejoined, "Quis scit an adiciant hodiernae crastina summae tempora di superi?" If they can play like this with their knowledge, if they can jest and pun, is Latin or Greek a dead language? One, Bird, came in with a message: at once some one cried, "Bonum omen! avis a dextra!" Another boy who usually sat by the fire took his seat one day by the window; I asked, "Tune demigrasti?" He replied, "Illa sunt hiberna." One talking of metre, happened to say, "*ἔστι πούς*—" and another, not letting him finish, asked, "*ποῦ 'στι*;" I remarked of a certain *viva voce* summary, "*βραχὺ μέν*—" at once some one said, "*ὀλίγον τε φίλον τε*," and another, "*βραχὺς γὰρ καὶ ὁ παῖς*." Or again, on Ovid, *Ex Ponto* i. 2. 20, the reader explained, "Niobe saxea est facta," another added, "Sicut Lotti uxor," and a third, "*Salse* dictum!" Trifles, no doubt, but are they so bad? would they not add a spice to table-talk? And they are signs of a mood which I venture to think is not unimportant for education. One more I will add, to show how naturally mistakes are corrected. A boy read (Hor. iv. 14. 5), "o qua sol habitabilis illustrat oras"; amidst general laughter some one cried, "Non est sol habitabilis." I said: "Si sol habitabilis est, i tu et habita," and a boy said, "Non in sole habitat ille sed in luna; est lunaticus." Is not this better than "Parse *habitabilis*," or "What does it agree with?"

One object of this class-room talk is to transfer as many words as possible from the passive to the active vocabulary, from being merely understood when heard to being ready for instant use. In one term I noted more than 2,000 different words thus spontaneously

used, which is quite a good working vocabulary, if there were no more.[1] For idiom, syntax, and grammar, the trifles I have quoted are, perhaps, enough to satisfy curiosity; they have not been doctored in any way.

In our task, we are at one disadvantage as compared with our modern language colleagues. They can always fall back on the language as now used by a nation; they can refresh their memories, and enlarge their knowledge, in the most natural way by intercourse with living people. For us there is nothing but the written record. We must make many mistakes, chiefly perhaps of omission; and we can never learn the intonations of the sentence, though we can learn and reproduce the sounds of the constituent parts. That must be accepted, and the more readily, since with us this speaking is a means to an end, where many things once important now do not matter. But there is a great mass of material in the record which is simple, direct, and colloquial, quite enough to make us confident that we are (within our limits) speaking as the ancients spoke. Ransack your Plautus, Aristophanes, Plato, Lucian; search Cicero's Letters and the bits of lively dialogue or narrative which he so often gives; digest the admirable dialogues of Erasmus, Vives, and Corderius:[2] these furnish all we can want. Spice your talk with proverbs,[3] which may be varied from week

[1] I have printed this list, and I shall be happy to send copies to those interested as long as they last. If none is received this will be an indication that the stock is exhausted.

[2] Whole series of Latin lessons in Latin are given in Elsässer, *Linguam Discito Latinam*, and *Nos in Schola Latine loquimur* (de Meester, Brussels).

[3] Corpus Paroemiographicorum Graecorum; Margabitz, Florilegium Proverbiorum Universae Latinitatis.

to week until schoolboys know more than most University dons. And those delightful oaths! If you are aroused to wrath, let off *i in maximam malam crucem*, or ἐς κόρακας, and it all evaporates, without the chance of an indignant parent's protesting. You will be amused to notice with what glee any such phrase is hailed if it is afterwards met with in reading; I have known even *O di immortales* welcomed as an old friend. Real experiences are thus recalled by the printed words, which is exactly what we want. Besides this, the master must, of course, continually re-read the great masterpieces. If any one thinks he can teach and yet confine himself to his trivial round, he is mistaken.

I have but space for a brief summary of results. Those who specialize in other subjects end their classical course usually at fifteen or sixteen, although I have known excellent results follow when such a boy has taken the Latin reading with the sixth for pleasure, doing no writing and no preparation. At this stage they will have read easy pieces of Catullus, Martial, Horace, Virgil, and Homer, and portions of Cicero, Livy, Caesar, Tacitus, Lucian, Herodotus, and perhaps Plato or Thucydides.[1] They go into life knowing something of the great peoples on whom all our civilization depends, and I am bold to say that their memories of their work are pleasant. You will hear no bitter cries of wasted time from them, no letters by these will appear in *The Times* calling down fire and brimstone on the Greek language: they respect their work, and are glad to have done it. The specialists, owing to the rapid reading which the method makes

[1] These are included in the four-years course of Latin, two-years course of Greek.

possible, read the whole of Virgil, Horace, Homer, and Sophocles ; these are always done, and we always read three or four plays of Plautus, parts of Catullus, Lucretius, Juvenal, Martial, Ovid, Caesar (usually the whole Gallic War), Cicero (a dozen speeches, some letters and some philosophy), Livy, Tacitus ; the trilogy of Æschylus, a couple of plays of Aristophanes, parts or the whole of Thucydides and Herodotus, four or five dialogues of Plato, and ten speeches of Demosthenes. Other writers are taken according to circumstance : amongst them are Theocritus, Hesiod, Longinus, Xenophon, Lucan, Propertius, Tibullus, Sallust, Pliny, Suetonius, Seneca. A library of texts in sets is kept in the room, so that references can be looked up or illustrative pieces read on the spot. The grammar and critical work is treated as it comes up, and collected later in special lessons. Most important of all, the wisdom of the ancients is sought for its own sake ; and in these authors nearly all the burning questions of morals, religion, and politics come up for discussion somewhere. Finally, I repeat that the learning of four languages imposes no undue strain on a boy of linguistic tastes. In fact, quite a number of boys have learnt a fifth to amuse themselves : amongst these have been Sanskrit, Arabic, and Italian.

For the pupil the Direct Method, which may appear superficially to make his work easy, really makes him willing to do it. There is more real hard work than there is under the indirect system ; but it is done with the same zest as his games are played, and leaves him with a consciousness of power. The inimitable freshness of childhood is kept ; he is guided and even restrained, but not driven. And for the pedagogue the work is a delight. Only one word of warning—

let him not put on airs of omniscience and solemnity. He must be a part of the gay company ; he must not mind giving himself away, he must be a human being, not a wooden stick ; gladly must he learn, and then he will gladly teach.

CHAPTER V

SCIENCE

By Professor T. PERCY NUNN, M.A., D.Sc.

There is a well-known passage in Herbert Spencer's *Education* where that stiff old Victorian, for once "dropping into poetry," speaks of Science as the household drudge in the family of knowledges, who, while ceaselessly ministering to the rest, has been kept, like Cinderella, "in the background that her haughty sisters might flaunt their fripperies in the eyes of the world." But, he continues, "the parallel holds yet further. For we are fast coming to the *dénouement* when the positions will be changed; and while these haughty sisters sink into merited neglect, Science, proclaimed as highest alike in worth and beauty, will reign supreme."

This confident and uncompromising prophecy was uttered in 1861. Since that date there has been at least one period when it seemed well on the way to fulfilment. During the closing years of the last century the encouragement of sporadic instruction in science which was one of the functions of the Science and Art Department of South Kensington, developed by rapid steps into an elaborate scheme for fostering the systematic teaching of the subject in schools. Seduced by the substantial grants which were the reward of conversion, many an ancient foundation turned from the

cult of the Latin grammar to the cult of the test-tube, and renewed its youth as a "school of science." Nor was the movement confined to schools commonly recognized as secondary. The powerful and ambitious School Boards of the larger towns, overlooking or ignoring the statutory limitations on their activities, joined in the fashion, and organized their "higher elementary" and "higher grade" schools as "schools of science." These, unhampered by older traditions and well equipped from the ratepayer's purse, not only secured a full share of the Department's grants, but also entered into a vigorous and successful competition for pupils with their secondary rivals. Meanwhile, the "whiskey money," which, with typical British inconsequence, had been diverted from the compensation of displaced publicans to the coffers of the Technical Education Committees of the County Councils established by the Act of 1899, began also to be largely devoted, with other local funds, to the encouragement of science teaching in secondary schools. Thus the last decade of the nineteenth century and the earliest years of the twentieth saw a very remarkable impetus given to the study of science in a rapidly increasing number of grant-earning secondary and quasi-secondary schools. The Cinderella of the curriculum had already become, at least in these schools, the favourite and privileged daughter who received all the attentions of the visitors and monopolized the pin-money.

Then came the famous Cockerton judgment, the great Education Acts of 1902–3 and the "new orientation" of administrative policy that followed on the establishment in 1899 of the Board of Education. The first of these declared the illegality of the "schools of science" set up by the School Boards; the second

swept those bodies out of existence and assigned their powers, together with new powers in connection with secondary education, to the general local authorities; while the policy of the Board of Education, as it gradually declared itself under the influence of a new personnel, put a stop to the triumphant progress of science and destroyed its privileged position as a grant-earning subject.

The present situation, then, as compared with that of twenty years ago, is roughly as follows. In the Elementary Schools there is, undoubtedly, less teaching of science. The existence of "schools of science" within the elementary system was not only a symptom but also a cause of a concentration of interest upon the subject that had distinct effects in the ordinary schools and a strong influence on the attitude of the rank and file of teachers. With the disappearance of the special grants the attention given to science has very sensibly diminished. As regards secondary education the changes have been more complicated. In 1898 Secondary Schools could be divided into two well-contrasted groups. Those which accepted the grants of the Education Department were compelled to give a predominantly scientific curriculum;[1] those—including all the "public" schools—which could afford to keep their freedom, or refused to barter it, continued to go their own way: that is, they retained the old classical

[1] The Regulations required a "school of science" to give not less than thirteen hours per week to an obligatory course containing not more than five hours mathematics and, in addition, physics, chemistry, drawing and practical geometry. Of the ten hours to be devoted to "other approved subjects," two might be given to manual instruction, and two others to mathematics or art. After two years, practical geometry became optional. Thus, out of twenty-three compulsory hours, only six were required to be given to languages (including English), history, geography and other "general subjects."

curriculum modified to a very variable extent in deference to the demands of the modern spirit. During the twenty years science teaching has been levelled down in the former group and levelled up in the latter; it has lost its predominance in the grant-earning schools, but has secured a much stronger footing in the rest.

A reference to these historical circumstances forms, for several reasons, a convenient introduction to this chapter; for, in the first place, the English tradition of science-teaching was largely formed in the "school of science." The more enthusiastic friends of the subject are prone, sometimes unconsciously, to assess its present position in terms of the standards which obtained during its brief period of empire; its enemies derive from the same epoch much of their hostility, and its lukewarm friends many of their reservations. Secondly, in a period when interest was so much concentrated upon science-teaching, curricula and methods of instruction were subjected to a testing process whose results are of permanent value. A third reason goes deeper. The earlier work of the Science and Art Department was based upon the sound idea that a wider familiarity with science was an urgent national need: that science, particularly chemistry and physics, had become "bread-and-butter knowledge," without which a modern industrial State must starve. But in time this idea became merged in a wider one—preached with a rather narrow vehemence by Spencer, with a sweeter reasonableness by Huxley. The gospel of these writers and their followers was that the study of science is not merely useful, but may be made the basis of a culture alternative, and even superior, to the older linguistic culture. The "school of science"

was an embodiment and a manifesto of that gospel. It challenged the supremacy of the culture based on letters by offering one based on the achievements of the chemist, the physicist, and the biologist. Lastly, the conditions of twenty years ago have in some important respects returned. The educational conscience of England is once more stirring uneasily in its sleep; is, in fact, more nearly awake than it has been for centuries. Once more "neglect of science" is the loudest of the cries that disturb its slumber. Once more we are urged to protect our children against the faery spell of the old learning; to clear their vision by science so that they may see the world as it really is. And we are about to witness once more an outburst of administrative activity and the establishment of new institutions—the Continuation Schools and the "advanced courses" in Secondary Schools—which will offer fresh fields for experiment on a large scale.

We shall hardly deal with this situation wisely unless we remember the lessons learnt in the "schools of science." Those schools proved beyond doubt that science, well taught, may be an excellent educational instrument; but their very efficiency in their own line only made more evident the unwelcome truth that no one instrument, however admirable and however skilfully used, can do the whole work of education. That is why the system was abandoned, and rightly abandoned. Scientific culture, made universal and exclusive, would become, it was seen, as oppressive a tyrant as the culture it sought to dethrone, and would not fail to develop an equally narrowing pedantry.

This discovery not only stands as a warning to the incautious enthusiast; properly understood, it also helps to make clear the true grounds for the inclusion of

science in the school curriculum and the position the subject should occupy therein. Let us, then, inquire what those grounds and that position are.

The first point to be seized is that a subject justly claims a place in the school only in so far as it represents a movement of primary importance in the evolution of the human spirit. That criterion is clearly satisfied, for example, by the study of great literatures, of art and of music. It needs no argument to prove that civilization would be enormously poorer if any one of these historic types of activity had perished in its youth or ceased now to be cultivated. There is no question, therefore, that instruction suitably founded on them enriches, enlarges, ennobles—in a word, *humanizes*—the minds of children and young people. Science claims admission on the same ground. If it were merely useful knowledge it might, like shorthand or "commercial French," rightly be excluded or relegated to an inferior place among the studies of youth. But it is more than useful knowledge. Equally with literature and art, science is one of the grand historic expressions of the human spirit; it is entitled, therefore, to an equally honourable and spacious position in the curriculum.

The spirit in which the subject should be taught follows from the same criterion. We teachers are too ready to think that the educational virtue of a subject lies in some essence that can be distilled from it and administered in regular doses as a mental tonic. This persistent prejudice—a veritable idol of our tribe—accounts for the classical teacher's faith in laborious construing and mechanical verse-making, for the mathematician's belief in the talismanic properties of Euclid. Science-teachers, inheriting the same unfortunate habit,

have thought that the educative power of their subject, too, must reside in some isolable elixir. That is why they have too often focussed their efforts upon "cultivating observation" or "inculcating scientific method."

The defect of these and kindred views is that they attribute to a part what belongs, in reality, only to the whole. The prime contribution of the heroes of science to the world's cultural wealth is not the scientific method but the scientific life. In accordance with our criterion, our business is, then, to teach the realization of the life, not the mastery of the method. It is true that the scientific method is as necessary to the scientific life as breathing to the bodily life; but the scientific method, cultivated as an end in itself, resembles the method of the man of science only as artificial respiration resembles natural breathing. Our proper aim, then, is to make our pupils feel, so far as they may, what it is to be, so to speak, inside the skin of the man of science, looking out through his eyes as well as using his tools, experiencing not only something of his labours, but also something of his sense of joyous intellectual adventure.

Two questions naturally arise at this point: What are the marks of the scientific life, and, In what sense can boys and girls be made to "realize" it? Let us attempt to answer them.

The most obvious and fundamental characteristics of the scientific life are a love for "nature" and a disinterested desire to understand her ways. There are two things here, love and understanding, which God has joined together and man cannot hope to sunder without grievous loss to both. Wordsworth spoke sound philosophy when he said that "Nature never

did betray the heart that loved her." The complementary proposition is equally true: it is only to her lovers that Nature reveals her secrets. She has endless ruses for baffling the inquiries of those who do not approach her in the right spirit. That is why the magician and the medicine-man have contributed so little to scientific knowledge. They have sought to understand Nature not because they loved her but because they feared her, or they have tried to bully her into subservience to their own ends. That is, again, why practical applications of science—even the more clearly beneficent ones, such as the use of anæsthetics, antiseptics, X-rays and wireless telegraphy—have generally been based on the discoveries of men who pursued nature-knowledge for its own sake. It is the plain hard fact that valuable scientific truths are not attainable by the man who seeks them simply for the sake of subsequent dividends. He can gain them only if he is able for a while to put the marriage-portion out of his head and woo Nature as a disinterested lover. Commonly he cannot, and so prudently employs, at an exiguous remuneration, some one who can.

The first aim of the science-teacher must be, then, to make his pupils disinterested lovers of nature. This is uncomfortable doctrine to two very different types of persons. One is the "practical man" who supports the teaching of science in schools and technical institutes because he believes in its cash value. The other is the "high-browed" person who assesses all educational effort in terms of "mental discipline." The former will distrust the cultivation of a love of nature as a sentimental aim distracting attention from the real business of the science-teacher. The latter

may concede that it is not a bad thing so long as too much is not made of it, but will resent a proposal to put it in the forefront of our endeavours. Both must learn unless it *is* put in the forefront neither will secure what he specially desires. In the long run there is no money or "efficiency" to be got out of scientific studies not motived by genuine scientific impulses, and there is no mental discipline worth having.

Skilful teachers of the subject understand well the cardinal importance of this aim, and contrive, often with great success, to communicate to their pupils a genuine and strong love for scientific investigation and a permanent interest in its fruits. On the other hand, candour must admit that failures are far from infrequent. It is disturbing to discover how many young people, even among those who have a definite scientific bent, find their school science uninspiring and even boring. They will often confess, after leaving school, that their official instruction was unsatisfying, and that they had to feed their scientific appetite from private sources. In too many instances the appetite is even destroyed by the lessons that should have whetted and nourished it. These disasters are generally put down to the account of that much-abused person, the examiner. He must, no doubt, bear a large part of the blame, but the root of the trouble lies in ideas and presuppositions which exercise undue sway over the teacher's mind as well as over the examiner's. In a word, both attach too much importance to the formal and theoretical aspects of science, and too little to those which give the subject value in the eyes of boys and girls. The teacher fresh from the University is especially liable to this fault. He

(or she) has learnt to regard a science as essentially a systematic logical structure. From that standpoint precision in definitions, caution in generalization, and rigour in testing hypotheses appear to be the elementary conditions of scientific thought; indeed, nothing which falls short in these respects seems worthy to be counted as science at all. Science-teaching, conducted in this spirit, is prone to become an austere and even solemn business, singularly unfitted to nourish the enthusiasm of youth.

The teacher who is tempted to adopt this attitude should reflect that he is expecting his pupils to start from a point he himself reached only slowly, and perhaps late in his development as a student. The things in science that now loom most important in his eyes are the things of most significance from the standpoint of theory. For example, a quite unimpressive reaction of some substance hardly to be found outside a laboratory now interests him far more than a brilliant piece of chemical thaumaturgy, if the former throws light on a disputed question of molecular composition, while the latter is merely a pretty or striking experiment. But he certainly began his career with a very different scale of values, and where he was then his pupils are now.

These criticisms are not intended to depreciate exact thinking as an aim of scientific training. Every one must admit that science-teaching which does not develop a sense of the value of exact thought has failed in one of its main objects. We seek merely to emphasize two truths of great practical importance. The first is that habits of exact thought and interest in scientific theory must be regarded as goals marking the end of the course, not entrance gates into it.

They show the direction in which the teacher should press steadily, but always with patience and tolerance based upon sympathetic understanding of the juvenile point of view. The second is that the teacher will best attain his ultimate aims, in this as in all other subjects, not by ignoring the pupil's natural interests, but by cunningly using them to further his own designs.

We speak here of "natural" interests in the realm of science. Is it possible to say in general terms what these are? Undoubtedly. Children differ widely in specific interests, but what we have called the thaumaturgic side of science—the wondrous powers and magical transformations of material things; the curious ways of animals in field, wood and pond; the beauty and mystery of plant-life; the majestic processes of the heavens: these are things whose charm is felt by all young minds. The life-passion of the man of science has generally begun here, and it is here, therefore, that the science-teacher should begin. We may add, that he will do well occasionally to give even his maturer pupils what Dr. F. H. Hayward calls "red-letter lessons"—lessons whose avowed aim is to demonstrate beautiful and striking phenomena and in which theoretical interests are allowed to take a holiday.

Again, no healthy-minded boy or girl fails to be interested in the utilitarian and practical side of science: to wonder how this is made, how that "works," how the other is found out. If striking and beautiful phenomena are most apt to turn native curiosity towards science, these useful applications of exact knowledge serve best to discipline it into a study of theoretical principles. The garden or the ploughed

field is the place where the problems of plant-physiology should arise; physical questions should be raised largely in connection with records and predictions of the weather, the flotation of ships, the action of the electric telegraph and the dynamo; and so on. In spite of what has been done in recent years the great need in science-teaching is still to clear academic lumber out of the curriculum, to open the windows and let fresh air in. The laboratory and the lecture-room should be places where young students may be helped to come to close quarters with things they really want to do and to know about: not the etiolated facts and "bloodless categories" of the text-books, but the things the "play-book of science" and the juvenile encyclopædia tell them about—sometimes wisely, sometimes less wisely, but generally with a keen discernment of the actual tastes and impulses of young people. The watchful teacher will always find his chance to guide the intellectual energy that seeks these things into the channels of "scientific method"; and method thus acquired will become a vital part of the learner's mental habit, not merely an accomplishment kept strictly for use at school.

These observations lead to two more. (1) The special mark of the "new teaching" is the endeavour to exploit the pupil's spontaneity more boldly than has hitherto been thought desirable, and to guide his development with a looser rein. If we pursue this endeavour seriously we must admit much more variability in learning and teaching. The ideal of a course laid down in advance for all pupils, with their achievements mapped out ahead for each session, term and hour, must give place to an ideal of progress more elastic and more closely related to the ways of mental

growth. Individuals must be allowed to go more their own way and to take it more at their own time. This does not mean that the teacher will be superseded as such and reduced to the status of a laboratory assistant. His functions will be modified in form but in essence will be more important than ever. He must get his effects by indirect means: by suggestion, by inspiration, by creating and maintaining a scientific "atmosphere," by adroitly using the special bents and abilities of individuals for the benefit of others. To do these things well will require a higher level of craftsmanship than suffices to drive a team of pupils abreast through the incidents of a prescribed programme.

On the other hand, such an ideal does demand a drastic change in the traditional school organization. Our present arrangements are based on what Professor Adams has called "the fallacy of the average pupil." We make our plans chiefly with reference to this hypothetical young person, and recognize the varying needs of the real ones only when they are glaringly and obstinately divergent. The "new teaching" demands a Copernican change of standpoint: one from which the individual replaces the organization as the dynamic centre of the school system. It is superfluous to add that great practical difficulties beset the pioneers along that way of reform. Nevertheless, there *are* pioneers, and their early reports of the new country are, to say the least, encouraging.

(2) The second observation is more modest in scope. Over-emphasis of the formal side of the instruction tends to a divorce between scientific thought and constructional activity and invention which is unnatural and especially harmful in the earlier stages of progress. Our formula, "the realization of the

scientific life," requires the two activities to be brought into intimate relations, particularly at the beginning of the course. The botanical laboratory should be a kind of annexe to the school garden and the school "allotment"—a place whither problems that cannot be solved *in situ* may be taken for detailed and systematic study. Similarly, the physical laboratory should be a place where the boy who wants to make a sundial or a telephone can do so under official auspices and as part of his approved studies. In other words, it should be a place where carpenters' and metal-workers' tools are as much at home as glass-ware and brass instruments.

These remarks apply to all types of schools. Every Elementary School, for instance, should have its own "practical work-room," separated, for the sake of avoiding noise, from the main building, but within the school wall. Here the instruction in hand-work should be given which in towns now is usually concentrated in a "manual training centre" allotted to a group of schools. The practical work-room should also be the laboratory and demonstration theatre, and, in short, the natural home of all activities that involve free or noisy movements, wide space, and the use of tools and apparatus. It would serve not only to make the teaching of science a living thing, but also to bring hand-work into organic connection with other school studies. The difficulty of such a connection under existing conditions is one of the greatest weaknesses of the present system, and has disappointed many anticipations of the value of practical work in education.

The same kind of provision will be even more essential in the case of the new Continuation Schools.

Some of these will, presumably, be concerned with the training of boys and girls for skilled industries, and will require a scientific and manual equipment of a more ambitious kind. But in the great majority, where science will be taught as a branch of continued "general education," the combined work-room and laboratory would offer exactly what the situation will demand. Academic science-teaching would be obviously out of place in these schools. The "theoretical" side of the work must largely take the form of simple discussions and demonstrations intended to bring out the meaning and value of great scientific discoveries, to foster reading and inquiry, to encourage field-work in biology and geology and the use of public museums. The "practical" side must be of a similarly free and non-academic character. Beyond a simple course of "weighing and measuring" which may be necessary to supplement deficiencies in the students' earlier education, there should be no prescribed course of systematic work. From time to time a series of simple investigations arising out of the teacher's "talks" may be taken in hand—for example, an inquiry into the conditions of putrefaction to illustrate the germ-theory of disease, or a series of experiments to make clear the principles of wireless telegraphy. But, in general, the practical work in science should follow as far as possible the lines of individual taste and interest, and should give free scope for constructional activity.

The text of our discourse to this point has been that the science-teacher's chief task is to encourage the love of observing and investigating natural phenomena, which is the mainspring of the scientific life. Given that love, the mastery of scientific method

becomes a natural incident of the pupil's progress; without it scientific method, however scrupulously "cultivated," is sterile. But though the first thing must be put first, it is still true that an orderly and severely critical method is the very life-breath of science and the only guarantee of success in the pursuit of truth. In order to realize this aspect of the scientific life the pupil must learn, as Professor Armstrong has insistently urged, what it is to face problems in the position of a real investigator, left largely to his own wits to wrest from nature the answers to the questions he puts to her. The "heuristic method" of instruction has been subjected to a great deal of criticism which need not here be repeated or discussed. It is more to the point to urge that the impulse Professor Armstrong's propaganda gave to sound science-teaching should not be lost in a reaction that may easily go too far. We may agree that exposition and demonstration must have a much larger scope than the "stern, unbending" heurists were once disposed to grant, that the pupil should learn very much more than he could possibly discover by "investigation," and that he should be encouraged, not hindered, when he seeks to enlarge his information still further by means of reading. Nevertheless, the teacher should still find means to make genuine uncompromising "heuristic" work an essential feature of the course.

This is a point of special importance for the younger progressives. There is an impression abroad that the "new teaching" is incompatible with the old intellectual discipline: that it repudiates the ancient ideals of laborious effort and persistent industry, and is content to follow—even to lead—its pupils along "the

primrose path of dalliance." It is particularly incumbent on the "new teacher" to disprove this libellous account of his methods. He must take special pains to show that his way leads to a discipline which, precisely because it is in a truer sense *self*-discipline, is a much harder and more permanent thing than the old authoritarian methods could give. The general conditions of the problem are all in his favour. Strict "heurism" is found to be oppressive, not because young people dislike using exact and critical methods, but because they are too often called upon to apply them to "discover" things they care very little to know. Given that a boy's problem is his own problem, met in the course of a genuine intellectual adventure, he will welcome instead of resenting the methods of intellectual craftsmanship without which, as he soon learns, he cannot reach the self-imposed goal of his efforts.

We turn now to consider the subject-matter to be included in the science course and the general principles to be followed in its treatment. What can be said upon these heads is necessarily general in character. Even if it be assumed that in the near future the whole population will be under instruction from the age of six to the age of eighteen, a uniform course of instruction would be as impossible as it is undesirable. We must not assume that the needs of boys and girls are identical, and it is certain that a scheme suitable for a Secondary School would be quite out of place in a part-time Continuation School. Even among schools of the same type differentiation rather than uniformity is likely to be the note of progress. It is said that an evening class in Whitechapel used regularly to head the honours list of the Science and

Art Department in the subject of Agriculture. This achievement might be regarded as good evidence of the versatility of Whitechapel, but hardly of the soundness of its educational principles; one feels obscurely that there should be a closer sympathy between the school syllabus and the *genius loci*. In other words, the teaching of science, like the teaching of geography, should take a specific colour from the school environment. Schools, for example, in Kent or East Anglia, in the Potteries or the West Riding should reflect in their curricula the characteristic differences between the occupations and outlook of the populations they serve. This principle must not, however, be followed exclusively or pedantically, for science is not a merely parochial interest, but has a universality greater even than that of literature. While, then, it derives its strength from the "deep-rooted stem" of the regional life, it should blossom into a knowledge of, and an interest in, things that have a common value for all mankind.

We may conveniently commence our task, thus limited in scope, by discussing a principle suggested by the last sentence. Judged from the standpoint of value the contents of a science are not all on the same level, but form a hierarchy. Many have only a technical interest; others express the very life and genius of the science to which they belong. Some, again, are important on account of specially interesting applications; while a few have such far-reaching significance that they have entered into the common thought of educated people all over the world. In framing his curriculum the teacher must take account of these differences in value and exercise boldly the art of omission. It is far less important that any one

science should be fully treated than that the vital and representative ideas of science as a whole should be clearly taught and vividly apprehended. Let him, then, concentrate on these cardinal matters and let details of secondary importance go.

In carrying out these recommendations many things dear to the writers of text-books must be ruthlessly ignored. Such are, for example, the distinction between the chemistry of the non-metals and of the metals, between inorganic and organic chemistry, between physical and "general" chemistry. To pay regard to these distinctions is necessary in advanced study, but is often prejudicial to an elementary exposition of the subject. The teacher should consider himself free to take the materials he needs wherever he finds them, and to use them as he pleases, subject only to the laws of pedagogical method. Similarly, in teaching mechanics he need take no account of the ancient fence which separates statics from kinetics. If he makes any formal separation between the two types of mechanical problems, it should be on the ground of a real difference in their character, not because they belong to distinct "subjects," of which one must not be begun until the other is finished.

If a third illustration is required we may take it from physics. The segregation of physical problems into the separate "subjects" called heat, acoustics, geometrical optics, physical optics, etc., has certain obvious conveniences but much more serious drawbacks. It is not uncommon, for instance, to find a detailed treatment of heat in a curriculum which takes no notice of light, light taught with no reference to sound, and so on. Even when all three branches are included, the "water-tight compartment" method of

treatment is very generally followed. In such cases two undesirable results follow almost inevitably: the several "subjects" are considered in too much detail, so that the primary lines of argument become blurred by secondary divagations; and the connections between them are lost by reason of their isolation. It is often much more profitable to group the topics taught less with regard to their "subjects" than with reference to the broad physical methods and principles which they illustrate in different fields. The emission, absorption and reflexion of radiant heat, for example, may usefully be studied in immediate connection with the corresponding phenomena in light; for they arise from the same sources and follow the same laws. Similarly, the theory of wave-motion, introduced to account for acoustic phenomena, may at once be extended to light and radiant heat, and a little later to electrical radiation. This kind of procedure makes both for the lightening of the curriculum and for the more effective use of what is retained.

In these general remarks upon curricula there is room for a misunderstanding which it is extremely important to exclude. When one counsels a science-teacher to jettison secondary details and to concentrate on essential ideas, to pool topics that belong to different branches of knowledge and to disregard the logical boundaries between them, one may be thought to recommend a "scrappy" and disorderly treatment which could not possibly do justice to the dignity of science or represent fairly its essential character. Nothing could be further from our purpose. The architectural consistency and completeness of a curriculum is a matter of high importance; its development from the lowest form of a school to the highest should be like

a piece of continuous thinking, forming a logical, well-rounded-off whole. One of the worst results of organizing the teaching in terms of subjects is, indeed, that it makes architectural consistency so difficult; that it produces isolated groups of apartments but no unitary building.

We take it as axiomatic, then, that the teacher should think out his curriculum carefully as a whole. Its scope must, of course, depend upon varying conditions, such as the amount of time available for the subject. In favourable circumstances it may consist of two main streams of thought, a biological and a physical, with appropriate interconnections, each main stream including relatively distinct currents, such as the zoological and the botanical arguments or the chemical and the physical (in the narrower sense). When less time is given, it may be necessary to be contented with a single main stream in which topics belonging to various sciences find place. For example, it is often impracticable in a girls' Secondary School to provide more than one main stream, which may be assumed to be biological. In this case the principles we advocate suggest, in the first place, that the course should not be restricted to botany; the study of animal life should have an essential, if subordinate, place in it, and the human animal should not be forgotten. In the second place, provision should be made for the necessary study of related chemical and physical topics. (It is a common complaint of teachers of biology, especially in the universities, that their pupils' progress is greatly prejudiced by ignorance of these subjects.) There is no need to prescribe for this purpose self-contained courses of "pure" chemistry and physics. The ready and accurate use of measuring instruments, including

the balance, may with great advantage be taught in the mathematics course, where the pupil should learn, *inter alia*, how to determine density and specific gravity. Similarly, the use of the thermometer and the barometer may be taught and explained as "practical geography," *i.e.* as means of making exact determinations of weather and climate. The other relevant matters are probably best treated in the course of the biological argument itself, though some may find a more convenient home in lessons on housewifery. For instance, the composition of air and water, the nature of combustion and oxidation, and, in short, the essentials of the theory of chemical action, can be studied very profitably as an integral part of a series of lessons on plant-physiology.

The reader will have noted the suggestion that in certain circumstances part of the science syllabus may be taught by teachers of other subjects, such as mathematics and geography. This suggestion merely carries to an unusual length a principle that should, in some form and to some extent, obtain in every school.[1] The reasons that forbid the "water-tight" separation between parts of the course in science have equal force against rigid divisions between science and its neighbours in the curriculum. Science, mathematics and geography, at least, should be regarded as studies having, in addition to their distinctive aims, a considerable community of interest. A school in which the courses in these subjects are not brought into a close relationship must be considered as inadequately organized, however well they may each be taught.

The correlation between science and mathematics was considered, a few years ago, by a Joint Committee

[1] Cf. p. 47 for another illustration.

of the Mathematical Association and the Association of Public School Science Masters.[1] Their most important concrete recommendation was that exercises in "weighing and measuring" should, as a rule, be treated as belonging to the mathematician's care rather than to the science-teacher's. The principle underlying this recommendation seems to be that if a problem requires only direct measurement and calculation, and there is no question of investigating a physical hypothesis or applying a physical principle, it is best regarded as a mathematical rather than as a physical problem. This argument would assign the determination of densities by direct weighing and measuring to the mathematical course, but would leave the investigation of Archimedes' Principle in the hands of the physicist.

The same argument may be applied in the case of many other topics which, though commonly taught as mechanics or physics, are, in the sense defined, mathematical. Such is the case, for instance, with the whole of kinematics—*i. e.* the descriptive analysis as distinguished from the physical explanation of forms of motion. Given that a point moves in a straight line with uniformly accelerated velocity, the conclusion that the distance it traverses is determined by the formula $s = ut + \frac{1}{2}at^2$ is a purely mathematical deduction. Similarly, nothing but geometry and algebra is involved in the proof that a point moving uniformly in a circle has a constant acceleration towards the centre. The case for treating harmonic motion as mathematics is still more convincing. The bob of a pendulum or the end of a vibrating spring made to record its motion on a sheet of paper sliding uniformly under it is simply

[1] See their Report, published by G. Bell & Sons, London, 1909. Price *6d.*

drawing the sine-curve. The experiment is one which no teacher of mathematics should omit even if his aim were merely to give a vivid idea of the sine-function by illustrating its prevalence in natural phenomena; for pendulum-motion, it should be noted, is not a recondite phenomenon, but an event of ubiquitous and perpetual occurrence.

It is surprising that teachers of mathematics should so rarely use elementary trigonometry to throw light on another fascinating type of natural motion—namely, wave-motion. A strip of paper inscribed with a number of periods of a sine-curve and drawn steadily under the eye reproduces the characteristics of a "progressive" harmonic wave so clearly and simply that mathematical analysis is almost forced upon the observer. Let the form of the curve in its zero position be given by the formula $y = a \sin px$, and let the curve be drawn to the right with a steady velocity v. Then a moment's reflection shows that after t units of time its position is given by the formula $y = a \sin p(x - vt)$.

This striking piece of analysis demands no mathematical knowledge beyond acquaintance with the sine-curve and the rudimentary principles of graphic representation—things now included in every passable elementary syllabus. The analysis of "stationary" wave-motion, which gives the clue to the behaviour of musical pipes and strings, requires in addition only knowledge of the familiar identity $\sin(A+B) = \sin A \cos B + \cos A \sin B$; for it consists simply in recognizing the consequences of adding together the displacements given by the two formulæ $y = \sin p(x - vt)$ and $y = \sin p(x + vt)$. It demands, in fact, a much smaller mathematical effort than is cheerfully devoted to the identities that swarm in the pages of elementary

text-books on trigonometry, and is immensely more profitable. Indeed, when one has regard to the importance and fascination of wave-motion and the simplicity of the analysis its study requires, the neglect of the subject is almost amazing.

The value of these suggestions does not depend upon whether the pupil is studying mechanics and physics concurrently with mathematics. The point we are at present making is that in any case the direct descriptive analysis of such familiar spectacles as projectile and harmonic motion should be included in the mathematics course, and would add greatly to its value as mathematics. Where mechanics or physics *are* taught the policy has a further justification, for it tends to bring into vital connection subjects whose separation is unnatural and harmful to both. How much further the correlation may be carried seems a question of expediency rather than of principle. There is much to be said for handing systematic mechanics over to the mathematician altogether,[1] and for entrusting at least a good deal of the teaching in mathematics to the physicist. Such arrangements are, however, likely to be beneficial only if the mathematician gives a definite physical "atmosphere" to his teaching and the physicist pays due attention to the necessary mathematical "drill."

Arguments of a generally similar tendency hold good with regard to the relations between science and geography. The study of the "physical basis of geography" involves questions concerning the measurement of temperature and pressure, the behaviour of ice, water and aqueous vapour under varying con-

[1] This view is taken in the Report of the Committee of the Mathematical Association on the Teaching of Mechanics, 1918.

ditions, the adiabatic expansion of gases, the nature and history of the constituents of the earth's crust: questions which belong to physics, chemistry and geology. Some may be more conveniently dealt with where they arise in the geographical argument, others in the concurrent course in science; but in any case the geographical and scientific arguments must be brought into conscious and definite relations with one another.

We return, then, to the position that the curricula in science, geography and mathematics should be thought out as a whole. There is only one way of bringing about effective co-ordination of this kind: the teachers of the several subjects must meet from time to time in conclave to adjust their frontiers and regulate their policies. It should be regarded as unthinkable that any one of them should go his own way without constantly taking account of the needs and proceedings of his colleagues.

There is another member of the school staff with whom the science-teacher should always be in friendly alliance: namely, the teacher of English. In some schools the pupils' notes and more formal essays are occasionally submitted to the English teacher for correction and criticism after they have passed through the hands of the science-teacher. Such an arrangement is an excellent means of securing a high standard of clearness, coherence and precision in the pupils' records of experiments and statements of argument. In addition it works most usefully against the pernicious idea that the study of language and the study of science are interests which, even if not actually opposed, are at least indifferent to one another. It is therefore to be most warmly commended for imitation.

The reader who desires to explore the bearing of the foregoing arguments or to challenge their value would do well to study a number of syllabuses drawn up by experienced teachers for different types of schools. A collection of such schemes of work has recently appeared as an appendix to a Report of a Committee of the British Association on Science Teaching in Secondary Schools.[1] The special problems of science instruction in urban and rural schools and in schools for boys and for girls are considered separately by various writers, who offer their own solutions of them. It will be convenient to sketch here the scheme (numbered III) for which the present writer was chiefly responsible, and to draw from it some further illustrations of method and general policy in science-teaching.

The syllabus has in view the needs of an urban Secondary School for boys where science forms an important part of the curriculum for all pupils between the ages of twelve and sixteen. The first point to note is that biological questions receive a much greater amount of attention than is commonly given to them in schools of this type. A table included in the Report shows that, among state-aided schools where the leaving age is sixteen, only a few teach biology, and then only as "nature study" for boys below the age of twelve and a half. From that age onwards science means in these schools nothing but physics and chemistry. We may see here the influence of the tradition of the "schools of science" still active long after the demise of the institutions in which it was formed. In schools

[1] Published at the Offices of the British Association for the Advancement of Science, Burlington House, London, W. 1, 1917. Price 1*s*.

of the Public School type biology has, relatively, a more favourable position. "Nature study" is taught in the majority up to the age of fourteen and a half, and, in a few, is continued as biology proper to the end of the school course. It must be remembered, however, that in the Public Schools science has still on the whole the humiliating status of the shabby sister in "the family of knowledges."

In boys' schools generally, then, biology suffers from a neglect which cannot be considered compensated by the importance attached to botany in the education of girls. This situation is satisfactory neither from the cultural standpoint nor the utilitarian. To neglect biology is, on the one hand, to ignore one of the fundamental expressions of the scientific life, to shut one's eyes to a half of nature, and to remain a stranger to ideas which have exercised an immeasurable influence on modern thought. On the other hand, it is to be ignorant of, and therefore unsympathetically disposed towards, matters of the highest importance to individual happiness and social well-being. It is far from fanciful to connect the low status of biological studies in our education, partly as a symptom, partly as a cause, with the decadence of rural life and agricultural activity that is now seen to be a national evil of the first magnitude.[1]

For these reasons the scheme under consideration assigns a place to biological, side by side with physical, science in each year of the course. In the first year biology receives more than half the time allotted to science, since, even for town-dwelling children, the ways of plants and animals offer the most attractive

[1] Cf. Branford, *Janus and Vesta* (Chatto and Windus, 1916), pp. 200, 201.

field for observation and the best material for disciplining native curiosity into scientific interest. During the subsequent years the biological stream narrows, until in the fourth it takes not more than a fifth of the available time.

In the first two years the work is arranged on a seasonal basis. Thus, in the autumn term of the first year the young naturalist studies the life-history of bees and wasps, the inflorescence of typical flowers, and the gradual formation of fruits and seeds. In the winter he learns to recognize trees and to examine their buds, and in the spring follows the germination of plant-seeds and the development of the hen's egg and the spawn of frogs and newts. In the summer he is taught the use of a "flora," studies the fertilization of flowers and the part played therein by insects, and is introduced to the society of the neighbouring pond.

