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Robbins, Newsom and Plowden

Just over two years ago, FORUM presented evidence to the Robbins Committee in the form of an Open Letter to Lord Robbins (Vol. 4, No. 1). Here we argued not only for a large expansion of higher education to meet the growing demand from the schools, but also for the transformation of the present hierarchical system into 'what may best be described as a comprehensive system of higher education, open to all who qualify, and comprising an integrated system of institutions of equal status offering equal, though various, opportunities'. We devoted particular attention to overcoming the divisions in the training of teachers, proposing 'a complete integration between university and training college' through a series of carefully worked out stages.

We naturally, therefore, welcome the Robbins report, perhaps particularly the masterly exposure of the restrictive theory of the 'pool of ability'. Although the proposals do not go as far as we would have liked in some respects, the Report as a whole is a document of immense significance. To implement the main proposals would be to bring about a radical, and necessary, transformation of the whole system of higher education.

There is something to be said for a long cool look at a Report of this order some time after publication. We propose to devote considerable space to this in our next issue.

★ ★ ★

In the meantime there is the Newsom Report, concerned with a far larger proportion of the population than Robbins, which was published a week earlier. Here we should state that FORUM stands firmly behind Newsom's main proposal—the raising of the school leaving age to 16 by 1970. The Robbins Report shows that, if the Colleges of Education can be expanded somewhat beyond their targets, the teachers can be made available for this reform, now long overdue. The interconnection between the two reports is here apparent.

The Newsom Report contains very many positive proposals and suggestions, although its approach

was restricted by its somewhat equivocal terms of reference, as well as by a certain timidity in their interpretation by the committee itself. It seems really extraordinary that the committee should have left aside the whole question of secondary school organisation, which is, of course, a fundamental issue in this context. The main emphasis in this number of FORUM is given to an analysis of these proposals and of their implications for the schools. Although the Newsom committee did not assess the cost of implementing its proposals, John Newsom has done so since, at least in a general way, and it is clear that the demands made are, if anything, modest. It is strongly to be hoped that conditions in the schools which the report revealed will not be allowed to continue. Experience shows that 'Our Children' (in the committee's phrase) *are* educable—more so, perhaps, than the committee themselves believe. They deserve a great deal more than a diffused verbal benignity—they deserve the conditions and the teaching which will help them *develop* their abilities, abilities which in their case (as the Newsom Committee so tellingly demonstrates) have been frustrated by their conditions of life, and, we would add, by early and rigid streaming in primary schools and like problems at this level of education.

★ ★ ★

This brings us to Plowden, and makes it clear that, if we are to achieve a useful analysis of the educational conditions of our time, the educational process must be seen as a unity. The issues with which, in our view, the Plowden Committee must be concerned are outlined in an Open Letter to the committee by the three junior school members of the FORUM Editorial Board. This raises fundamental questions concerning the form and content of primary school education, perhaps the most important of the three stages under review.

The educational system is now thoroughly under discussion. It is up to us to ensure that the many admirable proposals of reports do not merely form the matter of election manifestoes, but are backed by a strength of opinion that will ensure that they are realised.

THE NEWSOM REPORT

Review and Comment

JOAN A. M. DAVIS

Miss Joan Davis taught in a co-educational country grammar school for 16 years, later she became headmistress of a girls' secondary modern school in Lincoln. Since 1948 she has been at the University of London Institute of Education as Senior Lecturer in Education with special reference to the secondary modern curriculum.

In March 1961 The Central Advisory Council for Education (England) was asked by the Minister to consider the education of those pupils aged 13 to 16 still in full-time education who are of average or less than average ability. How did it set about its task?

The Newsom Committee, as it has generally become known, held 70 meetings and paid about the same number of visits to schools in the United Kingdom. There were also visits to schools in France, Holland and Switzerland—though it is a pity no one suggested a visit to the comprehensive schools of Sweden to study the carefully graded programmes of 'work experience'. Evidence, oral and written, was received from well over 100 associations, organisations and individuals. From the heads of 150 secondary modern schools, 12 comprehensive schools and 20 schools in slum areas came detailed accounts of the schools, teachers and pupils. Use was also made of relevant material from the Crowther Report and that on Early Leaving.