In the second year the soil and the general physical and chemical conditions of plant-life are the staple subject of study. In the third year field-work and the study of concrete forms of life are restricted to the summer term, but time is reserved during the spring term for lessons, accompanied by simple experimental investigations, on the work of the micro-organisms which play so conspicuous a part in agriculture, in useful manufactures, in fermentation, putrefaction and disease. The young student is introduced here to the controversy about "spontaneous generation," and hears the dramatic and moving histories of Pasteur and Lister, of Manson and Ross's conquest of malaria, and of other battles of science against disease. In short, a first attempt is made at this point to show him that exact knowledge is won only by labour and devotion,

and to give him a sense of the nobility of the disinterested scientific life.[1] In the fourth year no practical work is prescribed, the boys being left to follow their own taste in this direction by private reading and observation, or under the guidance of the school Natural History Society. The class-work consists mainly of lessons and discussions on the economic aspects of biology intended to illustrate the importance of exact knowledge and research in this department.[2]

A final subsection of the scheme is devoted to theories of evolution and heredity, and to the work of such pioneers as Darwin, Mendel, and de Vries. It is suggested, however, that the consideration of these topics would be better postponed to a fifth year and taken as part of a supplementary series of lecture-discussions to be attended both by boys following an "advanced course" in science and also by specialists in other branches of study. This course should include some treatment of the philosophy of science illustrated from the history of scientific discovery.

Under the general name "Physical Section" the other main stream of the curriculum contains several distinguishable currents. The most definite are a course of physics proper, which is developed as a continuous argument running throughout the four years, and a three-years course of chemistry beginning in the second year.

The physics of the first two years consists entirely

[1] Professor R. A. Gregory's book *Discovery* (Macmillan and Co., 1916) is a rich mine of illustrations for this text. Frankland's *Our Secret Friends and Foes* (S.P.C.K. 1909) contains a great amount of the right kind of information about micro-organisms.

[2] The teacher will gain much useful information and inspiration for his lessons from the collection of essays entitled *Science and the Nation* (Cambridge University Press, 1917) and from similar books,

of heat, linked with the biology by being based largely on "open-air" problems. It starts, for example, with a study of the thermometer as an instrument by means of which the varying coldness and warmth of the air may be unambiguously determined and recorded objectively. Its use for this purpose has hitherto been accepted as part of the nature of things, but we now raise the question, How does the thermometer work? and are thus led to the consideration of expansion as a phenomenon that generally accompanies heating. The reader should notice this inversion of the usual order of treatment, for it is typical of the methods recommended throughout the syllabus. That is to say, what are usually treated as applications of physical principles first taught in some other connection, are here taken as starting-points from which the principles themselves are derived by analysis: the theory is derived from the applications rather than the applications from the theory. It is, however, important to add that the theory, once established, is used as a clue to the understanding of further and more complicated applications. Another inversion of customary procedure may also be mentioned. Instead of graduating the thermometer-scale by reference to "fixed points," we accept and copy the standard graduation of the shop-made thermometer, and *afterwards* enjoy the striking discovery that the temperature of water during boiling or freezing is constant. This is a simple instance of the principle—always a useful guide though never to be followed slavishly or pedantically—that the historical order of discovery generally indicates the best order of exposition.

In the third year the simple ideas on radiation and conduction, gained by studying the school hot-water

system during the previous session, are sharpened into more precise concepts by observation of the seasonal temperature-changes of the soil and kindred phenomena. From these it is a natural transition to the study of the sun's radiation as the primal source of the energy expressed in plant and animal life. We come thus to the prism, the solar spectrum—visible and invisible, photometry, the laws of radiation and absorption of light and heat with their important utilitarian applications, the properties of plane and curved mirrors, and the laws of refraction of light.

At this point we pass to the conception of heat as a measurable quantity, and, following the simple methods of the pioneer investigator, Joseph Black, reach clear ideas about specific heat and the latent heat released or absorbed in changes of state. The ideas thus won are used to explain the behaviour and economy, first of internal combustion engines (petrol "motors" and gas-engines) and then of the older cylinder steam-engine and the modern turbine. This excursion into engineering involves a study of the expansion of gases under isothermal and adiabatic conditions and of the epoch-making investigations of Joule into the equivalence between heat and mechanical work.

The pupil receives at the same stage his introduction to the fascinating science of electricity. Beginning with the dissection of the electric bell, he is led at once to electro-magnetism and the electric motor, telegraphy and the galvanometer being taken *en route*. Faraday's classical experiments on electro-magnetic induction bring him to the induction coil and the dynamo, and a little later to the telephone. The reciprocal relations between the motor and the dynamo are

emphasized, and are made the occasion for enlarging his ideas about the transformation of energy—a subject which receives further illustration, first from a study of electric lighting, and finally from a comparison between the modes of action of secondary and primary batteries.

It is to be observed that the treatment of electricity during the third year is almost entirely "qualitative" in character. The aim is to make the fundamental notions of the science clear by a study of their most familiar and interesting applications. It is obviously impossible to discuss the dynamo and the transformer, electric lighting, and secondary batteries without speaking of electromotive force and resistance, of "volts" and "ampères," but there is no need at this stage to give precise definition to those terms. It is enough to use them with the practical understanding which is sufficient for the person who has to buy a new lamp for his house or a new accumulator for his motor-cycle. The task of investigating the theory of electrical measurements is reserved for the fourth year, where it forms an important item in the session's work.

From the theory of electrical measurements we pass to the geometrical theory of optical measurements. This, in turn, is followed by a simple exposition of wave-theory, applied to bring the undulatory phenomena of sound, light, heat and electricity under the domination of one of the most far-reaching and illuminating of scientific conceptions.

The course is planned to conclude with a simple account of the discoveries about radioactivity which form the present "growing-point" of electricity, and of the "theories of matter" based on them, followed

by a general review of physical phenomena from the standpoint of the conservation of energy and with special reference to the sources and economical use of the energy available for the world's work. As in the parallel case of biology, it is suggested that these subjects should, where possible, be reserved for a series of discussions in the course of the fifth year.

The three-years course in chemistry is developed in much the same way as the physics. Simple problems concerning the economy of plant-life largely determine the earlier course of the chemical argument, while the later work generally takes the form of an inquiry into the principles underlying familiar chemical processes and industrial applications of universal importance. The course is, therefore, broad rather than deep; details of secondary importance being omitted and attention concentrated on the typical conceptions and methods of organic as well as inorganic chemistry. As in the case of the sister subject, general theories are postponed to the fourth year, and the course ends with a review of the present condition of chemical science and industry—preferably to be postponed to the fifth year—in which special emphasis is laid on the social importance of pure scientific research and on the necessity for bringing exact knowledge to bear on the problem of utilizing the common riches of the natural world for the benefit of all mankind.

It remains to indicate the aims and scope of three subordinate sections of the scheme not hitherto mentioned. The first is a course which, beginning under the title "General Physics," develops in the third and fourth years into a formal study of the principles of mechanics. In the first year the young student, after learning to use the physical balance to measure den-

sities and specific gravities, is invited to study the mechanism of that important instrument and the conditions determining its accuracy and sensitiveness. In this way he comes to the theory of the lever and the centre of gravity. Next, in connection with the problem of measuring time—of which something is to be said below—he examines the mechanism of that familiar but little-understood instrument, the clock, and makes simple experiments on the pendulum. The examination of other common pieces of mechanism, such as locks and the "three-speed" gear of the bicycle, gives him further useful and congenial employment, and the year's work concludes with an elementary study of the mariner's compass and magnetism.

In the second year, the hydrostatics of the previous session is continued by an inquiry into the flotation of ships leading to the discovery of Archimedes' Principle and to the theory of pontoons, submarine navigation and balloons. The study of the barometer as a meteorological instrument gives an opportunity for retracing a classical route of scientific exploration from Torricelli, through Pascal to Robert Boyle, on which discoveries were made which prove explanatory of a great variety of useful appliances and inventions, ancient and modern. Capillarity and osmosis[1] are studied by simple experiments as problems arising in the investigation of plant-life. Towards the end of the year the pupil passes from levers to pulleys, learns how to estimate their "efficiency," makes measurements of friction, and becomes acquainted with the "principle,

[1] For capillarity the teacher may profitably consult Worthington, *The Splash of a Drop* (S.P.C.K., 1907), and C. V. Boys, *Soap Bubbles* (S.P.C.K., 1912); and for osmosis, Osterhout, *Experiments with Plants* (Macmillan, 1906).

of work" which brings unity into so wide a range of mechanical phenomena and is the forerunner of the still more widely inclusive principle of energy. He also discovers the conditions under which a single push or pull can be regarded as equivalent to two others, and applies his knowledge to the analysis of the stresses in simple frameworks like the suspension-bridge and the cantilever.

From these preliminary studies we pass in the third year to mechanics proper, which is conceived as an attempt to bring under the rule of general mathematical laws the more important types of motion found in physical nature. In studying changes of velocity we take care to avoid a common hindrance to clear ideas by giving attention to change of direction equally with change of speed. Another point of importance is that, instead of confining consideration to the progressive motion of falling bodies and projectiles, we study, side by side with these types of movement, the periodic type represented by the swinging pendulum and the vibrating spring. The simpler grammar of kinematics having been thus mastered we move on to kinetics. Using Mr. Goodwill's invaluable Vector Balance[1] we reach clear ideas about mass and momentum, and learn how the rate of change of momentum measures the force between interacting bodies. The notion of kinetic energy is also introduced, and is linked up with the principle of work studied in the second year.

The work is continued during the fourth year in the same spirit. That is, the object pursued is a clear grasp of fundamental principles rather than virtuosity

[1] See Goodwill, *Elementary Mechanics* (Clarendon Press, 1913), Chap. II.

in solving complicated problems. The former simple study of pendulum movement develops into the theory of harmonic and circular motion, which is extended to include a simple study of progressive and stationary harmonic waves. Finally we seek to establish the fundamental principles of rotary motion as illustrated by the phenomena of bicycling, spinning tops, the gyroscope, etc.[1]

The course ends here, but if it were to be continued into an "advanced course" it would have a natural completion in a simple study of the elliptic orbits of the planetary system. This requires rather more mathematics than is likely to be learnt in an ordinary four-years course, but if treated in the way indicated by Clerk Maxwell,[2] would be well within the resources of a fifth-year mathematician. The study of wave-motion should also be continued in the "advanced course" to the point where the student can appreciate Fourier's celebrated method of analysing periodic movement and its application to tidal prediction and similar matters.[3]

The second of the three subordinate courses is devoted to geology. Of this it is sufficient to say that it runs through the last three years, is very modest in scope, and deals partly with questions which arise inevitably in the study of geography and partly with matters, such as the paleontological record and the

[1] In dealing with these subjects the teacher will gain much help from Crabtree, *Spinning Tops and Gyroscopic Motion* (Longmans, 1901), as well as from Prof. Perry's well-known little book, *Spinning Tops* (S.P.C.K., 1910).

[2] In his wonderful but sadly neglected little book, *Matter and Motion* (S.P.C.K., 1888).

[3] For an elementary treatment of these subjects the author may refer to his *Exercises in Algebra* (Longmans, 1914), Part II., Section VII.

emergence of man, which are more closely connected with biology. It need hardly be pointed out that local circumstances should have a determining influence on the topics to be studied in this course, especially in the final year.

We have lastly to describe the third of the subordinate courses. This represents an attempt to restore to something like its due place in the curriculum the mother and queen of all the physical sciences—astronomy. A certain amount of astronomical information is necessarily given in every course on geography, and is, indeed, regarded as part of what "every one should know." Our aim is to place this common knowledge upon a proper basis of firsthand observation and inference, and, while enabling the teacher to get rid of an undesirable element of dogmatism in his teaching, to lead the pupil into what often proves the most attractive of all the highways of science.

The course enters into the curriculum of each of the first three years. In the first year we seek by means of simple observations and graphic records to establish the apparent rotation of the sun and stars about an axis directed to the near neighbourhood of the pole star, and to explain the principles of civil time-measurement. In the second year our observations and records are similarly directed towards the discovery of the apparent annual motion of the sun, which is the basis of the calendar. The third year carries the argument into wider fields. Working with the methods learnt in the earlier years and using the data printed in *Whitaker's Almanack*, the student sees how the elliptic motion of the sun and moon is established, and how eclipses are caused and can be predicted. Finally he learns something about the architecture of the solar

system, studies Kepler's laws, and is shown how the relative and absolute dimensions of the planetary orbits have been discovered.

As in the case of biology, any further development of the subject is left to the individual's initiative and the school Scientific Society. It should, however, be noted that the study of spectrum analysis in the fourth year brings the course, for a moment, back to astronomy on one of its most attractive sides. And, as we have already suggested, the boy who continues mathematics as part of an "advanced course" should follow the astronomical argument on from Kepler to Newton, and should make acquaintance with the dynamical foundations of the theory of elliptic motion.

It will probably be agreed that the curriculum we have outlined is liberal enough to satisfy any reasonable demands. The criticism to be expected is, indeed, that it is too full. The reader who is inclined to think thus should, however, remember our insistence that the proper aim of a general course in science is to give, not an exhaustive knowledge of detail nor a mastery of laboratory technique, but what we have called a realization of the scientific life and an appreciation of its more important contributions to the world of ideas and the welfare of man. A great deal of time is consumed at present in work that does little towards the fulfilment of that aim. Occasional practical exercises of the "drill" type will always be necessary to give the pupil a sound grasp of a principle or a method, but a much wider range of useful instruction would be possible if it were generally recognized that technical exercises of this kind divorced from the development of a definite scientific argument have comparatively

little value, and have received too much emphasis in the past.

On the other hand, it is admitted that the programme presupposes favourable circumstances including, besides a reasonably good material equipment and enthusiastic teaching, a full measure of time.[1] Where the conditions are less favourable the scope of the scheme must be narrowed, but the work should still, we urge, be carried out with the same aims and in general accordance with the same principles of method. This is, in particular, the reply we would offer to the question what should be done in the Elementary School. The supersession of the "schools of science" was followed, we have said, by a notable diminution in the amount of science taught in Elementary Schools. The reaction has, perhaps, gone too far, but it was hardly to be regretted, since it gave opportunity for strengthening the primary curriculum where it was weakest, namely in the "humanities." In a curriculum planned to end at latest at the age of fourteen there was, in fact, no room for an extended course in science which would not squeeze out or attenuate courses of study of still greater general importance. But with the advent of universal instruction up to the age of eighteen the situation will be radically changed. It will be possible to ease the pressure during the primary period by postponing topics which were included in the scheme of study not because they were appropriate to the age of the pupils, but because they were deemed of essential importance and there was no other opportunity of teaching them. Schemes of science instruction can be planned in which the period

[1] About five hours per week, exclusive of the time given in lessons in mathematics and geography, to some of the topics set down as part of the course in science.

of full-time study to the age of fourteen and the subsequent four years of part-time instruction are considered as a single whole.

Up to the age of eleven or twelve there need be no distinction between the curriculum for boys and for girls: a simple course of "nature study" based, wherever possible, upon open-air observations and the cultivation of the school garden, is best for both sexes. It should reach some such standard as is here assumed as the starting-point for the four-years course in a Secondary School.[1] A friendly understanding between the Elementary Schools and the Secondary Schools to which their brighter pupils are transferred as "junior scholars" would secure all necessary continuity in the instruction without necessarily fettering the individuality of the teachers in either type of institution. A similar understanding between the teachers in the Elementary and Continuation Schools is still more desirable. It should, indeed, be regarded as essential to a well-organized system; for, without it, the present obstacles to efficient science-teaching for the bulk of the population will still remain. Good working arrangements between the two types of institution being postulated, it should be possible to devise properly graduated schemes of work which, while taking account of the widely differing circumstances and always limited opportunities of the pupils and the varying interests of the teachers, would yet supply to each age the kind of teaching in science that best meets its special needs.[2]

[1] See Hodson, *Broad Lines in Science Teaching* (Christophers, 1909), Ch. III., for a syllabus of this type drawn up by Miss C. von Wyss.

[2] The very important Report of the Prime Minister's Committee on the position of Natural Science in the Educational System of Great Britain (1918 [Cd. 9011]) has appeared while this book was in the press. The Committee's findings seem to be in substantial agreement with the argument of this chapter.

CHAPTER VI

MATHEMATICS

By JAMES STRACHAN, M.A., B.Sc.

From the time of Plato to the present day the place of Mathematics in a liberal education has never seriously been disputed. The teacher of Mathematics has not been obliged, like his classical colleague, to defend his subject from external attack ; nor has he, like the teacher of Geography, for instance, had a struggle to rescue it from undeserved neglect. The well-known existence of numberless applications of Mathematics to commercial and industrial affairs, increasing with and largely contributing to the progress of civilization, carries sufficient conviction of the importance of the subject to the man of the world ; while the dictum of Bacon that Mathematics " make men subtile " sums up a widely accepted view that satisfies those who are more concerned for the mental and moral than for the material results of education.

It is, then, little matter for surprise that the movement for the reform of mathematical teaching, which took shape towards the end of the nineteenth century, should have been mainly directed from within. The teacher gifted with some power of self-criticism could not rest satisfied with the easy acceptance of his practice by an indulgent, because unenlightened, public opinion. He was bound to ask himself whether there was any

evidence amongst the pupils that had passed through his hands of that subtlety which the study of Mathematics was alleged to produce, and on a fair review of his experiences as a teacher he was compelled to admit that, whereas stupidity and fatheadedness as the outcome of his ministrations were of constant occurrence, the production of subtlety was phenomenally rare. Mathematics as a cure for a "wandering wit" might be all very well for a man of the intellectual capacity of Bacon, but somehow it seemed to fail in its effect when applied to the ordinary schoolboy or girl. Nor when he looked at his subject from the utilitarian standpoint was he any happier in an attempt to justify his existence. He could not honestly say that to 90 per cent. of his pupils, apart from arithmetic, the stuff he was teaching was ever likely to be of material service—an impression which conference with mathematicians engaged in the practical applications of the subject only served to intensify. Whether or not this view was unduly pessimistic, it was abundantly clear that such results as were produced were in no way commensurate with the labour involved in producing them.

There were thus two respects in which the results of mathematical teaching fell short of expectation. In spite of that, there could be no doubt that the subject lent itself admirably to treatment by the most approved methods of class-management. Every step taken, every demonstration given by the teacher, was followed by copious examples worked by the pupil. There ought to be progress made; for it was impossible of belief that the mass of mankind and womankind should be such hopeless blockheads as to be unable to progress in a study of such vital importance to the human race. "The study," said the schoolmaster, "is dull."

"True," said the stern educationist, "but that is no disadvantage. All the better discipline." But here the schoolmaster joined issue with the educationist. He felt instinctively it ought not to be dull. It might be hard, but give it interest and he would undertake that, however hard the road, he could carry his pupils along with him. What is taught in a school has no right to be dull. The question, he began to see more clearly, was not whether the subject was of such a nature that it might be expected to produce some specified mental effect, or whether if studied now it might be of material service in after life, but whether, as now presented, it possessed sufficient inherent interest to make its study possible at all; and if not—for as regards the mass of pupils the answer was obviously in the negative—if not, whence could the necessary interest be obtained, and how could it be introduced?

The experiments in mathematical teaching of the last twenty years may as a whole be regarded as an effort to find a solution to this problem. As happens in all exploration, the pioneers have often missed the way, misled by false impressions or held back by preconceived ideas. The danger of confounding interest with amusement is always present, if not with the pioneers themselves, at all events with their less clear-thinking followers. At various times the reform movement has been brought into temporary disrepute by an excessive devotion to so-called practical work or by alliance with the extreme heuristic school. In no subject have the fetters of tradition been more firmly riveted on the teaching than in Mathematics, and, even with full allowance for the salutary effect of a wise conservatism upon any movement of reform, there can be little doubt that the reform of mathematical teaching has

been unduly delayed by hesitation in breaking with the past ; so that much good new wine has been spilt by the attempt to preserve it in old bottles.

The reform movement began with Geometry. The Association for the Improvement of Geometrical Teaching, which later developed into the Mathematical Association, was founded as far back as 1871, and has carried on propaganda work continuously from that time to this. In those days Geometrical Teaching in schools was dominated by Euclid ; in fact, so far as the vast majority of pupils was concerned, it was nothing else. The virtues of Euclid are so well known and acknowledged as hardly to need recapitulation. As an exercise in pure deductive logic, no text-book in the world has ever approached it. The intellectual value of its requirements of absolute precision of language and authority for every statement made can hardly be over-estimated. The value, however, is contingent firstly on the pupil's making adequate progress in the subject, and secondly on his transferring the habits acquired in geometrical reasoning to his practice in everyday life. That the former contingency was not in general realized, was shown by the large proportion of pupils who failed to display any independence in the exercise of Euclidian reasoning, and took refuge in memorizing the steps, and at times even the very words and letters, of Euclid's propositions. The other contingency, that of transference of acquired habits to other fields of activity, is a phenomenon as to the existence of which psychologists are not yet agreed.

On the other hand, regarded as a text-book for the modern schoolboy or girl, Euclid's Elements left much to be desired. Assuming a pupil to have successfully struggled through the whole text of Euclid as now

extant, how much or rather how little geometry did he really know! And of what he did know how little was he in a position to turn to practical account! He could describe in full, and with chapter and verse for every statement, how according to Euclid it was possible to draw a straight line through a given point parallel to a given straight line; but he had never worked such a problem in practice, he was probably unacquainted with the use of the set-square, and unaware that Euclid's laborious method had been modified by modern draughtsmen so as to give an accurate result in a quarter of the time. He might be thoroughly convinced, and able to convince the world, that in obtuse-angled triangles if a perpendicular be drawn from either of the acute angles to the opposite side produced, the square on the side subtending the obtuse angle is greater than the squares on the sides containing the obtuse angle by twice the rectangle contained by the side upon which, when produced, the perpendicular falls, and the straight line intercepted, without the triangle, between the perpendicular and the obtuse angle; but he did not know this fact in the portable form $a^2 = b^2 + c^2 - 2\,bc\,\cos A$, and failing this, he was not in a position to use it to calculate the third side of a triangle, given two sides and an angle, or to calculate the angles, given the sides.

It is hardly to be expected that a text-book written in 300 B.C. would be up to date. However little human reasoning processes may have altered, account must be taken not only of the numberless applications of geometry in modern times, but also of the great improvement and simplification in the expression of mathematical relationships brought about by the use of algebra and the arabic system of numera-

tion. The idea of directed number and the systematic use of this idea in the geometry of Descartes must find a place in any adequate treatment of geometry in the modern school. At first, however, the forces of conservatism were sufficient to relegate the systematic numerical work to the domain of algebra and arithmetic, but it is noteworthy that among the first reforms was the reduction of the longwindedness of Euclid by the use of directed quantities, so as to include in one enunciation kindred propositions for which separate enunciations had formerly been required. The best instance of this process is to be found in the treatment of the "algebraic" propositions of Book II. A similar innovation was the extension of the idea of an angle to include reflex angles, whereby a more intelligible treatment (though none the less sound) of the angle properties of the circle was obtained. These innovations are now so well established that it will probably surprise some of the younger generation of teachers to learn that they were innovations at all, and that much controversy was excited by the first attempts to tamper with the sacred text.

The next innovation was more daring—no less than a deliberate interference with the holy sequence of propositions. It was one of Euclid's self-imposed laws not to employ any construction until the possibility of the construction had been proved. Accordingly, he dared not bisect an angle to prove the equality of the angles at the base of an isosceles triangle, for he required this very proposition for the proof of his construction for bisecting an angle. His overcoming of the difficulty by the construction of the *Pons Asinorum* is a masterpiece of human ingenuity. As such, however, it has not always been recognized by the successive generations of

schoolboys who have been dragged across the bridge, or if so recognized the object of the construction has been apt to be misinterpreted. Tired of the wearisome obstacle, the sympathetic conductor decided to show his charges how to jump the ditch. "Let it be granted," he said, "that an angle can be bisected;" and, with a side glance at the now purely monumental structure, the convoy passed on its way. Thus was opened up a whole field of interesting innovation. For long it had been felt that Euclid's classification of subject-matter, however admirable, was in many places disturbed by the need for preserving a sound sequence of propositions. If one short cut could be taken, why not others? The benefits derived from greater simplicity and more satisfactory arrangement would more than compensate for any loss of rigidity by departure from the strict deductive line. Where the argument failed and a fresh postulate would be too violent a remedy—why, the engineers were calling out for measurement—"Let us measure." So it came about that for a time every teacher of mathematics did that which was right in his own eyes, and the pupil progressed somewhat haltingly—partly by reasoning, partly by measurement, and, where these failed, by guesswork—still somewhat bored, but in truth not half so bored as he used to be. There was life in the new movement that had been lacking in the old system, and the pupil could feel, what he had not felt before, that all this geometry meant something and led somewhere; it was connected with real things. It is true that results based purely on measurement are often unsatisfying, and the measurement programme as carried out by mathematical teachers devoid of any acquaintance with the methods of Science bore traces of its amateur conception. Many

fell victims to the heuristic craze, and would be found pretending to their classes that they were discovering the Theorem of Pythagoras by measuring the sides of a number of right-angled triangles or laboriously counting squares. Still, to the average boy or girl a line three inches long is more substantial and more satisfactory than the line AB. The pupil is no longer expected to be merely a passive recipient of the colourless doctrine with occasional interludes of retailing the said doctrine or working out some puzzle related to it. He is now given something to do as well as to learn, and he feels that he will be judged not so much by what he can say as by what he can do. That is why he is less bored than formerly.

In the last ten years something like order has gradually evolved out of the chaos of systems that followed the fall of Euclid. It has now become customary to set apart the first year of a course in geometry for the assimilation of geometrical ideas and the acquirement of a knowledge of certain fundamental geometrical facts. This process is carried on by practical work—drawing with ruler, compass, protractor, and set-square, paper-folding, cardboard-modelling and such-like exercises. The facts referred to consist of the elementary propositions concerning angles at a point, parallel straight lines, and congruent triangles. These propositions are not proved in the sense of being referred to dependence upon something simpler and more fundamental than themselves. They are assumed, and worked with, until they become realized and familiar, and are intended to provide a basis for the purely theoretical work that is to follow. This last is taken up in the second year, and the system is virtually that of Euclid with an increased number of axioms and

numerous omissions of the less important propositions. Throughout the theoretical work it is customary to continue the practical exercises for purposes of illustration, and in order to keep the work in touch with reality.

Although this system is in general use there are many teachers to whom it does not commend itself. The teacher is no longer a law unto himself, but provides himself with a law in the shape of a text-book. As text-book writers differ widely in the order of their "facts" and propositions, as well as in the selection of propositions to be treated as unproved "facts," it follows that there is great diversity of practice between school and school, and, where the shoe rather pinches the teacher, between schools and external examining bodies. In such anomalies is to be found the excuse for the demand one sometimes hears for the re-establishment of a universally recognized sequence of propositions. There is really little strength behind this demand. To be sure, we have lost Euclid's best feature, his well-knit web of reasoning secure in every loop. The fabric has been somewhat roughly torn. Can we now unite the broken threads so as to have it whole and strong as it was before? Is it any use putting a new patch on the old garment? Not a bit. The garment was well-nigh worn out before the rent was made at all. Mathematicians working on the frontiers of the subject have in the last fifty years cast much light on the foundations of Euclid. The close examination of fundamental assumptions has revealed that Euclid made implicitly many more assumptions than his explicit axioms or postulates, and that even of the axioms themselves one at least, that dealing with parallels, embodies no necessary truth. Even

his fundamental propositions are not above suspicion. I. 4, for instance, although useful as a demonstration, will not with the strict geometrician pass muster for a proof. These are not matters that concern school-children, but surely, if the attainment of perfection in a chain of geometrical reasoning is a matter of such difficulty, it is little good setting up an authoritative scheme, alleged to be perfect, and compelling them to adopt it. Probably there is no finality in this matter, and no useful purpose is served by pretending that there is.

Nevertheless, consideration of the work of the modern philosophic mathematicians may possibly show us the way out of our present difficulties, for that we have not yet found the complete solution of the problem of making geometrical studies profitable is evident to any one acquainted with the progress of an ordinary middle-school class. The dullness and the boredom are diminished, but they are still there. The separation of practical from theoretical geometry has not quite met the case. Practical work as a relief from the strenuous thinking required by the theoretical may be excellent, but practical geometry by itself is just as liable to produce boredom by its inherent insipidity as theoretical by its quality of "stodge." Playing with instruments is entertaining for a time, but there is no strong purpose behind it to sustain the interest as in the case of genuine manual occupations like woodwork or art. And in the theoretical work the ordinary pupil still flounders as he did of yore. The abandonment of the *Pons Asinorum* has not brought with it all the benefits expected. The pupil still persists in assuming what he has to prove and in proving what he is asked to assume. That he is not averse to all

theoretical considerations is shown by the eagerness with which he will demonstrate correctly the Theorem of Pythagoras, or the fact that the area of a triangle is half the base by the altitude. There is some sense in these things. They are rather remarkable discoveries. There must be some good reason for their truth. He will show you how they come about. "But why," you hear him thinking, "should I be plagued with all those silly pairs of triangles? Any fool can see that the angles at the base of an isosceles triangle must be equal. It is equally obvious that if you get at a point within an angle by precisely similar treatment of the arms, that point must be on the bisector of the angle. A good way to bisect an angle, but why worry to prove it? Does the perpendicular from the centre of a circle to a chord bisect the chord? Obviously. The three angles of a triangle are together equal to two right angles. Are they? Yes. Well, now, that's a funny thing. Why?"

If the above soliloquy fairly represents the attitude of mind of the average student of geometry, we have in it some indication of the direction in which to look for a cure for the ills we at present suffer. Euclid made certain assumptions—some consciously, some unconsciously. Consciously he made as few assumptions as possible, and endeavoured to restrict these to such as would be granted as necessary truths by the adults for whom he wrote. He then endeavoured to show how all the geometrical facts within the scope of his treatise could be derived from these assumptions. That might be called Euclid's game. Is it a game in which the average schoolboy, or girl, has any interest? Speaking generally, No. His interest does not as a rule extend to the desire to build an edifice of reasoning on the

minimum number of assumptions. On the other hand, he does want to know the why and the wherefore of whatever is not commonplace. He is not yet philosopher enough to seek for the why and the wherefore of the commonplace itself. His outlook in geometry is the same as his outlook in other branches of science. Some facts are so obvious as scarcely to require mention. Some are obvious once attention is called to them and their meaning is appreciated. Others are more striking, constitute a real addition to his knowledge, and demand an explanation. Just as there were certain assumptions it was natural for Euclid to make, and these are more numerous and less explicit than those made by the modern philosophic mathematicians, so there are assumptions which it is natural for the schoolboy or girl to accept, and these are still more numerous and still less explicit than those made by Euclid. They form the natural basis of geometry for the young. If the boy can refer a new fact to dependence on his natural assumptions he is content. If not, he is unsatisfied. It is starving his intellect to leave him unsatisfied. But he does not want proof of his own natural assumptions, and it is another form of cruelty to force on him a meal for which he has no appetite.

Unfortunately many writers of modern text-books have gone to work in precisely the wrong way. They treat propositions like I. 32 or I. 47 by metric verification, leaving the proof to come later as too difficult for beginners. At the same time they give a full theoretical treatment of what they consider the easy propositions. Now, it cannot be too strongly emphasized that it is the "easy" propositions that are most difficult. To the boy or girl there is no point in proving the obvious. He might perhaps tolerate such a proceed-

ing if when he came to something that was not obvious he were shown some reason, as, for instance, in the case of the remarkable property of the square on the hypotenuse; but just at the very point where he demands intellectual satisfaction, he is put off with a miserable exercise in clipping paper, or, worse still, with a sheaf of sums.

A far better procedure would be to examine the properties of parallel straight lines, alternate angles and such-like, then measure the angles of triangles and prove the property regarding their sum. Go on to corresponding properties of other rectilineal figures, stating the results algebraically. Set out problems on drawing triangles from given data, classify these problems, and deduce results as to the uniqueness or otherwise of the solutions in each case. Study symmetrical figures, and find out ways of drawing bisectors and perpendiculars. Study parallelograms and work up to the area of the triangle, from which again may be deduced the area of the circle. Study the ratios of the segments of straight lines cut by the same parallels. Contrast the properties of equiangular triangles with those of equiangular quadrilaterals. Introduce trigonometry, using it for problems involving right-angled triangles. Apply the properties of similar triangles to the right-angled triangle so as to arrive at the Theorem of Pythagoras, — and so on. Throughout, assume nothing that is not readily granted; but, with due safeguard against hasty assumption, prove nothing that does not call out for proof.

There is no good reason for making separate courses, as is done in some schools, in Theoretical Geometry, Geometrical Drawing, and Mensuration. The science is Geometry, and the proper study of it, whether the

aim in view be intelligent practical application or pure mental training—granting for the moment the possibility of the latter—requires consideration of its practical and theoretical aspects side by side. Theory without practice is as faith without works—dead. Practice alone, unaccompanied by such theory as is necessary for appreciation of the genesis of the rules by which it is guided, is unsatisfying to the intellectually alert and demoralizing to the intellectually lazy.

Probably we shall never be happy until we get right away from the Euclidian tradition. "Please, sir," said an intelligent boy one day to the present writer, "why can't we learn geometry without all the 'pi-jaw'?" Why not? Why should this particular branch of science be selected as a lay figure for the display of dialectical subtlety? After all, the pupil, though he may have some interest in learning geometry, has seldom any in the dialectical part of the business. There need be no fear that the reasoning power of the rising generation will suffer in the absence of compulsion to reproduce the historic demonstrations. Once the boy realizes that he has something worth reasoning about he will soon learn to reason. We can see it daily in his other classes, if we miss it in the geometry lesson. Once the girl gathers that confidence which comes from having her sensible remarks sensibly accepted, she will be further on the way to intellectual salvation than if she be daily confronted with rigmaroles that will never accommodate themselves to feminine predilections in the matter of logic. One thing certain is that no pupil will learn to reason by making day after day copies of the reasoning of some one else. Let him feel the need

for reasoning and encourage him to reason in his own way. Better that he should be guilty of a fallacy and have it checked than that his reasoning should take the form of vain repetitions, however perfect. Let him, if possible, reason in his own language. There is no need to abjure formalism altogether. There is a formalism that is natural to and inherent in all scientific reasoning. But in geometrical reasoning there is much more room for freedom of language than is generally allowed. Above all, where brevity of expression is possible let it be used. The ordinary Euclidian notation in which every line is denoted by two capital letters and every angle by three, is intensely distracting. Time and again the bewildered pupil cannot see the wood for the trees. Instead of "$\angle ABD = \angle PAB$" let us have "$\angle\alpha = \angle\beta$," or "the red angle is equal to the blue angle," provided the figure is appropriately marked. Instead of "rectangle $AB \cdot BD$ = square on BC" let us have "$xy = z^2$," and the rapidity of our progress as our step becomes more elastic will surprise us.

There are teachers who would never dream of treating mechanics in any but a modern, up-to-date, common-sense way, and who nevertheless shudder at the thought of what they call an informal treatment of geometry. And yet there is no essential difference between the two. Both are sciences based on intuition and experience, capable of development from commonplace observations by mathematical methods. They have similar applications in everyday life. The schools are now ripe for a treatment of geometry on the same pedagogic lines as have been found successful with mechanics. Such a treatment may not solve all

our difficulties, and will doubtless land us in fresh ones, but it will at all events remove some of the most glaring anomalies in our present practice.

Dissatisfaction with the traditional system in the teaching of Algebra was longer in making itself felt than in the case of Geometry. So late in the day has come the movement of reform that probably it is not too much to say that the traditional system with its exiguous virtues and manifold abuses prevails in the majority of schools at the present time. The course in general runs something like the following :— Substitutions, Minus Quantities, Addition, Subtraction, Multiplication, Division, Long Division, Brackets, More Brackets, Still More Brackets, Simple Equations, Equations with Brackets, Equations with Fractions, Symbolical Expression, Problems leading to Simple Equations, H.C.F. and L.C.M. (monomials), Elementary Fractions, Simultaneous Equations in x and y, Simultaneous Equations in x, y and z, Problems leading to Simultaneous Equations, Involution, Evolution, Long Square Root, Factors, Factors of 4-Term Expressions, Factors of Trinomials, Harder Factors of Trinomials, Difference of Two Squares, Difference of Two Squares with Brackets, Harder Differences of Two Squares, Sum or Difference of Two Cubes, H. C. F. (Long Method), Fractions, Multiplication and Division of Fractions, L.C.M., Fractions with Numerical Denominators, Fractions with Binomial Denominators, Fractions with Trinomial Denominators, Cyclic Order Fractions, Miscellaneous Fractions including "Skyscrapers," Mixed Brackets and Fractions, Equations with Fractions, Literal Equations, Harder Problems, Quadratic Equations by Completing

the Square, Quadratic Equations by Factors, Quadratic Equations by Formula, Simultaneous Quadratic Equations, Problems leading to Quadratic Equations, Harder Factors, Remainder Theorem, Theory of Indices, Surds, Equations involving Surds; Ratio, Proportion, and Variation; Arithmetical, Geometrical, and Harmonic Progressions.

The above course goes under the name of "Algebra up to Progressions." It has been written out in full in order that any teacher reading it may realize the waste of child-life involved in working through it. Where does it all lead to? What is it all for? What human being is made any happier for all this grinding of the juvenile mental mill? Perchance the master when his "Local" results are published. But what does it mean to the child? At first a game—rather entertaining, being a funny sort of arithmetic. By and by a task, tending to become monotonous unless varied by some quizzical relation between the ages of a father and a son. Soon a nauseous task, and—last stage of all—a dull mechanic exercise serving to kill time till the bell goes. It is not hard work. It is lazy work, much less exhausting than playing patience. "Cancel when you can, multiply up if you can't: remember that two minuses make a plus, and watch your signs carefully or you may land in a mess, and when you come to the end and it all cancels out, make sure whether it's 1 or 0 that's the answer, or you may be jumped on."

If ever there was a system calculated to stunt intellectual growth it is this. To it is traceable the large number of highly intelligent educated people who have "no head for mathematics." If we think about our intentions at all, we set out meaning to

introduce our pupil to the finest intellectual machinery ever devised, but we show him how to grind the handle, and keep him grinding like an unskilled workman till at the earliest opportunity he throws up the job in disgust.

About twenty years ago it became fashionable to teach the solution of simultaneous equations by graphs. This was hardly a real reform—rather a backwash from the movement in favour of practical work in geometry. It had the merit of all handwork, however trivial, of adding to the capability of the pupil. It broadened his outlook both in algebra and in geometry by introducing him to Cartesian co-ordinates, and thereby also strengthened what little appreciation he might have of the concept of directed number. It is true that there has been much "pottering" with graphs. Time spent on plotting could often have been spent to better advantage, though it is doubtful whether under the "x-chasing" regime it would have been. Teachers have frequently failed to realize the absurdity of trying to get their pupils to use graphical methods for the solution of simple simultaneous equations—a process for arriving by much labour at an approximation to a result that can be got at exactly in two lines of calculation. But these drawbacks are insignificant compared with the service done by the graph as the thin end of the wedge for the break-up of the old wicked system. The new-comer by the room it occupied automatically displaced a certain amount of the incubus, while the very purposelessness of the graph work as frequently practised raised the wider question of the purpose of the whole study.

The question "What *is* Algebra?" forced itself to the front. This is a difficult question to answer—

almost as difficult as to answer the question "What is a dog?"; for, like the dog, Algebra is a product of controlled evolution, and has developed such characteristics as were found to be most serviceable for the purposes of self-preservation and utility to man. A popular dictionary defines Algebra as "that branch of mathematical analysis in which signs are employed to denote arithmetical operations, and letters are made to represent numbers and quantities." This definition is fully in accordance with the conception of Algebra represented by the traditional school curriculum, but like the curriculum gives no clue to the human purpose underlying the system of mathematical analysis. Another popular dictionary tells us that Algebra is "the department of mathematics which enables us by the aid of certain symbols to generalize, and therefore to abbreviate, the methods of solving questions relating to numbers." This is better. There are few departments of human activity in which measurement, and therefore number, is not involved. If we take care not to lose sight, nor to let our pupils lose sight, of some of the human activities in which our symbolism may be of service, we can make it a study with a purpose; a study to which a human interest, even a juvenile human interest, attaches; a study in which, therefore, we may expect our pupils to work hard, to wax strong in spirit and increase in wisdom.

The human activities in which number is involved are by no means necessarily all of a material nature. There are profitable activities that are entirely mental, that have for their object the elucidation of the fundamental laws of the mental and material universe. Among these is the study of what may be called "Pure Algebra." Pure Algebra has been defined as consisting

of all formal logical implications of the set of assumptions characterizing a number system. In other words, amongst the questions relating to numbers that require to be solved are those concerned with the fundamental properties of numbers themselves, and the fundamental laws governing the operations that may be performed upon them. No sooner is a system of symbols selected for the generalization and abbreviation of some material problem, than the symbols themselves invite attention to the logical implications of the assumptions made regarding them at their birth. The pursuit of the symbol along first one track and then another may bring about important consequences for humanity, and is a legitimate occupation, if not a duty, of the man who is his own master. Unfortunately in the past we have allowed the cult of the symbol so far to get the better of us as to divert to it much of the energy of the rising generation, forcing them to take part in the pursuit of the symbol as in a ritual the purport of which they are yet too young to grasp. Nevertheless, it will be conceded by the most ardent advocates of a more rational system of teaching that no great progress can be made in Algebra without practice in the manipulation of symbols, and that no course of school Algebra can be completed without some consideration of the fundamental properties of numbers and numerical operations. One school of reformers has even gone so far as to make considerations of "Pure Algebra" the principal content of their reformed syllabus. To them Algebra like Euclidian Geometry is primarily a "Mathematical Science" to be developed deductively from fundamental assumptions. They are interested, and they seek to interest their pupils, in the study of number for its own sake. In this study they hope to find salvation

and a way of escape from the wearisome iteration of meaningless manipulation which all good teachers shun.

It is a noble ambition. It is yet too early to prophesy as to its success or failure. If it succeeds, it should be the means of producing a race of highly educated pure mathematicians ; for a boy who can between the ages of twelve and sixteen maintain an interest in the study of pure number is likely to be in manhood in a strong position for advancing the frontiers of the science. It will suffice to express here the view that in face of the acknowledged weaknesses of juvenile human nature, and in view of the strength and freshness of its outlook which gives it half its charm, the generality of reformers are probably right in looking rather to increased attention to the material utility of Algebra for the interest necessary to give it value as a school subject.

It is the hope of those who seek to approach Algebra through considerations of utility, that as the subject develops the pupil will be led on naturally, and almost without his knowing it, to some appreciation of the philosophy of the subject. Equations, taken first as the outcome of concrete problems, will come to be regarded as the inverse of the familiar straightforward arithmetical operations. Formulæ relating to real things will call for such manipulation as to display the essential properties of related numbers. Through formulæ, especially with the assistance of graphical representation, will be gradually developed the idea of variation or the functional relation of one quantity to another. The idea of directed numbers and the conventions attaching to their use will receive copious illustrations from applications to concrete things. Once the use of

symbols for generalization is made familiar by their use in formulæ, symbols may be employed for the expression, and where possible for the proof, of the already familiar arithmetical rules. The human want supplied by logarithms will lead to an examination of the properties of indices and of the conventions necessary to admit of the required extension of connotation of the concept of an index. Graphs of formulæ will lead to the notion of gradient, gradient to differentiation and the idea of a limit.

It would be useless and absurd to claim that in a course of this kind interest would never flag. The conditions of any such Utopia are a perfect teacher teaching a perfect subject to perfect pupils. What is claimed for it is that with all its imperfections it would have life. The teacher would have the opportunity, which under the treadmill system he does not have, of enlisting the co-operation of his pupils in the hard work to be done. Boys and girls do not fight shy of hard work if they realize the sane purpose behind it. Provided the teacher realizes this himself, and plans his work so that the pupils may come to it intelligently, feeling that the work is productive and not merely vanity and vexation of spirit, he may count upon good progress with all who are intellectually fitted to undertake the study. For those who are less intellectual, the work, as in all subjects, must be made correspondingly easier; but there must be no sacrifice in the matter of interest. The backward are only still further retarded in their intellectual progress by mechanical manipulation of masses of symbols whose *raison d'être* they have lost sight of, or have never understood.

It must be borne in mind, moreover, that apart from its inherent viciousness as an educational instru-

ment, the manipulation of masses of symbols in heavy factors, fractions, and equations involving fractions, absorbs an immense amount of valuable time. In most schools the time available for mathematics is severely restricted by the pressing and legitimate demands of the rest of the curriculum. Unless the Algebra be reformed there is no time in which to treat of those methods by which mathematics renders at the present day its greatest services to humanity. First and foremost amongst such methods, at once the most elegant and the most powerful, stands the Differential and Integral Calculus—*the* Calculus *par excellence*. It will never do to continue to allow our pupils to depart from our schools the possessors of an alleged general education, but without any working knowledge of differentiation and integration. The study, it has been well proved by experience, is not, if wisely conducted, too hard for the average boy or girl of sixteen. The name is terrifying and the study itself may be made terrifying by the mysterious palaver with which it is often approached. In reality it is the natural culmination of an ordinary school treatment of variation or functionality illustrated by graphs. A course of Algebra such as has been suggested above leads gradually up to the Calculus, and is incomplete without it. It may not be possible for any but those specializing in mathematics to proceed far into the new realms of thought to which the Calculus gives access, but it is both possible and desirable that the ordinary student should, before turning to devote special attention to his own dominating interests, have some opportunity of looking out on this particular prospect with a seeing eye.

One of the most important uses of Algebra is the application to Geometry. Geometry, like every other

metric science, lends itself readily to algebraic treatment. Without such treatment no systematic application of Geometry to the material universe is likely to be effective. If the driving force in our mathematical teaching is to be derived from the interest attaching to the recognition of the applicability of the study to the world around us, it will readily be granted that no branch of the subject is better deserving of a place in our syllabus than that algebraic geometry which we call Trigonometry. The perversity of pedagogues in their treatment of Trigonometry is quite remarkable. Because Trigonometry involves the idea of similar figures —an idea, by the way, familiar to every small child who has tried to draw a picture—it was customary to postpone Trigonometry until the student had covered the ground of Euclid's Sixth Book. In the case of the vast majority of Secondary School pupils this postponement was *sine die*. Generation after generation of schoolboys and girls were brought through a three or four-years' course of Mathematics up to a stage at which they were just about to catch a glimpse of the promised land, where at last they might gain some dim realization of the purpose of the tribulation they had been passing through. But it was just too late for them to take possession, and the enjoyment of the promised land was reserved for the few. Even with those few the pedagogue did his best to make Trigonometry as barren as the preceding Algebra. The immense use of Trigonometry to mankind was touched on incidentally, while much attention was devoted to the transformations of $\sin\theta / \cos\theta = \tan\theta$ and $\sin^2\theta + \cos^2\theta = 1$. Trigonometry, with its identities and equations, was employed merely as a fresh supply of grist for the greedy algebraic mill.

All that is changed or changing. The good modern mathematical teacher realizes that without Trigonometry neither Algebra nor Geometry can be effectively taught. There is no need to defer Trigonometry until similar triangles are reached in Euclidian sequence. Indeed, in most of the newer syllabuses of Geometry it is customary to take similarity, as is natural and proper, at quite an early stage. This has great advantages in the treatment of Geometry itself. The Theorem of Pythagoras, for instance, is essentially a numerical relation, and its true significance is only obscured by Euclid's wonderfully ingenious construction for demonstrating it as an equality of areas. But apart from this and other advantages to pure Geometry of dealing with ratios at an early stage, the wide field of practical application opened up by Trigonometry is sufficient justification for the early introduction of considerations of proportion and shape. Indeed, the trigonometrical ratios are themselves an excellent means of reducing to metric form what to many pupils might remain a somewhat hazy concept.

Further, when tangents, sines and cosines are introduced, they are not to be treated merely as so many more algebraic symbols to be chased out of the denominators of fractions and displayed in all sorts of weird, artificial combinations. Their numerical values and their use in problems in heights and distances are the first and most important considerations. There is something fascinating to the boy or girl in the calculation of a length without actually measuring it up. Tables, commonplace as they may seem to the adult mathematician, are to the juvenile a new instrument of power, and he takes the same sort of delight in using them correctly as in carving his name

exactly with a new knife. In due course the necessity for combinations and manifestations of trigonometrical symbols will make itself felt, and as it makes itself felt, but not sooner, may be dealt with. When it does arise, the manipulation will be undertaken in a very different spirit from that of the old days when the manipulation was an end in itself.

There is another aspect of the relation of Trigonometry to the school curriculum that must not be lost sight of. Trigonometry is the principal mode of reducing to numerical form the results of geometrical investigation and algebraic calculation. Now, in the upper forms of a Secondary School the subject of Arithmetic is often like a squeezed lemon. Practically all the virtue of which it is capable has already been got out of it. Yet it is dangerous to drop it altogether. One reason is that Arithmetic is compulsory for most public examinations, but there is also a sound educational reason for continuing Arithmetic, namely, that it is undesirable to allow the pupil, through want of practice, to lose that facility in numerical computation which it has taken him so many years to acquire, and which when he leaves school for the wider world he would do well to possess unimpaired. The problem, then, is to find some occupation involving a good deal of arithmetical computation which shall at the same time be more profitable in execution than played-out sums on "work and pipes" and the ordinary stock-in-trade of the standard Arithmetic book. There are many ways of solving this problem, but one solution to which attention may be directed at this point is Trigonometry.

No insistent demand for revolutionary change has arisen in the case of Arithmetic, like what has made

itself felt in connection with Algebra and Geometry. Arithmetic is not so open to attack. By its very nature it is necessarily kept in touch with the world of human activity, and is therefore not so liable to fall a prey to formalism as the other branches of school Mathematics. At the same time, under the influence of the doctrine of interest, reinforced by the progress of educational thought in regard to Algebra and Geometry, the teaching of Arithmetic in all classes of schools has during the last twenty years undergone a gradual salutary change. It is of the same general nature as the change reformers hope to see realized in the case of other branches of Mathematics. The teacher now tries to establish his pupil's arithmetical knowledge on a basis of experience of the concrete, and the nature of the requisite experience is selected so as to be in accordance with the interests proper to the pupils' age, sex and environment. At the very foundation of the subject much careful attention and ingenuity has been devoted by teachers of infants to devising means of inculcating number concepts and introducing simple operations with numbers in connection with those healthy general activities of body and of mind that are characteristic of very young children. When the systematic learning of the "first four rules" is undertaken, an effort is made to make the rules themselves intelligible by concrete illustration with heaps of counters or bundles of sticks. To be sure, there is much learning by heart to be done. There is no royal road to the multiplication table. But to deliver a rule as if it were part of a heaven-sent ritual which the unfledged mortal must perform, whether he understand the mystery or not, is now considered bad practice.

Similarly, compound calculations are no longer taken as the abstract consequences of certain tables of weights and measures peculiar to the Arithmetic book. The weights and measures dealt with are those the busy world uses. They are brought into the class-room, seen and handled by the children, and used by them, or at all events in their presence, to perform the functions for which they exist. Care is taken that the sums set shall have some relation to the requirements of mankind, and instead of quantities described according to the whole gamut of tons, cwts., qrs., sts., lbs., oz., dms., the range of dissection is restricted in accordance with ordinary business practice. Sensible questions based on the concrete demand sensible answers applicable to the concrete. An answer like $\frac{7}{17}\frac{1}{3}$ has to be decimalized before it can be interpreted, while the degree of approximation in the data of a sum is carefully examined in order to determine the appropriate degree of approximation in the answer. Recurring decimals, except as curiosities to be looked at in passing, have gone out of fashion, and there is none of the old wearisome conversion of recurring decimals into vulgar fractions by rules whose genesis was quite beyond the pupil at an elementary stage.

As the pupils enter their "teens" and their interests become more clearly dependent on their outlook on life, some attempt is made to adapt the Arithmetic to their new requirements. For girls it may take the form of calculations connected with marketing and housekeeping generally, including the keeping of accounts; work which may, in the hands of a good teacher, develop into valuable instruction in household economy, far beyond the range of ordinary Arithmetic. The interests of boys are generally more

varied; so that, whereas for some classes it is profitable to use the Arithmetic lesson as a means of throwing light on the machinery of commercial practice, for others it is more valuable to treat of the application of Arithmetic in the industrial occupations the majority are likely to follow. The development of Arithmetic along such lines as these is, of course, dependent upon the length of the pupil's stay at school. The wise teacher selects the Algebra and Geometry into which it leads, according to what is most likely to be fruitful in view of the time at his disposal. The foolish teacher commences "Algebra up to Progressions," and gets as far as "Brackets" by the time the boys leave school.

In the Secondary Schools the change in the teaching of Arithmetic has been similar to that which has taken place in the Elementary. As already remarked, the subject tends, if pursued to the end of the course, to have the substance squeezed out of it. The traditional sums on Interest, Stocks, Present Worth, Clocks, Work and Pipes, etc., are felt to be unsatisfying, and do little more than serve the purpose of keeping the calculations going. If this were the only consideration, it would be easy to effect a reform by sweeping away the whole lot, and trusting to Trigonometry, Chemistry, Geography and other subjects to provide the necessary amount of calculation. It is felt, however, by many teachers that the time devoted to calculations in £. *s.* *d.* is well spent if the calculations have reference to transactions as carried out in the practical business world. The real objection to the old type of money sums is that so many of them are unreal or obsolete. Instead, therefore, of pressing for the abolition of calculations relating to the bank and the stock exchange, the leaders of thought in this matter have set to work

to devise a course in what is called in the recent Report of the Girls' Schools Committee of the Mathematical Association the "Arithmetic of Citizenship." This course is as applicable to boys' schools as to girls'. The main items in such a course are: (1) Local Rates —their relation to rent, analysis of rates; (2) County Finance—sources of revenue, items of expenditure, loans; (3) Capital and Industry—limited liability companies, value of investments, banking, building societies, land tenure, annuities; (4) National Finance; (5) Insurance—life, fire and marine, National Health —conditions that determine premiums.

There is not likely to be much difference of opinion either as to the interest attaching to such a course or as to the value of the training to be derived from it. The point to be settled—and it can only be settled by experience—is, how far the subject-matter is within the compass of the ordinary adolescent boy or girl. The competent teacher will modify it in accordance with his pupils' capacities. Whatever the outcome, there is no doubt that it represents a great advance upon the old Arithmetic book.

It may, however, be as well to point out that even by the best teachers the capacity of the pupil for Mathematics is often misunderstood. Girls especially are frequently classed as unmathematical, withdrawn from lessons in Algebra and Geometry, and set to work instead at the traditional arithmetical sums. This practice is unfair to the girl. More often than not her alleged failure in Mathematics is merely failure to see sense in the subject through the mist of formalism by which it is obscured. To her[1] Algebra is abhorrent

[1] The reference here, of course, is not to all girls, but only to the girl commonly classed as unmathematical. Many girls not prac-

because so deadly mechanical; Geometry, because progress is retarded at every step by the demand for proof of the obvious. The Arithmetic to which she is condemned has the advantage of having grown out of something concrete that she once understood, but it also soon becomes mechanical and meaningless. It is little other than a means of keeping her occupied. The only means of salvation in such instances is for the teacher to realize that, if the pupil has no interest in the subject, it is for the teacher to discover what interest the subject with saner treatment may have for the pupil. That interest will not be attained by narrowing, but by widening the field of study. There are all kinds of practical questions that can be dealt with direct without any formalism, either geometrical or algebraic—How to make a map, How to find the height of a hill, How to save calculation by use of tables, What speed is gained by the gear of a sewing machine or a bicycle—to mention only a few in addition to those specified in the "Arithmetic of Citizenship." When the girl might be tackling such questions as these, questions that call forth all her intellectual powers to their mastery, it is an injustice to undermine her confidence by stigmatizing her as unmathematical, and to throw her back on the sluggish performance of allotted tasks every one of which is a mere copy (*digitis mutatis*) of some one else's reasoning.

The criticism most often levelled at the "New Teaching" of Mathematics is that it lacks thoroughness as compared with the old. "If it were so, it were a grievous fault." It is possible that some

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tically minded and not given to serious thinking are, unfortunately, only too content to spend their time working mechanical sums. Such girls are not usually classed as unmathematical.

reformers have been so intent on their reforms as to lose sight of the importance of maintaining the standard of strictness and precision inherited from the foregoing generation. It is possible even that the impatience characteristic of the reforming temperament is not always compatible with the prosaic demands of the class-room, so that the most far-seeing and energetic reformers do not always make the best schoolmasters. If so, their failings ought not in justice to be charged against their creed. For there is nothing in the creed of the mathematical reformers which carries with it any lowering of standard in the pupil's work. The immediate aim of the teacher of Mathematics still remains, as it was a generation ago, to insist on clear thinking, followed or accompanied by accurate performance and expression. It is still his moral aim to get the best work out of the pupil. This object, he knows as well as the veriest martinet, is not to be attained by making the work soft or easy or amusing. But, unlike the mere martinet, he hopes to attain it by attaching to the work a human purpose that the boy or girl will appreciate, a purpose that acts as a stimulus to hard work in which the thinking shall be every bit as clear, and the working or drawing every bit as accurate, as under the regime of pure mental discipline.

For so far as the ordinary daily methods of teaching are concerned there is little change called for or brought about. It is still the pupil's work, not the teacher's, that counts. The change is in the type of work set and in the attitude of teacher and pupils towards it. If the work lacks life, it is the teacher's business to give it life. Mathematics is no longer merely the working through a set book with the

teacher as taskmaster. Still the tasks are there, and it is for the teacher to see that they are approached and carried out in such a spirit as not to mar the intellectual pleasure and mental enrichment to be derived from the performance of them. It is as true now as it ever was, that the good teacher of Mathematics does not do all the talking: neither does his class do all the working.

There is, however, one considerable change in the type of work set which the abandonment of formalism for scientific treatment necessarily carries with it. The standard type of mathematical exercise involves a hypothesis and requires a conclusion to be reached. In geometrical exercises it was customary that the conclusion should be stated as well as the hypothesis. For instance, "If adjacent angles are bisected, prove that the bisectors are at right angles to one another." This type of exercise is still useful, and any reform that banished the intellectual joy to be got out of riders would be pernicious. That, however, is only half the truth. There is a still greater intellectual joy to be derived from discovery, and it is a mistake to take the wind out of the sails of the would-be discoverer by always stating the conclusion to be reached. For this reason it is often of advantage to suppress the conclusion in stating the problem, putting an exercise like the above in the form, "If adjacent angles are bisected, do you notice anything else about the figure? If so, can you give a reason for what you find?" The simplest of riders is here chosen for the purpose of illustration. With slightly more complex figures the hunt for propositions can be carried much further and provides as much mental exhilaration as the acceptance of the intellectual chal-

lenge conveyed in the old-fashioned and, let us hope, still vigorous rider.

On the same principle, that of encouraging the spirit of research or intellectual conquest, it is often advisable, paradoxical as it may seem, to suppress the hypothesis. A common kind of exercise in Trigonometry, for instance, takes the form of giving the distance between two points on a level plain and the angle of elevation of the top of a mountain from each, from which data the height of the mountain is to be found. In such an exercise the difficulties of the concrete problem are nearly all removed in the enunciation. The real difficulty consists in discovering a way to treat the problem by mathematical methods. It would be far better from the point of view of general education if the problem were set in the form, "How are we to find the height of an inaccessible peak?" A higher order of sagacity is required to discover what measurements are necessary than to work out the result when the measurements are given. Giving the measurements in the first instance tends, if anything, to suppress the development of this higher order of sagacity and to produce an unpractical type of mind in which concrete difficulties are not appreciated at their true value.

One further criticism of the "New Teaching" of Mathematics may be dealt with in conclusion. It is sometimes alleged that while the newer methods may be for the benefit of the intellectual democracy, they militate against the production of first-class mathematicians. Now, it is fairly safe to say that a really clever pupil is proof against most pedagogic contrivances, just as a healthy man is proof against all that a doctor can do for him. It is very unlikely that

the budding mathematician will be suppressed or depressed by any innovation for the benefit of his less gifted fellows. On the contrary, there is no doubt that the new movement is bearing fruit in the highest classes of our schools and universities. There, as in the ordinary school classes, the process of attaching a purpose to the work is adding interest and sanity to the whole study. The subject is no longer an artificial programme to be read through with a view to answering questions set in challenge at a future examination. It is recognized and is treated as a great Science arising out of human needs, carried forward by a burning desire for knowledge of the truth, and applying itself in turn to the satisfaction of further human requirements. To the genuine mathematician, the purely intellectual interest is often far stronger than considerations of utility, but he suffers not one whit by the realization imparted in early youth of what consequence his study is or may be to mankind. Such a consideration tends to make him more careful in his thought, more precise in his statements, more intolerant of all that is slipshod, and, let us hope, more indulgent towards those who have not yet attained the same intellectual eminence as himself.

CHAPTER VII

GEOGRAPHY

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Introduction.—It is impossible to discuss the teaching of geography without being sure of what we wish to do. Methods which are entirely suitable when one idea of the subject holds the field may be entirely unsuitable when another ideal is held. Methods in vogue two centuries ago were not the methods of thirty years ago; methods of thirty years ago are not the methods of the New Teaching, partly because there has been a change in all teaching methods, but also partly, possibly to a greater extent, because that which is taught is not the same and demands new methods. Geography could then be taught from a text-book that contained a list of capes and bays, mountains, counties and county towns, with a few brief statements as to what the towns were noted for. All that was necessary was that these should be learned. The methods employed to induce the pupils to learn were very different from those of to-day, when the aim of teaching geography is to enable the pupil to place himself in and on the world, to realize precisely where he stands. It is not sufficient, for example, that he should be able to say that the world is round: he should be able to feel that it is round with his feet firmly planted on one spot, to imagine, not as something external but as con-

cerning himself directly, this globe turning under him and wheeling onward on its course round the sun. We wish our pupils to imagine accurately the conditions of the great world stage on which they play their parts. Book-work, though necessary, is not sufficient. The emphasis must be laid on the making of mental images as nearly as possible corresponding to the actualities. The methods of teaching must be different because the conception of geography has changed. The New Geography demands New Teaching.

Geography deals with Real Things.—It is essential that teachers should know what their aim is; they must know what is important and what is less important. What is important at one stage of the pupil's advance may be less so at another. It is important, of course, that what is known should be correct. Pupils should not speak of the Rhine when they mean the Rhone. names should be used correctly; but confusion of names is of much less importance than lack of ability to recognize that names stand for real things. It is this that must be taught first, last, and all the time. Very much geography as taught now does not deal with real things but with things that have no manner of resemblance in essentials to the real things. If geography did deal with realities pupils on the point of leaving Secondary Schools after a full course would not make statements like the following, "Heligoland commands a view of the northern Atlantic and the North Sea," "The Nile flows up to the Mediterranean Sea," "The water after surging and boiling in the great heat of the Gulf of Mexico escapes in a north-easterly direction," "The chief occupation of the inhabitants of Surrey and Kent is hop-picking in summer," "Canada

is one of the countries owned by Britain." It is just as difficult to teach the new geography as it was easy to teach the old. Geography and history are different from all other school subjects in that they deal with things that cannot be brought into the class-room. Perhaps history is the more difficult as no history worth the name is possible without a working time scale and an understanding of adult passions. These from the nature of the case children cannot have during the earlier years of school life. Geography deals with things which if not so impossible are yet almost as difficult of realization. Nothing geographical is adequately realized unless the pupils have some kind of idea of the size and scale of the world and its several parts, and not even the greatest traveller has even seen the whole world in a long lifetime. No one can see a large area like England all at once so as to take in all its relationships. These must be imagined, and imagined accurately. Inaccurate imagination, at any rate in essentials, is worse than useless.

All this makes the teaching of geography extraordinarily difficult, but it does not absolve us from attempting to do the best we can. One thing that the teacher can do is always to have visions of real things before his mind. Unless he makes an effort to visualize the things he is speaking of he will insidiously suggest by a word here and a phrase there ideas of things that do not correspond to the actualities. He must deal, and feel he is dealing, with the world as it exists and not with some picture of it. This is the first necessity in the New Teaching of geography.

Objects of teaching Geography.—The objects of teaching geography are mainly cultural in the best sense. This does not, however, exclude the possibility that

geography may pay directly : it has a cash value. The old geography was of very little value to any one, but it is obvious that those who have been trained to make accurate mental pictures will not be satisfied with sham presentments. They will not be satisfied with appearances, but will be accustomed to look for real things in the world. They will not make the error of mistaking the sham for the substance. And this will be not merely because they are accustomed in a general way to deal with realities, but because the actual things of which they have learned and with which they are familiar in geography are those in the main with which commerce is concerned. They have a knowledge of facts which will enable them to check reports from other lands and estimate their value. Those who have been trained to think of real things on the earth's surface will make better business men as well as better citizens.

The Grammar of Geography.—Dealing, then, with the world and not with any representation of it, dealing with it in such a way that his pupils may be educated to become good citizens, the teacher is forced to adopt such a scheme that the facts with which he is dealing can be arranged in an orderly fashion. Without orderly arrangement any study is useless : there must be some kind of grammar. The older geography had a grammar, the new geography must have a grammar also, though it need not be the same grammar, and in fact is very different. Grammar is not usually interesting. One does not expect it to be interesting in itself : all one asks is that it should be convenient. A series of numbered pigeon-holes is not interesting, though the pigeon-holes may contain interesting matter. There are at the present time two grammars

of geography in use. In one the facts are arranged in one way, in the other the same facts are arranged in another way. In one the facts are arranged according to geographical principles. We have the subjects of physical geography, economic geography and historical geography. Physical geography, for example, deals with the origin of mountains, with river flow, and with the action of volcanoes : it is only incidentally that we learn of the Alps ; they are introduced as examples of fold mountains, and we learn the names of the Mississippi and Vesuvius as being types of rivers and volcanoes. In the other grammar the world is divided into regions large or small, and each region is considered as a whole. No doubt there is a place for both grammars. At the university stage there is certainly a place for the former, but the writer is very strongly of opinion that the second grammar is the only one that should be used in schools, especially Elementary Schools. In practice it is found that however interesting individual lessons on physical geography may be yet the course as a whole is unsatisfactory : it seems to lead nowhere. It is essential that in school the emphasis should be laid on regional geography.

The grammar of the older geography also divided up the world into regions and arranged the subject-matter of each in order. Unfortunately the older geography was unsatisfactory, partly just because emphasis was laid on the grammar. It was also unsatisfactory because the methods by which the world was divided into regions, and still more the methods of treatment of each region, left much to be desired. The regions of the older geography were political divisions, the regions of the new geography are natural regions.

A political region may be, and very often is, a natural region, but political divisions are less stable than natural regions, natural regions are more fundamental than political, and a study of natural regions is found to afford a more certain basis on which to build the superstructure of geography.

Starting, then, with natural regions, the grammar proceeds to discuss these according to some plan. The plan on which the older geography proceeded to deal with each political division into which the world was divided was twofold. There was a subdivision into smaller units: the British Isles were divided into England and Wales, Scotland and Ireland, and these again into counties and parishes: there was also an enumeration of certain facts about each region beginning with its boundaries.

The natural regions may be treated in a similar way, but with a difference. They may be divided into smaller natural regions, as political units were divided into smaller political units, but each natural region is treated as a whole, as an organic whole. In the older geography boundaries, rivers, mountains and towns were taken as isolated facts. In the new geography, the essential things are not the boundary but the centre, not the mountains but the highlands and lowlands, not isolated facts but the region as a unity, diversity in unity as found in organisms. The older geography treated of the subject-matter somewhat as an anatomist treats the human body. The new geography recognizes differences in parts: the head is not the heart, the arm is not the leg, but the man is more than the sum of his parts: the natural region is more than the inventory of all that may be found within it isolated and separated. Everything

within the region goes to give a special character to the region.

The new geography, then, deals with the relationships of the phenomena within the region, but these phenomena are not related haphazard. There is a definite, almost a logical, scheme by which these phenomena are seen to be related—the grammar of the new geography. The name "geographical argument" has been suggested for the logical form in which the scheme may be exhibited. Whether the name be adopted or not it is convenient as suggesting that the phenomena are related in a way in which they are not seen to be related in the old grammar. The scheme deals with the subject-matter under eight main heads—structure, climate, relief, vegetation, human settlement, human movement, economic factors, and historical factors. The order in which these are given is on the whole the most satisfactory, but one must not take it as invariable. The relief is determined largely by structure and climate, but it is also true that the relief does in fact modify climate. The vegetation of a region is mainly determined by the structure, the climate and the relief, but human agencies working within limits may substitute one form of vegetation for another: wheat may replace grass in the plain of North America, but wheat could not be grown in the Arctic nor in the Equatorial regions. It is even more indeterminate whether human settlement or human movement should come first in the scheme: man moves between settlements, he settles usually at nodal spots of movement. In practice the order is of no account so long as the relationship is recognized.

Principles of Geography Teaching.—Now, though there is a grammar of geography, the last thing we should

attempt to do is to teach that grammar. There is always a danger lest one should be obsessed by the grammar. One may easily become an anatomist even with the new geography, and one must be a seer. One must see things in their true perspective, see things whole, living. There is a *genius loci*, as Dr. Herbertson has said, of every region. Further, the teaching order is not the logical order but the psychological. We must have a definite end in view, but we must begin where we can ; we must begin with things in which the youngsters are interested, about which they know, before we go on to the things which they do not know, but this does not mean that there is no order in the teaching. On the contrary, school time being short it is necessary to use every minute in teaching with definite ends in view. There must be good reasons, based on knowledge of children as well as of the subject, why one thing should be taken before another.

One principle we have already stated, that the world should be taken region by region : it has to be added that the lessons on each region should not have the same plan but that each should have a character of its own, and that according as the capacities of the children increase new ideas should be introduced. For example, in giving lessons on England to young children, instead of treating of the natural regions lessons could have as subjects a loaf of bread, or an apple, or a cotton duster. These would not be isolated lessons, as were the old object lessons, but would be selected definitely with the aim of giving ideas of the geography of particular regions in different parts of England. How and where was the wheat grown ? How did it reach the shop ? These are questions which would be asked, and the answering of them would be an important part of the

lesson. The farmer who grows the wheat is, too, an essential figure in the story. Consideration of what he and his assistants do at different seasons of the year and at different hours of the day helps to keep the lesson on the plane of reality. The mistake should be avoided of giving a lesson on "the farmer," a very indefinite personage who does not exist. Generalizations at this stage are unsatisfactory: it must be possible to give details. The cotton duster, again, supplies material for a lesson on a different kind of region altogether, and on a different kind of people. Geography is in both cases introduced as supplying the setting of the stage on which activities take place. Undue stress is not laid on the geography, but the course is at bottom geographical in view of the fact that the topics are so chosen as to form a series which covers the whole of England. Or, again, the work may consist in solving a series of problems. The most important facts of the geography of North America may be introduced and learned in their natural setting and relationships in attempting to answer such questions as "How could I emigrate to the plains of Canada?" "How could I send the wheat home to England?" Problems in reference to tea could be made to cover all the important facts in the geography of south-eastern Asia.

At a later stage the lesson may in form be more strictly geographical: regions may be studied as regions, but, even so, particular aspects of geographical principles should be emphasized under each. The dominant fact in the Siberian plain is the presence of vegetation belts, and these may supply a theme for the lesson. Only towards the end of the school course may the idea of the geographical argument be introduced and a few regions studied from the new point of

view. It is very doubtful, however, whether the idea of "structure" should be introduced into courses of geography which end at fourteen. This method of taking regional geography is a very different matter from teaching all regions so as to fit on the procrustean bed. Facts already known are seen to take their places in an orderly scheme, but it is necessary to have a knowledge of facts first. These have already been seen to have some kind of relation to each other, and it only wants one further step to show clearly what the relationship actually is.

Into this regional course must come as much so-called physical geography as is desired. Again, the principle to be observed is to introduce the subjects as they are referred to in the regional course, and at the stage when the children can understand them. Knowledge of rivers and river flow may come quite early: erosion and deposition may be introduced in connection with a stream from the Pennines. Deltas may be introduced rather later. Sinking of lands may be referred to naturally in connection with the west of Scotland. Mountain folding may be discussed at a later stage still, perhaps when Southern Europe is being studied. These subjects are all of different orders of difficulty, and if physical geography is considered as a branch of knowledge it is apt to be taken at a particular stage in the school course when some ideas are too difficult and some are too easy. It must always be remembered that it is better to go slow at first and be sure that the children *realize* what is being talked of, than to make the children learn what is of very little value because only inadequately understood, though they may easily learn to make correct statements. Of course it is not to be expected that they will make perfect mental images: no one does so, but if there is

too much hurry the mental images which are made are such that the general impression is untrue rather than true. In particular, if the teaching is hurried it is almost impossible not to cramp ideas of the scale on which the world is built, and the impression thus made is extraordinarily difficult to correct.

Map-work.—One of the chief mistakes in teaching is to think that the children are learning only the things which they are told to learn. It is forgotten that suggestion plays a most important part in teaching, and that though nothing is said much may be implied, much that the teacher does not mean. Of nothing is this more true than of map-work. One of the greatest defects in the teaching of geography is the abuse of the map. By its very size it is insistently teaching all the time that the things of which teachers speak are very small. Too often the things of which teachers speak are actually identified with the things shown on the map. Very many of the worst failures to realize the real things of which geography treats are due to definite misreadings of the map. The girl who wrote "Britain consists of three islands, England, Scotland and Ireland," was only expressing an idea possessed by very many people, though they do not like to confess it. They do not think of the mainland of Japan as consisting of two parts, but they do think of Great Britain as somehow divided into two parts physically. They think of Great Britain as divided into two because they have been accustomed to see England and Scotland separated in their atlases. Again, such phrases as "the bottom of Africa," "the south-east of England below the Wash," occur in nearly every geography lesson. It is the map which is to blame. By convention north is placed at the top of the map, and the map is thought

of instead of that which it represents. If any one is asked to draw a map of a street or two round his own home he does not take any trouble to make sure that north is at the top—he probably does not know what direction is north—but he feels that there is something hopelessly wrong if France is drawn with the north towards him as in fact is the case. When drawing a map of his own home he is thinking of the reality, while in drawing the map of France he is not. To the insistent teaching of the map is entirely due the lack of realization of scale shown in such statements as "In Manitoba if the summer is dry they obtain water from Lake Winnipeg," "New South Wales is protected from the open Pacific Ocean by New Zealand." The map thus used teaches things that are wrong. To be used satisfactorily the map must be looked *through* not *at*. It must be used as a binocular is used: the less one is conscious of the binocular the more effective it is. In most cases the map is looked *at* not *through*, and one is very conscious of the map.

With all those disadvantages arising from the use of maps it seems as if it might be better to do without them. Geography could be learned without the aid of maps, just as one may appreciate literature without being able to read or write. One may gratify a literary taste without a knowledge of reading and writing: one may see plays, may listen to an author reading his masterpieces, or may even dictate one's own masterpieces to a secretary. Reading and writing are not literature. But the ordinary man is helped enormously to a knowledge and appreciation of literature by a knowledge of how to read and write. So the ordinary man is helped to understand geography if he can read and make maps, but he must be able to read

maps, to see the sense in the maps as he sees the sense in books without being more than dimly conscious of the individual words. It is not enough that he should be able to spell maps, and very much of the ordinary so-called map reading is no better than map spelling, if it is as good. Maps must be read.

Pupils and teachers think they are learning geography when they are learning only accidentals associated with maps, as if they should think literature was being studied when note was taken of the kind of type and the number of letters on a page. It appears to be an absolute necessity, if the map is to be used at all, that there should be a graded course in map reading. Teachers, then, must teach map reading as a means to an end, not as an end in itself. It is a long business. It does not consist in getting the children to look at a physical map of Europe and say what the symbols stand for. It does not even consist in looking at an ordnance map on the scale of an inch to a mile. Still less does it consist in picking out the counties on a political map of England. Asking children to understand a political map is like asking them to understand one of Shakespeare's plays before they can read. No. In map reading as in ordinary reading one must begin at the beginning and go slowly, emphasizing all the time the meaning of that which is read.

In teaching to read print there are three stages.

(*a*) The child is accustomed to use words in combination to express ideas : he is not taught to read till he can speak.

(*b*) He learns that certain symbols stand for certain words and ideas with which he is familiar, and practises reading till he thinks of those ideas rather than of the symbols.

(*c*) He is introduced to new ideas by means of those symbols.

In addition, the pupil learns to read partly by learning to write, not in the sense of the mechanical formation of letters, but in the sense of expressing ideas. In any sensible English course there is not only a graded course in reading but a graded course in writing and composition, special attention being given now to one point and now to another. There must be the same three stages in learning map reading.

(*a*) The child must be able to recognize certain simple geographical facts. He is not taught those facts in school any more than he is taught to speak. Geography, like charity, begins at home. He knows where the school is, and the shops: he knows how to come to school. He has thus simple ideas of markets and obstacles to direct movement controlling routes. This does not mean that he knows all the geographical facts about his neighbourhood that he can know or that it is desirable for him to know, but he knows enough for him to go on with. When he comes to school he certainly does not have a large vocabulary, but he has enough to go on with, and he may increase it.

(*b*) He is taught to use symbols for the facts he knows. It is not enough that he should be shown these symbols. He must learn them, first to recognize them with effort, then to recognize them easily, and then to think of the things for which they stand rather than of the symbols. This implies time, not necessarily all at once but extended time: it can only be learned slowly by iteration. Any other method leads to disaster. Hurry only emphasizes the symbols. The only way in which the process can be hastened is by having

a definitely thought-out scheme, a graded course. Even when a certain advance has been made and the map is recognized as a collection of symbols, map reading may be little more than map spelling. May it be whispered that this is perhaps the case in the highest forms of our Secondary Schools and in our Universities? We do not consider it reading when a boy has to spell out C, A, T, and then say "cat." Similar mistakes and worse mistakes are made in regard to map reading. We think that the symbol is something like the reality. We imagine that we are thinking of the things when we are only thinking of the symbols. This is as if we thought CAT was like the animal This is not even spelling. It is a mistake made in map reading that is not made in reading books. When we do think of the symbols as merely symbols we take a very long time to make out what they stand for. The tendency is to say "this contour line runs here and here, this other runs here and here, this third runs in this way, and so a hill must be represented," instead of reading the map as a whole at once without seeing the individual contour lines. So little is this understood that people think of simple contour maps as those with one or two contour lines marked, while, as a matter of fact, the simplest relief map is that with most lines marked. A book is not easy to read when all the words on a page except one or two have been omitted. The book is easy when a sufficient number of words are used to give the sense.

(*c*) Then we may come to the third stage, when new geographical knowledge is acquired by means of maps. This does not mean, of course, that no maps may be used for learning new facts till all maps are able to be read with ease. As a child acquires knowledge by

reading almost as soon as he learns how to read simple language, so he can begin to acquire some geographical knowledge almost as soon as he has begun to have some familiarity with simple maps, and the sooner the better, for it is only in this way that he can get the right attitude to maps. Just as he learns to read by reading about something, so he learns to read maps by using them to acquire geographical knowledge. Further, though in reading there may be some little repetition of the same words and sentences, he normally improves his ability to read by continuously being made acquainted with new matter of different kinds; so also he should be familiarized with many maps of different kinds. It is impossible to teach map reading by the use of one political map of England.

In fact, all three processes must go on simultaneously: the pupil must learn more of his home district: he must improve his knowledge of map reading, and he must use his continually increasing abilities to acquire new knowledge. Though it must be independently graded, the map course is an integral part of the geography course. It bears something of the same kind of relation to the geography course as a whole that the skeleton does to the body. The simile must not be strained, but at any rate it is true in so far as it suggests that the relationship is vital and that without a living geography the map is dead, while without the strong framework there is little to support geography. Perhaps it may also be pointed out that the growth of the skeleton, while real, is not obvious, and that there should be no such things as mapping lessons.

It will be impossible to go into details with regard to such a course, but some suggestions may be made about the principles on which it may be framed.

From what has already been said it is obvious that the first maps should be of places that are known to the children. We may also say that maps should be made of things seen before those not seen, and of areas before lines. Mapping of unknown things, of things that cannot be seen like political areas, of lines like meridians, before children have been trained to understand maps only impresses on them more and more the idea that geography deals with unrealities, the one thing above all others that we wish to avoid. It is perhaps necessary only to point out the danger of mapping unknown and invisible things before the meaning of maps is understood, but the danger of stressing line work is more subtle and not so generally recognized. Nothing, of course, can be said in favour of the use of lines, even broadened lines, to stand for mountain areas. An area cannot be represented by a line, and it is inexcusable to attempt to do so. Maps are difficult enough to understand as it is without the introduction of unnecessary stumbling-blocks. But even good teachers introduce outline maps much too early, and emphasize contour lines, isobars, isotherms and the rest before the youngsters are ready for them. To start with, the line is not so important as the area. It is not the isotherm of 32° but the area that is frozen that matters. Further, by stressing lines which by themselves really say very little we increase the danger of divorcing geography from actualities. Those who write "the isotherm of London is 42°," and they are many, are no better than parrots, for they do not understand what they are saying, and no more does any one else. The line is really a very advanced geographical idea, wonderfully stimulating, no doubt, but requiring a great deal of preliminary work before it

can be used effectively. The difficulty is increased by the definitions usually given of isopleths : *e.g.* the isotherm of 32° is usually defined as "a line joining all points where the temperature is 32°." This is not correct in practice, and it is not satisfactory from the teaching point of view. A much better definition reads, "The isotherm of 32° is the line which separates the area which is frozen from the area which is not frozen." Actually when maps are made the line is drawn *between* points, not *through* points, and in the class-room the emphasis is thrown, as it should be, on the area.

Example of Teaching—Matter and Method.—Let us now see, as an example of what has been said, how a first-year's course in geography might be worked out. On the one hand, there must be some world geography. This of necessity will deal with the way in which typical peoples live. Not too many should be taken or the children will be confused. There must be no maps, for they do not yet know what maps mean. The geography is in the nature of a background. At first at the pre-systematic geography stage we shall merely have stories of particular persons who are much more important than the background. Gradually, however, the background acquires importance, and at the systematic stage the people rather than the individual persons are considered. The more simple folk will come first, Eskimos, Steppe-dwellers and pygmies ; later will come Swiss and Norwegians, Greeks and Egyptians.

On the other hand, we must begin at home for the purpose of learning about maps. We draw a map of the class-room—we call it a map, not a plan—on the look-and-see principle : measurements only complicate matters at this stage. We each draw a map and mark

the desk where we sit with a cross. We write below the map "Map to show where I sit." We have not only drawn a map, we have drawn it for a purpose, and we have emphasized the geographical idea of position. The maps will not be very good : the teacher wishes to repeat the exercise for the sake of practice in the mechanical drawing of the map : if possible some advance should also be made. Both ends may be attained if we mark in, say by a dotted line, the way from door to desk and we write below "Map to show how I go to my seat." The map exercise remains almost the same, but what on the stage would be called the "patter" would of course be changed, and we should, in fact, have made a considerable change in the geography which is taught, for we have introduced a second great geographical idea, movement along a natural route. The shortest way over the desks is not the quickest way for ordinary purposes, though the small boy with the instincts of the mountain climber may find the very difficulty alluring.

So far the children have drawn only what they can see. With the next map which would include other rooms as well as the original class-room, they advance a stage by mapping something which though known is not seen at the time the map is drawn. This is an extremely important step : thinking through boundary walls is of the very essence of geography. It is the inability to think beyond the limitations of time and space which makes so much of geography dead and lifeless. But there must be training to think in this way. At first every help must be given. Even the leaving of the class-room door open is found to have distinct suggestive value. And a beginning has also been made in teaching scale, another of the great

difficulties. We have now drawn maps on different scales. Nothing has been said, nothing should be said, about scale except that as we wish to put more on to a sheet of the same size as before we must make everything smaller.