The reports from secondary modern schools provided the basis for the most interesting analyses. The 150 schools constituted a national sample, chosen randomly from north and south to include in due proportion large, middling and small schools, single-sex and mixed schools. Heads were asked to write freely about the neighbourhood, buildings and equipment of their school, the timetable, school life, particular difficulties and their own solutions. On the basis of these returns the proportion of schools in different neighbourhoods were classified as follows: mining 7%, rural 12%, problem area 18%, mixed area with a number of owner-occupied houses 30%, council estate or new town 33%.

Each head also filled in four questionnaires concerned with fourth year pupils and wrote pen portraits to describe one pupil in three chosen

randomly from the school register. The committee analysed the resulting 6,000 descriptions of pupils, taking into account such factors as length of school life, readiness to wear school uniform, attitude to school activities outside the classroom, likelihood of sitting external examinations—and arrived at three types, Browns, Jones's and Robinsons. This proved a cumbersome procedure, with results reminiscent of the hypothetical types of Norwood and as unconvincing as individual differences expressed as percentages usually are.

Improvement in reading

More to the point was that all 14-year-old pupils in the sample modern schools and comprehensive schools took the Ministry's test of reading ability used in earlier surveys. As a result the committee was able to compare school with school, pupil with pupil, area with area—also making use for this purpose of materials collected for the Crowther Report in the National Service Survey of 1957-8. It was found that the group average in reading ability was highest for schools in mixed areas, lowest for schools in problem areas—while the 20 slum schools scored a further 1·8 points lower. But differences between group scores for schools in similar neighbourhoods showed that some are more successful in helping pupils to overcome the handicap of poor social conditions. Of great significance was the finding that, between 1948 and 1961, pupils aged 14 years and 8 months in secondary modern schools showed an average gain in reading age of 23 months. This is clearly a considerable achievement.

A survey of buildings showed that one school in five was built before 1900; only one in five had buildings up to present day standards, while 41% of buildings were seriously deficient in many respects. A quarter of the schools had only makeshift accommodation for science, 34% no metalwork room, 42% less than half the prescribed area for playing fields, 50% no music room, 60% no geography room, 75% no proper library. At the bottom of the scale were schools in problem and mining areas. Staff turnover was also investigated according to an index which gave an overall 'holding power' for men of 65% and women of 58%. Again it was found that in problem areas nearly half the teachers—men and women—had moved on within three years, while in slum schools only 34% of men appointed in 1958 remained in 1961 and even less women.

How clearly the picture emerges of bad conditions and staffing difficulties! Unfortunately the remedy is not nearly so clearly outlined. While proposing various measures the Newsom Committee did not investigate the costing of any of them. It would seem to be necessary to strengthen such committees of enquiry on the sociological and economic side so that definite proposals could be forthcoming. Such proposals would be more effective than the kind of recommendation made—that an inter-departmental working party be set up to inquire into the deprivation of children in the conditions of slum areas; though if such a committee came into being and really meant business it could do good.

The main recommendation of the report is that the school leaving age be raised to 16, as was earlier recommended by the Crowther Committee, the measure to apply to those entering secondary school in 1965 so that it would only become effective in 1970. The arguments for this on educational and social grounds seem incontrovertible, but the difficulties remain. Apart from the problem of buildings, where are the teachers to come from? The report makes no suggestions. Will it ever be possible to reduce the size of classes if the age is raised to 16? The answer lies partly in the expansion of colleges and universities through the crash programme and the long-term policy advanced by Robbins, so that a far greater proportion of 17- and 18-year-olds go on to higher education and return—we hope—to schools.