Then maps may be made of the school, of the school and playground, of the school playground and surrounding streets, each for a definite purpose—"to show where I live," or "to show how I go home," or "to show where I buy" this, that and the other. It is essential not only that the purpose of the map should be known but that it should be stated. From their very nature maps must omit a very great deal, and a map should always have a title and say what it is supposed to show. Insistence on the title focuses attention on the things that matter, and incidentally discourages many time-wasting features which only detract from the value of the map. The idea of scale, though nothing is said, will acquire a fuller meaning with each map that is drawn. Each area is measured in terms of those that have gone before, not by lines to show how much is 1000 yards or 2 miles. The latter method is all very well in its place, which is at a later stage. At present we are concerned with the qualitative idea and no great precision is to be aimed at, because attempting to attain it is merely a waste of time.

As larger areas are added new problems are presented. Gradually we find that instead of mapping things that we know well we are mapping things that we know less well: we find that instead of learning how to map things we are learning geography through a map. But as the home region is always represented, and that is known to be real, the suggestion is that these other things are real in a sense which is not suggested when

separate maps of those areas are shown. Questions of relief mapping, too, will be introduced. We wish to map high areas and low areas. Two difficulties present themselves. One is how the high area is to be represented. If we were Japanese there would be no difficulty: with the brush we should show the area as an area. Normally we cannot adopt this plan. Chalks may be used. Some people, however, object to chalks, and they certainly are rather messy. If a pencil is used we are confronted with the problem of how to show an area by means of line work. One thing should not be allowed, an attempt, always unsuccessful, to cover an area with a confused, untidy tangle of lines scribbled at random. What may be allowable with chalk is not allowable with pencil, and if the children use pencils the teacher should refrain from this scribbling on the blackboard. The most satisfactory solution will probably be found to be to mark the area by diagonal lines from top right to bottom left within a boundary line. The lines should be drawn freehand, not with a ruler; with the latter time is wasted and the effect is not so good. The boundary should not be emphasized: it does, however, mark the extent of the area, which is taken to be high and is important as, much later, it may be made to acquire precision as a contour line. At present it has no such significance.

The other difficulty is a geographical difficulty, that everything may seem so flat that nothing is high enough to be worth attention. This is specially the difficulty of town schools. The difficulty is, however, usually very greatly exaggerated. There are very few schools even in the centre of a great city where there is not some perceptible, if slight, difference of level. It may not be particularly noticeable till it is pointed out, but one

of the functions of geography is to teach to see. Further, there is commonly in geographical teaching a far too great exaggeration in the conception of heights of land. The surface of the globe is stated to be very flat, but all the teaching goes to emphasize the heights of certain areas. Peaks are spoken of by name, but peaks are of very little account, and even peaks are relatively not high. The heights that are available for reference even in cities will be found on examination to be far fairer examples of relief forms on the scale on which they occur than is usually supposed.

As the first-year's course progresses some correlation may be effected between its two parts. Supplementing lessons on people in other lands, lessons may be introduced on typical people in Britain, the wheat farmer of East Anglia, the fruit farmer of Kent, the dairy farmer of Aylesbury, people nearer or more remote from the home district. The interest is human, the background is geography. Maps may then be drawn to show how things produced are brought "to me." In continuing the mapping course in this way very much must be omitted and only the bare necessities must be mapped. As still larger and larger areas are mapped more and more must be omitted, but the size of the areas mapped will be realized. The maps now drawn are such that the desk and school-room and playground can no longer be shown: the home area looked enormous when it was mapped in comparison with the school, and the children are led to understand how much greater in extent the Chilterns and the Pennines must be.

Thus in the course of a year the pupils starting from the class-room may reach the outer shores of the British Isles. The coast line is in its place as the last

thing we come to. Beyond it is the ocean. Going slowly at first we can hasten our pace towards the end and take in great areas. These later regions will not be studied in the same minute way as the home district, but in general outline and in their relation to the home district. It is only when the children have thoroughly grasped the fact that all these places have some relation to the home district that they can begin to study individual regions. It is only when the children have such a background as is given by a course like that outlined above that they are able to profit by further work.

Wall Maps, Atlases and the Globe.—Before leaving the question of maps it will perhaps be well to say a word or two as to wall maps and atlases. The latter are of course indispensable, if maps can be read at all. Many atlases, however, have defects, and atlases with those defects should be avoided. The use of lines or of "caterpillars" to show highlands should, of course, be an absolute disqualification. The same may be said of a preponderance of political maps. These have their place, but in addition to the fact that political maps have only a very limited use in school they are usually overcrowded with names, and this is bad for eyesight. Maps on Mercator's projection are sometimes used to show distributions in which area is of importance. It is as well to avoid atlases containing them, for though the offending maps may not be used in class the children learn from them : wrong ideas are unconsciously acquired as to the relative importance of various parts of the British Empire, or with regard to distribution of population. In these cases equal area maps should be used. Definition maps have usually an even worse effect. A map which shows a delta, a

port, an estuary, a glacier, a volcano, a desert and an archipelago all in one very small district teaches more wrong geography than does the *Swiss Family Robinson* and with an air of authority which that book does not possess. Something may be said in favour of photo-relief maps, but it is probably better to avoid them. They suggest that they are more like the reality than are other maps, but they give very wrong impressions with regard to the height and slope of land, just the points on which the maps lay emphasis.

Besides avoiding these defects atlases should have definite qualifications. Maps should be largely orographical: heights should be shown either in browns and greens or on the chromatic scale. The use of brown and green for a land surface has been criticized on the ground that any single distribution, *e.g.* height, should be shown by different shades of the same colour. This is a most important generalization, but it may be pointed out that on land we are really dealing with two distributions, highness and lowness, and that it may be argued that two colours are not only allowable but necessary. In any case there should be no break in the scale adopted. The use of pink or red to show greater heights than a dark brown makes a map more difficult to read than it should be. It may, perhaps, be easily enough understood, but it is like a word wrongly spelled which distracts attention from the subject-matter. Atlases should also contain maps showing distributions of rainfall, of temperature, of vegetation and of population. Annual averages of rainfall and temperature are of little use. Two maps at least are necessary, for January and July, or for summer and winter, or for two periods which exhibit seasonal change. Four maps would be better, but here we

are speaking of minimum qualifications. Maps showing directions of winds are desirable, and for older children pressure maps are useful, but temperature, rainfall and pressure should not be shown or attempted to be shown on one map: the result, especially if the maps are small, is to make them of little use in teaching. From what has been already said it is obvious that atlases for younger children should show distributions as areas: isotherms are out of place. Rainfall should be shown by different shades of blue, but it is legitimate to use two colours for temperature as there are two ideas, heat and cold. There are perhaps other desiderata in an atlas for school use, but there is little to be gained by specifying them. Considerable difficulty will be found in obtaining an atlas that satisfies even the conditions given above.

With regard to the question of what to do with an atlas when we have it the only answer is "use it." Use it continually. There must be few geography lessons after the first year or so in which the atlas should not be used. In fact, grave doubts may be cast on any geography lessons in which the atlas is not used. Nor is it one map only to which reference should be made. There should be continual cross reference from one map to another. Only in this way can there be familiarity with the atlas. Indeed, an atlas may be worn out by continual use of one map at a time without the pupil becoming really familiar with the atlas as a whole. To the use of only one map at a time may be traced many of the misconceptions of geography. It is the world as a whole that must be seen, and the continual attention given to one map cramps the vision so that even the area studied is not seen in its true perspective.

Of wall maps little need be said here except that the supply is inadequate, and that though wall maps are convenient for class teaching they can be done without. With the exception of the continents there are few areas of which orographical wall maps exist, and many of these are spoiled by being overprinted with names. Many wall maps are still political and are worse than useless for teaching : it is certainly better to do without them and use the atlas. One or two series of maps other than orographical are published and are extremely useful. The single wall map is, however, almost as dangerous as the single atlas map, and the fewness of available maps makes those that do exist of less value. In any case, wall maps should be used as supplementing atlases and not in place of them.

The globe, however, has undeservedly fallen into disrepute. This is possibly because its function has not been properly recognized. It should not be used to show things that can be shown better on a wall map or atlas map. It should be used only to show things that cannot otherwise be made plain. The globe even at its best is comparatively small, and it is ridiculous to attempt to show political divisions or orographical features, or indeed anything but the broad divisions of land and sea. It should be used to show things that maps cannot show, all the relationships that can be shown only on a globe, relationships of size and direction which are most important and yet much neglected. It may also be used most effectively in such stock lessons as those on the seasons and day and night. The globe should be as large as possible. A blackboard globe is probably better than any other. It is inadvisable to have the continents either all coloured or whitened or to have them outlined in white. There

is much more freedom in use if the outline of the continents is incised. On occasion the continents can be marked in if necessary. Lines of latitude and longitude may be marked in the same way. They are not at all in evidence and yet can be used if necessary.

Pictures.—We have discussed the question of maps at some length, because without adequate ability to read maps it is difficult if not impossible for any one to acquire a deep knowledge of geography. We have already insisted on the necessity of dealing with real things. One way of ensuring that we are dealing with some of the real things is to travel, and no satisfactory substitute has been found for the grand tour as a means of education. This is, of course, ruled out of court as we are considering the teaching of geography in school, and, of course, it never was possible for more than a few. We must find some substitute which will as far as possible keep the subject on the plane of reality.

The school journey or excursion is valuable, and has a place that cannot be taken by anything else. The geography taught on a school journey evidently deals with real things, and there is a "carry over" from the school journey to the class-room, so that in the class-room geography is assumed to be real also. After all, however, the school journey deals directly only with districts near at hand, and it is not safe to trust entirely to the "carry over." Pictures at once suggest themselves. They are a poor makeshift for the reality. The great trouble is the margin or frame. In dealing with real things there is no margin or frame : everything is in obvious relationship to something else. Perhaps this might be partly rectified if a sufficient number of pictures could be seen, but it is impossible

to show a sufficient number of pictures, partly because of the dearth of suitable pictures in a school and partly because of the physical difficulty of showing them. If they are large enough for a class to see at all satisfactorily, there cannot be more than a few available, because of the lack of storage space. If a stock of small pictures is accumulated they cannot be used for class teaching, it being practically impossible to provide a copy for each pupil. There remains always the blackboard—the most dramatic instrument in the class-room. If a teacher is artistic, simple but striking pictures may be drawn : such pictures are most effective if they have to be built up gradually as the lesson proceeds. In this case, as in all cases where doing is emphasized, the blackboard is invaluable. But anything on the blackboard is from its nature ephemeral : it cannot be kept and must not be elaborate.

Perhaps the most satisfactory means of giving a general impression of a country is by means of stereoscopes. They are best suited to junior classes, but may be used at any stage. At whatever age the stereoscope is introduced the spontaneous and never-failing ejaculation "It *is* real" testifies to the value of the instrument. Some twelve to fifteen pictures are in general sufficient for any sized class. These may be passed round while the children are engaged in some written work, and after the pictures have been collected the formal lesson may be taken on what has been seen. This method may, of course, be adopted with any series of small pictures, but it is much more effective with stereoscopic pictures. Use may also be made of many small pictures by mounting them on cardboard and arranging them round the walls of the room. In this case it is advisable not only to have a

title for each picture, but to add a note or two drawing attention to the points most worth observing. It is possible to attach slight wooden laths to the walls of the class-room in such a way as to form supports for these pictures: then, if the pieces of cardboard on which the pictures are mounted are all of the same height, they may be changed as often as is desirable.

The way, however, in which the most may be made of pictures is by using the lantern. The chief disadvantage is that people are afraid of it, and keep it in a cupboard instead of using it. It may entail a little trouble in fitting up, but this is by no means necessary. Even with an oxy-hydrogen lantern arrangements may be made very quickly. The lantern may be kept permanently on a light portable stand with the oxygen cylinder attached, so that all that is required is to attach the other tube to a convenient gas jet. Better still is it to have an electric lantern: this can now be obtained to run off the ordinary lighting circuit, in which case the fixing takes next to no time. The picture may be thrown on a wall or on the back of a wall map. Best of all is it to have the lantern permanently installed in position in a special geography room. In such a case the room may be darkened, the screen fixed in position, and the picture thrown on the screen in from twenty to thirty seconds.

The advantages of the lantern are obvious. Sketches and, of course, also maps and diagrams may often be traced instead of drawn. To a non-artistic person this is a great advantage. These sketches are also permanent: there is no need to write on the board "Please do not rub off." Further, the picture may be seen by the whole class. Even large framed pictures are usually on the small side, and, of course, one may

have far more lantern slides, for the cost of each is much less, storage is reduced to a minimum, and each picture is much more easy to find. One may not only have a greater number in stock, but may in a given lesson show very many more. It is almost as easy to show a dozen pictures on the lantern as it is to show one. Even as compared with the reality the lantern picture has certain advantages for class teaching: one can be quite sure that every one is looking at the same thing, whereas it is extremely difficult to point out a distant spot to a single individual, and practically impossible to make sure that all the members of a class are looking at the same object.

Whatever the method of exhibition the picture must be not merely looked at, it must be studied. The danger of the lantern is that too many pictures may be shown and no one studied. It is quite legitimate to show a number of pictures when the object is to give a general impression, but a most important use of pictures is to study the outward appearances of things, to practice seeing things. In this respect the lantern has advantages over the kinematograph, another valuable instrument in teaching geography. It is more difficult to see things on the kinematograph than on the fixed picture, on which appearances may be studied at leisure.

To a greater or less extent all pictures should be studied, and the children definitely trained to see things that are significant in pictures. They must be trained not only to "look at" but to "see." Even the grand tour is of little value to those who cannot see. It is for this reason that it is often well to show only a few pictures during the lesson, but to study intensively what is shown. In later work the picture

should be related to the map, the large-scale map. Each supplements the other. Unless a picture can be made from the map or a map from the picture it is doubtful whether either can be read intelligently or fluently. Such exercises are most helpful as training in looking with critical eyes, looking for things, looking through things, looking behind things. Looking at pictures, like the study of maps, is after all only a method. Even if we looked at everything visible to bodily eyes we see only a part of the matter of geography, the basal matter, no doubt. We must see things with the imagination ; we must see things that cannot be seen with the eyes, and understand what they mean.

Books.—Of the use of books we need say less, not because they should not be used but because they are already used, both too much and too little. There is more than a tendency to accept the book and learn what is stated instead of thinking about it. There is also a tendency to trust entirely to the text-book. The text-book, the reference-book, has its place. Without it the teaching tends to lack definiteness. The book provides a certain definite minimum of knowledge which may be insisted on, and supplies connective tissue for such pupils as happen to be absent from particular lessons. But the children should be trained gradually to supplement their text-books and class-work by general reading for a definite end. This does require training ; it also requires suitable text-books. The single text-book is almost as harmful as the single map. A child who has been brought up on one text-book has unconsciously come to think that the one text-book is all that is necessary. By the very fact of changing text-books he comes to think less of the

individual book and more of books in general. Text-books which are suitable for one age and one stage of development are not suitable for another. Subject-matter, treatment of subject-matter and language that are suitable for children of twelve are not suitable for children of ten or fourteen. As they grow older they are not merely learning more facts but they are learning, or ought to be learning, how to look at things from new points of view, and, of course, they are learning more and more how to use words. This presupposes that regions studied in successive years should not be treated on a uniform plan in the text-books used, but that each text-book should mark a definite advance on the preceding. At first the text-book may all be read aloud in class. Then portions may be omitted, but time given for reading silently in class. Then omitted portions may be lengthened and the private reading left more or less optional. Other books may also be recommended, and exercises set involving the use of some of them. The sources of statistics also which are used in class may at first be stated, while later the pupils may be referred to such books as give them.

Outline Curriculum.—In planning a course of geography, then, many considerations have to be taken into account. We have seen that the world must be studied regionally and that the physical geography must be worked into the regional course. The map course also requires to be fitted into the regional scheme. We must proceed from the simple to the complex, and we are confronted with the dilemma that the children cannot really know the world before they know the homeland, and cannot really know the homeland till they know the world. It is evident, then, that regionally the world must be gone over twice, at any rate. The

first year's course has already been suggested. In the next year it seems necessary to extend the previous year's work and to take a rapid survey of the world, still from the point of view of the home. Thereafter Britain may be more intensively studied region by region in preparation for a study of the world, also taken region by region, and spread over three years or telescoped into two. In this scheme it is usually convenient to group the continents in three pairs giving north and south sections, the Americas, Asia-Australia and Europe-Africa. In these the geographical argument takes shape more and more evidently. At the end of a Secondary School course there is, in addition, time to take the world as a whole and consider world problems which can be studied with advantage only when knowledge of the individual regions of the world is combined with ability to use geographical material.

Conclusion.—Care must be taken so that at every stage the children have work to do, something to bite at that is difficult but just not too difficult for them, work that requires accuracy and imagination, for geography is at once a science and a humane study. It requires at once the accuracy of scientific work and the sympathy which comes from the humanities.

CHAPTER VIII

HISTORY

(*a*) By M. W. KEATINGE, M.A., D.Sc.

Of all the subjects in the school curriculum none has changed its aspect more of recent years than history. From being a chronicle of kings and of diplomacy, a list of battles and of statutes, of which so recently as fifty years ago Herbert Spencer could say that it was useless as a guide to political action, history is now becoming a sociological study. It is recognized that the growth of civilization and the progress of the community as a whole to culture, economic freedom and self-government is the bedrock of the subject. It is now clear that much that used to pass as history, those portions which are purely traditional or purely antiquarian, or, in more general terms, the chapters that throw no light on the problems of modern life and afford no assistance to the contemporary citizen, must be relegated to the rubbish heap.

And not only must the subject-matter of history be revised; the methods of teaching it need reconsideration. A great change has come over school method as a whole. All teachers recognize that their aim should be to lead their pupils to learn for themselves rather than to cram them with predigested information, that each pupil should have work to do

individually on his lines and at his own pace, that the process is often as important as the result, that laboratory methods must be adopted, as far as possible, in history just as much as in the domain of manipulatory science. This consideration brings with it a demand for more and greater variety of apparatus, and it is seen that the old text-book is sometimes unsuitable and generally insufficient. The term "apparatus" is used because it is through the success of the science laboratory that we have become familiar with this side of method; but the term must, of course, be interpreted to suit the subject in question. Here, to some extent, the laboratory will be a library and the apparatus books.

Finally, there has been a movement towards making all subjects as concrete as possible, of making sense-perception of the most primitive kind our starting-point, even if we travel away from that starting-point as rapidly as we can.

These, then, are the three headings under which we shall have to consider history teaching:—The nature of the subject as conditioned by the aim, the methods to be used and the apparatus by which these methods may be carried out and some of the demands of modern teaching may be met. As methods cannot be considered apart from apparatus we shall divide our considerations into two parts: (1) Subject and aim, (2) Material and method.

Now the nature of history and of the methods to be used vary at each stage of the pupil's growth, and on each stage a volume might well be written. As our treatment has to be brief, and as we wish to make it practical, we shall distinguish between two stages only, (*a*) that between 10–12 years of age,

and (*b*) that from 12 onwards, and for each topic discussed shall, to some extent, try to show how the treatment must vary with the age. Clearly in such a brief sketch it is impossible to aim at more than a suggestive exposition, leaving it to the reader to make the necessary application of the advice given to different stages of development and varying conditions.

Aim, Subject and Scope.—The aim of history teaching is in the present and at home. We give the story of past events that a pupil may understand the social system in which he lives through learning its origins. Through history he will be introduced to civics, and become acquainted with the social forces around him. But to attain this aim the scope of the subject must be wide. It is now recognized that history must not be confined to the history of one country, of one social class or of one period. It is true that, like charity, history begins at home, and that the history of the pupil's town or county will make the first appeal. But as in geography, as soon as we get beyond the history of the boy's immediate surroundings we may as well go further afield, and much English history leads us more directly to the European history connected with it than to other episodes of English history. The problem is a twofold one, and arises in connection with all subjects: to teach small portions of history intensively and in some detail, and to give at the same time the current of events from early times to the present day, and of the sequence of events in European history, without which so much English history is unintelligible.

The wide sweep of history can be given in several ways. Obvious methods are to arrange courses of

universal history and to turn a class on to European instead of English history for a term or for a year.

Probably it is only for courses of universal history that the pupil should be diverted for any considerable period from the history of his own country. Indeed in the early stages this diversion is unnecessary, since in single lessons given with lines of time great periods may rapidly be covered. Biographies of great men of all ages will be fitted into their proper places on this line so that the historical continuity may be given. A short reading-book will be used and may be expanded by the teacher. Some such method may be adopted with small children, and may be modified by the teacher to suit his convenience.

But at some point in the later stages of instruction more time, two terms or a year, must be devoted to universal history, and a text-book giving a rapid sketch of the whole course of civilization from the earliest times to the present day may be placed in the pupil's hand. Here two conditions must be fulfilled: (1) The sequence of events must be continuous. Sketches of historical episodes at various periods, without any attempt to show continuous development, are insufficient. (2) Each period must be expanded and illustrated by documents. For instance, at the proper time the class must read some of the laws of Hammurabi, they must be introduced to Homer's *Iliad* and the pertinent passages of the Old Testament, to Herodotus, to Cæsar's *Gallic War*, to Froissart's *Chronicles*. A good teacher with adequate supplies of translations of these authors for his class will have no difficulty in giving life and reality to the sequence of events in the compendium. For such a course, if only it were properly planned, a year might well be

spared, and it is all-important for the understanding of any period of history that it should stand out on a general background of this kind.

The teaching of European history, in so far as this goes beyond what is taught in the general scheme of universal history, stands on a different footing. The time available for history teaching is so short that to devote a year to European history would either unduly curtail the time given to English history or perhaps would oust the course of universal history altogether. It is far better to treat the important episodes of European history when they arise out of or are needed for the understanding of the English history then being studied. For instance, the visits of Alfred and of Cnut to Rome can be made the occasion for treating of the conditions of the Europe through which they travelled; the advent of the Normans as conquerors of England leads to a brief sketch of the Normans in Europe; Matilda's marriage to the Emperor links England to the Empire and its history; the Crusaders open the door to a short history of Turks and Saracens and the Mohammedan religion; generals in the Civil War, like Prince Rupert, who had learned their craft when taking part in the Thirty Years' War, afford a natural transition to a fuller treatment of that devastating conflict. There is no lack of opportunity to expand European events without deserting the sequence of English history.

On the plan here suggested portions of English history will stand out on a background of universal history, and these portions will be treated with so much detail that they will give ample opportunities for problem work of a strenuous kind.

Problem work will be considered in a later section;

the kind of detail which is desirable may be treated here. For all school ages it is human and economic details that are most calculated to appeal to pupils and to enable them later on to approach the political side with profit. Therefore we may start with the life of the people. Mr. C. R. L. Fletcher in his *Introductory History of England* has shown how illuminating it is to take the village as the starting-point in each period, and show how the political events affected the residents there, and we may develop his suggestive treatment. A careful treatment of a portion of Domesday Book and of Magna Carta with considerable detail about the manner in which these records both illustrate and affected the lives of serf and villein, reve and lord, Jews and priests, widows and minors, will make it clear to the pupil, perhaps for the first time, that English history is not only the growth of institutions but the development of the people under the shelter of these institutions. Studies of other concrete matters: of the building of castles, cathedrals and ships; of farming, travelling and trading, all contribute to the same end and give the circumstance of life that partly conditions and partly is produced by the activities of kings, lawyers and statemen.

If we now proceed to discuss *materials and method* it is because this is the best way of throwing further light on the nature of subject and aim.

Pictures.—It is for the early stages that pictures are clearly the most suitable material. Arnold of Rugby, in his remarks on history teaching, suggests as the proper manual for children a book of pictures about which stories may be told, and though it is only quite recently that it has been possible to procure for teaching purposes the right kind and the right number of pic-

tures, there is no doubt that Arnold was right. Even for older pupils it is difficult to overdo the supply. We must therefore ask what the pictures should be, how they should be used and where they can be obtained.

Pictures may be of three kinds—portraits of historical personages, pictures of groups and scenes which are more or less contemporary, and modern imaginative pictures portraying historical scenes. While admitting and even demanding that portraits of historical characters should be shown, we should perhaps be unwise to expect that younger pupils will take more than a limited interest in them, for the element of action is wholly lacking. Even such an admirable series of portraits as that issued by the Clarendon Press is not certain to appeal. If it were always possible to take our class to the National Portrait Gallery, the case might be different; but the prints or photogravures of small size and moderate quality to which we often are limited, though useful as a starting-point, need supplementing by pictures of a different kind. Two examples will illustrate this. In Reid's *Pictures of British History*, *The Middle Ages* (A. & C. Black), will be found a mediæval picture of the first parliament held by Edward I after his coronation. This is a useful type of picture because, in addition to giving a view of parliament which may be enlarged by the artist of the class, and may serve as the basis of much explanation and story-telling, it shows Edward in company with at least one person who was to occupy his time later on. Edward is sitting with Alexander III of Scotland and Llewellyn II of Wales on either side of him. On the left and right are the archbishops of York and Canterbury, while bishops, barons, mitred

abbots, judges and woolsacks complete the picture. He will be a dull teacher who cannot make this print an interesting starting-point for Edward's wars in Wales and Scotland, for the wool trade, for the position of the barons, and for the influence of the Church at this period. (Note that there are more clerics than laymen in the house.)

Of a different kind is Maclise's well-known picture of Caxton showing his printing press to Edward IV. Its merit is that it gives us a family group. Edward is in the centre, the queen is on his right. In front are the Princess Elizabeth (afterwards the wife of Henry Tudor) and the two princes who were put to death in the Tower. In the background, between the king and Caxton, is that unpleasant uncle Richard of Gloucester. Historical personages always seem more human when grouped in this way. It is better to have Holbein's group of Henry VIII, Princess Mary and the Jester, Will Somers, than to have separate portraits of Henry VIII and Mary.

Once pictures have been provided, the next step is to set exercises on them; for pupils do not for long value any materials that remain unused. As already suggested, a suitable picture can be enlarged considerably by the teacher and one or more gifted members of the class. The whole class, for most children can learn to draw if encouraged, can redraw the picture with certain features added or omitted. Or the class may be asked to draw the next stage of the action; *e.g.* if the well-known picture, *When did You last see your Father?* is in question, the next scene might be a regrouping of the Roundhead soldiers in conversation round the table after the boy has left the room. The important thing is to get the pupil busied with the

pictures around which he has associated groups of incidents.

Much has been said about the need for using *historical poetry* in the class-room, and there are excellent selections of this kind of verse; recently, indeed, Professor C. H. Firth has published an admirable selection of poetry that deals with historical episodes of the nineteenth century. There are, however, difficulties in the way of regarding poetry as one of our main instruments, the chief one being that it is difficult to collect a number of poems upon any given period that are all suitable for the pupils' stage of development. It is also difficult to set exercises on poems, or to do much with them except have them read and in some cases learned. Perhaps the ballad is the most helpful kind of poem, and for this reason, that it is relatively easy to get a junior class to write for themselves ballads on one of their history topics in imitation of an example given them, and that they enjoy this exercise. Certainly too much care cannot be taken to read with a class in the literature hour the poetry and drama of the history period, when these are suitable: *Piers Plowman*, in a modernized version, for instance, and Shakespeare's English historical plays; but the time allotted to history in our schools is too short to allow much of this reading to be done in the history hour proper. Here we shall be restricted to the short allusive poem, and shall find it a most valuable subsidiary aid.

The centre point of the whole treatment of *materials and method* is the getting of independent work from each individual pupil. The main apparatus will be a text-book, preferably one containing some documents; or failing this, a text-book and a document-book, and a small library containing larger document-books and

a collection of general histories, monographs and biographies which suit the period studied. The text-book will be a brief compendium of fact. Its purpose is to save the teacher the trouble of dictating too many notes in class, and to give the pupil in a succinct form the backbone of facts and dates that, with a fulness that varies with the stage of instruction, must be learned thoroughly, and which is all the more necessary when an effort is made to widen the reference of the history lesson. The document-book is essential for the best teaching. As its length must be limited, it will contain documents upon which exercises can be based (the documents which give local colour will be supplied by the teacher from a larger collection), and as much has of late years been said about the nature of these exercises, we shall only remark here that for junior classes of boys suitable selections of contemporary documents in the class-room library may be used in the same way and with the same end as the books in the method which will now be described.

In the opinion of the writer the manner of providing and using a small library as the laboratory in which the class will work is the most urgent and the most interesting problem to be solved by the modern teacher of history. Each teacher, no doubt, will solve it in his own way, and the following illustration is given merely as a method that to some extent was successful with the particular class for which it was devised.

The age of the class is 14–15, the subject is the reign of Henry VIII, and the following books are available for use in the class-room library :—

H. A. L. Fisher : *The Political History of England*,

1485–1547. A full and well-balanced account of the period.

A. F. Pollard: *Henry VIII.* A brilliant history, full enough in parts to give a graphic picture of the period.

C. R. L. Fletcher: *An Introductory History of England*, 1485–1660. Gives 60 pp. of characteristic and readable treatment.

Creighton: *Wolsey.* A good monograph.

Anne Manning: *The Household of Sir Thomas More.* This purports to be Margaret More's diary. It is more suitable for girls than for boys; but prefixed to it in the "Everyman" edition is the brief life of More written by Roper, Margaret's husband.

More: *Utopia.* ("Everyman.")

Seebohm: *The Oxford Reformers.* Much information, well put, about Colet and Erasmus. ("Everyman.")

Gasquet: *A Short History of the Catholic Church in England.*

Lingard: *Abridged History of England.* Both these books give the position from the Catholic standpoint.

W. H. Hutton: *Sir Thomas More.* An easy book for boys to read and make extracts from.

J. J. Ellis: *Thomas Cromwell.* Gives a number of interesting facts about Cromwell from the Evangelical standpoint. It is frankly partisan, and treats Cromwell as the scourge of the monks, appointed by God for the purpose.

N. L. Frazer: *English History Illustrated from Original Sources*, 1485–1603. This contains a number of useful extracts for illustrative purposes. Several copies should be available.

Barnard : *Companion to English History* (Middle Ages). Very useful for social life.

Corbett's *Drake and the Tudor Navy*. Vol. I contains a useful account of Henry's navy.

Historical Portraits, Vol. I (Clarendon Press).

Reid's *Pictures of British History*. *The Tudors* (A. & C. Black).

This list of books may seem extensive, but some of them will certainly be in the teacher's possession and could be lent by him ; some could be transferred for the term from the school library to the class-room library ; some (*e.g.*, those in the "Everyman" series) cost only 1*s.* 3*d.*, while others can be purchased second hand at a low price. At any rate, in considering expense, it must be remembered that unless apparatus of this kind is provided it is as difficult to teach English history as it would be to teach chemistry without a laboratory.

Once the apparatus is there, its proper use is our next consideration. Our object is to make as many pupils as possible open the books with a definite object in view. With varying pretexts the books will be kept in circulation through the class ; its members will be encouraged to read them, and apart from this will be set definite topics to get up, and to contribute to various lessons. If we add that the class have a text-book containing documents, the whole of the apparatus is before us. What shall we do with it ? The first problem to be solved is one of arrangement. Our task is to teach the period, *i.e.* to see that at the end of the term the class knows the story as a reasoned sequence of events. Much will have to be given didactically, explained when given, and frequently

revised. On occasion a definite lecture (not necessarily for a whole school period) will have to be given, and notes from it will have to be learned by the class. But interwoven with this routine work must be the manipulatory critical and constructive work by the pupils themselves. Here, as in most teaching, the problem is one of organization. A piece of work has to be given out to a boy or to a small group of boys to be ready by a certain date, and by that date, or near it, the sequence of the lessons must be ready for it. For if boys who have prepared work for a certain date have to wait for some time before use is made of it, they tend to grow disheartened and to forget it. It must be remembered also that the exercises on documents in the text-book must either be set after one of these pieces of individual topical work, or given back corrected at the time of its production. It is evident, therefore, that a considerable amount of planning will be needed.

We first divide our class into three groups :— C. Clever pupils. M. Mediocre pupils. St. Stupid pupils. Among these we shall note those with a taste for drawing and modelling or for music. If these pupils are found in the ranks of groups M. and St. this will be particularly useful.

To plan out the whole course of lessons is impossible in the space at our disposal ; we can only indicate with abbreviations the kinds of topics that will be allotted to each type of pupil, leaving it to the reader to work out most of the arrangement for himself. In any case no single arrangement would suit any two classes.

Give out books to various classes of pupils, and indicate work to be done.

C. Seebohm's *Reformers.* C. Roper's *More.* C. More's *Utopia.* To three M. pupils Hutton's *More,* from which to get up cc. 1 and 2, Early Life, c. 4, Political Life, c. 5, Execution.

C. Creighton's *Wolsey.*

Give pictures in charge to a St. pupil, to be put up as requested.

C. To give account of Reformation with line of time. Wycliffe, Hus, Luther. Refs., Fisher and Seebohm.

C. To give account of Colet and Erasmus. Seebohm.

M. To get up Henry as shipbuilder. Corbett's *Drake;* Barnard's *Companion.*

M. or St. To get up and describe Cattermole's picture of Luther before the Diet of Spires in Reid's *Pictures of British History.*

M. or St. Henry as a musician. If any boy is good enough, refer him to Grove's *Dictionary of Music.* In any case he can play Henry's anthem, or the class can sing it.

C. or M. pupil: to get up Cromwell in Ellis.

C. or M. Childhood of Mary, Elizabeth, Edward VI. Refs., Fisher and Fletcher.

C. Lingard's and Gasquet's views on the Divorce, as compared with those of Fisher and Pollard.

A few indications follow of the conflicting statements in the authors given out that, with a little guidance, can be unearthed by the pupils and ultimately copied down in their note-books.

Gasquet: "The Pope, there can be little doubt, would have done what Henry desired, had it been possible for him to do so, according to his conscience and the law of God."

Pollard: "On 11th May 1527, two months before Wolsey opened his court, a divorce was granted at Rome to Henry's sister Margaret, Queen of Scotland. . . . She alleged a pre-contract on the part of her husband Angus, which was never proved. She professed to believe that James IV had survived Flodden three years, and was alive when she married Angus."

"On 18th Sept. Casale wrote to Henry: 'A few days since the Pope secretly proposed to me that your majesty might be allowed two wives. I told him that I could not undertake to make any such proposition, because I did not know whether it would satisfy your majesty's conscience.'"

Gasquet (*Visitation of Monasteries*): "The visitors found out in their inspections what they were expected to find, and their reports, at least so the king assured the Commons, proved that while the greater religious houses were well conducted, those with an income of less than £200 a year were dens of infamy."

Ellis: "It is suggested that the suppression of the monasteries was attended with unnecessary outrage. It is scarcely to be expected that men who knew the black truth about the monks should respect their feelings very much."

No comment is needed upon the teaching that can be given upon passages that conflict in this manner.

It is evident that the success of such a piece of work depends on the organizing power of the teacher as well as on his ingenuity and his knowledge of his subject. At any moment also he must be ready to scrap his

plans if for any reason they are not succeeding; at any moment he may have to substitute a stiff dose of ordinary routine work for this laboratory method. Always in preparing such a course allowance must be made for a large number of "ordinary" lessons in which the text-book is being examined on, or notes are being given to the class. Towards the end of the year there may be no time or opportunity for this kind of work at all; and yet the writer ventures to suggest that such work should be the basis of, and so the really vital element in, all teaching of history in schools, and that the other routine elements which may at times cause it to disappear are less essential, though needful in the circumstances of school teaching.

With younger boys the same method may be adopted, only with greater dilution and more reserve. Simple source books and historical novels will be among the books of reference, and individual pupils will often need preparation and coaching in the contributions they are to make; but the principle is the same and can be applied by the ingenious teacher to the precise conditions of his work.

(*b*) By EUGENE LEWIS HASLUCK, B.A., F.R.Hist.S.

The new teaching has brought into clear focus the old problem of the responsibility of the school for the political ideas communicated to the pupils. The experience of Germany has shown that a nation can be moulded to the will of a governing class, but this can be accomplished only when the teachers become willing tools. Before a government can mould the population it must mould the teachers. The personal opinions of the teacher are of the first importance in any consideration of the political effects of history teaching. In the

past the problem has been rather burked. The classical tradition made it possible to divert a good deal of history teaching to Greek and Roman times, with the result that much political teaching went on in a more or less symbolized form. Modern opinions could be very well inculcated through the medium of classical parallels. The same principle applies to the teaching of English history. So long as the period was sufficiently remote it was assumed that there was no danger from the personal views of the teacher, whereas in point of fact these views could by no possibility be sterilized. They necessarily coloured the presentation of all the incidents of the past, and could not but suggest to the pupils a point of view from which to envisage current problems.

Through lack of insight, or it may be of courage, we contented ourselves with an attempt to draw a distinction between history and politics. It was assumed that if we cut out contemporary history, and the period just antecedent, we would interpose a sufficient barrier between politics and history proper. Thus there was a stage in the teaching of history during which our pupils never received any instruction in the events immediately preceding their own time. Psychologists tell us that the present is the darkest moment in our series of experiences, and our history teaching certainly had the effect of making the same true with regard to our pupils who were by our methods denied the knowledge of the events that explained what was happening around them. For a while history after 1815 became a blank for the schoolboy. Instruction crept steadily forward till it included the early part of the reign of Victoria. But it was left for the new teaching to suggest that contemporary history ought to represent the

efflorescence of all that the school has taught at the earlier stages of the history course.

This certainly raises in an acute form the problem of partisan teaching. It is said to be impossible to give instruction in contemporary history without taking a side. But the same applies to the teaching of ancient or mediæval history. The only difference is that in dealing with contemporary events we have to say nakedly what we mean, whereas in treating of older problems we teach by a symbolism that our pupils find it easy to follow. It is sometimes said that the difficulty may be met by prescribing a certain non-committal attitude on the part of the teachers, the adoption, in fact, of a sort of historical Cowper-Templeism. No doubt it is easier to maintain a judicial attitude in history than in religion, but many teachers are repelled by the prospect of dancing in chains, or, at the best, playing the uninspiring game of see-saw with pro's and con's. One of our new teachers, Dr. F. H. Hayward, makes the suggestion that in all such controversial matters each teacher should be allowed to teach as partisan, on the condition that he should be compelled to state both sides of the case, and in particular bring to the notice of the pupils a presentation of the other side drawn up by its best exponent. He claims further that political extremists should have the right of entry to all schools under reasonable conditions, on the understanding that they too should make the pupils aware of the arguments on the other side.

To the warm-blooded, practical teacher, there is something repulsive in these unsettling suggestions. He feels that he wants to do his work without having continually to take himself to task for unfairness. But, after all, the judicial attitude of mind is not

unfavourable to teaching, and is not inconsistent with enthusiasm when circumstances warrant it. In any case, an impartial attitude must be attained by any teacher who hopes to deal honestly with the knotty problems that inevitably arise in dealing with recent and contemporary history.

A few suggestions may be made on the best method of treating controversial subjects. In 1869, after a violent dispute with the House of Lords, Gladstone carried the disestablishment of the Irish Church into law. The disestablishment has been a *fait accompli* for nearly fifty years ; the grievance of the Catholic tithe-payers has gone, but who will say that every one is satisfied ? A Conservative teacher, fresh from reading the debates on the Welsh Church Bill, would doubtless regard the whole affair of 1868–9 as a piece of monstrous injustice. Can he fairly be trusted to give the Liberal case ?

In 1878 the Earl of Beaconsfield, by threat of war, compelled Russia to modify the Treaty of San Stefano in a manner which played into the hands of the Ottoman Empire. The danger to England of a "Big Bulgaria" was, it has been suggested, more apparent than real ; but the intervention of Beaconsfield's Government on the Turkish side was at that time denounced by Gladstone and the Liberals as "immoral." Can a Liberal teacher safely attempt to justify Beaconsfield's action in the interests of English policy ?

In 1881 Gladstone was preparing to give self-government to the Boers. Impatient of delay, the Boers took up arms, and gained a military success in the skirmish at Majuba. Conservatives urged that the blood thus shed must be avenged ; the Liberals held that the unfortunate incident could be safely

ignored. Will a teacher of either party be able to present both points of view?

In cases of this sort we may suggest the application of a clear and definite method. First the teacher will take the facts that are beyond dispute, and deal with them along with the class in the usual way. Then in the case of a measure or a course of policy which was carried into effect, he will take the view of the Opposition; finally he will take the view of the Government that was responsible for it. In the case of a measure or course of policy that was negatived or failed in execution, he will take the views in favour of it first, and those against it last. The reason for this is that, as there is supposed to be a slight advantage to the party that has the "last word" in a discussion, the teacher should grant whatever advantage there is to whichever party, Conservative or Liberal, may happen to enjoy the victory of its policy. By consistently applying this method invidious distinctions will be avoided, and the treatment will be acknowledged to be fair.

As an example, take the Boer War of 1881. The following facts are fully explained and discussed in class: the annexation of the Transvaal—the Boer discontent—the sympathy of the British Liberal party for the Boer point of view—Gladstone's promise of redress—the elections of 1880 and the Liberal victory—the Boers' expectation of immediate redress—the delays and pressure of business which prevented the immediate granting of concessions to the Boers—the Boer rebellion—the conflict of troops—Majuba Hill—the concession of independence to the two Boer Republics. These facts are all beyond dispute. Then we take the view of the Opposition: the suggestions for con-

tinuing the war after Majuba, which were not carried into effect (explaining carefully that this was the Conservative point of view)—the undesirability of granting independence at all—the advantage of British control—the forfeiting by the Boers of their right to concessions by their rebellion—the injury inflicted by the war—the disgrace of Majuba—the false impression of British cowardice that concessions at this moment would have. Finally we take the Government's point of view: the firm belief in Boer self-government—the promises of several years—the insignificance of the losses at Majuba—the necessity for the virtue of forgiveness—the Boer outburst to be excused by the wrongs suffered from the other party—the reserve strength still left to the Empire in any case of future quarrel, and so on. It will prove a far easier matter still to keep bias out of whatever notes and summaries are to be given to the class.