The teacher's function

Another part of the answer lies in a more precise definition of a teacher's function. The use of teachers to supervise school dinners has been resisted for years but they have accepted the chores of laboratory and craft-room, and time-consuming administrative duties relating to registration and dinner money. With a generous allowance of aids there could be a far more economical use of skilled teachers. New equipment and methods can also help to solve the problem. If programmes of individual work were devised for pupils with special difficulties, if closed-circuit television made the brilliant teacher available to much larger groups, we should soon find ourselves thinking of groups graded in size according to the work they do and the kind of learning planned for them.

The report, rather than looking ahead in this way, advises against excessive specialisation and the old system of class teaching as inappropriate for secondary modern schools. It urges the Minister to insist that all graduates entering teaching should have professional training but expresses a clear preference

Non-Streaming Conference

Just over one year ago, FORUM organised a very successful conference on non-streaming in the Junior School. Attended by over 200 teachers and others, it was fully reported in FORUM (Vol. 5, No. 2).

As a result of many requests, the Editorial Board has decided to organise a second conference on this topic, with the aim of taking the discussion further, and of raising for the first time the question of non-streaming in secondary schools. The discussion in both sessions will be opened by headmasters of non-streamed schools.

The Conference will take place at:

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10 a.m.—12.30 p.m.

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for training of a concurrent pattern for teachers in secondary modern schools rather than a graduate certificate. But it has little to say about training, though it would seem reasonable to expect the teacher to be prepared to teach two subjects which might be chosen from the traditional academic subjects as well as from the arts and crafts. This would contribute greatly to the deployment of teachers, a subject discussed at some length in the report.

Stress is laid throughout on helping adolescents to look forward to growing up, on encouraging the transition to adulthood in work and recreation. Here new buildings are of key importance and the Ministry's architects envisage quite a new pattern based on the open space plan and involving a group or team of teachers responsible for a variety of work, perhaps in the sciences and crafts, or in the arts. The report includes fascinating plans for various experimental centres—neither club nor school but with something of each—some for the younger children, one a club house with a residential wing, another principally a music and drama centre. It will be exciting when some of these are built—but this must not be at the expense either of badly housed or of overcrowded schools.

In this connection the report also advocates the planning of extra-curricular activities, particularly for fourth-year pupils who, it is suggested, might be actively engaged at school for two evenings a week. It is envisaged that adults in the neighbourhood would help to organise clubs but the suggestion that teacher club-leaders be appointed is commended highly. A teacher in school for perhaps four mornings a week, free every afternoon and supervising social activities during five evenings would provide a liaison between school and club and obviate the dissensions which so often arise when separate organisations share premises. It is also recommended that all pupils spend a period away from home in camp or hostel.

'Half our present'

This helps to recall that 'Half our Future'—as the Newsom Committee heads its report—is also half our present. Boys and girls of 'average and less than average ability' are not for ever retained within the walls of secondary modern schools. They grow up, they marry, have families, go to work, enjoy themselves. They merge with the other half and are indistinguishable from them. They build the motorways, office blocks, luxury hotels; they make the cars, television sets, refrigerators; they instal central heating, mend burst pipes, repair gas leaks, drive buses and trains, mine coal, produce

electricity—and construct nuclear submarines and atomic power stations. These skilled and unskilled workers are the average and below average children grown up. They are, the report tells us, the majority of all boys and girls and they are seemingly rather dull pupils whom teachers apparently find little satisfaction in teaching!

What the Newsom report is really saying is that here and now in 1963—despite Lord Beveridge and the 1944 Education Act, despite twenty years of building houses and schools, a low unemployment rate, a general rise in the standard of living—we remain virtually two nations, of manual and non-manual workers. In the mining areas and heavily industrialised midland and northern cities, in particular, the manual workers' children are not yet sharing in the benefits of national prosperity. These are the boys and girls the Newsom report brings to attention.

Within certain limits it is a good report despite the fact that it is based on the assumption that class structure and educational hierarchies will remain unchanged. Must this be so?

Reflections and Suggestions

NANETTE WHITBREAD

Miss Whitbread has taught history in two secondary modern schools, one of them an unstreamed school; she has also been head of the history department in a large London comprehensive school. Miss Whitbread is at present Lecturer in Education at the City of Leicester Training College.

In important respects the Newsom Report is an indictment of educational neglect and deprivation. But it not only highlights deficiencies and calls for urgent action; it also reveals much remarkably enlightened and encouraging work that has even so been going on. And it marks a breakthrough in official educational thought with far-reaching implications.

Two statements must have direct impact on work in the schools: 'Intellectual talent is not a fixed quantity with which we have to work but a variable that can be modified by social policy and educational approaches,' and 'the kind of intelligence which is measured by the tests so far applied is largely an acquired characteristic' (§ 15 and 16). And there is the corollary that the terms 'more able' and 'less able' must be taken to be 'descriptive rather than diagnostic' (§17). These are probably the most significant statements in the Report, especially when set beside the fact 'that the standard indicated by "average" is rising all the time' (§7). The logical

implications for the schools and the whole future of a mass education system are enormous, and must be seen in the context of the sort of cinderella education vast numbers of ordinary children have been receiving. It all means that determined efforts must at last be made to enable the schools to do their job properly, to counteract unfavourable sociological factors and find the right educational approaches. And this in turn means that far larger sums than hitherto must be spent on the ordinary schools.

It is therefore a serious fault that the necessary expenditure was not costed in this as it was in the Robbins Report. Specific not general recommendations are needed if action is to follow, especially when public finance is involved.

A statement that is revolutionary in terms of usual practice is that 'There is no reason . . . why those who are poorer at school work should give less time to it.' More should follow from this than the suggestion of 'some form of homework, liberally interpreted, for all' (§338). It must raise questions not only of the child's time spent on work, but also of the degree of individual attention given him and hence of size of classes in selective and non-selective schools. Even so, it does mean that most secondary schools must re-think their attitude to homework, at least. Nor is it simply a matter of homework in itself: the discriminatory setting or not of homework implies the relative esteem in which teachers hold the class.

Remedial teaching

There are also some pertinent comments on remedial work: these should be carefully considered before setting up a full-scale Remedial Department with its attendant danger of vested interest. The committee accepts the 'need for some remedial teaching in most secondary schools', but adds the warning that 'the time spent in a remedial class should be kept to a minimum. It is no good keeping boys or girls there until they have acquired a perfect memory' (§343). There is also the point that some 'need remedial treatment in mathematics' alone (§458), and this presumably carries the implication that merely to put such children in a bottom 'set' is not enough. The case is clearly stated for individual help and the importance of realising that each child is unique in remedial teaching. It is curious that there is no discussion of any system by which children are withdrawn from normal classes for remedial help: such a method can either be substituted for established remedial classes, or used as a means of providing follow-up help to ex-remedial class children who are being integrated into normal classes.

Similarly, in view of the prevalence and complexity of various forms of 'setting' for certain subjects, it is odd that this is discussed in only one paragraph (§531). Here it is suggested as a means of providing more choice of subjects as well as for work at different levels.

Despite the introductory assertions about intelligence and ability, somehow the tone of the Report does not always seem truly to reflect them. Perhaps this is because there is a dichotomy between faith in an unrealised potential and an over-emphasis on cultural impoverishment within the family and neighbourhood environment. Even so, the frequent use of the terms 'less able' and 'weaker' pupils does seem to contradict the notion of their greater educability. In this context it is perhaps unfortunate that three categories of children—Browns, Jones, Robinsons—are postulated, as these may be popularly equated with the A, B, C terminology associated with the fixed ability concepts which are rightly denied.

Again, although there is a denial of 'the fallacy of supposing that there are two types of pupil, the able and "academic", and the less able and "practical"' (§362), the Report is not sufficiently forceful in condemning this concept as invalid. Indeed, the old notion which has already done so much harm in the past still lingers in an emphasis on the value of practical activities for the majority of *this* group of children as distinct from *all* children. On this the new Report is almost as open to misinterpretation as Hadow and Spens. The effective application of the Norwood categorisation is revealed in the committee's finding that 'schools in our survey were markedly better off for 'practical' rooms than they were for libraries' (§93). The many references to the need for proper provision and use of books must be given particular attention in this context.