The Dramatic Element in Teaching History.—The historical novel, to which the new teacher of history gives an important place, has the great advantage of presenting character in action. Further, it enables the author to select the dramatic elements, and thus secure unstrained attention by the elimination of unimportant details of fact while introducing other details which have little intrinsic importance but which add materially to the artistic effect. Here arises the thorny problem of accuracy of detail in history teaching. The new teaching shows a strong liking for pictorial illustration, but the more severe teachers adopt a very high standard with regard to the historical truth of the illustrations supplied. They prefer a contemporary picture to anything that the best modern illustrator can achieve. It is this spirit

that accounts for the cold reception the historical experts have given the cinematograph as a means of illustrating history lessons. They complain that the dresses and backgrounds are almost always untrustworthy, often demonstrably inaccurate. Here the new teaching is in doubt. There are the two types of progressive teachers: the historians who regard their subject as a science and the artists who look upon it as also in some sense one of the fine arts. In his *Clio, a Muse*, Mr. G. M. Trevelyan presents the artistic side with much force, and he has many followers among the teachers. Yet the scientific section remain obdurate, and refuse to grant the degree of freedom that their gayer fellows demand. But one of the features of the new teaching in all subjects is that while the scientific spirit is welcomed in the humanistic studies, the scientific studies are expected to acquire a tincture of humanism. There is a place in history for the most severe technical accuracy, but there is also a place for that free and generous presentation that conveys true impressions without depending upon the literal accuracy of the details. There is a place for Scott as well as for Stubbs. Stanley Weyman, one of our most careful writers of historical fiction, confesses that he generally invents his dress for his characters. Even Scott goes seriously wrong, though I have not been able to verify the statement made by the American novelist, Frank Norris, that Sir Walter is one thousand years wrong in one of his descriptions in *Ivanhoe*. Yet both Stanley Weyman and Sir Walter Scott supply material that no teacher of history can afford to reject. What is wanted in the training of the historical imagination is the cultivation of the power of reconstructing past times into *consistent*

wholes. If the characters of history live and move and have their being in a world free from contradictions, the ends of history have been served, even though the cut of a coat or the length of a kirtle is misrepresented. There is, indeed, a pedantic attempt at accuracy in the teaching of history that is very natural but very objectionable. Teachers, but more particularly pupils, are fond of answers that are definitely either right or wrong, and accordingly text-books lay down their facts with a precision that is rather startling to the serious student of history.

What is imperative is that only things which have a meaning should be treated as important—things that have a connection with what has gone before, and that modify things that come after. Here more than elsewhere the distinction is marked between what may be called static and what dynamic learning. The pupil who gets up facts from his book and then reproduces them is working statically, but the pupil who elaborates the material supplied to him into a vivid picture is doing dynamic work. The reading of history at the assimilative stage, or the looking at cinematographic reproductions of historical incidents, is largely a process of constructive interpretation. The mind may be helped by external stimulus, but the activity must come from within. Sir Walter writing his novels in his study at Abbotsford was surrounded by all manner of relics of the old times of which he wrote. Had he merely represented what he saw when he raised his eyes from his paper, his work would have been static. As it was, he interpreted all that he saw, and breathed into the material elements the breath of life. Rebecca at the window

in Torquilstone Castle went through a static process of historic study, while the wounded Ivanhoe supplied the dynamics.

There is another direction in which the dramatic elements exercise a disturbing influence in the teaching of history. It may be said, with partial truth, that the general rule is that the greater the amount of superficial interest evoked by historical matter, the less real importance that matter will be found to possess. To illustrate this it need only be remembered that those parts of history most in favour with our pupils are almost invariably those which bring out the petty details of famous lives, military actions and social customs. An average class will be intensely interested in the personal peculiarities of men like Charles I, Cromwell, Chatham or Nelson, without showing the slightest desire to attend to such questions as their influence on the nation or the political results of their measures and deeds. The comparatively unimportant battle of Agincourt has always been remembered better than a more important field like Wandewash, merely because our history books have usually provided stirring details of the one, while passing over the other with a few dry phrases. The habits and amusements of the middle ages will be remembered when the guild system and the Curia Regis have passed into the limbo of forgotten knowledge. Pupils will recall the fact that Anne Boleyn had six fingers on one hand, when they have forgotten what her religious attitude was, or what was the name of her daughter; they will be able to quote Henry VI's "forsooth and forsooth" when they cannot tell the significance of Towton or Barnet; they will know that Napoleon took snuff and muti-

lated the furniture with his penknife when they profess no knowledge of the Emperor's policy.

This interest in the trivial is not to be blamed; in fact, it is perfectly natural that the juvenile mind should be more closely drawn to the things which it can readily visualize, and which can be easily understood, than to those broader and more immaterial conceptions which only appeal to the maturely developed brain. Yet from a consideration of this fact it should be fairly clear that we should make as much use as possible of this desire for the detailed, the trivial and the picturesque. Though, as always, history teachers should beware of embarking on a mere sugar-and-jam campaign in order to popularize their subject, and though the appreciation of the really important factors of history must ever be the basis on which lessons are given, it will be of enormous advantage in the teaching of our subject to play very considerably upon the dramatic and picturesque sides of history, especially in the lower forms of schools.

Dramatization.—Teaching by means of school plays is far from being a new plan, but no observant critic of educational methods will deny that a recrudescence of the dramatic method is characteristic of the new teaching. Mr. Edmond Holmes' "Egeria"—Mrs. Harriet Finlay-Johnson—not only exemplified the method in her school at Sompting, but has expounded it in her *The Dramatic Method of Teaching.* Mr. H. Caldwell Cook has given a still more vivid presentation in his *The Play Way.* Though not confined to history, the teaching by school plays finds its best field in that subject. Naturally it is most suitable for the junior grades, because at this stage the pupils have not yet

reached the self-conscious period. But also with the most advanced classes there is something very attractive in dressing up and playing a part, even though the play has to be in Latin or Greek to save the dignity of adolescence.

But while dramatization exemplifies the very spirit of the new teaching, it is little used at present in the actual teaching of history. This may be largely due to the fact that there are not very many school plays of a historical character available. But as a matter of fact it is not the printed and published play that is the most useful for scholastic purposes. It is the play that is compiled for the occasion, what we might almost call the extempore play, that is most successful in a school. If a possible play is suggested, discussed, arranged into scenes, outlined in synopsis, and finally elaborated, written out, learnt and acted, the result will be far better than if a ready-made play is purchased by the dozen copies and put directly into the hands of the class. If the pupils themselves can be got to elaborate the play, so much the better, and the more the pupils do in the way of suggesting scenes, outlining characters designing scenery and even writing the words, the better the results will be.

The writing of specimen scenes, the designing of costumes, and the suggestion of manners and customs that would be suitable to introduce as "business," can be made to form the subject of good class exercises. When by the judicious co-operation of teacher and pupils a finished article is produced and ready for rehearsing, it will be found that there is a keen competition among the pupils for a share in the real acting.

When a school historical play is to be prepared and

performed, it will generally be found both necessary and satisfactory to hold the rehearsals out of school hours; but experience will show that the sacrifice of play-time will not stand in the way of a good and regular attendance at rehearsals if only they are conducted with energy and good humour. When a play is ready for presentation there is a further field for activity in the production of costumes and properties, which can quite readily be more or less extemporized, and the needs of the case may often provide opportunities for correlation with woodwork and drawing.

The invasion of the time of the teacher, together with the extra work inseparable from the production of a play of this sort, will prevent more than one or perhaps two plays being presented in a single term. In fact the teacher will probably find himself lucky if he can manage one such play a term. Even if only one historical play is produced during the year, it will be found that a great deal has been done to create an interest in history among many pupils to whom book-work and exercises have no attraction. Not only does dramatization contribute to the retention of knowledge of the particular episodes dealt with, it stimulates a further interest in the past, which is of great value in the teaching of this subject.

Historical plays are in some cases replaced by isolated historical scenes. This is usually done with young pupils; and in the junior forms and in Elementary Schools it is a good plan to introduce almost extempore dialogues to illustrate social and biographical topics about which the class is learning. Such subjects as the preaching of St. Augustine to Ethelbert, the presentation of Caractacus as a prisoner at Rome, the taking of the oath by Harold, the dispute between

Becket and the knights before his murder, the death scene of Cœur-de-Lion, the Black Prince at Limoges, may form each the subject of a short scene, lasting not more than a few minutes.

As regards the wording of these plays and dialogues, it is obvious that we shall have to depart very far from the actual historical truth, for we can neither represent the language, the accent, nor the actual words of the characters. Our end will have been attained, however, if we have succeeded in bringing out the essential historical facts, and in impressing a lasting idea of the episodes in question on the minds of our pupils. Obvious anachronisms of speech and reference must be avoided, and archaic words and phrases may be introduced with effect, though the greater part of the dialogue must necessarily be in the language of modern England. This is not altogether a disadvantage, for we must remember that the antique forms of speech, phraseology and pronunciation were as natural and commonplace to our ancestors as modern English is to ourselves at the present day.

One effective aid to the success of historical plays is to let the leading characters in the cast know of books wherein they may find information about their real historical selves. This supplies an obvious incentive to the diligent use of the school and class libraries, for the provision of which Dr. Keatinge pleads so strongly. Experience shows that it does not prove a difficult matter to persuade the youthful actors to look up references and to suggest the introduction into their parts of authentic characteristics and observations. The success or failure of these plays depends to a large extent upon the capacities of the teacher in the matter of drama. If he has no proclivities in this direction

it were as well, perhaps, not to attempt any form of dramatic work, or at any rate to keep experiments of this description within very narrow limits. Probably lack of the impulse towards dramatic personation accounts more than anything else for the unwillingness of the average English schoolmaster to give effect to the demands of the new teaching for this application of the principle of learning by doing. On the other hand, the actual staging of a simple play gives plenty of opportunity for the activities of youngsters who have no real dramatic impulse, but still like to be included in whatever action is going on. The work done by the "supers" on the professional stage offers just the sort of opportunity needed by the boy of much energy but little histrionic ability.

Correlation.—One of the most striking characteristics of the new teaching is the revolt against what it has become fashionable to call "the water-tight compartment system." Progressive teachers realize that the division of the curriculum into "subjects" is a more or less conventional arrangement to meet the practical needs of the school, and that too sharp a line should not be drawn between one subject and another. The revolt has taken the form of a deliberate attempt to correlate the various branches studied at school. It is true that the movement has not made nearly so much progress as an examination of the current criticisms of educational method would suggest. The revolt has been intensive rather than extensive; but in its limited area it has been so strong as to lead to a vigorous reaction. Satirists have made capital out of the crude efforts of the reformers to correlate all the subjects of the school curriculum, and have found little difficulty in reducing to an absurdity the misguided attempts of enthusiasts

to generalize Jacotot's advice to learn one thing thoroughly "*et y rapporter tout le reste.*" But the anathema the little boy in the story hurls against the primrose because everything in his school life was being centred round that otherwise unobjectionable flower, represents the resentment of a very limited group. For in point of fact the whole force of the powerful body of specialists is exerted, in the form of *vis inertiæ*, against the development of correlation as understood by the extremists. Still, it is true that progressive specialists recognize the need for a certain amount of linking up among the various school subjects, and admit the desirability of getting their pupils to attain some conception of the unity of knowledge.

History offers a specially good field in which to study this characteristic of the new teaching. When we find a Professor[1] of History making the remark in a work on the teaching of his subject that the business of the teachers of history is to teach history, we have no difficulty in realizing that serious attempts have been made to induce them to teach something else. We have seen already that there is a strong case for the correlation of English Literature with History; and experience shows that most of the other branches of the curriculum can be brought into very close connection with our subject. By general custom Geography has become inseparably linked with History, and it is easy to show that the two subjects have more than a superficial connection. M. Taine has popularized the correlation between the characteristics of a nation and the geographical conditions under which it lives, and even the most superficial reader of history must note the close connection between the events he reads

[1] Professor H. Johnson in his *Teaching of History*.

about and the geographical setting in which they take place.

But a wider correlation is sometimes claimed: connections are established between history and science, mathematics, languages, art, and even engineering. In particular the manual work-room and the art school are called in to the aid of the teacher of history, with the result that practically the whole school is called upon to assist in the history lessons. On the other hand, the teacher of history must make his contribution in his turn. But this form of mutual assistance requires very careful organization, and is indeed a far more difficult matter than would at first sight appear. The history teacher, were he on the spot, would know the exact moments when historical information was called for in lessons on other subjects, and the exact kind and amount necessary on each occasion. In most Elementary Schools, and in those others in which the form-master or *ordinarius* takes several subjects, the history teacher is present in the person of the English or mathematical or classical master, the two being united in one body. But in any school that has adopted the specialist system, progress in this correlation is difficult, for in most cases the specialist instructor is so entirely wrapped up in his own subject that he hardly gives thought to others.

In this matter history specialists are no better than the rest. Unless there is some conscious effort, we shall find that these teachers too will tend to forget that there are opportunities to bring in useful references to the other subjects. It is one of the evils of the specialism of the age in which we live, and we must set ourselves to combat the accompanying evils of a system which, in its main points, is undoubtedly far

superior to the old plan of the all-round *ordinarius*, at any rate in the case of Secondary Schools.

To combat this sectional exclusiveness of the specialist teacher there must be a conscious effort and a united effort. It will not do for one teacher on a school staff to initiate correlation. Cases have been known where the energy of one teacher has saturated a whole school with his particular subject; where, for instance, mathematics, woodwork, drawing, geography, classics and French have all been reduced by the powerful and ceaseless activities of an enthusiastic history specialist to the position of ministering angels to his own subject, each dutifully paying its quota of exercises and sidelights on the dominant subject of the school. But even in the new teaching a case of this kind is rare, and is only to be found when the rest of the teaching staff are more or less lethargic, or when the conquering specialist has first of all subjugated the head master. If, as ought to be the case, the majority of the staff are pushing and energetic teachers of their subjects, much mutual concession and agreement will be necessary, or an attempt to establish correlation will degenerate into a sort of fight for supremacy among the muses. The ideal of the new teaching is that there should be frequent discussions in the common room of the syllabuses of the various subjects, and that teachers ought to take council with one another at intervals on the problem of correlation. Unfortunately there is very little of this at present in "specialist" schools; a desire for sectional independence and an unwillingness to intrude into other teachers' work, a sort of "live and let live" theory, has prevented a satisfactory system of correlation from being established in more than a very few of our Secondary Schools.

In one direction there is a tendency of the teachers of other subjects to poach on the domain of the history master, but against it no great objection need be raised. So far as the history of the development of particular sciences is concerned, it will probably be best if the instructors in each subject are left to provide the necessary information. Thus the chemistry teacher will give an account of the development of chemical research, the mathematical teacher will deal with Archimedes, Galileo and Newton, and the English master will trace the history of language, metre and style. But there is much scope for correlation of the other type. The history teacher will find very frequent cause to bring in references to the subject-matter of the various subjects, and we may expect that other teachers will find many occasions on which it will be useful and indeed necessary to illustrate their lessons by historical allusions.

CHAPTER IX

(*a*) MUSIC

By PERCY C. BUCK, M.A., Mus.Doc.

Revolutions, to the looker-on, present three phases. In an existing order of things a new idea, in some way contrary to and subversive of that order, comes to birth, passes through a period of germination, and finally, challenging the established order in the open, is itself either established or overthrown. And the history of Music and Education, no less than that of Political and Social life, is the story of Ideas crystallizing themselves into Institutions, which in turn are overthrown by newer ideas. For ideas are fermentation, institutions are stagnation, and all progress comes from the duel between rest and motion.

Middle-aged men have already witnessed one such revolution in education ; for the ideas which reigned unchallenged in their boyhood are now so extinct as to seem, in retrospect, almost medieval. But in this particular revolution the new idea was one which, in spite of its success in ousting the old dynasty, has never established itself as a guiding principle in education. Every one was grateful to the pioneers of a movement which freed us from a conception of education which had become intolerable, and every one was, in consequence, tolerant for a time of the principles which these pioneers proposed to substitute. But the new idea

was from the first received with more than a little suspicion, and the malcontents have, during the last thirty years or so, become so numerous that they are now endeavouring, by a counter-revolution, to establish governing principles quite different in nature ; and it is the new idea behind this counter-revolution which has been christened the " New Teaching."

The developments summarized in the above paragraph must now be considered in detail, since without a clear understanding of what actual changes have occurred no grasp can be obtained of what is meant by the new ideas as applied to music-teaching. Up to forty years ago this was founded on one adamantine and unyielding principle ; from beginning to end there loomed the stark figure of the Law. At his first lesson a pupil was told how to hold his hands, and at his last how to write the coda to his symphony, not with any reference to the particular hand or symphony, or even the particular pupil, but because it was all in the code of the mandarins. A long succession of high-priests, each initiating his successor, had preserved the mysteries of the craft and zealously guarded the sacred truths—guarded them, as a wit remarked, with "flaming umbrellas" ; to doubt was blasphemy, to ask for a reason impertinence. Any musician who was a student at that period could with ease recall scores of dogmas then expounded to him with Athanasian assurance which would be greeted with mockery by the students of to-day. And in confirmation of this, lest it should be thought mere rhetorical exaggeration, let two examples be given from the writer's own experience.

In his Harmony text-book he was told that, in a major key, the common chord on the mediant could not

be used : and as often as he used it (being by nature sceptical and perverse) his masters industriously blue-pencilled it. In his text-book on Composition and Form he was told, solemnly and seriously, that every variation must preserve intact the harmony of the original theme.

It would indeed be difficult (one could wish it were impossible) to convince the average student of to-day that his masters were taught the Art of Music on precisely the same principles as they were taught their Latin Grammar ; this was allowed, that was wrong, something else was an exception. No touch of humanity or emotion was allowed to peep out through any chink of the subject, and no teacher who was a true Lawgiver ever allowed for any humanity in his pupil ; and the rebukes administered when the burning question "Why?" burst through all repression still make hot with anger some of those who suffered from them.

Thirty years ago, however, the reaction against this martinet system had already begun, and students were perhaps unlucky who did not find their way into the hands of at least one teacher who was born of God and not of a machine. The leaven of a new idea was quietly working, and its essence lay in a realization of the fact that the individual mattered. Professor Adams has put the case deftly in an illustration which cannot too often be quoted. If the task in hand, he says, was to teach John Latin—Johannem docere Latinam—the old teachers considered that the one essential thing was to know Latin ; whereas the newer kind realized the necessity of knowing John. The discovery sounds so promising that one could have expected a long and fruitful period to ensue in which all teaching, fertilized and vitalized by the new conception, would reach a

high plane of efficiency. But there are many thinkers to-day who are more than apprehensive that the attention focussed on John has obscured the Latin. The idea, strong and true enough in itself to rescue us once for all from the unleavened pundit, has run riot in the hands of faddists and sentimentalists, and in music we have reached a stage where the pupil is not only not expected, but is scarcely allowed to do any thinking. Every note is fingered for him, sometimes even with alternative versions; accidentals are repeated, sometimes even in brackets, in case his memory is poor; every passage is overladen with phrasings—often, it is true, badly enough to make him think, if the power was not atrophied; the top stave is reserved exclusively for the right hand, so as to prevent his applying his mind to arranging it; the tune is even printed, in some editions, in coloured or enlarged notes, to save him the trouble of finding it out; and if he wishes to acquire a false reputation for musicianship what is easier than to "get up" all the technical jargon of second-subjects, episodes and codas from the anatomical futilities of the annotated programme?

That education has, during the last thirty years, been gradually drifting into a position where its whole existence is in danger, and that this drifting has been caused mainly by people who were, in themselves, real enthusiasts, will be denied by few who have been seriously watching the progress of events.

In music-teaching it has been a period of battle between rival systems of piano-teaching, voice-training, theory-instruction and what-not, in which, as in everything else, the greatest charlatans have usually succeeded in securing the most attention. Quick results from patent methods has been the cry, and music-teachers

have vied with dentists in making their processes painless.

Fortunately there has been at work, during the same period, a body of men who, though not specially focussing on educational problems, have provided educationists with a scientific conception of the fundamental issues which promises, if the opportunity is grasped, to bring order out of chaos. And it is this scientific conception, due almost entirely to the work of psychologists, which is here called the New Teaching. If it is possible to sum up in a sentence the bed-rock idea behind this conception, one might describe it as the insistence on the fact that a man knows only what he has found out for himself. The old teacher—let us call him the Class A man—administered the Law as delivered unto the prophets; he was uprooted by the Class B man, who, allowing for the humanity of the pupil, explained the Law—though too often it was not the Law but some vain imagination of his own; the New Teacher, of Class C, aims at getting the tentacles of his pupil's interest so firmly entwined round a subject that they will refuse to let go their hold until the interest is satisfied. Thus the fundamental error—as clear as noonday to any one, for instance, who was taught musical theory a generation ago—lay in the assumption that it was possible to start with Law, and to apply it to any and every instance that occurred; and we are now at last recognizing that Law is the final discovery and not the first step, and that all true progress is inductive, not deductive. The age of Lawgivers is happily past, though in music-teaching their trail may still be seen in the survival of the pathetic futilities of figured-basses and strict counterpoint. And the rule of their successors, grateful as

we are to them for their insistence that the human longing for explanations should be satisfied (though we complain that they pandered to it), will pass so soon as mankind at large realizes that there is no such thing as Law behind us at all, since it is towards Law, and not from it, that all human activities travel.

It is undoubtedly easy to caricature such a position, and to point out the dangers and absurdities which must inevitably follow all departures from tradition; and it may be conceded that the extreme lawlessness of, for instance, much modern composition is bordering on the outrageous. Even so, it is in the end all to the good, for there is no way of getting at the wheat so satisfactory as by blowing away the chaff; and few modern compositions, with all their eccentricities, are such direct insults to the Muses as the ancient orthodox Doctors' Exercises. And however much we may resent immediate results we cannot ignore the truth, at the bottom of all education, that the acquisition of information does not constitute knowledge. No isolated fact is knowledge until it has been coupled up and connected with another, and in the moment of connection knowledge is born. Such is clearly the basis of Bergson's "flash of intuition," and such is the underlying meaning of that great challenge to all old systems in *Jean Christophe*—a challenge which might serve as the Magna Charta of all modernism—

"Il y a un âge de la vie où il faut oser être injuste, où il faut oser faire table rasée de toutes les admirations et de tous les respects appris, et tout nier—mensonges et vérités—tout ce que l'on n'a pas reconnu vrai par soi-même."

Every widespread movement is founded, though often unconsciously, on the apprehension of a philoso-

phic truth ; and the present change of attitude would seem to be founded on a realization of the truth that the more you know of a thing (*not* the more you have been told) the higher will be the calibre of your enjoyment, coupled to a democratic resentment that the highest forms of pleasure have been regarded hitherto as the privilege of the few instead of the common inheritance of the many. And in the latter half of this statement is to be found the real kernel of the whole question. To the old unbending teacher music was an art whose full enjoyment was limited, and was intended by nature to be limited, to the fortunate few who had acquired the learning which such a teacher alone could impart. The New Teaching meets this heresy *à outrance* with a stout unflinching denial. The highest enjoyment of art, it says, is no ring-fenced privilege ; it is, though not at the call of every dilettante who desires it, at the command of every human being who will take the trouble to make himself worthy of it. And it is the duty of the teacher to point out both the path and the reward.

The teaching of music is so largely an individual matter—the giving, that is, of a lesson, by one person to another—that any attempt to show the practical application of the principles involved must unavoidably be made in terms of the individual and not of the class.

A pupil comes to a teacher and says, "I want to learn music." We all know exactly what happened in the old days of the Class A teacher. The piano was opened, the ruler was placed conveniently at hand, the five-finger-exercise book was produced, and one more victim to drudgery and torment was started down the hill of disillusion. The Class B teacher—which means,

in effect, the average teacher of to-day—does the same thing, but does it humanely. There is no ruler, and there is not much finger exercise—and what there is is done so perfunctorily (as any examiner will agree) as to be practically useless ; there are possibly quite pretty tunes at an early stage, and various other amenities which often make the lesson and the learning a pleasure to both pupil and teacher. But there is little or no radical difference in the aim, which remains that of turning out one more passable pianist. To the teachers of Class C the same pupil comes and makes the same remark, and the different conception is at once clear. "Good," replies the teacher, "you wish me to help you to become a musician ; to get to love good music and to hate bad, and to know the difference ; to be able to talk sense about it, and to know when other people are talking nonsense ; to understand something of its past, and how its present grew out of that ; and possibly, by the grace of Heaven, to discover that you have gifts as an executant and interpreter which it may be worth while to develop later on."

The value of the work of psychologists in building up the new ideas has already been acknowledged, and it is not difficult to point out specific instances of our indebtedness to them. Firstly, psychologists have forced on our attention the necessity of separating, into water-tight compartments, matters of pure technique from matters of interpretation. No one any longer believes—though few put their belief into practice—that an instrumentalist or singer can be best trained by putting him into the hands of one teacher, however eminent, who is to teach him every branch of his art. Yet there is scarcely an institution in England at the

present moment where a singer or a pianist can, even if he asks for the privilege and is prepared to pay for it, put himself under an expert in hand-training or voice-formation, in order that his purely muscular apparatus may be in a state to benefit from the teaching of a master of interpretation. Of the innumerable excellent teachers at such institutions there is scarcely one who is capable of imparting the highest technical training *plus* the highest interpretation ; but there are many who, working in couples each at his own branch, might gain the desired result to the incalculable advantage of pupils who at present have to be content with a lopsided training. The New Teaching aims at making irresistible the demand for such simple justice to the individual.

Another demand which the psychologist makes of the *laissez-faire* teacher is, that he should somehow or other abolish the cruel and unscientific custom of allowing children's hands to be taught on a full-sized piano. The suggestion that a child should be taught on a full-sized violin or 'cello would be everywhere received with derision, and the only conceivable excuse for making an exception in the case of the piano is the old tawdry justification for all educational crimes against the young—cheapness and convenience. From the technical point of view the present method stands self-condemned ; while from the artistic point of view we get the result—amongst others—that children, at an age when their ears are ripest for education in the all-important matter of tone, are unable to reach the sustaining-pedal, and grow up under the almost universal impression that it is the "loud" pedal and nothing else.

A further lesson, going to the very roots of the

fundamental differences of human temperament, and of the first importance in such a matter as the teaching of musical theory, is to be learnt from Psychology. Every subject has two sides from which it may be approached, the practical and the theoretical. In England, in spite of the fact that the child learns to speak before it is taught grammar, it seems almost invariably to be assumed that the theoretical should come first, and that no consideration should be paid to the fact that nature divided us into two groups, one group learning far more easily and thoroughly if the first steps are practical. A large majority of students learn best by "doing" first and "knowing why" later. Yet to this day almost every student in England is taught musical theory by the reverse process. Instead of being allowed to form an idea in his head and to get it down on to paper, subsequently learning his grammar and spelling, he is set to work to learn, by the patient acquisition of rules and exceptions, how to erect jerry-built exercises in answer to given questions, and in a majority of cases he has no idea whatever of the sounds resulting from the notes he has manipulated. In the result, the composers show the scars to the end of their lives in the shape of that stamp of the "machine-made" which we find in so much English music, and the instrumentalist, proving once more the amazing powers of the human brain, gets high examination marks for producing work of which he would not recognize a single chord if it were played to him. The New Teaching maintains that a knowledge of the mysteries of double-rooted chords and triple-suspensions, of the tricks of "double counterpoint" and "combined species" does not, even if you travel the whole road, end in musicianship; and that, in conse-

quence, the attempt to make musicians of people by taking them down that road, avowedly only for a short distance, is fore-ordained to failure. And it suggests that, as a "condition precedent" of all musicianship, ear-training is of such supreme importance that any student who is turned out as "finished" by any teacher or institution without being able, as a minimum, both to hear what he sees on paper and to put on paper what he hears, is a disgrace to his training.

To sum up, before passing on to the question of class-teaching, it is now being realized that the end of good teaching is to make the pupil so interested that he cannot help thinking. The old teacher, the Class A man, did not consider that this was in any way his concern; he carried out his side of the bargain punctiliously, put knowledge before you, and left it there. An amusing instance of such a type occurs in a book recently written by a teacher of the new school.[1] An inspector (obviously one of our Class A friends) complained that this teacher's boys had not learnt enough poetry by heart. The teacher, whose whole energy had been devoted to making the boys love poetry, replied that he did not think the forcible administration of large doses of poetry was likely to make them love it in after life. "The inspector seemed to think that very natural and probable, but he reminded me that what they did when they left school was not my business." The Class B man, seeing the lacuna in the methods of his predecessors, set to work to make the thinking easy. He still thought of it, as of all learning, as being to the pupil necessarily a "wearisome bitterness," and so resorted to sugar-

[1] *The Rudiments of Criticism*, by E.A. Greening Lamborn (Clarendon Press, Oxford), a book equally full of amusement and instruction.

coating. The Class C man, our New Teacher, acts on the conviction that of all the joys of man none is so great as that of satisfying a desire for knowledge when once that desire has been awakened; and that the true criterion of his own ability as a teacher is summed up in the apothegm in Ch. I.—"a teacher has been really successful only when he has . . . enabled his pupils to do without him."

Although music-teaching is, as has been said, so largely a matter of individual lessons, it will be more in keeping with the scope of this volume if an attempt is made to show, in a general way, how the new ideas affect class-teaching. Most of what has been said will, to those who look below the surface, suggest points of contact and modifications of detail when transferred to the class from the single pupil. But it should be borne in mind that lessons which at the time are purely individual have, later on, a communal value. Our orchestras and choral societies, whose number and value might so easily be enormously increased all over the country, are only adult music-classes, and they depend for their aggregate efficiency on the value of the units composing them: that is to say, on the teaching the unit has received in individual lessons. But in regard to music-classes in schools a series of suggestions may be made which, though they seem so obvious that it is difficult to imagine any objection to them, are yet so contrary to what is now the general practice that they are really suggested reforms.

(*a*) *Singing-classes.*—1. These should be held first thing in the morning. A short spell of singing—15 or even 10 minutes—is not only a musical exercise, it is a physical bracing. After it the faculties are so charged with vitality that all subsequent work is on a

higher plane. Yet at a leading girls' school recently examined it was found that there were three half-hour singing-classes on whole-school-days after tea, because "the time-table could not spare time from more important morning work."

2. Keenness on "results" should never be allowed to lead to unjust treatment of the individual voice. There are at this moment thousands of boys and girls all over England ruining their voices, and their chances of being singers in after life, by being forced to sing "alto" or "tenor" parts because they "read" well. It would be a mercy to the voices and a blessing to English singing if some autocrat had power to forbid any partsong in a girls' school that contained an alto part, and to prohibit any boy at school from singing either alto or tenor. The only plea that can be advanced for allowing such things is the necessity of providing material for performances—*i. e.* the plea that the individual voice may be ruined with impunity so long as one concert is managed reasonably well.

(*b*) *Class-work for instrumentalists.*—1. It has been lamented that "learning music" is so complacently taken to mean "learning the piano"; and it is equally lamentable that "learning the piano" so frequently means learning to play a few piano pieces and nothing else. An elementary ensemble-class is quite easy to manage, and it adds enormously to appreciation of and keenness for music if pianists are given opportunities of playing easy pieces with violinists or singers. And beyond the mere added enjoyment the method trains up a number of plucky readers and sympathetic accompanists, besides giving a quickness in finding places, making repeats, allowing for the mistakes of our fellows, and other qualities of general musicianship.

2. Every teacher regrets that in individual lessons there is "not time to do everything"; and in consequence the most elementary questions on keys, time signatures, meaning of terms, etc.—all points in which understanding is essential to good playing—will "floor" the best players in most schools. But all these things can be taught as well—and probably, owing to the class-feeling or team-spirit, better—to a number of pupils taken together; and the private lesson would have an appreciable fraction of time set free for other needs.

3. Many schools have, and more might have, an orchestra. But the music which such orchestras play is too often of a deplorable kind. When it escapes being either fourth-rate rubbish written by publishers' hacks to the standard required, or easy arrangements of the popular indiscretions of better-known composers, it generally takes the form of a long and tedious work, such as a Haydn symphony, serving mainly to strengthen the universal suspicion of the young that classical music is invariably dull. Some one once put a great truth into epigrammatic form by saying, "What is worth doing at all is worth doing badly"; and an average school orchestra, helped out by one or two teachers and a piano, can, with reasonable success and an amazing amount of pleasure, cope with a great deal of modern music of the front rank. Here and there an occasional passage may, from want of skill, be roughly handled, but the practices will be exhilarating and alive, and the deeply-rooted belief that "good" music is dull will find one more nail driven into its coffin.

(*c*) Every school should have a class for the inquiring mind, and many already have a "Harmony

Class." The members of this class are, as a rule, a few enthusiastic souls who, realizing that there is something "behind" music, want to get at its deeper meaning. It seems almost intentionally humorous that, until quite recent years, the initiation offered invariably took the form of a course of exercises on a figured-bass—as perfect a stone as could be offered to any beggar for bread. Where the old traditions have lost their sway these classes are now replaced by "Appreciation Classes" whose power for good, in the hands of an able teacher, is beyond calculation.

(*d*) Other subjects which are taught in classes are also gradually coming under the sway of the new ideas. The History of Music, for instance, was taught until recently as a compendium of names and dates, occasionally enlivened by personal anecdotes. It was possible to satisfy the most exacting examiners as to one's knowledge of Palestrina, or of the quarrels between the Gluckists and Piccinists, without ever having heard a note of the music of any of the composers concerned; but it is now becoming gradually, if a little reluctantly, accepted that biographical data posing as historical knowledge are a barren and fraudulent substitute. But the most far-reaching reform lies in the slow but sure recognition, already referred to, of the vital importance of ear-training as the fundamental condition of musicianship and the inevitable preliminary to theoretical work. No child is fit to begin a literary training until he can read what he sees and write down what he hears; and training in harmony and counterpoint is sterile and contemptible until the pupil also can write what he hears and hear what he writes.

(*e*) Finally, the importance of reading at sight is at last being admitted. It is dawning on teachers that

the average pupil, when given a new piece whose technical difficulties might be mastered in a week, takes a preliminary fortnight to reach that state of familiarity with the actual notes at which real technical practice can be said to begin. And during that fortnight any given passage has been played wrong so many times that a fourth week becomes necessary for the elimination of stuttering. Reading music is, like reading words, almost entirely a matter of eye-training; and just as we can prophecy with certainty that the querulous child, puzzling over C A T, will in time read fluently, so we know that any pianist, puzzling over the common chord of C, will ultimately read well if the practice is consistent.

But it has not yet dawned on teachers, even on some of those most enthusiastic over sight-reading, that the subject should be taught in a gradation as logical as that whereby language-reading is taught. In language the eye proceeds definitely from unit to unit; at first the letter, then the syllable, then the word, then the group of words, until the expert reader finds that he is *always* looking some inch or more to the right of the word his tongue is saying. So the psychologist would proceed in music-reading; from the note unit to the chord unit, the two-chord unit, and the phrase unit, until the expert finds himself looking an inch or more ahead of the notes his fingers are actually striking. But even in books written by specialists for the express purpose of teaching sight-reading it is not easy to find any real comprehension of the above obvious facts, nor any truly logical gradation beyond the general principles that the early examples should be "easy" and the rest gradually more "difficult."

Few things, it is notorious, are easier than to launch

a list of complaints against the methods of any body of workers in any line of life. A writer need only enumerate the blunders he himself has made, and is probably still making, and he will have at hand a jeremiad which can be worked up into a formidable indictment. But in the present chapter the real object has not been to point out errors, but rather to try to analyse that new feeling of responsibility and thoughtfulness which is beginning to permeate music-teachers as a body, and to trace the origin and nature of the particular traditions that form the object of attack. And the reason why such new ideas do not make more rapid progress is not, it may be claimed with confidence, that teachers are slow to accept them, but that other outside considerations are at present too strong. Examinations estimate results by definite performances, and parents estimate progress by examinations ; and so long as examinations (and inspectors) continue in their present demands, so long will the teacher have to concentrate on technique and leave musicianship to struggle for itself. But a campaign for a change in the methods of estimating results should not be hopeless, for England is, curiously enough, the one country which claims (and in her Public Schools puts the claim into practice) that the end of education is not learning but character ; and where such a belief is held it should not be impossible to convince thinkers that the proper end of all teaching in Art is the raising of the standard of taste and not the manufacture of executants. For every one who thinks for a moment will confess that Ruskin spoke the simple unsophisticated truth when he said, "Tell me what you like, and I will tell you what you are."

(*b*) MUSIC IN ELEMENTARY SCHOOLS

By JOHN E. BORLAND, Mus.D.

THE teaching of Music in Elementary Schools offers a striking contrast to what is commonly known as music-teaching, which, until recently at least, concerned itself almost entirely with the externals of notation and instrumental mechanism, and ignored the real thing, Music. One cause of the contrast was the absence of pianofortes from Elementary Schools in their earlier years. The teachers had to depend upon their voices, tuning-forks, blackboards and pointers for such results as they achieved, and these results were by no means despicable. The very disabilities of the schools proved to be their musical salvation, for where the teachers had no pianos to assist in learning songs in that laziest of all ways, direct imitation, they were led, and indeed were compelled, to give a reasonable amount of training of the ear and eye in order to secure any results at all. It is no exaggeration to say that much of the improvement of music-teaching in high-grade schools, in music-schools, and in private, which is one of the most marked features in the education of to-day, is due to the influence of the Elementary Schools, working upwards, rather than to any artistic force proceeding from the Secondary Schools downwards. It is a common experience to find higher-grade schools of all types just beginning to introduce the kind of Voice-training and Ear-training that the best of the Elementary Schools have used for years. It will be within the recollection of readers of these lines that a recent revival of interest in music in some of the great Public Schools was due to impressions received by a head master who heard

some singing in a village school during his vacation, and realized how much his own boys were missing.

This section is headed *Music* in Elementary Schools, but it may be necessary to remark, for those who are not familiar with the work of these schools, that the singing-class is the only official provision for the teaching of music, at present. At a first glance this may seem to be a limited thing, and the teaching may appear to be easy to provide for ; but where the ideal is high this is by no means the case. The subject includes the physical side of singing—the proper use of the breathing apparatus and of the voice mechanism. These branches alone, in other circles, call for the life study of specialists. The singing-class provides also for the training of the ear and of the eye, and is concerned in addition with presenting to the children nearly all their early impressions of what the art of music is in its wider aspects. The responsibilities of the teachers are therefore heavy, and it is remarkable to find here and there great success won in all these branches by teachers who are not specialists, whose own gifts and opportunities have been limited, and whose spare time is largely occupied with the preparation of lessons in other subjects of the curriculum. Where success is attained it is due largely to organization. Special musical powers on the part of the teachers will do much, but continuity of work with the children from infancy onwards is still more potent. The poorest results are to be witnessed in the schools where infants and seniors isolate themselves, and where even within one department the class-groups are separated by a kind of mental bulkhead. It is quite impossible, we repeat, to tackle effectively this great composite subject within the nine years or so of school

life, unless a real continuity is secured. This is sometimes done by means of Staff Conferences, sometimes by means of a Syllabus carefully followed and overlooked by a musical head teacher, sometimes by a mild form of specialization. All these plans work well when they are adopted with goodwill, and it is not at all necessary to sink down despondently and decide that the task is too great for the ordinary school class and teacher to tackle successfully. Some schools have specialized in vocal tone ; some have secured efficiency in the mental branches by neglecting the tone ; but these compromises are uncalled for when the whole work is properly graded. Vocal faults should be almost absent from the senior classes, because it is possible to establish good tone and articulation quite early in school life ; Ear-training should be well in hand in the Infant School ; and when the allied subjects such as Speech-training and Physical-exercise are also made to help and not to hinder the singing, every normal class can excel in each part of the subject, while the sub-normal classes can reach a somewhat lower ideal in all the branches without neglecting any.

We used to hear a good deal of what was called the Board School voice. The term was a misnomer and very unjust. It carried with it a sneer, and an implication that a certain raucous kind of tone was due to the schools : the truth was that this tone was the normal untrained voice of the majority of the social grades that filled the Board Schools—a tone which the schools were fighting hard to improve. The fight began in the Training Colleges, and it is now the exception rather than the rule to meet with that kind of voice amongst either teachers or taught. So far as the children were concerned, it must be remembered that they spent

only from twenty-five to twenty-seven and a half hours a week under the school influence, most of which time was devoted to other subjects than speech or song, as against all their evenings, week-ends and holidays spent in the home, the playground and the street. In the Elementary Schools there were always some teachers with sensitive ears who maintained a high ideal of vocal tone, and during the last twenty years their numbers have increased greatly. Regular, efficient breathing exercises, and careful practice of vowel sounds, are now established as essentials in all the best schools, and in London a special impetus has been given to the movement for improving voice-use by the establishment of courses of lectures by experts. An important step was taken when a chapter on Breathing was incorporated in the Recommendations of a Conference on Speech Training held in 1915, while in the following year some supplementary agreements were come to in consultation with Organizers of Physical Instruction and a School Medical Officer. These Recommendations are in the hands of all teachers in the London Service, and are also available for others in a pamphlet on Class Singing issued in 1917.[1]

The Elementary Schools have based the mental part of their music-training on the Tonic Sol-fa system, with its acceptance of ear-training as fundamental and all else as superstructure. The thing, the name, the sign, is the order of presentation, whereas in the old bad type of so-called music-teaching (pianoforte playing) the sign and the mechanism of the instrument claimed all attention, leaving pupils unable to name the

[1] *Class Singing and Ear Training in Schools*, published by P. S. King & Son, Ltd., 2 & 4 Gt. Smith Street, Victoria Street, Westminster, S.W. Price 2*d.*

simplest of musical combinations when heard. The specialist music-teacher of the past, who dealt with individual children, often signally failed to train them for any true grasp of music itself; but the non-specialist school-teacher, who had to deal with classes of fifty or more children at a time, was successful in making real musicians of a good many of them by the aid of the Tonic Sol-fa system, with its direct appeal to the ear, first and foremost. The value of Tonic Sol-fa as an elucidator of the Staff-Notation is now recognized by many musicians who formerly despised it, while the school-teacher is now alive to the possibility of giving children a decent working knowledge of the Staff-Notation through the aid of the Tonic Sol-fa, with its single scale and single unit of Time.