Modern trends supported

On the whole, modern and educationally progressive trends are supported, and there are many suggestions for revising curriculum and syllabus content in the fourth and fifth year. Options, greater emphasis on preparation for adult life, courses oriented towards occupation interests and leisure pursuits, typewriting outside commercial courses, a new and meaningful coherence—such developments are essential if there is to be any value in raising the school leaving age. It is clear that 'thorough reconsideration subject by subject of what should be taught' is long overdue (§355). Yet there seems to be some rather loose and contradictory thinking in some sections: the specific emphasis on tables in mathematics is unexpected, while some of the sug-

gestions for science may appear excessively haphazard and equivocal in their break with tradition. All the curricula discussions suffer in the attempt to consider fourth and fifth year courses in isolation from what has gone before, as well as from lack of real evidence and analysis of successful practice. The committee quite rightly did not try to provide a blue-print for a final two-year curriculum. But there is a danger that some schools may use the general suggestions as justification for whimsical or inadequately thought-out courses which simply keep their leavers' classes vaguely happy.

In the variety of interesting practices touched on, there is generally a lack of useful detail. Teachers will find it difficult to cull practical ideas from the Report as it stands, though the committee is presumably in possession of much material and examples that could profitably be made available within the profession.

Language and learning

With all the emphasis on language and the handicaps of linguistic inadequacy, it is strange that there is no consideration of the role of language in learning and thought processes. Recent and current research seems to have been ignored. Indeed there is singular lack of evidence from educational, pedagogical or psychological, research and controlled experiment in this country or abroad.

General encouragement is given to the extension of relatively recent developments such as film appreciation and film making, integration of extra-curricula activities into the regular programme, a foreign language for all. Nor do the committee hesitate to recommend experiments in the organisation of the traditional school day to provide for a third session (§140). Yet it is unwilling to give any real consideration to such important developments as non-streaming and comprehensive schools. Although there are not yet many un-streamed secondary schools, it would undoubtedly have been within the committee's terms of reference to collect such evidence as is available. To have done so would have been a most worthwhile undertaking. To have examined the effects of non-streaming in primary schools, even, would have been quite as relevant as to comment on the introduction of a foreign language to juniors (§495); for whether or not children have been streamed in their contributory primary schools must concern the area secondary schools, just as their learning French is assumed to concern them. It is tantamount to prejudging the issue merely to state that 'streaming . . . is a matter of acute educational controversy' (§520), and then to assume that, pending the evidence of the National

Foundation's enquiry, new schools should be organised on a streamed basis. Meanwhile, it is to be hoped that Heads of large schools will note that rigid eight-stream grading is implicitly condemned (§521).

It is most unfortunate that there was a statistical fault in the comprehensive schools sub-samples, and that this was discovered too late for anything to be done to correct it (§621 and Appendix V). The nature of the apparent error, in that it revealed far fewer of the Robinson range, is such that it makes a further investigation imperative. If we are to try to review the nature and implications of planning secondary education for all, it is essential that we evaluate tripartite and comprehensive.

Streaming and the comprehensive school

The issues of internal streaming and comprehensive structure are closely related, and the controversies which centre on them reflect fundamental educational concepts. The virtual exclusion of both issues from this Report is thus a doubly serious weakness. These approaches deserve particularly thorough examination in the context of the Report's important statements on the theory of intelligence.

The limitations of the terms of reference inhibited the committee from considering the education of their range of children in the full educational context. It also prevented their following through the implications of their findings. The official denial of fixed and innate ability, and the principle of equal opportunity, must call in question the validity and the rightness of Eleven Plus procedures.

Furthermore, the findings of the Newsom Report, following on the relevant findings and recommendations of the Crowther Report, and combined with the Robbins Report principle of the availability of higher education for all who are qualified and desirous, inevitably raises questions about our educational structure. The principle of educational opportunity must be applied continuously if it is to mean anything, and ways must be found to make it so. It cannot be deemed to exist at five, begin to fade at seven when streaming is often introduced, simultaneously be re-instated and denied at 11, and then finally re-emerge at 18 when more than half the children already quit school two or three years ago. Implicit in all the recent Reports is a higher valuation of the democratic ideal which educational practice and administration is failing to live up to. The drawbacks to all the sectional reports is that the limitations of their briefs preclude evidence and analysis of the whole educational structure.

Admittedly it was not within the committee's task to undertake a sociological criticism of contemporary society. However, they make certain observa-

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tions which demand attention. Employment is a case in point: 'large numbers of young school leavers at present enter employment which involves no skill or special knowledge . . . ' (§102), and of course many of their jobs are dead-end. This presents an educational problem. How can the objectives outlined in chapter four, the desire for some vocational content (§317) and orientation towards the adult world be reconciled with this reality of the job prospects of many? The lack of training and apprenticeship facilities, especially for girls, is rightly mentioned (§102); but it is not brought out as a national problem that urgently needs to be tackled, although the 1962 White Paper on Industrial Training is indeed quoted (§12). The only corollary drawn is in the direction of 'well-designed course in schools . . . ' (§102). But what is the use of helping young people 'to see the way ahead into further education and future training' (§102) if such opportunities do not exist? Clearly the Report carries implications beyond its restricted terms of reference.

The need for better links between schools and the world outside is frequently underlined. To make these effective will demand administrative and structural links with industry and further education. Unfortunately the latter has fallen outside the periphery of both the Newsom and Robbins Reports.

Standards—and intelligence

Heads and their staffs can give immediate attention to much in the Newsom Report. It is undoubtedly true that a proportion of children are 'underestimated and under-employed, in the sense that their occupations in school commonly make insufficient demand on them', and that 'boys and girls, properly taught, can reach much higher standards than is commonly assumed' (§92 and 306). Nor is it always appreciated that 'The less successful a pupil is, the more courage he needs to keep working' (§337). Many schools do not yet recognise the implications of the rising standard of the average (§7), and need to make far more effort to realise the 'unexpected reserves of talent' (§102). A good many syllabuses in use fit the description 'well-intentioned simplification . . . in the wrong way' and need to be re-thought (§343). It is evident that a great deal more attention will have to be paid in the schools to pedagogical study, trial and evaluation of new methods, syllabuses and courses. Schools must now release themselves from the strait-jacket of outmoded intelligence tests, and review their work in the light of the right of children to 'have an equal opportunity of acquiring intelligence, and of developing their talents and abilities to the full', as proclaimed by the Minister.

Once again, in the Beloe and Crowther tradition, there is condemnation of schools entering pupils for external examinations which are not suited to them (§244). And coupled with warnings against restrictive effects, there is encouragement for experiment with new kinds of examinations involving course work and oral tests (§246 and 247). Here there is an interesting suggestion for exploiting tape-recorders. In the light of a specific recommendation—10(a)—schools will have to give careful consideration to possible internal leaving certificates. They must also heed the realistic warning that 'the more pupils who enter for examinations, the greater the risk of creating a sense of rejection among the dwindling numbers of those who do not' (§251).

The Committee's brief

Though teachers may find the Report vague in some respects, they can certainly draw inspiration from some of the suggestions and criticisms. Curricula must be made far more relevant to young people's needs, and schools must accept their responsibility to remedy linguistic deficiency and face the challenge that virtually all their pupils are educable.

Perhaps a general criticism should be that the Newsom committee chose to interpret its brief unduly narrowly. The education of the 13 to 16 age group needs to be considered in the context of at least the junior secondary range, expanded extended courses and further education; and must raise issues concerning the structure of secondary education. Just why the committee decided the latter was outside its brief (§5) is obscure. Detailed costing of the recommendations need to be undertaken immediately, and the financial obligations implied in its findings must be accepted. The very serious revelations have to be realistically faced. Only if the Newsom Report is fully implemented, in spirit as well as by items, can its complement, the Robbins Report, achieve its ends in the long run.