Recent additions to the ear-training work in the schools have been made through the realization of the need for treating Music as Literature is treated. It is no longer thought sufficient to give children only such music as they can perform with their voices, but it is also found both possible and desirable to bring them into touch with music of larger calibre by means of "Appreciation" lessons. These are not provided for as yet in the official curriculum, but the enthusiastic teacher can always be trusted to go a good deal beyond minimum requirements when convinced of the desirability of doing so. Little children are being taught to appreciate the "Form" of simple tunes, their building up by phrases, their harmonic background, and so forth. They are being led to feel the moods of music, beginning, of course, with those which are obvious, such as the simple contrasts of quick and slow, sad and merry measures, tripping dances and stately marches. The journey from these beginnings towards

the appreciation of an orchestral symphony is continuous, and not so long as it was once thought to be. For this part of the work a pianoforte and a player of skill are essential, but some teachers have obtained excellent results with the aid of a gramophone, in the absence of any better means of presentation.

Another recent fillip to the rhythmic side of musical training has been given through the propaganda of the Jaques-Dalcroze System. Much that is quite unsuitable for large classes and for Elementary School children is included in the System; but its earlier steps, consisting of listening for rhythms and illustrating them with physical movements, have been introduced with success in many schools, and the movement is rapidly growing.

In the earlier days of the Elementary Schools, when instrumental accompaniment was scarce or non-existent, the bareness of unison singing led to the gradual provision of a mass of school music in two, three, or even more voice-parts. The natural craving for harmony was thus satisfied, and the children received a useful education for after-life as part-singers. The thirty per cent. or so of girls who were normally destined to become adult contraltos, and the boys who would ultimately become tenors or basses, thus acquired the power to hold an under part. Lately, part-singing has been somewhat decried on account of the injury which was sometimes done to young children's voices by the employment of the extremes of their compass, but there is no need for such injury to be done. Part-music for children must be carefully selected to avoid an undue use of the extremes, and preliminary voice-training must be thorough. If these safeguards are observed there is no reason why

children should not enjoy the inestimable benefit of the mental training which part-music affords.

In conclusion, we must not omit to note the great variety of the songs which are found to be practicable in Elementary Schools. National songs have always been in use, but some Recommendations of the Board of Education about ten years ago drew fresh attention to the importance of giving the children a working knowledge of these standard tunes. At about the same time many of the older and recently revived folk-songs became available, and have added variety to the programme. In addition, new interest has been aroused in the Shakespeare songs of the seventeenth and eighteenth centuries. In common use to-day are also the undying melodies of the classic composers, Bach, Handel, Haydn, Mozart, Beethoven, Schubert, Mendelssohn, Schumann, Brahms, Rubinstein, Grieg. Healthiest sign of all is the recent stimulation of our native composers to produce songs and part-songs for schools — not limited as in older days to mere banalities which were supposed to be the only fit pabulum for the budding musical intellect, but real live songs with fine words, and music by such masters as Parry, Stanford, Elgar, Mackenzie, Bantock, Walford-Davies. The outlook is full of hope.

[Though Dr. Borland is one of its officers, the London County Council is not in any way responsible for the opinions expressed in this article.]

CHAPTER X

DRAWING AND ART

By H. BARRETT CARPENTER

THE last forty years have witnessed a change in the teaching of drawing so great as to be worthy the name of a revolution, a revolution not yet complete but holding the promise of greater things still to be accomplished. We may speak of the "new teaching" of drawing, but it is rather a return to the pursuit of lost ideals, common sense being called to our aid.

When education was made compulsory the authorities of that day decreed that all children in Elementary Schools should be taught certain subjects, among which drawing was unlucky enough to be named. Unlucky because those who decreed that it should be taught also prescribed a fixed course of instruction. In framing this course no thought appears to have been given to the most important item, the natural development of the child. For practical purposes drawing was confined to one idea, the cultivation of skill in copying. The drawing might be made from a flat copy or from a solid object, but there was no idea beyond that of copying. In practice the flat copies were often based upon beautiful Greek ornament, but when, for cheapness and convenience of distribution, the copies were reproductions of very far-off copies, there remained little that was Greek and less that was beautiful.

The solid objects were geometric shapes chosen because they are the foundation forms upon which are based many of the articles made by man. Apparently the solid objects stood for use without beauty, and the flat copies stood for beauty without use. Be that as it may, there grew up in the minds of our people the idea that use and beauty were things apart; that the ugly thing was so because it was useful, and that the beautiful thing could be beautiful only at the price of being useless—a devil's doctrine if ever there was one.

The first step towards revolution was taken when it was realized that children took no interest in this dull work, loathed it indeed, but that some of them would contentedly draw things of their own choice. Still, those in authority could conceive of drawing in no other way than as an act of copying, so "recreative drawing copies" were given out, and the children were left to make what they could of such birds, beasts, or fishes as fell to their share. As this was "recreation" the teacher had no need to worry about it, but could get on with marking or other routine work. Dull flat copies, dull objects, and "recreative" Noah's arks, less dull perhaps, but still copies, these were the stones officially offered in place of the bread for want of which thousands of young minds were starved and stunted.

To-day the best teaching is based on the real wants of the child, who, coming into a strange world, must needs learn its ways, the meaning and use of the things he sees, their relation to each other and to himself, and something of the joy and beauty of life.

The young child's eyes are always being turned, this way and that, with interest and inquiry. What can drawing do to satisfy him? Bright colours catch his

eye, then we will use bright colours to help him to think, and the world of make-believe shall help him to realize hard facts. Let us pin up a large spot of one bright colour and a small spot of another on a sheet of dark paper. The spots stand for this or that, but one is big and one is little, and one stands here and the other stands there. Bit by bit a story grows up round them, but always the one spot is just so big and the other just so much less, and they stand here and there. At the end each child gets his piece of dark paper and his two bits of coloured chalk, and from memory he makes the two spots, one big and one little, and he places them where they should be. He has begun to develop the idea of relative size and relative position. Day by day new stories go with new sizes and new positions, the spots divide into quarters and rings of different colours ; bars of different lengths, different directions, and different colours also come in, and in due time grow into flags, while the spots grow into simple leaves and fruits, or birds and fishes.

The undeveloped hand, unfit for pens or pencils, can clutch a little lump of chalk and draw with it freely and boldly, so that, following nature, mind and body develop together. As control of the arm and hand is developed the simple coloured shapes give place to objects of simple form—round, oval, square, oblong, and so on—but each with its own character, and each having its special position, direction and proportion.

Next comes the investigation of details (explorers' work in a new country), and the fitting of each detail into its proper place. The beautiful patterns of feathers, the great veins of leaves, the sticks of a fan,

the folds of a tie, the twist of a knot of cord—these are types of details that present endless interests to the young mind intent on finding out. So is laid the foundation of the true proportion of parts to the whole. Positions of points, direction of lines, proportion of spaces—Euclid's order over again.

But this is not the only side to be cultivated. There are powers and qualities, more or less common to all, which must be developed, but there are also individual personalities longing to express themselves in their own way, so, side by side with the periods of definite study, there are other periods when each child in his own fashion draws his own version of a story, or his own idea of something that has interested him. At the outset such drawing is symbolic, a loop may stand for man or beast, house or tree, and even after the objects have taken shape the drawings are still symbolic of the measure of interest felt by the child in the thing drawn. Usually the greater the interest the larger the figure, just as we see them in the Assyrian sculptures and in the drawings of primitive races. Little by little the ideas of position, direction and proportion develop in the child's mind, and his own version of things becomes orderly while remaining personal.

With increasing grasp of ideas and greater power of hand the growing boy becomes able to face the difficulties of representing solid objects and of seeing them from any point of view, but the question of appearance must not be allowed to shut out the question of understanding. In studying all living things, as well as all things made by man, the idea of structure for a purpose must be present. In drawing them it is not only a matter of measurement, how long or how high,

but, what kind of creature is this? where did it live and how? why has it a long neck? why are its eyes set so? why has it hoofs, or toes, or claws? why so long and thin a tail, or why so broad and strong? If the object be of man's making one asks, "What is this for? how was it made and who made it? why this shape? why was this lip, this foot, this handle set just so?" After close examination the object is withdrawn and the drawing is made, built up rather than drawn, with a force and freshness and a sense of personal impression rarely to be found in any mere copy.

Not until the seeking out of structure, and the reasons for it, has become a habit can the problems of foreshortening be faced with much hope of success, and even so in practice it is found best to begin with round objects rather than square. The retiring surfaces of straight-sided objects are always rather difficult to master. One does not always realize that a geometric drawing of an object needs at least two views (plan and elevation) to explain the structure and to show the relative dimensions of all the parts to the whole, but one ordinary drawing must show all these as well as the point of view from which they were seen. The mastery of these problems of foreshortening marks a great step in mental development, a larger understanding of the true relation of things, and a firmer grip of structure.

The question of the best drawing-tools for children to use has had much thought given to it, for it is realized that at five years old, at fifteen, and at twenty-five, our physical powers are very different, and that we need a right judgment if we are to be wise guides. The use of the brush and of the pen or pencil ought not to begin until the wrists and hands are developed

sufficiently to control them. This is not yet fully understood, and the tools of maturity are often placed in the hands of infancy. Also many small children are given a brush without being shown how to use it, the result being disastrous alike to the painting and the painter. Of this come dirty colour, dirty paper and dirty fingers, and the children soon lose interest in the performance, but when shown how to use a brush and to lay colour cleanly and vigorously they gain greatly in self-respect and taste the joys of good craftsmanship. Pen and pencils involve such delicate movements of the hand that they should not be used until the hand is well advanced in its development.

Enough has been said to show how greatly the teaching of drawing in the Elementary School has changed, but, great as the change is, it is by no means universal throughout the country, and very much remains to be done. In many schools drawing is still looked upon as a subject to be taught because it has to be, not because of the necessity of training the mind through the eye. All drawing must be taught so as to suit the Inspector, whose ideas on the subject are often amazing. Far too many teachers are content to do what they are told without working out for themselves the reason why it should be done. Others, desiring "to keep up with the times," eagerly seize upon the latest catch-phrase, such as "correlation" or "self-expression," or think to find salvation in brush-work or in pastels. Such phrases and such forms of work have their meaning and their use, but in multitudes of cases they are mere "Mesopotamias." A notable case in point is that of "mass-drawing," an excellent thing when you know what it means, but a mere fetish if you do not. "Mass-drawing" in reality means

drawing an object, or a group of objects, as a whole instead of as a collection of small parts, and the mastery of it marks a real advance from the position of the infant-mind towards what ought to be the mental position of the full-grown man. By some strange perversion "mass-drawing" has come to mean, in many schools, the representation of an object by starting from a spot in the middle and working a line round and round until the irregular spiral so formed attains something like the size required. This wild doctrine is being preached and practised by numbers of people who are oblivious of the fact that it is an artificial method (for no child naturally draws so), and that it is contrary to our experience of the way in which the sensation of sight is conveyed to the mind. Contrast, which gives a certain shock to the optic nerve, makes us look for the cause of it, and contrast occurs at the edge of an object or of a surface, so it is the edge which attracts our attention, and the shape of the edge or boundary leaves its impression upon the mind, and it is this shape which children naturally draw first when left to themselves; the filling-in is done afterwards.

Among the things waiting to be done, one of the most important is the cultivation of the sense of colour, which ought to be taken in hand seriously. It is a great help in the development of the power of comparison, and it stimulates the mind to take delight in all beautiful things. The colour-sense if undeveloped may remain dormant, or may even die of atrophy. This we dare not allow, for under the conditions of modern life we need a strong and healthy colour-sense more than ever.

If the change in the teaching of drawing in our Elementary Schools has been great, the alteration in

Secondary Schools has been no less remarkable. Of course in both types of school there are still many survivals (not of the fittest), but happily they are decreasing. To-day one looks upon the specimens formerly produced in boys' and girls' schools, both public and private, with somewhat the same feelings as are aroused by a collection of mediæval torture-instruments. The flowers, horribly stippled until the faintest flutter of life had fled ; the beasts, barely recognizable, bodies smothered in hair ; the human heads, dried and polished, with glassy eyes set in an endless stare—have we not seen them all, framed and glazed, sharing the place of honour with the trophies of the chase and the tribal totem in the parental dwelling ? From the depths of this ignorance we are happily delivered, but there are still victims, weary spirits sighing for freedom. While there are head masters who look upon drawing as an extra only to be tolerated by taking the time out of play hours, and while there are head mistresses who rule that it is a thing to be taught after dinner when the brain is inactive, we must still work for the deliverance of the oppressed.

In many Secondary Schools the natural development of the child is now the first consideration, and the drawing course is one of the most interesting parts of the whole scheme, but in this respect girls' schools take the lead. A great variety of interests has been utilized, so that there is less danger of methods becoming stereotyped and more chance for the teacher to use his or her own genius to the best advantage. Drawing is not confined to the use of pencil and brush, for it is now realized that to stitch a seam, to weave a basket, or to decorate a pot, is just as truly an exercise in drawing. In all these different ways correct placing, true

direction, and a sense of proportion are developed quite as much as by the representation of objects in line or in colour, and many a child responds eagerly to the call of craftsmanship while quite unmoved by pictorial art. Nor must modelling be forgotten, for it appeals strongly to that love of making things which is born in so many of our children, but which is so often crushed out because the youthful craftsmen make such messes. The building instinct is very strong in boys, and it is amazing to see the eagerness of a young class when asked to make a hut in clay, and it is worth while to compare the quality as well as the quantity of their output with the work they will do in the same time on paper when merely copying objects. As in drawing, so in modelling, teaching does not now aim at technique as the sole consideration; the use and meaning of the thing to be modelled must first be discussed until each pupil has a tolerably clear understanding of the reasons for every step he is going to take. If this be done the result will be seen in the real delight in sound structure shown by the young builders. Many boys also show ingenuity in devising methods of using clay so as to suggest the material, be it stone, wood, plaster, or thatch, most suitable for the building in hand.

Modelling has also the great advantage of actually dealing with three dimensions, and consequently of giving experience in the comparison and estimation of bulk and in the realization of solidity. As experience widens, the critical comparison of different objects becomes more marked, and when the modelled illustration of a scene from life, or from a story, is attempted, the fitting together of the various parts presents an absorbing problem and sets the youngsters to work,

observing, remembering and reasoning in the liveliest way. It is interesting to note how the desire to provide a more complete setting for the scene will sometimes suggest the support of the solidly modelled objects by a background in relief, which shows how vigorously the young mind works when stimulated to activity along natural lines.

The constructional activity of boys which finds a certain outlet in modelling is to some extent balanced by the interest of girls in construction with the needle. Needlecraft is now taught on very different lines from the sewing of old. Large stitches with coloured threads (so that every stitch shows) have taken the place of the small white stitches on a white ground. This is less trying to the eyes, and there is the less need for supervision, since every ill-set stitch cries aloud demanding repentance and reparation. The stitching is not aimless, but is devoted to the making of some article of use so that hemming and seaming have a real value from the first. Variation in the length and direction of alternate stitches produces the effect of pattern, which grows naturally as the article is made and gains greatly in interest as the workmanship improves. So is learned the lesson that good craftsmanship is of itself beautiful, and that added ornament should never outweigh the original construction. After these simple efforts come more complex problems, the making of articles of apparel or of domestic use, and here again by the adaptation of stitches the necessary work provides charming decoration, and the effect is enhanced by the choice of a beautiful colour-scheme. Then follows the making of cords and buttons, patterning of darned work, "patching" as a thing of beauty instead of a blemish, the simple delights of adapting

materials without waste, and of finding unexpected ways of attaining desired ends. In all this the element of choice is ever present with the constant exercise of judgment, and freedom of choice develops individual powers and personal tastes. The use of beautiful colour in common things is also encouraged, so that by oft-repeated experiment the girls may learn the laws that govern it, and thus develop that cultivated taste which wars against all forms of ugliness.

The response to such teaching is wonderful, and there are not wanting instances in which young minds which seemed indifferent to all appeal have opened of their own accord under the influence of the beauty born of craftsmanship.

Basketry is another craft which is being used to attain the same end. Here too there is great scope for judgment in the choice of weave, of shape, of pattern, and of colour. There is the same need of steady control and of persistent effort, and, in the end, the same delight in the thing made because it fulfils its purpose and fulfils it beautifully.

For both boys and girls the drawing of natural forms and of objects of use has generally superseded drawing from copies and from geometric models, while memory-drawing is gradually taking its rightful place. Object-drawing progresses from the single object to the group, and from groups to their surroundings, and so to the chief parts of rooms and of houses. This leads to more important constructional work and so towards an intelligent interest in architecture. This particular goal is also approached in many boys' schools by way of measured drawing. From very ordinary beginnings the boys pass to drawings of simple furniture, joiner's work and iron-work, and so to parts of

buildings. This affords further proof of the need for cultivating a complete grasp of the matter in hand, so that every part may bear its due relation to the whole.

Geometrical work also serves another purpose, for though used largely to induce habits of neatness and accuracy it has been turned to account as an aid to the teaching of colour. By using the simplest forms, and colouring the alternate spaces, the sense of pattern is produced, and from this, by encouraging experiment and by showing the comparative effect of various colours when placed together, boys can be encouraged to give free play to their real feeling for colour, and they will produce effects as varied as they are beautiful. Beginning with nothing more than red and blue, a class of some twenty, after quite a short time of practice, has been known to produce a set of drawings of great richness and variety, with no two alike and with not a bad one among them.

Another notable feature is the teaching of lettering. The decay of good handwriting on the one hand, and on the other the need of good lettering for both public and private purposes, has caused a reaction in favour of a clear and well-formed script, so that there has been quite a renaissance in this direction. Since it is but right that beautiful thoughts should be expressed in beautiful words, it is equally fitting that the visible form of the words should be equally beautiful, and if we read the finest literature in our schools to cultivate high thought and fitting language, the teacher of drawing is fully justified in teaching the use of fine lettering. Many hundreds of young people are learning to despise the abominable scrawls which disgrace our note-books and make our letters an offence to our friends, and though at first the effort to produce a clear and

worthy script is slow, yet it has been shown that with practice a finely-formed and delightfully clear script can be produced as swiftly as a hasty and illegible scribble.

Drawing in a good Secondary School to-day means an appeal to the mind through the eye (always the readiest way), the natural development of observation, memory and reasoning power, and the ultimate formation of a sound judgment. It means also a keen interest in and appreciation of all natural structure and of the beauty that springs from it, as well as delight in all good craftsmanship and honest effort.

If there is indeed a "new teaching" of drawing in Elementary and Secondary Schools it would be strange indeed if Schools of Art had no share in it. Of late it has been rather the fashion to deride our Schools of Art, and to speak of them as though they were in utter darkness, yet the truth is that most of the movements for the better and livelier teaching of drawing, of design, and of craftsmanship, have had their origin in these same schools. Even the very critics themselves have in many cases owed their own enlightenment to the schools they take such pleasure in decrying.

The great cause of the trouble was the old method of administration, whereby the unhappy Art Master was compelled to earn the grant for the maintenance of the school by preparing the greatest possible number of students for examinations of a fixed type, and by producing as many "works" of a certain standard as could be completed in one year. The Art Master of individuality had to revolt or become a fossil! Happily all this is a thing of the past. If a master has ideas he is now free to work them out, and as a result the teaching in many Schools of Art is full of life and energy.

The key-note of the old teaching was laborious reproduction. Everything was copied. Ornament was copied, models were copied, the human figure was copied, designs were copied. When the student had made so many copies that he instinctively reproduced the things he had copied so often, his training was complete. This blind copying was the fruitful parent of all sorts of errors. It did not even produce accuracy, for the mind of the student, intent on reproducing details, failed to grasp his subject as a whole, and so he became a kind of artistic Peter Pan, for he continued to see things with the child's eye and never grew up.

The key-note of the best teaching to-day is the development of the mind of the student, so that not only shall his powers be trained but he himself shall be inspired to put forth the very best that is in him. To this end he is encouraged to seek for and to discover the reasons for all he sees and for all that he is asked to do, so that, with full understanding of his object and of the means of attaining it, he may exert his whole force without haste and without waste.

Formerly the student's first efforts were directed to copying a piece of flat ornament and a group of geometric models. Careful instruction was given as to the readiest way of making the copy, but such instruction inevitably degenerated into the giving of recipes or formulæ. Now the same student is given a plant or other natural form which he is encouraged to examine so that he may understand its habit of growth, its structure, and the use and meaning of its parts; then, linking together his mental notes, he builds up the plant, making it grow as it ought and seeking to give it the same qualities as had excited his interest and admiration. Criticism on his work is not now a mere

command to alter this or that, to lengthen here or to shorten there, but it is rather an inquiry as to the reason for these differences, followed by a further examination of the subject, until the student grasps the full meaning of what he sees and thereafter draws it rightly. If the subject be a group of articles of common use there will be first an inquiry into the intention of the maker and his reasons for so making them. The limitations of the material will be considered, and after these the particular aspect of each article due to its position. Finally comes the relation of all the articles to each other and to the mass formed by them all as a group. Analysis first and then synthesis, with the emphasis upon the latter.

Passing to the more advanced work, drawing from Life is being taught on newer and far better lines than formerly. For many years there was but one recognized way of approach to the Life-class, and that was by prolonged study of the Antique. This method tended to produce painstaking students but not artists. Drawing from the Antique was a matter of incessant measurement and of intensely careful copying of surface forms, but not a question of movement and balance and of structure treated as a means to an end. The student fresh from the Antique school found the living figure perplexing, elusive, and very unlike all that he had become used to. Often, too, he realized that he had lost his old freshness and that nothing could recall it.

The remedy is found in a return to a more natural manner. If a boy says, "I want to draw people," the reply is, "Then, draw them." Starting with such knowledge as he has, the boy draws figures, living people doing this and that, with spirit and energy. Becoming

conscious of mistakes and of gaps in his knowledge, he is set to look for the truth and to fill the gaps. From the first he seeks for natural action, he learns to balance his figures truly, and instead of becoming jaded he grows keener, more critical, but with ever-increasing command of his subject, his materials, and himself. Instead of confining Life-drawing to the copy of a model in a rigid pose there is now a movement in favour of drawing from the moving figure. The difference is enormous, for the student realizes what movement actually looks like and how it can be suggested, while the teacher realizes the utter fallacy of a fixed pose purporting to represent action.

The teaching of Design also has changed utterly. The old idea of basing everything on the fitting of a plant into a set space has given place to an intelligent understanding of what decoration really means. Better still, the student is taught to derive his rules from experiment instead of accepting them ready-made. The decorator learns where and when to use effects that are restful or stimulating, neither shackled by timidity nor betrayed by ignorant rashness. The weaver learns to produce sobriety or brilliance, richness or delicacy, and to make a few colours do the work of many. The calico-printer is taught how to plan his patterns to suit the different races who will use them, and so to master the use of colour that he can vary his patterns in a dozen different ways without loss of harmony and without waste. The wood-carver is helped to discover how best to add beauty to his wood and to bring a fresh charm into both building and furniture. In like manner the metal-worker, the printer, the lithographer, the embroideress, and the dress-designer, learn not only the methods of their

craft but the true object of their work. In every case the possibilities of the material are first considered, then the end in view and the best way to reach it.

Instead of praising wasteful elaboration the new teaching exalts sound workmanship with simplicity. Just so much decoration as shows the joy of the workman in his work, and makes the best of the materials, and brings brightness into dull places—that is the new ideal, not yet sought by all, but pursued eagerly by those to whom Art is a precious part of our national life, not to be sacrificed without irreparable loss.

Whether it be in the Elementary, the Secondary, or the Art School, the new teaching is based on the close relation between the physical and the spiritual sides of life. Since we see with our eyes let us also understand with our hearts, so that we may delight in beauty rather than in ugliness; for if the bodily eye learns to delight in things that are pure and simple and true the eyes of the spirit will be opened to see them too.

CHAPTER XI

HANDWORK

By GEORGE F. JOHNSON, M.A.

Before proceeding to animadvert on the teaching of handwork in the future it will be well to consider first a general brief review of its tendencies in the past. The employment of practical means by the use of various material had been advocated from the time of the very early philosophers down to those more specifically drawn towards education, like Pestalozzi, Comenius, Froebel, and others. It was practised, in an insidious manner, in this country by men who believed in "learning by doing" until it became more generally known, when it was styled "technical" education, and received some amount of public recognition from the Education Department of twenty or thirty years ago. From this humble beginning as technical instruction it developed more generally, and was styled manual instruction or manual training; by these appellations it remained known and recognized, until a few years ago the Board of Education rechristened it "Handicraft." It may not appear obvious to all, but there is a significance in each of these titles to the work comparable to the attitude of mind at the time, and expressing a development of thought embodied in the work as carried on under each of its separate names. To begin with, technical

instruction—its earliest name—was a mere groping for something better; it was not technical instruction in that it was not preparing a boy for a technical pursuit, but it was at that time thought to be useful for a boy of twelve years to know how to handle tools, and in so far it was technical in its teaching. But that was not the idea, because it aimed at something more than teaching a boy the use of tools in conjunction with wood; it meant to train a boy's hands so that he might be a better builder, or engineer, and so it developed into manual training or manual instruction. This was subsequently found to be deficient in expressing the real idea of the work, for its purpose had attained a higher significance than a mere training of hand, and perhaps eye as well, though that was not included in the title. However, "handicraft" appeared in the "code," and manual instruction disappeared. Certainly this new term was less specific, but it did no more than the previous title to express the ideas held by those chiefly responsible for the progress of this aspect of educational work. So we arrive at the generic term "educational handwork," embracing all activities with materials in our schools from kindergarten onwards. At the same time, throughout this developmental process in regard to handwork (or handicraft) for older boys—that is, from twelve to fourteen years in the Elementary School—various attempts were made to introduce handwork for younger children such as "Varied Occupations," cardboard modelling, paper folding, and the like. These had but fleeting popularity due largely to the narrow conception held by those who attempted to teach them; it was hand and eye training, and little more was attempted, largely because nothing more than this

was conceived in its value. However, an impetus was given by a Commission of Enquiry by the Board of Education, which toured the country and endeavoured to find in the handwork some values over and above the mere manipulation of tools and material and the training of hand and eye. The educational values were being observed with a clearer perception; and manual instruction of the older boys, together with hand and eye training of their juniors, were giving place to handwork which had educational purpose over and above that of training. It was seen that by teaching a child to fold paper he could be taught something beyond mere manipulative folding, as, for instance, that two halves or four quarters were equivalent to the whole; that a planed piece of wood could be utilized for the experimental acquisition of scientific truths in mechanics, to wit, levers, moments, etc. This, then, is something of the condition in which handwork teaching is to be found in a few of the more up-to-date schools to-day; some there be that adopt the higher type of educational handwork, but the vast majority adhere mainly to its subjective values rather than its objective ones. It has been found that nothing is lost, but that everything is to be gained by employing handwork as a means to an end rather than as an end only in itself; Pestalozzi recognized this, for he said: "Man must not merely learn first and then do; but seek to learn by what he does." Let two examples suffice to illustrate this principle, for it is vital in its bearing on the new teaching that must inevitably come into vogue in the near future.

The dominant attribute of human mind is "purpose" or motive, and the natural attitude is to work

towards ends which appeal to the worker as necessary. The interests of the child are now more frequently consulted, and tangible practicable problems are presented to him. It is therefore interesting to compare the following cases which came within the writer's experience, and clearly show the difference between past and prospective practice. Two boys were attending different manual instruction centres in charge of different instructors; both boys were about twelve years of age, and came from homes in poor neighbourhoods—one boy was barefooted.

Boy A. B. was busy one day making a tooth-brush rack to hold two tooth-brushes; the model had to be made $6\frac{1}{2}$ in. long, $2\frac{1}{4}$ in. wide and $\frac{3}{8}$ in. thick. The wood which had to be employed was yellow pine. The boy was asked why he was making this particular model, and he replied: "Because it is No. 9"—he had finished No. 8, apparently with satisfaction. Asked why he used yellow pine, he answered: "Because the teacher told me to do so." On turning to the teacher for his observations, he agreed that the boy's statements were substantially correct. When questioned as to why such a model was being made, his explanation was that the "new exercise"—that is, the new tool operation—was the making of a square mortice from a bored round hole—to hang the model up!

It will be observed that there was no *child's* purpose in the model, nothing from which he could derive any interest other than the pleasure of "making something." This boy had certainly no personal interest in or need for a tooth-brush rack—as he had no boots on his feet it is highly improbable that he would have a tooth-brush, much less two brushes. If there arises a need for a tooth-brush rack, let the resulting model be such

a one as will fulfil the needs of the demand. Either a boy desires a rack for his own personal need, or he desires to supply a family need ; in one case, the rack should be made to hold one brush, and, in the other, sufficient spaces should be made to accommodate the brushes of the family. This, of course, assumes that the need or motive for such a model arises from the boy. When the model is stereotyped in a rigid scheme, the need does not appear to be felt ; it is not personal or altruistic, but forced on him from without for little more reason than that it is model number so and so. No choice was left to him ; size, timber, method of construction had all been pre-arranged, and he was simply to act as machine-like as his nature would allow. Contrast this case with the following—

Boy C. D. was absorbed in making a toy engine, chiefly from materials he brought with him to the manual instruction centre. They consisted of a small coffee tin with a lever lid, a cigarette-tin lid, and several pieces of wire. The boy was observed for several lessons, and though the model when finished was not particularly elegant it would *work*, and gave the boy a lead that he might, and eventually did, follow later on. Two tin supports were soldered to the sides of the tin, and holes punctured to take the wire, which was to serve as a spindle. The lid of the cigarette tin was crimped by snipping and bending to serve as a turbine, and three wire legs were soldered to the body of the boiler. A small hole was punched in the top of the boiler for the steam to escape and impinge on the crimped edge of the turbine. A tooth-powder tin with a hole punched in the lid served as a spirit lamp with shredded rag for a wick. This was the first attempt, and many mistakes were to be improved upon later.

The boy was quite aware of the following points on the completion of the first engine.

(i) That the spirit lamp needed a small hole in the top to allow for expansion of gas in the tin—this by experience.

(ii) That some other method of supporting the boiler than by soldering wire legs to the body should be found—this also by bitter experience.

(iii) That a piece of fine tubing fitted into the boiler top would be better than a hole punched with a nail.

(iv) That a wooden pulley fixed to the spindle would drive another small model.

In conversation with this boy it was suggested to him that by arranging the lid of the tin as the boiler top instead of the bottom, the lid would blow off if an over-pressure of steam had been developed. To this was received the rebuking reply, "Please, sir, the lid will blow down as easily as up, and the water from the boiler will put the lamp out." In this simple idea the boy had re-invented the fusible plug now found in the boilers of our liners and battleships. So far as possible the attitude of the boy towards his work should be either that of solving a problem or working out a difficulty which will eventually lead him to the knowledge of some truth, the working out and establishment of some principle, or the illustration of the subject-matter of one of his school lessons.

This, then, must be the "spirit of life" breathed into all the handwork teaching of to-morrow. The modification of that spirit to suit individuals and classes of children is all that is necessary; the leading, encouraging and directing characters of the teacher will each and all find their place in his work.

The conclusion has now been arrived at that hand-

work has for its fundamental principles mainly two complementary attributes, viz.: (1) progressive activity for developmental functioning, and (2) the acquisition of skill in the use of tools and material in order to foster adaptability and resource. It cannot be doubted that the former offers great opportunities in the methods of the skilful teacher for materially assisting in the *mental* development of his pupils; neither can it be denied that the latter possesses advantages for *manual* development. It is very largely a matter of balancing the values according to the purview of the teacher and the ages of the children under instruction. The outlook of the individual teacher is very largely guided and moulded in practice by the authorities governing his work; as these are adults with powers to think and decide for themselves, argument is the means to be pursued in demonstrating improved methods. In the case of the child, he has very largely to be prescribed for; at any rate, the methods in the teaching vary, and quite rationally, with his age. Now it is conceded that in general the child's development is from general to particular, from mass to detail, from fundamental to accessory. As he grows older he begins to specialize in his own small way; there is the "motor" child and the "sensor" child, the boisterous and the pensive, the budding mechanic and the precocious boy-philosopher. Then it is for those in power so to arrange the methods that they will assist in the natural development of all that is best in the child's nature, and repress what may appear evil; to foster the *general* development first, and later on to help forward a *particular* embryonic power which may be observed. So that when the child is of tender years, forced flowers and fruit of mentality must be discouraged, and a general body of mental

stamina built up, in order that some day there may be better and larger blossoms from the same plant. A time will surely come when the latent genius will manifest itself; should it be allowed to develop too early, it will be comparable only to the seeds sown by the wayside. This, then, is the argument for general handwork first, and particular handwork later on.

In the kindergarten and junior classes of the Elementary Schools the handwork is, and must always be, general. In the senior classes of the Elementary Schools, in the Secondary Schools and in junior vocational school courses, the methods will be such that, while helping always towards general mental development, they gradually approach nearer the standard, both in method and technique, of the workshop or the university; in the actual trade-school proper the methods should be as little removed from those of the workshop as is practicable.

The main part of the handwork in the kindergarten will consist of simple manipulative operations in paper, cardboard, string, raffia, wire, bobbins, boxes, tins, and the thousand and one "odds and ends" which form the improvisations of a child of tender years. The imagination vastly helps the little one to see in a rolled-up duster "her very own baby"; in an upturned chair a motor, or cart, such as may be woven with threads of fantasy (to adults), but "very real" to the child. It is therefore necessary to deal sympathetically and provide the material, both actual and spiritual, for the unfolding of the character. Ample and varied must be the kind, and freedom, within practicable limits of large classes, accorded for the exercise of individuality. Technical accuracy must not be entertained as an element in the teaching of young children, but a steady and kindly suggestive method adopted, that each

of the little ones may be led to believe that he or she can do much better work than that shown. This will usually lead to the gradual establishment of a higher standard each month and year until, when the senior school stage is reached, it will have become habitual. And what is equally important is the gradual progression from general manipulative to specific accuracy, in accordance with the fundamentals of child development. Watchfulness and care are necessary to see that there *is* improvement in the actual handwork of each child, otherwise a low standard of execution becomes permanently established, and the secondary value of handwork —acquisition of skill—very much impaired, to say nothing of the ethical and moral influence of always passing poor and mediocre work.

As the age and ability of children increase, so do the difficulties of manipulation and resistance of the materials employed. Paper, cardboard, wood, metal, roughly indicate the progression in use of materials, with, of course, various other media fitting in between and alongside. Also it will be observed that the tools employed in each case are heavier, and require more skill and strength in their use; the scissors, knife, saw and plane, the file and hammer indicate the necessity for increased physical ability. The handwork for the juniors fits consequently between paper and metal. But be it understood that in any stage *any* material is to be used so long as it is the best obtainable to fulfil the purpose—paper in the upper sections, metal in the kindergarten, if needs be. There must be no rigid "scheme" of work but a scheme of "principles" laid down, from which choice may be made either by pupil or teacher—in fine, it must of necessity resolve itself into individual effort.

The character of the work at this period will be limited if the organization is not improved. There must be a room in every school set apart for practical work (indeed, every class-room ought to be a practical-work room), and the organization of the school made such that every class is free to use it to its maximum ; this is in addition to the handicraft-room equipped for the senior boys, that is, from eleven to fourteen years. All forms of handwork should be catered for and the necessary equipment provided for the use of paper, cardboard, plastic stuffs, light wood, veneer, raffia, cane and such other materials as gradually find a supplementary place, such as wire, string, tin, twigs, boxes, canisters and what-not. A reasonable number of pupils under one teacher at this stage is twenty-five ; if there are more than this number, the work, which should be largely individual in character, cannot possibly be effectively supervised, for be it remembered that *education* is our aim, and *instruction* a part only of the method employed in the attainment of that aim. If, of course, the class is smaller so much the better for the education of those in it.

Tables and chairs should be provided instead of desks, and these should be of such a height as to be comfortable for the children to sit at, and sufficiently strong and heavy to prevent undue movement when in use. A small vice should be fixed to each table, which should be about 5 ft. long and 2 ft. wide. There should also be two drawers in each table to contain the individual equipment, provided some arrangement for compartments is made so that each tool may have its place in the drawer. Tools for general use should be arranged in racks on the walls, or a cupboard provided in which they may be kept

conveniently and readily accessible when required. A small bench, on which simple metal and other accessory materials may be used, should be fixed to a convenient wall; a metal-work vice, a glue-pot, a bunsen ring and soldering stove should also be arranged for on this bench, with all necessary tools held in a rack on the wall in front of it.

It will be observed that no rigid scheme has been laid down and no set pieces prescribed; in fact, they should not be permitted. Lay out a general basis of procedure in accordance with the spirit of the principles previously enunciated, and work this out as a guide, and do not be enslaved by a scheme of models. Particularly at the present juncture would it be inadvisable to draw up stereotyped schemes for all schools. By such a procedure the conviction of individual teachers, their initiative and free expression would possibly be violated, or at any rate repressed, and this is not in the interests of progress. At the same time, a general plan or typical scheme drafted on sound educational principles should suffice to develop, according to the various needs of local circumstances, the best points which rigidity would tend to repress—the individuality of the school and originality of treatment in this department of a school's activities. There are certain accepted canons of handwork teaching that should never be violated—these should form the fixed basis for practice in all schools. Further, there are certain minor matters pertaining to these canons wherein deviation from the common line of practice may be permitted and to some extent encouraged. For it is far better educationally that a teacher work out in faith and conviction his own principles, than that he should attempt to work out with doubts and

misgivings the convictions of some one else; that is, provided he is not breaking the fundamental canons of the educational faith.

In the earlier stages of child-development it is observed that ends and means are very near to one another, that is, the result of action is not far removed from the action itself. At this junior stage, the child can reasonably be expected to work at objects whose ends are more remote, or farther removed from the actions. Though this is undoubtedly true, too great a demand should not be made on the child's patience and perseverance at first; to this end work which can be completed within a reasonable time—dependent upon the age and capacity of the child—should as a general rule be required. As he develops in years and capacity, this period will become more attenuated. In addition to this, the moral influence of having completed a model in reasonable time will have the effect of cultivating a sense of power and mastery in the work. There are children whose patience and perseverance will hold out longer than others; usually the length of time increases as the child grows older. In these circumstances it is impossible to fix a time limit or a capacity limit which would be suitable for all alike. The teacher's intimate knowledge of his pupil will guide him in the exercise of discretionary powers.

The question of accuracy and disciplinary work in this stage should be carefully watched; for, as pupils are intermediate between the kindergarten and senior sections, so the increased accuracy and skill demanded should be intermediate also. There should, therefore, be greater accuracy and skill required in all the work, and a general levelling-up of the standard of execu-

tion; it must not be inferred from this that there is to be less free-expression work—on the contrary, as power and skill grow under this treatment so also will the power to express freely. Gradually work out a "sliding scale" of skill and accuracy leading from the kindergarten towards the senior classes.

Some indication of the kind of work expected of boys in the senior classes has been given in the earlier part of this chapter. Here again it may be pointed out that it is largely a matter of the spirit in which the teaching is conducted. There are teachers who believe and practise the "tell and show" method, while others practise a "go as you please" attitude. Neither method is ideal; a combination of all is the best, with modifications to suit the individual temperaments of the pupils.

The use of tools should be introduced as gradually and rationally as circumstances will permit, but boys should not be given long set lessons on the tools until they understand their practical use. A boy should be allowed to choose his tools for the different processes of his work—within limits, of course—and if he attempts a grossly wrong application, the principle should be pointed out as a general and fundamental one, to the whole class and a demonstration given on its correct application. This need not necessitate a long discourse, but a talk of a few minutes, and the teacher will feel that the class is well in hand and making progress. An intelligent knowledge of the tools and materials is necessary, and a thoughtful teacher will see that this is attained. Lessons will certainly have to be given on the construction of tools and the various processes of rendering wood and metal serviceable for use.

One matter at this stage will certainly have to be dealt with in the future; and that is, there will have to be more inventive and constructive model-making than at present. Attempts are being made to meet this difficulty, but there is still too much copying from books and periodicals. This is better than old rigid schemes, but still the boy in many cases is not being allowed to experiment and devise for himself—there is too great a fear of spoiling material and having nothing to show when lessons are over. Would that there were a greater reliance on the doctrine of "casting bread upon the waters." There would be far more knitting of brows, scratching of heads, and tenseness of thought if it were so. Undoubtedly, boys delight in something that will "go" or "work," and advantage should be taken of this propensity. Apart from the fact that it is interesting work and enjoyed by the boys, it possesses advantages in that it provides tremendous scope for the exercise of ingenuity and the varied application of constructive principles; it also has the advantage of drawing forth the constant maximum effort with minimum of external stimulus. From the economical point of view it is also advantageous, as there is usually a large amount of effort and practical work exerted on a relatively small quantity of material.