THE ROBBINS REPORT

The next number of FORUM (Summer 1964) will contain a number of articles on the ROBBINS Report:

W. H. G. ARMYTAGE: *Robbins and the New Universities.*

F. C. A. CAMMAERTS: *Robbins and the Education of Teachers.*

TOM DRIVER: *Robbins and the Future of Technological Education.*

JEAN FLOUD: *Robbins and the Pool of Ability—an assessment of Appendix One.*

APPROACH TO ENGLISH LITERATURE

HARRY BELL

A History of English Literature by Herbert Hayens has been used as a basis for this book. Much of the original content is retained, but the entire work has been recast and it is now an *approach* to the subject rather than a history. In order to achieve a balanced result Mr. Bell has added much new material, including a chapter on some important modern writers.

In this unique approach, great care has been taken to integrate text and illustrations. Thus the drawings and photographs do not merely illustrate the works of selected authors, but fulfil a wider purpose. Various themes are followed throughout: for instance, many drawings reflect the social background from the earliest times onwards and show some characteristic features of each period. The geographical background is illustrated where this seems desirable: for example, by the photographs of Arnold Bennett's Potteries and of the natural grandeur of mountain and lake so beloved by the Romantic poets.

The book, therefore, is not merely a summary of the great contributions to English literature. In word and picture, these writings are shown in their historical and geographical setting and readers everywhere are helped to achieve a greater understanding of the literature which developed.

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Teaching Machines and Programmed Learning

What is the truth about teaching machines and programmed learning? What issues do they raise for the teacher and for the learner? What are their implications as regards classroom organisation, group and individual learning? These are the sort of questions teachers are asking. In the succeeding articles in this section, FORUM attempts to provide what can be no more than an interim assessment. Readers not knowledgeable as to the differences between the two main approaches (associated respectively with the names of Skinner and Crowder) might do best by turning first to D. H. Holding's review-article on page 67. Three of our contributors, Kenneth Austwick, Richard Goodman and J. F. Leedham, are concerned with experimental work in this area. Eric Linfield attempts an independent assessment. It seems that the time is not ripe for any final judgment, but Mr. Leedham's call for more experimental work in developing new programmes by practising teachers seems worthy of emphasis.

An Interim Assessment

K. AUSTWICK

Mr. Austwick is Lecturer in Education at the University of Sheffield. He is at present Director of the Programmed Learning Research Unit at the university.

Probably there has been more nonsense talked and more extravagant claims made for Teaching Machines and Programmed Learning than for most innovations on the educational scene—and that is no mean achievement. Education, like religion and politics, is a field in which everyone feels entitled to pronounce—we are all experts. Laymen never seem to tire of telling teachers how or what they should be teaching. Within the profession, inevitably, are a few misfits who, unable to cope with the classroom and its problems, rationalise their own failures by deciding that what they are unable to do is unnecessary or undesirable or by seeking some new gimmick to do their work for them. The net result is that every new idea is seized, exaggerated, and distorted before anyone has time to assess it carefully and objectively.

Such has already been the case with so-called 'automated teaching'. In the present stage of staff shortage and increased demand for school and university places teaching machines have been hailed as the answer to our problems, a panacea for the second half of the century—with forecasts of brave new schools based on computers, and teachers transformed into counsellors—or machine minders. In fact, one source of difficulty has been an implicit assumption by so many supporters and opponents that the machine would be a substitute for the teachers and that children would be working with them most of their time. This makes it difficult to

arrive at a realistic assessment of the limitations and possibilities of teaching machines and programmed learning.