One difficulty to be faced is the relation of the heavy handwork—wood and metal—to the rest of the school curriculum. In the future the "centre" will have to go, and every school will have its senior as well as its junior handicraft-room; where there is already a senior handwork-room on the school premises, and the teacher a member of the staff, little difficulty need be experienced so long as the head

teacher and the instructor are in sympathy, and have the right ideals. In that case *real* correlation of handicraft and science, mathematics, and other school subjects would be comparatively simple. But where boys from several schools attend a manual instruction centre for one half-day per week, the difficulties are much more complicated. At any rate, a step in the right direction can be made by the cordial co-operation of school and centre, and by frequent exchange of visits and views on the work. Before this can be brought about much prejudice and even suspicion will have to be overcome.

This chapter would not be complete without reference to the subject of drawing in relation to handicraft. The natural mode of expression for a boy is by sketch ; what is called a rough working sketch should consist in a general view of the model, with dimensions and side-notes to indicate material and methods of construction ; it should be sufficient for even a stranger to work by. The workman-like methods of the engineer and builder show things in orthographic projection ; this is the artificial mode of expression. In order, therefore, to link up the natural with the artificial, oblique and isometric projection should be employed. They consist of mechanical representations of what a boy draws naturally ; they introduce the use of drawing instruments and so pave the way for orthographic projection. When these steps have been completed, then it is open to each boy to select whichever method best illustrates his proposed work ; it should be borne in mind, however, that a working sketch is every bit as useful and purposive as the more elaborate drawings, but a boy should not be permitted continually to employ one mode of ex-

pression, rather let him ring the changes on all three.

A boy of thirteen years, having completed a two-years' course of handicraft in wood and metal on the lines suggested in the foregoing remarks, will be more or less ready to begin his preparation for the vocational school course. It should be distinctly understood, however, that the following course is in no way a preparation for a particular trade, but a means of approach to the trade—or the vocational—school where such teaching is professedly carried on. At any rate, an experiment has been carried out recently, and very favourable results, so far as can be judged at present, have been obtained. During the final school year of the Elementary Schoolboy, *i. e.* from thirteen to fourteen, half of each week was spent at the manual instruction centre and half the week at his school. Two classes were running at the centre, one class attending each half week in five consecutive half-day periods, while the other class spent this time at its own school; the second half of the week was just reversed. Slight modifications were made at school to minimize the loss on the literary side of the work, while the work of the centre was divided roughly into the following—

Time Table.—CLASS A.

	Morning 9-12.	*Afternoon* 1.30 to 4.
Mon.	Practical Mathematics and Drawing.	Woodwork.
Tues.	Science Models.	Science: Machine Construction.
Wed.	Metalwork Room.	Class Work at School.
Thur.	Class Work at School.	" "
Frid.	" "	" "

In regard to the curriculum, the Practical Work both in wood and metal was more intensive and nearer the trade processes than formerly, but not strictly

so ; it included, besides the making of useful models, definite instruction in joints and other principles of constructive work either separate from or in conjunction with some model. The range of possible avenues to a life's work is thereby considerably increased, as there are all the "side" trades cognate to wood-work and metal-work. Advanced Drawing includes geometry and machine construction, and the application of the principles of drawing to patterns and developments of hollow objects in the three dimensions. Lessons in Mechanics, Mathematics, and such other Physical Science as can be made applicable to handicraft were included in order to establish a real link between theoretical and practical science—one being complementary and supplementary to the other. Such truths and principles as the following have been undertaken—bunsen burner, production of sound and noise, a compression and extension spring, etc., and varied models made to exemplify the principle under experimentation. In the Practical Mathematics rules and formulæ were investigated and inferences drawn and noted. So far as possible the work was of an experimental nature and therefore slow ; it was conducted under the guidance of a good teacher, who saw that time was not wasted on unduly prolonged experimental work.

No difficulty was experienced in getting boys to volunteer for this course, and indeed at the close they were so enthusiastic in the work that they requested an extension of the course by another six months ; this is now going on as satisfactorily as before. By an advisory, eliminative process, boys unsuited to this kind of eventual occupation would be warned and advised, and later weeded out of the classes. The

elimination at this stage in a boy's career (between thirteen and fourteen) is not fraught with those social and economic difficulties which arise later on, when it is usually too late to shape square pegs to fit round holes. On the other hand, those boys who showed promise in any special direction could be advised as to the future with greater certainty. Although the aim is not to train a boy for a special occupation but to give him such a general training in dexterity, adaptability, etc., as would fit him for any one or more when the opportunity arose, still employers and others could be supplied with more suitable candidates for the various trades. And even if a boy did not eventually continue in a direct trade line after following this "intensive" course, he would doubtless be none the worse for his experience.

One cannot close this chapter without some remarks on the training of the teacher of handwork. For the class of work conducted in the juniors' divisions, no very great skill is required, but the method of teaching and the practical processes of the work ought certainly to be undertaken by all students in the Training Colleges. This is a lamentable weakness in the majority of our Training Colleges, and one that should be drastically amended. One knows that *some* handwork is taken in these institutions, but with what effect? Usually that the students despise the whole subject. Now a teacher's function is to teach, to educate; but it is doubtful whether the Training College student gets enough professional training during his college career—he gets a surfeit of mathematics, history, and geography, etc., of a sort, but he spends the major portion of his time in stuffing facts away for examination purposes rather than learning the arts of his profession. In this

period there should be an adequate allotment of time to the pedagogics of handwork and necessary practice in the tools and materials of the work, and the student be well versed in the "why and wherefore" of the methods employed.

It is to be regretted that there is not one of our Training Colleges or Universities which caters for a teacher drawn more particularly towards the teaching of practical subjects. When so much is being said at the present time regarding educational reform, and the shortage of teachers is a grave menace to the future development of education, is it not time that the Universities took the matter in hand and offered a diploma or degree course in education in general and handwork in particular? The demand for adequately trained and educated men is great at present, and it will be even greater when developments are afoot in the future, and the supply is nil. True, there are a few coming into this work, but they are sadly ill-prepared; artisans chiefly, good workmen at their trades, but quite ignorant of teaching and the management of boys. Can nothing be done for these men to give them a decent start in their new work by attendance at a University in the evenings, or part time, or better still, whole time for one or two years? This is only palliating; a remedy is wanted, and to obtain this a satisfactory training course will have to be devised. There is also the advanced training in practical subjects for men who will eventually be employed in the pre-vocational and vocational schools, so that a further period of training would have to be undertaken by those wishing to engage in this advanced instruction.

The remedy could be effected by requiring students

to attend full time for a one- or two-year course at the Training College or University, where a corresponding diploma is awarded. It must be of a high rank and standard, and worth the time and cost expended in obtaining it. Later on, the period of training should be increased, so that a student must spend at least two years in qualifying for the diploma. Now though this is intended as a diploma in handwork and its teaching, it must not be concluded that only handwork is to be studied during the training; it should be a general cultural course with specialization in training. If it is necessary for a cookery teacher, *a fortiori*, it must be an essential for the handicraft teacher.

In conclusion, a wide survey of the whole subject should be made, and the problem treated in a manner worthy of the great cause signified by the term liberal education.

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CHAPTER XII

PHYSICAL TRAINING

By GUY M. CAMPBELL, F.C.T.B., F R.G.S.

Parents if asked, "Why do you educate your children?" would probably reply, "To fit and equip them to take their place in the world as active, useful men and women."

And, though the principle of "Mens sana in corpore sano" is being more and more generally accepted, and the necessity for a national system is emphasized in Mr. Fisher's Education Bill, its actual application as a matter of the most vital importance in every home throughout our Empire is not yet properly recognized. With very many physical training is still regarded in the same light as voluntary rationing, an excellent subject to talk and platitudinize about, but not a matter that directly concerns each individual father and mother. The lesson that history has taught over and over again, viz. that neglect of physical training has caused empire after empire to dwindle, crumble and finally fall to pieces is forgotten in the scramble "to get rich quick." But to do this with even moderate success health is necessary. Day by day we see "men to whom labour is life, and illness is death, men who devote themselves to great purposes and great works, men who run the life-race with feet winged with the purest hope, and who, with the goal in view, falter and fail; all for the want of a little bodily stamina, a little

bodily power and bodily capacity for the endurance of fatigue, or anxiety, or disappointment." How many men, earnest, eager, uncomplaining, are pursuing their avocations with the imminency of a certain breakdown ever before them, when health and full power might have been secured, if, while cultivating the mind, a regular time for systematic, rational exercise had also had its place in the daily round. For want of exercise appetite fails, energy flags, sleep — nature's great restorer—is lost, and the whole system gets out of gear.

There is no profession, no occupation, no position in life in which a normally developed frame will not be valuable; even to the most highly intellectual man it is essential to success.

We want neither the book-worm, music-box nor acrobat. Exclusive culture of either mind or body is a deplorable error. Mind and body must be viewed as the two well-fitting halves of a perfect whole designed mutually to sustain and support each other, and each worthy of our unstinted care and attention. "No man would dream of yoking two oxen to pull against each other, but man very frequently does forget to see that the burden allotted to the team of mind and body is fairly adjusted."

Properly regulated exercise bears directly upon the functional systems of the body, and especially upon those important structures which contain the vital organs and on whose full development the health and functional ability must greatly depend through life. Such exercise will enable a man to prolong and sustain his labours with safety to himself and increased value to his fellow-men. This culture must, however, be obtained *in youth*, while the body is growing, while all

is plastic, changing and capable of being changed. This is the time for all cultures, mental and physical, and most emphatically so for the latter.

Exercise is of two kinds, recreative and educational. To the first belong all school games, sports and pastimes; a long and varied list upon which every Englishman looks with pride and affection, for they mould characters as well as the frames of our youths. The influence of national games upon the national character is valuable beyond computation; nothing could take their place, nothing could atone for their loss.

But, valuable as these exercises are, it will be at once seen that not one of them has for object the systematical development of the body; the skill, the art is the first consideration. And in this, as purely recreative exercises, lies their chief value, the forgetfulness of self, the game being all-in-all.

Out of this great good arises a defect: the movements of such exercises are executed by those parts of the body which can do them best, *not those which need* employment most. Consider football, cricket, rowing, racquets, tennis, fives, walking, running and jumping, and it will be found that the lower limbs and right arm have the lion's share of the work. It is distinctly apparent to every eye that these, our national recreative exercises, develop the lower half of the body to the neglect of the upper. While the lower limbs are usually large and not infrequently massive, the thoracic region and upper limbs are usually small and imperfectly developed, in fact years behind the lower limbs in all hat constitutes growth and development.

Recreative exercises alone, then, cannot produce uniform and harmonious development, because the

employment given to the body is only partial, and the neglected parts will be far behind the others in strength, activity, dexterity and endurance; hence the necessity of a national system of educational exercises such as graduated gymnastic exercises, swimming, etc. But this important principle in exercise must never be forgotten. "Exercise must be regulated by individual fitness, must be approached gradually and increased only with increasing strength," for the exercise that scarcely amounts to exertion in one person will be injurious and dangerous to another. Proper supervision is therefore also a necessity. What would be thought of that teacher, who because a boy or girl was quick and capable left them to their own resources and inclination? Yet we hear people saying, "All exercises should be voluntary, should be left entirely to a boy's own choice and disposition." Do we allow him the same licence with his diet, his hours of rest, his study? The developed capacity of the untrained body is as far from the symmetry and strength to which it may attain with proper training and under supervision as the clever, self-taught man from what he would have been with thorough professional instruction. Just as the strength of a chain is only equal to its weakest link, and this weak link is overlooked until its failure, so will the flaw in the weak part of the human body remain undiscovered until the time of trial.

The object, then, to be aimed at in a national system of physical training is that the system shall be gradual, uniform, progressive, a continued rise from the first exercise to the last, and it must also be varied and interesting. Such a stimulating effect should be produced as to make every boy and girl feel the necessity of keeping physically fit through life, and not regard

the cessation of physical exercises at the close of school life as a happy release.

At the present time two systems principally hold the field in this country, the Swedish and the British, although a few words may not be out of place later as to the Müller, Dalcroze and Sandow systems.

The Swedish system is the official system approved by the Board of Education since 1904, and it is also used as the basis of the physical training in the Army nd Navy, but it lacks the essentials necessary to be truly national on the lines spoken of in a previous paragraph.

The Board of Education claim their adhesion to and approval of the Swedish system was "in consequence of the Report of an Interdepartmental Committee appointed by the Board jointly with the Scotch Education Department."

This is all the more curious as the Royal Commission on Physical Training of 1903 in their Report, Section 176, state : "The Swedish System, admirable in theory and nearly perfect in its adaptation of certain exercises to attain certain results, is stated to be defective, inasmuch as it is exhausting, and *tends to staleness* if thoroughly carried out, and its *lack of interest and variety* renders it *unsuitable as a system* to be pursued through nine years of school life. But selected exercises from it should form part of a wider and more varied *whole*." Even more striking is the following extract from the report of the Board's own Medical Officer for 1914, p. 189 : "Even its most whole-hearted supporters would admit that the Swedish system has certain shortcomings, and that there remains opportunity for research and experiment with a view to perfecting the exercises, and their application, nor would any one suggest that *this should be the*

beginning and end of all Physical Training. Still, it certainly appears to be the most suitable instrument available to serve as a general basis of training."[1]

This states the case in a nutshell, viz. the Swedish system "appears to be the most suitable instrument available as a general basis of training." Additional suitability from the Board's point of view is presumably the saving of expense, no cost whatever being involved as the children can exercise in their school-rooms or on their playground in their everyday clothing under the direction of the school-teacher. Furthermore, the tables published in the official syllabus are so carefully drawn up as to make it practically impossible for even the meanest intelligence to fail in securing their execution by the children. This is all to the good, but nine years' practising of free movements always given in the same order and built on the same lines becomes deadly monotonous and effectually kills any desire for continuing physical training after leaving school, just the very time when active, stimulating exercise is most needed by the individual. In 1909 the Board became so convinced of this that the teachers were directed to introduce "step marches, dancing and skipping steps and gymnastic games." The teacher was also blamed for being unskilful. This is unfair to the teacher, whose primary purpose is to teach school subjects only. Swedish partisans believe that their system represents the limit of human intelligence, and that outside one narrow text-book there is nothing good. How can a teacher knowing but that system remove its dullness? "How can they who know no variety impart any variety? and how otherwise can dullness be relieved?"

Again, if we analyse the movements we find that

[1] The italics in the quotations above are mine.—G. M. C.

"Swedish trunk movements are too short or too limited." The trunk bends forward or backward or to either side from the upright position and returns to it, or turns from the front to either side and back again, and the movements are usually performed slowly, whereas when a "young person" has had proper preliminary training quick trunk flingings accompanied by deep breathing not only develop the muscles more speedily but are of great benefit to the internal organs.

The exaggerated arching of the chest prevents deep and free inhalation and exhalation. In this connection see p. 265 of the *Gymnastikreglement* for the Danish Army and Navy: "The measure in which the Breathing Exercises should be performed is not always similar; it must be regulated by the state of the breathing: if this is quick owing to the previous exertion, then the breathing must be performed more quickly than when it is steady." We must heartily agree with J. P. Müller, who states: "This advice is quite wrong. When, after exertion, much more air is needed in the lungs, it is in the highest degree desirable, and quite possible too, for the person who has learnt to breathe correctly, to breathe extra deeply and slowly immediately after severe efforts—well knowing it is the best means of steadying and strengthening the heart."

Span bendings, we are told, are to produce a backward arching of the upper dorsal spine, raise the upper ribs and thereby increase the capacity of the thorax. As a matter of fact, this backward arching is unnatural, creates an artificial stiffness, and may easily strain the heart and lungs.

Other examples could be given, but enough has been set forth to show that, though the Swedish system may

be a basis upon which to build a national system, it fails in the following respects—

1. It is too dull and monotonous.
2. It is apt to be dangerous for weak persons.
3. It is ineffectual for strong persons.

The British system, which is an evolution of the German and that of Archibald Maclaren of Oxford, aims at securing the best all-round development of the human frame by creating such an interest in physical training as shall last through life. Hence for collective training, *i.e.* in masses, in addition to free movements, flags, wands, bar-bells, dumb-bells, clubs, rings, etc., are introduced. Individual training is carried out by work on the horizontal bar, vaulting horse, parallels, buck, rings, table, etc. Working on these pieces of apparatus develops courage, self-reliance and initiative, which the exclusive use of mass movements can never produce. The exercises are progressive and easily adaptable to any age and either sex. The use of music for such collective or mass movements as have been thoroughly mastered adds fresh charm and renewed zest. Experience has proved that the practice of the British system appeals to the girls and boys, the women and the men of the nation, and is not discarded when school is left. There is no dullness nor monotony to look back upon with loathing, but ever fresh and more complicated combinations to call forth the skill, strength and activity of full manhood, or interest and keep fit the old. Why, then, is this system not the national one? What are its defects?

First—expense.

Second—the ordinary school-teacher has not the time to acquire the requisite knowledge.

The expense is an exaggerated bogey. There is no

necessity to fit up a complete gymnasium in every Elementary School. Begin with purchasing one thing at a time ; for example, wands the first year, dumb-bells the second, and so on. For fixed apparatus, build a gymnasium for a district or a municipality, and have the children taken there once a week or once a fortnight, as is done in schools where swimming is taught.

In the United States and Switzerland the gymnasium is not only a physical centre, it is a social centre. Physical and social meetings of all kinds are held there. In Germany the *Gymnasiarch*, or Director of Physical Training, ranks next to the Mayor.

To learn how our American cousins realize the importance of making the gymnasium a real, live centre for the community, go and visit the splendid buildings of the Manhattan Gymnasium in New York, or that of the Boston Athletic Association, Boston, Mass. Besides the large hall filled with the ordinary apparatus of the German system, the galleries have banked running-tracks covered with rubber, there are fencing-rooms, boxing-rooms, a bowling-alley, a roller-skating rink in the roof, a swimming-bath, Turkish bath, Russian bath, billiard-room, a reading-room on whose table will be found the principal papers and periodicals of the world, a dining-room that easily seats two hundred, etc., etc., everything that can conduce to the promotion of physical fitness and physical comfort. From six in the morning until midnight the director and his assistants are available, and the training of city men, children, youths goes steadily on. The membership of the Boston Gymnasium was at the time we were taken over the building 2,000, and there was a waiting list of 1,500. The Governor of the State was the President.

The old German Gymnasium in St. Pancras Road, King's Cross, has successfully trained many an Englishman, but it did more, it inculcated "brotherhood," true brotherhood. There was real, hard work in the Gymnasium, but there were also sing-songs, cinderellas and plays on their own little stage. A lonely young man was made to feel at home ; he was also taught to think of the poor, particularly at Christmas-time, when the Gymnasium was decorated, a big tree put up, and every effort exerted to make the "Kiddies" of the neighbourhood happy for at least one day in the year. Many and many a young man, now to be numbered among the "Veterans," has cause to bless the day he became a member of the Gym., was saved the temptations of the streets, and made a man both physically and socially. Our Y.M.C.A.s of to-day are but following the lead set by the old German Gym. All honour to such men as founded it way back in 1860. There was then no thought of war or Kultur, just a great, honest desire to start something good for young men.

All over Germany there are annual friendly Inter-town and Inter-district competitions, and every five years a National one. The last festival of the kind the writer attended was at Nüremberg, where he found himself one of 32,000 gymnasts who had flocked from all parts of the world. Special buildings are erected and acres upon acres of ground are allotted for these national events.

The Government makes special grants, believing rightly that the health of the nation is the State's best asset. Every conceivable form of physical competition is arranged for—games, work with movable apparatus, work on fixed apparatus, antagonistics, competitions for

teams, for individuals—young and old—displays for children, displays for grown-ups. Three thousand children gave a display of free movements and fancy steps, 8,000 men gave a display with iron wands, grey beards led veteran squads on apparatus—no one under forty being permitted to be a member of the squad. One squad on the parallels was magnificently led by a patriarch of seventy-two. Belgium, France, Switzerland and Italy work on exactly similar lines. When will such national enthusiasm be secured in the United Kingdom? When the Government realize it is necessary to have a popular, rational system which has its foundation laid in the Elementary Schools. When pedants cease gibing at teachers of physical training and agree that properly qualified teachers of this important subject shall be given the same status as any other qualified teacher, and when it is also realized that remuneration should be given on the same scale as that of any specialist teacher.

A real effort for holding National Festivals in this country was commenced in 1912, when the first festival was held in the grounds of the Crystal Palace. A second was held in 1913, and the last, for the time being, in 1914, when over 3,000 took part.

But are there no defects in this system? Yes. The greatest is the enormous number of exercises available. They run into thousands. An unskilful teacher would be lost in the weltering amplitude, which is one of the strong arguments of Swedish partisans against the system, but to the trained and qualified teacher this is not an obstacle, as the exercises fall as readily into groups as do the Swedish movements.

Again, we are told the British system makes people round-shouldered. When it does, it is the result of

faulty teaching, which is as common in one system as in the other, and is not the fault of the system but of its application.

It makes acrobats—no more and no less than the tumbling and similar exercises which have had to be added to the Swedish system to counteract its dullness and monotony.

What about the Sandow system? Its greatest defect is depending upon rubber, steel springs, or their equivalents to secure resistance. This resistance becomes, therefore, intermittent instead of constant. Speaking very broadly, the tendency is to create big, heavy muscles which produce sluggishness of movement, after the manner of a heavy cart-horse. The system also becomes dull and monotonous.

The Dalcroze system, or Eurhythmics, is excellent for acquiring rhythm and control of each separate limb and part of the body. In its early stages it is useful for children, but although there is undoubtedly a certain amount of physical exertion, just as there is with ordinary dancing, it is from the musical rather than from the physical standpoint that its practice is urged.

Professor J. J. Findlay describes Eurhythmics "as the use of the body as a musical instrument. . . . It is the technique by which the human body can take its place side by side with violin and piano, as a master instrument. Dalcroze, since the days of the Greeks, is the first musician to have realized what a wonderful addition we make to our orchestra when we add the trunk and limbs of our very selves, bodying forth direct from our inmost feeling the rhythms which the composer so imperfectly symbolizes in the score." Another writer describes the exercises as falling into

two groups: the first, exercises of control; the second, exercises of interpretation, whereby "concentration, quick reaction to stimulus, equilibrium, mental and physical, self-control and self-reliance" are developed. All this is perfectly true, and cultivation of an æsthetic sense is valuable, but it is equally true that no amount of Eurhythmics, however graceful and fascinating, will teach a child the best way to jump a ditch or climb a rope, nor does M. Dalcroze claim that it does. A system which is to make "the body a musical instrument" can therefore scarcely be regarded as of sufficient utility to form a very important part of a *national* system of physical training.

The Müller system is a free-movement system, and its exercises will secure the best results for a given purpose in the shortest time of any system. It is a big advance on the Swedish system both rationally and scientifically, and though applicable to young or old is best adapted for keeping adults fit (particularly those relegated to sedentary occupations) with a minimum expenditure of time. Every "veteran" should make its acquaintance. It, however, also suffers by being too monotonous.

"Yes," says the reader, "this is all very well, but we want the essentials of a national system, not a review of what is being taught here or there." True, but unless some slight conception of what systems have gained a hold in this and other countries is placed before the impartial layman, how can he pass judgment? Enough, we hope, has been said to show that no present single system is sufficient for our national requirements. Sir Frederick Treves in *Physical Education* (1892), p. 56, emphatically endorses this view: "One soon has to conclude that no one system is

per se complete and all-sufficient, that no one can lay claim to international adoption, that evil may result from a blind adhesion to one particular method, and that considerable allowance has to be made for nationality, physical condition and physical tastes." He continues: "The German system may be spoken of as assimilative. The German writers and teachers have adapted and embodied whatever they found good in the practices of other people in the matter of physical education. No system is more liberal, more intensive, more catholic."

One of the important essentials of a British national system is, therefore, that it must be assimilative.

It will be asked, Has no effort been made to secure such a combination? Efforts have been made repeatedly and continuously for years by advocates of the British system, but thus far the Swedish partisans have held aloof. They declare with intolerant arrogance that their system is the only one. What right have people who have never studied or tried other systems to condemn those systems? What would be thought of the person who always having eaten pears and never tasted apples therefore condemns apples and ostracises those who enjoy both? As a matter of fact those teachers who have studied more than one system are nearly always willing to praise the good points possessed by each of the systems. Certainly the writer's experience is that teachers qualified in both British and Swedish systems value the latter system for many things, though they are not prepared to regard the system as the be-all and end-all of physical training. It is regrettable that similar broadmindedness has not been forthcoming from the other side.

To sum up, a British system to be truly national

must be popular; it must grip the hearts of the people; it must be progressive, "capable of pursuit both in youth and age, and must satisfy the respective aims of each period of life"; it must inculcate in addition to the means for actual development, courage, skill, initiative, self-reliance and responsibility.

Neither cart-horses nor race-horses are desirable, hunters should be the aim, *i. e.* well-trained staying power, backed by big lungs and a strong heart, with moderate speed.

How is it to be done?

1. Follow the advice of the Royal Commission, and out of each system "select that which has most approved itself."

2. Use the Swedish system for the early training of children.

3. Add the Anglo-German, *i. e.* British, exercises for "young persons and persons."[1]

4. Complete with the most important movements of the Müller system.

5. See that the instruction and training are placed in the hands of properly qualified specialist teachers.

(These teachers to start with would have to be peripatetic.)

6. Do not begrudge the expense.

Recently a deputation received at the Board of Education was informed that the Board was not antagonistic to the British system, but, before endorsing it, they desired a definition of its aims and the opportunity of examining the text-book of its principles. It was explained that there was no *one single* text-book in print, but since that time a book has been prepared

[1] "Young persons" = people between the age of fourteen and eighteen; "persons" = those over eighteen.

and is now in the hands of the printers. The author has collected together the vital principles from the other text-books, and shows how the Swedish and British systems can be fused. If the reports of those who have seen the book prove correct, one great obstacle to a true national system will have been removed.

The nation is spending £7,000,000 *a day* to carry on the war; two-sevenths of this amount would properly instal a national system of physical training, such as has been outlined, in perpetuity, thereby benefiting not only the present youth of the country but the millions yet unborn. Has not the nation the moral fibre to demand that this result shall be achieved?

THE CASE FOR THE SWEDISH SYSTEM[1]

By MISS MURIEL H. SPALDING

Physical Training must inevitably attract a large share of attention in the Educational Reconstruction which is now before us. The possibility of the establishment of a national scheme of physical education is already stirring the exponents of the various systems now in vogue to press their special claims to recognition with great insistence. The final decision in the matter must rest with authorities whose knowledge is, of necessity, less expert than that of the teachers whose views they have to consider. But the different sections of the Gymnastic Profession will no

[1] As the subject of Physical Training is so controversial, the editor feels it to be only fair to include this article, so that an important body of opinion should not be unrepresented.

doubt take the opportunity of presenting the principles and aims of their respective systems. In spite of the wide differences of opinion which exist, it should surely be possible largely to eliminate party spirit, tainted as it so often is by some degree of commercialism. All those who consider the question from a really national standpoint will agree that the opportunity has at length arrived for establishing the necessary right relation between Physical Training and education as a whole. Under this relationship the former will no longer be looked upon as an isolated factor, but as one which is specifically directed towards the humanistic aims of other branches of education. The principles which underlie Physical Training must not only be fundamentally sound, but they must also admit of sufficient elasticity in their application to meet the new demands which will constantly arise from the evolution of the whole science of education. The purpose of this article is briefly to examine the principles of the Swedish System of Gymnastics as contrasted with those of other systems in so far as a limited space allows.

The Swedish System differs from others more in its aims and methods than in the actual exercises which it includes. The criterion by which exercises are admitted in this system is based on the extent to which they will assist in the maintenance of health. Every exercise is used to produce a definite improvement in the functions of the heart, lungs and other organs. The muscles are only considered in so far as their work and development are related to the other functions of the body. Special importance is attached to establishing an intelligent control of the muscles. To this end the promotion of the power of inhibition

plays as important a part as that of excitation. These general aims have been summarised in definite principles on which every phase of the work is based.

Of these principles those which perhaps most clearly distinguish the Swedish System from others are the following :—

I. *The subordination of the development of muscle to the improvement in the functioning of the body as a whole.*

The harmonious result which is aimed at operates very strongly in determining the form, and methods of application, of the various exercises and the nature of the apparatus which is used. The rigid exclusion of dumb-bells, clubs and parallel bars which is insisted on by teachers of this system, is based on the belief that their use, particularly for children, is definitely productive of asymmetrical growth and of bad postures of the head, chest and spine. Moreover, their use precludes the straightening of the hands, which is an important corrective of the rigidity induced by ordinary manual occupations.

II. *The adoption of special Laws of Progression.*

These laws determine the methods of increasing the difficulty, both mental and physical, of the exercises. The methods which underlie the Free-standing exercises depend for the most part on alteration of leverage, width of base, and other principles of bodily mechanics. They therefore afford ample opportunity for progressive development without the risk of strain which attends the use of gradually increasing weight of apparatus. Many of the methods of progression are directed particularly towards increasing the amount of concentration and co-ordination called for by the exercises, so that a gradually increasing degree of control is insured.

III. *The use of commands instead of music.*

This helps the teacher to eliminate automatic work. The suitable inflection and modulation of the voice which characterise the command set up a more direct and sympathetic relation between the teacher and the class than results from the performance of the exercises to music. In this relation the class may be compared to an orchestra conducted by the teacher. Each individual member, while allowed legitimate scope for self-expression, plays his part in maintaining an attitude of sensitive response to the conductor.

IV. *The adherence to an "Order of Movements" which forms the basis of every lesson.*

The exercises included in the system are all classified in groups according to their most marked functional effects. These groups are arranged in a scientific and progressive order. Every lesson consists of exercises selected from each of these groups and arranged in the prescribed order.

These principles form a criterion which guides the teacher in adopting or rejecting new ideas and methods, and in modifying the work to suit the special needs created by the age, sex and temperament of the pupils.

The adaptability of the system was one of the chief reasons put forward by its founder, Ling, in claiming its recognition. Probably Ling himself did not foresee the extent to which his claim would subsequently be justified. Only those who have had personal experience of the unrestricted application of the system can appreciate the opportunities which it affords for correlation with the wider educational ideals of the present day. It is possible to adapt the work not only to the physical but also to the psychological needs of children of different ages. For the younger

children the work is characterised by the quick, vigorous and massive movements which are suggested by their natural activity. The play element predominates, and appeal is made to their imitative and dramatic instincts. For the older children the use of these movements is maintained. At the same time, exercises which demand more sustained effort and stricter accuracy and attention to detail are gradually introduced.

The hygienic purpose and effects of the exercises and the value of prompt, and, above all, accurate response to commands can be intimated to the class. Thus is established a connection with the theoretical instruction given in their "Health" lessons. It is a common complaint that under modern educational methods children are losing the power of application and of thorough and accurate work. Swedish Gymnastics properly taught should prove to be a valuable aid in re-establishing these basic features of sound training. The realisation of visible improvement as a result of intelligent and progressive effort towards definite aims and the feeling of comradeship which is engendered by the carrying out of movements jointly in response to an inspiring command contribute towards the training for right conduct which constitutes true education. The wide scope of the system which has been suggested above has, perhaps, made it an easy target for hostile criticism by those who have had neither the opportunity nor the inclination to consider it in a broad way. In the minds of many of the lay public the idea seems to be prevalent that a complete presentation of the system is to be found in the Government Syllabus of Physical Exercises as used in the Elementary Schools. This syllabus has served a most useful purpose during

the preparatory stages, which will soon, it is hoped, lead to wider developments. The teachers who use the syllabus have, in many cases, produced most favourable results in spite of the obvious limitations imposed upon them : such as inadequate time, unsuitable dress, lack of apparatus and, above all, their own lack of expert training. The effects of the system as hitherto carried out by insufficiently trained teachers in the Elementary Schools can, therefore, form no basis for an argument against the system as a whole.

Still, it must be admitted that in the past some of the teaching, even by trained experts, has been too academic and restricted in its methods and aims. The latitude allowed by the principles of the system, which indeed constitutes one of its main features, has not been sufficiently appreciated. The common criticism of the system as dull and limited has possibly found some justification on this account. The fact that the Swedish System has, during the last few years, been adopted by practically all the important public and private schools for girls, as well as by a large number of boys' schools, and the undoubted popularity which it enjoys amongst the pupils are, however, sufficient contradiction of this criticism. It is perhaps amongst those members of the profession who are concerned in the training of the expert teachers that the expansibility of the system in accordance with modern educational ideals is most strongly felt. This has been reflected in the recent decision by all Swedish Training Colleges to lengthen the period of training to three years. It has been found that the two years' training hitherto insisted upon by these Colleges has not been enough to enable the students to gain the necessary technical and scientific knowledge to make

full use of this expansibility. It is hoped that the extended curriculum will give the student a better grasp of the demands and responsibilities of her work and of its relation to other educational activities.

Teachers of Swedish Gymnastics are often accused of a fanatical adherence to their own doctrines and of an uncompromising hostility to other systems. The divergence between them and the exponents of most other systems is due to such fundamental differences in principles and aims, that they feel they would be false to their high ideals if they attempted any form of compromise.

CHAPTER XIII

DOMESTIC SUBJECTS

By MISS M. E. MARSDEN

THE development of the teaching of Domestic Subjects may best be studied under the headings of Elementary, Secondary, and Technical Schools, Training Colleges for Teachers and University Courses.

In *Elementary Schools* various methods of introducing it into the curriculum are adopted by Local Education Authorities. A certain amount of latitude is allowed by the Board of Education, and encouragement is given to schemes suitable for the needs of different localities. In towns, special Domestic Subjects "centres" are built for Cookery, Laundry-work and Household Management. These are attached to certain Elementary Schools, and girls from neighbouring schools attend for periods varying from half a day to five days per week, between the ages of eleven and fourteen years. In country districts the problem of providing facilities for instruction is much more difficult. If Domestic Subjects "centres" were attached to all rural schools they would be unused for the greater part of the week. Therefore in some districts peripatetic teachers are employed. These spend from two to four weeks in one village where a convenient room has been prepared for the classes, and the girls receive instruction for part or the whole of every day

during the period in which the teacher is in residence. Another arrangement is for the teacher to spend one day a week in different villages, and yet another is the provision of travelling "vans," which are really movable rooms, equipped for the teaching of Cookery and Housewifery. They usually remain for four weeks at one school, and serve the purpose of "centres" during that period.

The critic will, of course, see the disadvantages attached to each one of these plans, but each has its own advantages under the special conditions and difficulties which have to be faced. The encouraging feature of the whole is the ingenuity and practical interest which have been displayed in planning accommodation, ranging from an ordinary furnished house to a travelling "van," in order to bring instruction in Domestic Subjects within the reach of girls attending Elementary Schools. The courses are arranged in several different ways. In some, the girls attend for one half-day a week for two years. In others, they attend for two half-days a week for one year; while in others the instruction is more concentrated and the girls take Domestic Subjects every day for twelve weeks, or for two and a half days for twenty-four weeks. In the Cookery courses the girls are taught the principles and processes of Cookery. They begin by making simple dishes, and gradually proceed to those requiring a higher degree of manipulative skill. Then they go on to the planning, cooking and serving of meals. The girls, as far as possible, work independently. Great care is taken, in the selection of equipment and utensils, to choose things similar to those found in the homes of the pupils, so that they may be able to put their work into practice

at home. A high standard of cleanliness, neatness and order is aimed at, and economy of time, labour and material is practised. The girls are encouraged to buy the dishes they have cooked, so that the parents may judge the value of their children's work. Arrangements are frequently made for the parents to visit the centres and see the work actually in progress. By these means, new methods of Cookery and changes in dietary are suggested to the parents. The Laundry-work course includes the usual processes employed in home laundry-work. All kinds of materials and garments, brought by the girls from their own homes, are washed and finished by simple and inexpensive methods. Great care is taken to teach the girls how the laundry-work for a family may be carried on in a small house with the least inconvenience to the members of the household. In Household Management the girls learn how to clean and keep in order the various utensils, furniture and fittings of a home, and how to carry out the periodical cleaning of the house. They are given practical experience in housekeeping, account-keeping, and planning and cooking the daily meals of a family. Simple lessons in the care of infants and young children, and in First Aid, are also included. Under some Education Authorities, schemes for teaching Combined Domestic Subjects are being carried out. These are for girls over twelve years of age who have previously attended courses of instruction in Cookery and Laundry-work. In the best of these, a house is taken and used as a residence for the staff. The girls then do the work of the house, and formal class-work is dispensed with. This plan more nearly approximates to the daily routine of a well-ordered home, and thereby its practical value is enhanced.

Among the newer schemes is that of "Mixed Courses" in Domestic Subjects. Girls of eleven years of age who have had no previous instruction in Domestic Subjects are eligible for these. They include the teaching of all branches of Housecraft, together with Infant Care. At first the subjects may be treated separately, but in the latter part of the course they are taken concurrently, *e.g.* some girls will do the Laundry-work for the family, others will cook the dinner, and others will be employed in various cleaning operations. In remote country districts a "Concentrated Mixed Course" is found useful. The girls in one district devote four school weeks to the course. At the end of that time, the teacher and equipment move on to another centre. The next year, a more advanced "Mixed Course" may be given. The advantages of this scheme are its adaptability, the small amount of equipment required, the scope for individual work and the closer approach to home conditions.

In *Central Schools*, the scientific aspect of Domestic Subjects is specially studied. The relation of Physics and Chemistry to domestic work, and the study of Hygiene form a large part of the scheme of Domestic Science in this type of school. It would, however, be advisable to raise the standard of the Housecraft work and to correlate it far more closely with the Science teaching in these schools.

One wishes it were possible that a similar variety in teaching Domestic Subjects had been introduced into the methods adopted in *Secondary Schools*. A survey of the teaching of the subject here is not quite so cheering. But one must, in fairness to Secondary Schools, point out that it was not until 1909 that the Board of Education inserted a clause in the Regulations

for Secondary Schools that provision should be made for the practical instruction of girls in Housewifery, and that courses of Domestic Subjects might be substituted for those in Science, for girls over fifteen years of age.

Schemes for the teaching of Domestic Subjects in Elementary Schools were in full working order before the need for teaching it to girls in Secondary Schools was realized. However, Secondary Schools, both in London and in the provinces, had included it in their curricula before it was thus included in the Board's Regulations. Needlework was the first branch of Domestic Subjects to be taught to Secondary School girls, and it was followed by Cookery as the second branch of the subject. In the Secondary Schools the more enlightened head mistresses realized from the first the connection between Housecraft and Science, and attempted to correlate the teaching of the two. The crowded curriculum of many of the Secondary Schools presents, I believe, the greatest difficulty to head mistresses in finding a place for Domestic Subjects in the school time-table. Obstacles, such as provision of staff, accommodation and equipment are much more easily overcome. I cannot but think, however, that if every head mistress would realize, firstly, that almost every woman, at some period of her life, has to take a share in the management and actual work of a house, and, secondly, that home-making, infant and child care, and the spending of a large proportion of the income of the nation, will be the main life-work of many women, she would feel it her duty to arrange that *every girl* in a Secondary School should have a thorough course of practical training in Domestic Subjects, including Hygiene.

Every girl, as a future citizen, has a right to demand it, and the nation should require that type of education for its woman citizens which shall best prepare them for their life-work. It is probable that with improved methods of teaching in the lower and middle form of Secondary Schools, and with more grip and thoroughness in the work of the girls, time could be allotted to the teaching of Domestic Science without any injury to the other subjects which form part of the educational schemes of the schools.

The arrangements for teaching Domestic Subjects in Secondary Schools fall under two main headings :—

(*a*) Schemes for teaching it throughout the school.

(*b*) Schemes under which, with the exception of Needlework, it is taught entirely as a "post-school" subject.

Where taught throughout the school, Needlework is usually taken in the lower forms for one or one and a half hours per week. The children make bags and simple garments, which they decorate with stitchery, often of their own design. In the middle and higher forms, Cookery is usually taught for one and a half or two hours weekly. In almost every Secondary School scheme, importance is attached to the connection between Physics and Chemistry and Housecraft. Science is more attractive to girls if they see its practical application to domestic work, and realize that a knowledge of Physics and Chemistry will result in more complete mastery of house-work provided that enough time is given to attain a satisfactory degree of manipulative skill in Housecraft. It is certain, however, that the standard of Housecraft would be raised and its correlation with Science more effectively carried out in Secondary Schools if the course were properly graded

as to the skill required in technique. The order which suggests itself is that the course should begin with practice in the methods of cleaning various kinds of utensils, apparatus and furniture used in the home, and that this should lead up to Laundry-work, in which not only the cleaning of fabrics, but daintiness of "finish" would be taught. It may appear that to introduce Housecraft by a course on the "cleaning" of various articles and materials is not likely to arouse the pupils' interest in the subject. This is not the case if the girls are allowed to clean their own personal possessions, or things they use at home or at school. If they make the different polishes and pastes required for such cleaning, and are taught the scientific reasons for using the various ingredients, their interest is keen. They greatly enjoy "building up" the necessary recipes, and the knowledge thus gained lays the foundation for the necessary critical attitude towards extravagant trade preparations for cleaning articles in daily use. Cookery would be taken next, as it is more difficult than the preceding subjects, both as regards its scientific aspect and the manipulative skill required to carry it out. If three consecutive hours, instead of two, each week, could be devoted to Cookery, it is not an exaggeration to say that the practical value of the courses would be doubled. Many typical and standard dishes cannot be prepared, cooked and served in two hours. The practice of leaving the cookery of dishes prepared by the girls to be completed by other people is entirely uneducational.

The next section of Domestic Subjects to be taken in Secondary Schools—if this graded scheme were adopted—would be Household Management, including Hygiene and Infant Care. The work of the earlier

stages of the course would be revised as part of the general arrangement of house-work. The last section to be included in the scheme would be simple Dress-making, a knowledge of which would prove useful to every girl.

In a few of the Secondary Schools in which Domestic Subjects, with the exception of Needlework, are not included in the curriculum, "post-school" courses are offered. These are generally so arranged as to be completed in one year, and are taken by girls of seventeen or eighteen years of age. The greater proportion of the time is given to Housecraft and Hygiene, but the time-tables usually permit of subjects of more general culture—Languages, Art, etc.—being studied. Valuable as these courses may be, they form a very poor substitute for the inclusion of Domestic Subjects in the ordinary school curriculum, because an exceedingly small proportion of girls are able to take them. The additional year at school is more than many parents can afford to give their daughters, and if the girls have decided to take some professional course of training, it is usually necessary to proceed to that on leaving school. Mention must be made of a two-year scheme of Housecraft training which has been adopted in a few Secondary Schools for girls of sixteen and seventeen years of age. About half the time is spent in Housecraft and allied subjects. The remainder of the time is given to subjects of general culture. The course has a strong scientific bias and is well planned, but is taken by a comparatively small number of girls, and is therefore open to the same criticism as post-school courses.

The number of girls in Elementary School classes in Domestic Subjects is limited to eighteen, while Second-

ary School classes vary from about eight to twenty-four. It is inadvisable to have more than sixteen in a Secondary School class, for it is not possible for the teacher adequately to supervise the individual work of a larger number of pupils. The methods of teaching vary. In some lessons the teacher demonstrates the particular section of craft-work, which the class afterwards carry out. In other lessons, the teacher and the class work together, the pupils suggesting the different steps of the operation. In yet other lessons, the pupils do experimental work, to test the principles laid down by the teacher, and, where possible, to discover principles for themselves. Very interesting experimental work can be done by junior pupils, leading them to find out, for example, in Laundry-work, the best ways of washing woollen fabrics, or, in Cookery, the methods of preserving the green colour of vegetables. The better the teaching, the less didactic and the more real it will be. The restrictions imposed by war conditions have led to new developments in all branches of Housecraft. More attention, for example, is being given to the cookery of vegetables, with the result that new and attractive dishes are prepared, of which the chief ingredients are vegetables. The length of the individual lesson in Elementary Schools is usually from two and a half to three hours, whereas in Secondary Schools it is often only one and a half or two hours in duration, which is not enough to permit of either a high standard of craft, or satisfactory experimental work. The plan of allowing the girls to cook meals for themselves or for others is satisfactory, provided always that the educational side of the teaching does not suffer thereby. It is quite possible, however, to lose the educational value of the lesson by insisting on

the cookery of large quantities of food by methods imperfectly understood by the class, and expecting the work to be completed in so short a time that the lesson is merely a scramble to finish a number of dishes by a certain hour. In places where the girls cook school meals there is sometimes a tendency to expect pupils to prepare and cook food in too large quantities. On the other hand, if the teacher has to make the subject "pay" by means of the sale of cooked dishes, the work suffers greatly. She is afraid to order an adequate supply of materials in case they should not be sold, and she can only teach "popular" dishes, such as pastry, cakes, etc., because of the difficulty of selling such dishes as soups and vegetables. On the whole, this is the worse of the two evils. Where possible the dishes cooked by the girls should form *some part* of the school dinner, other arrangements being made for the cookery of supplementary food. Unless the girls have an opportunity of tasting the dishes they have prepared, they cannot form a true estimate of their own work. Residential schools offer great advantages in this way, and in many day Secondary Schools the plan of arranging for the girls to dine at school suggests a practical and economical use to which the dishes prepared in cookery classes can be put.

As a matter of fact, in most Secondary Schools, Domestic Subjects are not considered seriously. They are included in the time-table, but their value is not realized, and little or no effort is made to develop a systematic and graded scheme of Housecraft. One or two separate craft subjects are taught, but without any attempt to connect and build them up into an entity. Secondary Schools have had ample opportunity to incorporate Domestic Subjects as an integral part of

their Educational Schemes. All, except a few schools, have missed that opportunity. Until the vital importance of Domestic Training is understood, women will not receive the type of education necessary to enable them to fulfil their duties and responsibilities to the community. One hopes that head mistresses of Secondary Schools will realize that girls who have had this training will thereby be able to assist in the work of rebuilding the national edifice, which has been so shattered by the waste of war.

There is much scope for good text-books on Housecraft. These are, in fact, conspicuous by their absence. There are a few, but very few, which one can put into the hands of students with the knowledge, both that the craft methods advocated are thoroughly satisfactory, and that the scientific information is entirely reliable. The writing of such text-books would not be an easy task, but there is great need of them, and they would supply a genuine want. The dearth of good text-books leads to much note-taking in Domestic Subjects classes, and is an excuse for the habit formed by some teachers of writing notes or summaries of the lesson, to be copied by the class from the blackboard. However, the plan of asking the pupils to write out their own unaided account of their work in Housecraft classes is far more general than it was. The immaculately neat note-book is still a fetish with some teachers who sacrifice spirit to form. But the majority of teachers are beginning to realize the educational value of the pupils' own written work—though it will be understood that the note-book problem would be more easily solved if a greater variety of reliable and up-to-date text-books were available.

Some educational institutions where Domestic Subjects are taught are supplied with Kitchen-Laboratories. Stress should be laid on the importance of these most useful adjuncts in teaching the relation of Science to Housecraft. They should be equipped with utensils large enough to permit of Housecraft operations being carried out on the same scale as in an ordinary household. To attempt to teach the methods of cooking meat by dealing with quantities not exceeding two or three ounces, or of fruit by stewing four prunes or six gooseberries, or of cereals by making one-ounce rice puddings, is useless. Methods of cookery are modified by the bulk and shape of the materials to be cooked, and students must have practice in handling them in reasonable quantities. The underlying idea of the Kitchen-Laboratory is excellent, and it would be well if every institution which aims at giving a scientific training in Housecraft possessed a Kitchen-Laboratory.

There are so many varieties of *Technical* School Schemes that it will only be possible in this chapter to deal with some of them. The main headings under which they may be grouped are :—

1. Residential and non-residential schools for girls who have left Elementary or Secondary Schools.
2. Day and evening technical courses for adults.
3. Trade schools.

It seems advisable to consider only the first two of these groups. The pupils in *Day Technical Schools*, for girls who have had an *elementary* education, are from fourteen to sixteen years of age. The courses vary in length from one to two years. As the girls have had a previous training in Housecraft they can now do more advanced work. Their knowledge of Needlework

is applied to Dressmaking and Millinery, their skill in the simpler methods of Laundry-work leads to the power to carry out more difficult processes in that subject. The practice they have had in Cookery and Household Management is a valuable basis for more advanced work in the arrangement and cooking of meals, and in practical housekeeping. Other subjects, such as English, Citizenship, Science and Art, are introduced into the course. The age of students in *Day Technical Schools* for girls who have had a *Secondary* education varies from sixteen to eighteen years. The courses are usually arranged so as to occupy one or two years. Unless the students have been at Secondary Schools where Domestic Subjects are taught to all the pupils, they will be obliged now to learn the simpler processes of Housecraft, and therefore will not reach so high a standard of practical manipulative skill as if the groundwork had been covered in earlier years. Their work, however, is usually intelligent because they have had the advantage of a longer general education including, in most cases, Science. Practical Housewifery, Laundry-work, Cookery, Household Management, Needlework and Dressmaking, occupy the greater part of the course; but other subjects are included, such as Science, English, Citizenship, etc. The value of Day Technical Courses is much enhanced if the students are in residence during the whole or part of the time. But even in non-residential courses the students generally have the advantage of working in a house or hostel attached to the school. Stress must be laid on the necessity, in the later stages of the course, for substituting work in a house for the more formal routine of the class-room.

Day Courses for Adults in Technical Schools are usually

attended by students of ages varying from eighteen to twenty-five or thirty years. Some take only three- or six-months' courses, but these are too short to be of much practical value, and the training, as a rule, should not be less than one year. It is an essential preparation for successful Institutional or Private Housekeeping and for School Matronships. The course includes the chief practical Domestic Subjects, and experience in catering for large numbers, together with Hygiene, First Aid and Home Nursing. The consideration of food values and of arranging well-balanced dietaries is of supreme importance to housekeepers, and should form an integral part of the training. There are indications of an important future for Housekeeping and Catering on a large scale. Residential courses of training in Housekeeping are much more valuable than non-residential ones.

For those who cannot afford to devote the time and money for full Day Training Courses in Technical Schools, *evening courses* are a great boon. These are designed to give as thorough a practical training as possible in a limited time, and to adapt it to the needs of the students. The work usually reaches a high standard, for the students are much in earnest and make use of every opportunity offered in the courses.

Progress in the teaching of Housecraft in all these types of schools has been due to the *Training Colleges for Teachers of Domestic Subjects*. Without their improvement and development the progress of the work, from its humble inception to its present standard, would have been impossible. No scheme for teaching pupils in any type of school can be carried out without teachers. The standard of work in Training Colleges for teachers sets that of the work done in schools.

In the earliest Training Courses a period of three months was considered enough for training a Teacher of Cookery. Now, the shortest course of training for Domestic Subjects teaching is two years. Many students take a three-year course, and an appreciable number avail themselves of the four-year courses offered by some of the Training Colleges. The schemes for Training Teachers of Domestic Subjects have to provide for three main aspects of the work. These are :—(1) The Craft, (2) The Sciences which underlie the Craft, and (3) Training in the Art of Teaching. All the Craft subjects previously mentioned in this chapter are included in the longer courses for training teachers. In the Training Department of the Battersea Polytechnic, a special fourth-year course of training in Science as applied to Housecraft has been in operation for some years, and this has proved exceedingly valuable. The course provides greater opportunity for experimental work (proving that Housecraft is really applied Science) than is possible in shorter courses. It strengthens the scientific habit of mind in the teacher of Domestic Subjects, and if this or similar courses were more widely taken, there would be more likelihood that the resources of Science would be applied to the solution of the problems of Housework.

The greater part of the Teacher's Training Course in Domestic Subjects is spent in the various branches of the Craft. A high degree of manipulative skill, involving quick and deft employment of materials and appliances should be attained. This cannot be reached without considerable and continuous practice. It is evident that a student who begins her training at the age of eighteen, and has had no previous opportunity

of practising Housecraft, will find this very difficult, though a sound knowledge of the elements of Physics and Chemistry will help her to solve her difficulties intelligently.

The results of many years' experience in training teachers lead to the opinion that they should have opportunity for teaching in all types of schools, to ensure their being sympathetic and useful teachers in any one kind of school. Adaptability to the changing needs of the community is essential if the work of the teacher of Domestic Subjects is to be an asset to the National Economic Scheme. The best way to ensure this is to give teachers a training in teaching which will develop their ability to teach pupils of varying needs and ages and of different educational attainments.

If we turn now to the main tendencies of the teaching of Domestic Subjects we may hope to forecast the direction in which the new teaching will probably progress.

1. It will be much more general, that is, it will increase in quantity. More time will be given to it in Elementary and in Secondary Schools. Even now, in Secondary Schools, both public and private, the tendency is for Domestic Subjects to be more universally taught. The new Municipal Secondary Schools, which attract a yearly increasing number of pupils, always provide special accommodation for Housecraft. Private schools, in spite of their increased expenses, due to war conditions, year by year offer more courses and provide additional rooms or houses for the teaching of Domestic Subjects. The advent of Day Continuation Schools for girls will mean additional instruction in Housecraft. One may reasonably expect a great increase in the number of

Housecraft courses in Adult Technical Schools. The present general simplification of the mode of living will certainly continue, and will probably be accentuated after the war. This implies more personal work for each individual and less paid service. The demand, for example, by bachelor professional women for small flats will probably greatly increase. Large numbers of such women in the past have attended evening technical courses, because, having had no instruction in housework during their school life, and no opportunity of practising it during their professional training, they have found that they had little idea how to use household appliances to the best advantage. Many women, in the future, will have to take a share in household work, and will find that some instruction in it is essential. There will therefore be a considerable field for day instruction to those women who have not previously received, either at home or at school, definite, systematic instruction in Housecraft. One may suggest, further, that instruction in Housecraft on a scientific basis should form a part of the curricula of women in all Universities. Also we shall probably see, concurrent with the movement for affiliating the Training College to the University, the establishment by all our English Universities of definite schools for the scientific study of Housecraft, and for the training of teachers of these subjects.

It is probable also that the teaching of Domestic Subjects to boys will increase. The line of demarcation between the work of men and women is rapidly growing finer—in some instances it has, for the time being, entirely disappeared, and one can see no reason why it should reappear in its pre-war place. Why should not preparation be made for this in school curricula? Paid

domestic assistance in the home is increasingly difficult, if not impossible, to obtain. In times of emergency would not much dislocation of household routine be prevented if the men and boys of the house could give some efficient help? Many a woman is now carrying on the business of her husband who is on military service, and why, similarly, should not the husband be able to manage, if only partially, household affairs should the necessity arise? The training given to Boy Scouts in household matters proves that they are quick and eager to learn all kinds of domestic work, and most willing to put it into practice.

2. The new teaching will be of even higher practical value than it is at present, and will bear a more definite and intimate relationship to the home lives of the pupils. The war has emphasized the need for considerable extension of public knowledge of all matters pertaining to Housecraft. There is, in the first place, urgent need for wider knowledge of food values in order that Cookery may be of higher practical value. Much good has already been effected in this direction by the restrictions consequent on war conditions. Cookery is now more difficult, as many of the ingredients formerly considered essential are unprocurable, so that there is greater necessity for knowledge of the Science and Art of Cookery in order that food may provide the necessary degree of nourishment and attractiveness to the palate. We are assured that "plenty" will not be concurrent with the advent of peace, and that there are many lean years in prospect. Therefore, a general knowledge of the relative food values of available foods will be almost more imperative in the future than it is at the present time. Economy in household management, with the object of husbanding our resources of

labour, time and material, will be forced even upon the most unwilling. Economy without loss of efficiency implies a high standard of domestic work, which is impossible unless the teaching of the subject has been sound and thorough. This teaching will result in domestic work of all kinds being done with more efficiency and with greater economy of time, labour and money. Women will realise that much of the drudgery now regarded as inseparable from the management of the home is unnecessary. More intelligence in housework will mean saving of labour and the reduction of drudgery to a steadily decreasing minimum.

3. The new teaching will more clearly emphasize the fact that Housecraft is Applied Science. It must be frankly admitted that up to the present, the Science of Housecraft lags very far behind the practice. Comparatively little is known of the chemical and physical changes taking place in Cookery and Laundry-work, and what is known can only be expressed in abstruse terms of Chemistry and Physics, not understood by junior pupils. Yet experience shows that Domestic Subjects are better understood when the broad, elementary, scientific principles which underlie the operations are intelligently grasped. One of the main difficulties experienced by the best Housecraft teachers is how to make the subject of real educational value, and, at the same time, to ensure that the standard of practical skill shall be high. It is quite possible to press the scientific aspect of the teaching of Domestic Subjects to such a degree that the pupils do not reach the necessary standard in practical skill. The new teaching will demonstrate that the methods of Housecraft are capable of continuous improvement and adaptation to new conditions. They must therefore be taught in the true

scientific spirit, and a critical habit of mind, as regards processes and methods, must be encouraged in the teaching in Elementary and Secondary Schools. There will then be reasonable ground to expect that the students will be eager to try new methods, to suggest improvements in house planning, domestic furniture, equipment, utensils and materials, and to discover new and better methods of dealing with the problems of house-work.

After-war conditions will necessitate greater scientific knowledge of domestic work, so that better use can be made of the materials employed in every-day operations, and more attention given to labour-saving devices. It is amazing, for instance, to reflect on the years of human labour which have been devoted to the removal of dust, only to deposit it in equally undesirable spots. It is more amazing to realize the present-day opposition to its removal by scientific methods, especially when one sees that this attitude is not confined to those who have the care of houses, but that it extends to municipalities responsible for the health of entire towns and cities. Vacuum cleaners, for instance, should be in general use, not only in buildings but on roads and streets.

The methods of teaching Housecraft throughout, both in Elementary and Secondary Schools, Training Colleges and Universities, will be rather less didactic and more experimental (that is, simple research) in character than up to the present. Concurrently with this there must be, especially in Secondary Schools, an attempt to reach a distinctly higher standard of practical Housecraft. If the subject were seriously taken, and carefully graduated schemes of instruction were arranged, and if arrangements were made that no

girl could go through the schools without having had a thorough course of domestic training, very valuable results to the nation would follow. One result of the general recognition of the fact that Housecraft is simply one branch of Applied Science will naturally be that the subject will come more and more under the ægis of the Universities. Obviously this will result in a much higher status for Housecraft in the educational world. Up to the present the English Universities have recognized Housecraft to a comparatively small degree. The Northern Universities Joint Matriculation Board permit Domestic Science, Laundry-work, Cookery, Needlework and Housewifery, as subjects which may be taken in the School Certificate Examinations. It would materially facilitate the teaching of Housecraft in Secondary Schools if some recognition of Housecraft could be given in all school-leaving or matriculation examinations. The University of London—never a very progressive body—has gone so far as to give a Diploma in Household Science. The University of Sheffield has adopted a similar measure. Is not the time ripe for theoretical and practical Housecraft, with its subsidiary Sciences, to be permitted a place among the subjects which may be offered by candidates at the Universities in the Inter. and Final B.Sc. examinations —for example, that a candidate be permitted to offer such subjects as Chemistry, Physics, and Household Science (theoretical and practical) for the final pass B.Sc. ?

Finally, as in all branches of educational work, the important factor is the teacher. All teachers should take a three-year course of training, as it is impossible for a satisfactory course, including the three essential aspects of the work, to be given in a shorter time.

Teachers should be also freely encouraged to take a four-year training course. A four-year course should be an essential qualification for all Domestic Subjects appointments involving administrative work or other special responsibility. In order to make this possible, a much more generous and universal system of Scholarships and Bursaries is necessary. Travelling Scholarships for Domestic Science, to enable students to see something of the work done in America and elsewhere, would be invaluable to future teachers of the subject.

CHAPTER XIV

COMMERCIAL SUBJECTS

By FRED CHARLES, B.A.

Commercial Education is a phrase conveying to different minds widely different ideas. Commercial Education suffered in the past and is still suffering from two unmerited disadvantages, the attitude of the public towards trade and the association of the phrase with a little shorthand, less typewriting and no education. The very meaning of the word "commercial" has become debased until to some people it is almost synonymous with grasping, and is associated in their minds with the making of profit by fair means or foul. Its true meaning is pertaining to commerce, and commerce is the exchange or interchange of commodities. Industry and Commerce, then, are divisions of occupation corresponding to the economist's classification, production and distribution. All subjects that are concerned with commodities between their production and final consumption are commercial subjects, and Commercial Education is the education that fits a man to be a "Merchant," "the Steward of the Kingdom's Stock," "to carry on a work of no less Reputation than Trust, which ought to be performed with great skill and conscience, that so the private gain may ever accompany the publique good."[1]

[1] *England's Treasure by Forraign Trade*, by Thomas Mun, 1664.

Thomas Mun in his day maintained that business was a profession, and H. B. Gray and Samuel Turner express the same opinion in *Eclipse and Empire*. The preparation for this profession is Commercial Education.

The business of the Commercial Education with which the new teaching is concerned is to help its pupils to become better merchants, better citizens, better men; to train them to think; to help them to acquire good business habits; to give them useful information. The aims of the teaching are to develop the character, to train the intellect, to strengthen the habits necessary to commercial life; these aims can be secured by teaching subjects of practical use.

J. A. Froude, in his Inaugural Address to the Students of St. Andrews in 1869, said there were then more subjects than could be treated adequately, that a choice must be made, and that among subjects whose educational value was recognized, the ground of selection should certainly be utility. "What I deplore," he added, "in our present higher education, is the devotion of so much effort and so many precious years to subjects which have no practical bearing on life."[1]

The subjects, the new teaching of which is discussed in the foregoing chapters, have a place in Commercial Education; but the point of view is so widely different from that of the usual Secondary School, and the part of the subject selected so specialized that in some cases the subject is almost a new one.

As to the divergent points of view, let the parents speak for themselves. "My boy is in the classical sixth at ——" (an old public school); "he writes good Greek prose, excellent Latin verse, and has a good

[1] *Short Studies on Great Subjects*, Vol. II. p. 464. Edition 1886.

knowledge of ancient history; I am sending him to a School of Commerce, so that he will not look a fool when he goes into the City."

Again, "My boy has been at ——" (a modern school with an excellent reputation for hard work and successful examination results). "He is coming into my business later; it is with Frenchmen, and is transacted in French, but the French at that school is unsuitable. His work is Victor Hugo, poetry, mediæval and old French. What he must learn is present-day French, to read, write and speak present-day French, to understand Frenchmen—how they live, what they do, what they think, what they want. If you are going to do business with Patras, the language of Plato or Thucydides will not be much good; Cochrane's estimate of the character of the Greeks will be more to the point than the qualities exhibited at Thermopylæ."

Or again, "Never mind Alfred and the cakes, or Richard Cœur de Lion in Palestine, or Calais graven on the heart of a British queen; teach them how the Empire grew, and the modern history of Europe. Show them the foundations on which the British Empire of the future is built; put in the cakes if they make the foundations firmer, otherwise leave them out."

Commercial Education meets the wishes of these parents; it does as Froude advised—it makes its selection on the ground of utility. Its subject-matter is ever changing, ever growing; it studies things not as they were, not as they are, not as they will be, but rather the direction and manner in which they are moving; it is a question of problems on conditions dynamic rather than static.

A result of the variety of the subject-matter, of the

continually changing conditions of commercial life, of its ever-altering aspect, is that the teaching must of necessity be broad-minded, tentative, suggestive, never dogmatic; it must do more than recognize several right ways of doing a thing, it must have them sought out or suggest them. One result of this teaching is to bring up a race of students able to see and to appreciate a point of view other than their own—a faculty of great importance in commercial life. It throws a weight of responsibility and an additional strain on the teacher; he must understand and estimate the true values and the relative values of the various right ways or right answers; he must compare and contrast them for the benefit of his pupils, and to be able to do this he must have an extensive knowledge of his subject far in advance of the standard to which he has to teach it. The day is past in which a man can teach a class a lesson behind his own knowledge of the subject—a custom not unknown among the early teachers of book-keeping.

It requires also that the teacher has, in addition to a thorough knowledge of the subject, a live, open mind and a ready sympathy with his pupils. It further makes the learning and saying of lessons impossible; even if the plan by which the master is only a "positive" policeman—the latter sees that certain things are not done, the former that certain things are done—had a place in the new teaching it would be ruled out in the case of commerical subjects by the absence of text-books; at any rate in the subjects now being considered, whose teaching has been dealt with in the earlier chapters.

On the commercial aspect of Mathematics, of History as distinct from Industrial History, of Science and of

Languages, there are few if any suitable text-books. Of Commercial Arithmetics there are several, but the happy mean is hard to find; those of the one group are by arithmeticians who have no experience of business, those of the other are far too full of technicalities to be suitable for the pupil who is on the threshold of commercial life.

There are, however, appreciable advantages in this absence of text-books; it prevents the teaching from becoming stereotyped, the teachers from sinking too far into other people's ruts. And, further, the existence and use of text-books tend to make the work academic, and academic to the practical man of business is very nearly synonymous with useless. In the present rapidly growing state of Commercial Education text-books would no sooner be written and adopted than they would be out of date.

These general considerations relate to all subjects. Of the teaching of individual subjects something may be said. The "new" teachers of Geography are perhaps nearer to, or more in accord with, the "new" teachers of the commercial side of their subject than are the teachers of other subjects. If they proceed from configuration to climate and communications, from climate to products, and so to the distribution of population, all that they need do to adapt their teaching to commercial requirements is to stress the products, communications, and distribution of population; products, transport and population are all important in Commercial Geography.

The teacher of English, on the other hand, has to recognize and remember the difference in aim; his chief aim is to cultivate not the appreciation of literary masterpieces, not the acquisition of literary style, but the

capacity to write clear, concise, matter-of-fact English; in fact, to write "fool-proof" English—by no means an easy task. The best means of approach is probably précis writing and reporting. The construction of a good précis or report, whether oral or written, is a valuable exercise not only in English but in clear thinking; and clear thinking is a commercial asset.

The teacher of modern languages should take to heart the plea for thoroughness in both written and oral work put forward by Mr. Somerville, the representative of Eton, at the Conference on Commercial Education held at the Guildhall in 1898; when thoroughness is attained, then he must go further and devise and practise a method of teaching the additional subject-matter. Commercial French is not merely the rendering of "yours of even date received" but a study of the life, habits, manners, thoughts, wants and products of the people in the countries in which the language is spoken. Thus far, lectures and discussions have been the means of instruction.

Commercial Arithmetic, unlike the Arithmetic of the great majority, is an end in itself; it is not a means to the end of mind training; it is an implement without which the business man is unable to carry on one side of his work—the financial. It must lead directly to statistics and accounting; and a not unimportant development is graphical representation. To these developments the method of the up-to-date teacher of Mathematics is applicable, but so far the teacher of Arithmetic has shown himself unadaptable or ununderstanding; and the Arithmetic examiner is far worse than the teacher, he has failed to grasp that Arithmetic without accuracy is useless, and worse than useless, misleading and wasteful, in business.

The pupil who can add three lines or thirteen lines may satisfy the school-teacher that he knows how to add, even though two or three slips may have been made in the working, but the teacher of Commercial Arithmetic must not be satisfied until his pupils can add twenty-three or thirty-three lines without any mistakes at all. This standard of accuracy may sound high, but it is quite easily attainable by pupils of fourteen to eighteen years of age who have been reasonably taught in the earlier stages. Unfortunately in the Commercial Schools of to-day it is often necessary to go right back and teach simple addition to pupils of seventeen years of age from Secondary Schools of good standing. Time is short, but time for practice could be obtained by leaving out the good old-fashioned puzzle problems dear to the heart of the Arithmetic examiner, who was himself guilty of the howler of a "Cash discount of 10 per cent." allowed by a retailer. It is far better to practise simple operations until they can be performed accurately and with certainty than to decide when three ladies and their daughters went shopping who was Jane's mother. Practice alone can give pupils that confidence in their powers that is unshaken by long though simple calculations and masses of figures.

In Commercial Schools there are other subjects outside the scope of Secondary Schools, and probably rightly so. Among the most elementary of these are Shorthand, Typewriting, Book-keeping and the Theory and Practice of Commerce.

Shorthand and Typewriting long suffered from being taught by inexperienced teachers, the school secretary or a clerk, or a newspaper reporter who had an hour or two to spare in the week, but no knowledge or skill in teaching; these subjects received little sympathy

or encouragement from the head, but were allowed to be taught on sufferance in consequence of the insistent demand of parents. So small an amount of time was allowed for them, and so badly was it distributed, that little or no progress was made; here, at any rate, is one of the causes of the bad repute into which they have fallen. A short time, half or three-quarters of an hour, spent on each every day is undoubtedly the most economical arrangement; the total time spent on acquiring one hundred words a minute in shorthand may be reduced by lengthening the daily lesson, but the maximum length for efficiency is soon reached; for instance, experiment has shown that four hours a day are not any more effective than half that amount.

These subjects have been said to have no educational value, but that appears an unreasonable and extreme statement; they require, and their teaching under the new conditions trains, readiness, nerve and self-confidence; they give, too, an admirable training in accuracy in detail.[1]

No subject, perhaps, has suffered so much and so persistently from bad teaching as Book-keeping, and the reason is to be found in the ease of acquiring that little knowledge of it which is a dangerous thing. There are still to be found men teaching Book-keeping whose knowledge of "the ingenious art" is little, if any, greater than that set out by George Fisher in 1779; and many business men hold that his statement is still true of schoolmasters: "The Art of Book-keeping or Merchants accompts is talked of by many . . . understood by few."

Quite recently a teacher of Book-keeping complained

[1] For a more detailed consideration see "Shorthand and Typewriting in Secondary Schools," *School World*, September 1915.

that the paper given his son was ruled in a manner unsuited to the question set in a Book-keeping examination ; it took some time to convince him that a ledger might be correctly ruled in more ways than the one and only way that he had taught and that he believed to be the only right one.

In no subject is there more room for that broad-mindedness that has been advocated in the teaching of all commercial subjects. Few subjects can give better training in accuracy, in attention to detail and in discrimination than can Book-keeping when well taught ; it interests and fascinates, and a hard-working student seldom feels greater satisfaction and even elation than when he finds the Balance Sheet in a long and complicated exercise, which involved the distribution of considerable profits, right to a penny.

The methods of teaching the Theory and Practice of Commerce are almost as many as there are teachers, and are almost as varied as the estimates of the scope of the subject. They fall, however, into two groups, those of the teachers of economics who consider this subject to be an adaptation of, or growth from, Political Economy, or, to use what is becoming a derogatory epithet, a "side-show." The weakness of this group is that its teaching is apt to become theoretical ; the Theory outweighs the Practice, and the result is dry-as-dust, out-of-date bones dressed up in words. The second group is apt to swing to the other extreme ; Practice outweighs Theory, and the subject then becomes a bare collection of facts and rules with practice in their application. Such are the extremes ; between them are some excellent teachers, the best appear to be nearer to the latter than to the former. Two examples, one from the Business Routine section

and one from the Commercial Correspondence section of the subject illustrate the methods of two successful teachers. A central principle was selected from a number suggested by the pupils: that a complete record must be kept of all communications and transactions with a correspondent or client. In discussing the necessity of the record in various cases a quantity of theory was introduced. The making of the record involved press copying and carbon copying; the relative values of press copies and carbon copies were discussed; here came practice, law and theory. The keeping of the records caused a lively discussion on the relative value of guard-books and letter-books on the one hand and files on the other; the weight of class opinion was heavily in favour of the latter, but here again came divergent ways, the favourite of which was the vertical file. Practice in filing, in indexing, in sorting and docketing, visits to see various kinds of files in use all gave zest and interest. The case-book of the specialist and the companion card index came under review in the same course. There was no lecturing, no formal imparting of information; the teacher and pupils were working together as seekers after truth; there was frank sympathy between them; the teacher elicited much and showed the need for more information, and together they collected it; the practical work, press copying written and typed letters, etc., made a pleasant variation, but the limited apparatus necessitated the division of the class into small sections, each of which did different practical work. The organization of this practical work so that every pupil did every piece of work, was carried out by members of the class.

In the correspondence section of the subject perhaps

the most successful work is done by those who take a complete transaction and see it through all its stages. Every pupil writes every letter, prepares every document and performs every operation for every party to the transaction. For instance, one firm makes an inquiry with a view to purchasing goods; receives in reply price lists; makes further inquiries; receives more detailed particulars; places an order which is acknowledged; and so on, until a receipt is obtained in return for a cheque in settlement. In this way not only are commercial forms and customs mastered, but familiarity with the various documents is obtained. The accompanying theory includes insurance, fixation of rates, relative advantages of transport by water, road and rail; indeed, almost anything connected with the buying, selling and distribution of goods may crop up in an unexpected question, of which a skilful teacher knows how to make full use. By selecting firms in different countries still further information is required; for instance, the currency of the foreign country, its banking facilities, its demand for long credit.

This example may raise the question of the Model Office. The model office implies the fitting up of the class-room as an office, the division of the class into two or more sections each representing a party to the transaction. The main advantage claimed for the method is the suggestion of reality by the surroundings and the consequent maintenance of interest; the objections are the unnecessary cost in capital and time. The time taken together with the feeling of playing at shop has prevented the adoption on a large scale of the model office in this country. It reached its greatest popularity in the United States, but both there and on the Continent it is losing ground. The method of the

foregoing example contains the main advantages of the model office; it has this further advantage that every member of the class sees both sides of every step in the transaction; and his double view can be brought into prominence by requiring all letters to be copied, two files to be kept, one for each party to the transaction, and the appropriate letters or copies and documents to be placed in each. The class in this case may be, without sacrificing educational efficiency, considerably larger than is possible in a model office.

The taking of parts may be usefully adopted in specific cases apart from the model office. For instance, an up-to-date teacher, of considerable business ability and some experience, was teaching a class of boys Arithmetic. Proportion had been mastered, and after various other applications the class reached Stocks and Shares; to secure the interest of the class and to bring home the details of the subject the pupils were given parts, the banker, brokers, jobbers, clients; a balance at the bank was assigned to each, stock and share certificates were distributed; transactions took place daily and were duly recorded; settlement was reached and the bank balances made up. One unexpected result followed—a complaint from a parent: "I don't want my boy to go on to the Stock Exchange; I don't want him to speculate. Why are you giving him a taste for it?"

The capital outlay on commercial education is great even without the cost of the model office. Typewriters of various makes, duplicating apparatus of different kinds, the apparatus necessary for press copying, files of various kinds, a filing cabinet, a card index, an adding machine and at least one example of an adding attachment to a typewriter should be considered

as indispensable, and all pupils should be able to use them and should do so from time to time. Pupils appreciate the advantages of such a device as a card index if they can use it continually; in one school, therefore, each house has a card index of its members; the card contains the name, address, class, record, games, of the individual; cards of past members are separated from present members; all members of the house have access to the index.

Further apparatus is desirable, but the above should be considered as an irreducible minimum in a school of commerce. The place of others can be supplied to some extent by visits to works, factories, offices and public museums and buildings. Thus for schools in or near London it is hardly necessary to collect samples of commodities for geography teaching; visits to South Kensington or to the Imperial Institute give opportunities for studying such commodities as tea, rubber, timber, wool, cotton, and in many instances the aid of a specialist can be obtained for the asking. Visits, too, are generally sufficient to bring home to students the various mechanical and other methods of time keeping.

Practice in filing, copying, duplicating and the like can generally be obtained in connection with the clerical work of the institution in which the education is being given. Care must, however, be taken that this is not exploited as a means of securing cheap labour. Some typewriting offices have been guilty in this respect; they have secured pupils, made use of them as junior clerks and left them to pick up such further information and accomplishment as they could. While this *caveat* is unnecessary in the case of public institutions the temptation must be great to schools

that have to pay staff, expenses of upkeep, advertising on a scale unknown to public institutions, rent, interest on capital, and profits. In one such institution, at least, all the typewriting, secretarial and office work is done by the pupils, who pay high fees for the privilege.

Commercial Education, however, owes much to private initiative; parents demanded and private individuals provided instruction in particular subjects which they considered, and perhaps rightly, had a money value as well as an educational one; private institutions met the demands of the parents before such education was provided or recognized by the State. Originally Commercial Education, both here and on the Continent and in the United States as well, was given in private institutions; in many of them money-making was the first consideration; in others, started and partly owned by commercial men, education took precedence over profit. In the former there was much instruction, little education; pupils came to acquire a certain accomplishment, to learn a certain group of facts in the shortest possible time; rules and their applications were taught and learnt without a thought of education; it was mere unintelligent cram and nothing else, but it had its uses. To some extent it systematized the subject-matter of utilitarian education. Owing to its financial necessities it led to the starving of the teacher and to the employment of unsuitable men as teachers—in one well-known, widely advertised school a master was paid at the rate of 4*d.* an hour; but, on the other hand, success was measured by results alone, and consequently the management had to be effective, progressive and thoroughly up to date.

There is no published survey of the Commercial Education now being given in the United Kingdom.

A brief summary of the facilities then available was compiled and issued in February 1917 by the Central Committee for National Patriotic Organizations, under the chairmanship of the late Mr. Henry Cust.[1] It is a depressing pamphlet, which offers no suggestions and upholds no point of view; it sets out, bare and unadorned, the facts, and in so doing shows "the nakedness of the land."

The Commercial Education given to boys and to girls is different, owing to the different conditions under which they will work and the great difference in their prospects; commerce is going to be the life work of the boys who enter it, the girls, or at any rate a number of them, may be considered as temporary workers only. A number of the boys must be ready to represent their firms abroad, to go to the uttermost ends of the earth, if needs be, to break new ground, to find new markets; the great majority of girls, on the other hand, will be employed at home. Of the heads of the commercial houses the majority will be, for some time to come, men. There are, however, indications of an enormously increased field of work for trained women in the newer professions; the professional bodies of Bankers, of Secretaries and of Accountants, for example, are considering the admission of women. Women are already training themselves to take advantage of permission to sit for these professional examinations as soon as permission is granted.

A different provision, too, has to be made according to the age at which the pupils have to become wage-earners, and this roughly corresponds to their pros-

[1] Training for Business at Home and Overseas, Part I. A Statement of the facilities now available in the United Kingdom. The Central Committee, 62-65 Charing Cross. Sixpence net.

pects; those who enter business at sixteen generally do so without any definite prospect, often without influence—with, indeed, nothing but their character, native intelligence, and their education upon which to depend. Those whose entrance to business life is deferred until eighteen or later generally have influence, secured positions to which to look forward; from the first they are destined to be leaders. The pupils, too, have to be considered in two categories: those who give their whole time to their education, and those who have to secure such education as they can after business hours.

Hitherto the specialized training of girls has been more common than that of boys; boys were able to obtain junior clerkships, to begin at the bottom of the ladder, without any previous training, but girls, on the other hand, found it almost impossible to make a start without some technical training. This very often was no more than sufficient Shorthand and Typewriting to make them of doubtful use; to this were added Book-keeping, Arithmetic, Business Routine; until at the outbreak of war a well-qualified girl clerk of eighteen or nineteen years of age was being introduced into many business houses. The war has given enormous opportunities to this type, and their numbers and their earnings are indeed great.

The number of boys receiving education definitely commercial has never been large in this country, and higher commercial education, that is commercial education for leaders in commerce, has been practically non-existent. In London the great majority of pupils at Commercial Schools or classes is made up of part-time pupils; men and women who have entered on their commercial life ill prepared, have found the need

of training in some branch of their work, and have sought to remedy the defect by attendance at Evening Classes. Of these there is, apart from private institutions, satisfactory provision at the L.C.C. evening institutes, at polytechnics, at the London School of Economics, and at the City of London College.

Of full-time courses there are still few; the London County Council has Central Schools with a commercial bias, some of which do admirable work with pupils up to the age of fifteen or sixteen. Two of the Council's Secondary Schools for boys have commercial sides, one of which originated in the commercial side of University College School, then under the able headmastership of Dr. Spenser. The City of London College has the Day School of Commerce for both boys and girls from fourteen to twenty years of age; it has now under consideration the provision of a special two-years' course for boys whose future is secure, who are destined by birth and connections to occupy controlling positions in the commercial world of the future.

The School of Economics provides full-time day courses also, but these fit men and women for administrative rather than for commercial work.

Manchester has its Day School of Commerce, and the provincial universities have their Faculties of Commerce, but, as was said, no survey has been published showing the extent to which those faculties are being used and how far the courses meet the requirements of the business men of the district. Unfortunately, in one instance the Faculty of Commerce is looked upon as academic, unpractical, and, from the point of view of local commerce and industry, useless; it is a source of harmless amusement for

pedagogues who live in a world of their own far removed from that of business.

In the last few years, however, Commercial Education has made great strides forward ; what is to be done to make good the ground gained and to secure a further advance ? A commercial bias might be given to the education in schools where the leaving age is sixteen to seventeen ; this bias to be of use must be thoroughly and sympathetically put on ; it must not be merely tolerated by the head because parents demand it, or in order to retain pupils at the top of the school. When the attitude has been changed the further changes are partly administrative, but mainly matters for the teachers. Sufficient time must be provided ; it is useless to attempt Shorthand, for example, unless a period of at least forty minutes is allotted to it every day for from one to two years ; in that time a pupil of fourteen or over should acquire mastery of the theory and the power to write rapidly enough to be useful. A qualified teacher could do all that is necessary in Geography, History and Mathematics if he would take the trouble to ascertain, and keep constantly in touch with, the views of the employers for whom his pupils are to work. In modern languages thoroughness and the study of the language of to-day are as much as one could reasonably expect from the schools. This change in existing Secondary Schools would carry us as a nation a long way further than we have travelled hitherto, but the specialized technical commercial work will apparently have to be done in specially equipped, specially staffed institutions, where much could be accomplished in a two-years' course combined with a long vacation abroad.

Never was so good an opportunity as the present ;

public opinion is awakening, the parents are keen, the youngsters are interested, and the employers are more appreciative of what education can do than ever before. The education authorities are alive to the needs of the future. The great difficulty is to find qualified teachers; they must be of the right character, and should have academic and professional training and also experience in business of the subject they are to teach.[1]

Their provision is partly a question of money; at first existing teachers may have to be paid, not only better than they are, but more than they are worth, in order to bring into the profession the right recruits. Given the money and the prospects the men and women will be forthcoming; then the right attitude must be secured, the right atmosphere created. Those already engaged in the work have a clear idea of what is needed; schemes are in existence, outline syllabuses of specialized Mathematics, Science, History and Modern Languages await men and opportunity.

The older educationists have still to be convinced; the pure mathematician looked askance at the geometry which ousted Euclid; he now looks askance at the graphics and statistics which threaten the older Mathematics; the teacher of French is loth to give up the French classics on which he was brought up for what he considers the slipshod, journalistic language of to-day; the history specialist chafes at the thought of spending most of his teaching hours on the last century or two, on the people and their wants, instead of upon the Constitution; the classic still wants the time for the languages that are dead and the civilizations that are gone.

[1] For further consideration of this subject see "Training of Teachers of Commercial Subjects," *School World*, May 1916.

But the old order changeth yielding place to new; the older educationist will appreciate the new aspect of the older subjects and even the new subjects; he will find their value. They touch the very life of the people, not of the few, but of the many; not of the administrators only, but of the workers also. They deal with the every-day life of the nation, not with its great occasions but with its daily drudgery. They compel the interest of the youngster who has to make his own way in the world, because he learns how and why others succeeded before him. They deal with live men and their doings in a world of changes; they are "humanities."

For the keen, business-like, able, broad-minded teacher there is a great future in Commercial Education, he will help to render efficient the preparation of the coming generation for what is to be one of the greatest professions of the future: a profession which is once again to place this country in its former position of commercial supremacy.

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