However, let us attempt such an assessment as far as schools are concerned, taking the limitations first. Instead of taking the usual psychological or cybernetical approach to teaching, let us go to the classroom and consider the teacher there. After all, he should know something of the how and why of teaching and learning. Teaching, he will tell us, would be easier and more successful if classes were smaller. Let us take this to its (logical) conclusion and imagine therefore that we have one pupil and one teacher. In this situation we have, if you like, a conversation piece which, in the last resort is being manipulated (is that the right word?) by the teacher. How much of the teacher's part in this can be taken over? Before the conversation begins he must decide upon the field of discourse; its limits will depend upon his estimate of the student's abilities. He must then initiate the conversation. This may take the form of questioning, exposition, illustration, suggestions for experiment and so on, using perhaps visual, audial or other aids. Theoretically these can be replaced by a 'programme'—with the same aids. The conversation must be acceptable and comprehensible to the student who in turn reacts in some way to the situation. The development of the conversation and the teaching-learning process then depend upon the tutor's ability to assess and direct the student's progress.

This is the point at which an automation or mechanisation of teaching is subject to considerable limitation. Communication from machine to student is not difficult, communication from student to machine is, because it must be in a 'language' which the machine can receive and understand. Information going into a machine must be coded, but we do not want to use student time and energy learning a coding system (in any case, lack of skill in this might influence his success in the programme). Again, when the information has gone into the machine,

can the machine assess and understand it? A simple digit-for-digit comparison may be easy to achieve, but verbal responses may require interpretation of meaning; synonyms or misspelt responses may be acceptable to a tutor but beyond the powers of discrimination of a machine.

At present there are two systems in general use to circumvent these problems. In one, the student is asked a question and offered a set of alternative answers which the machine has been programmed to deal with. He communicates with the machine by pressing a key corresponding to his choice of answer. The alternative method is to require the student to respond to a question and then make him assess his response by comparing it to the correct (required) response supplied by the programme—in other words the student must take over one of the functions normally done by a tutor, thus reducing the machine, in many cases, to a presentation device. In the former (multiple choice) method, the programme writer must not only anticipate the wrong answers which the student might produce but also give additional instruction to correct the *errors which he thinks have led to those wrong answers*. In the second (constructed response) programmes, since the student must assess his own answer, this assessment must be within the powers of the student—in other words the answers must be simple and unambiguous. Again, in the *linear* constructed response programmes he must be correct almost every time, hence the steps must be small.

A pre-determined course

In both cases the machine is *preprogrammed*, i.e. the conversation is written by the tutor in advance. Here then is the crux of the matter—the whole exercise must be written beforehand and the 'tutor' and student then go through a set of predetermined motions. Actually this is not so outrageous as it sounds. In conventional teaching, within limits, the same situation arises. The teacher determines his starting point and plans the general route to his intended finishing point. The difference is perhaps one of degree only; but the problem in machine teaching is: are the limits too narrow?

In machine teaching the route must be precisely specified, only a limited number of alternatives may be allowed at each step, other deviations cannot be coped with and hence must not occur. Thus the system is likely to be teacher (machine)-centred. In fact, it seems more appropriate to talk of programmed *instruction* rather than programmed *learning*. The system would be much more flexible if it were possible for the student to take control from time to time, by asking his own questions and being able to find the answers. In other words, in

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addition to the machine being able to probe the student to locate his lack of knowledge, it should be possible for him to probe the machine to seek additional information. This would imply some easily accessible store of material and an ability on the part of the student to frame appropriate questions.

However, since we have not yet reached this stage, let us consider how successful programmed instruction has been so far, and what possibilities it offers for schools. First we must sound a note of caution. A recent survey of research data by Schramm listed nearly two hundred articles on programming. Of these barely 20% were concerned with evaluating programmes by comparing them to conventional teaching, the majority were concerned with display and response variables—machine or text, branching or non-branching, multiple choice or constructed response. At the same time Stolorow has suggested that the properties of programmed learning are almost certainly functions of the quality of the programmes. Again, going back to the survey, only 20% of the reports were concerned with secondary school children and about 10% with primary school children; the rest dealt largely with college or adult groups. In fact, the number of evaluation studies

which refer to programmes for secondary school children is quite small. This is in spite of the fact that the secondary schools are potentially one of the greatest fields of application for programmed instruction—and certainly the field where many claims are directed.

Undoubtedly programmed instruction has proved successful in a number of specific fields, performances after it have often been as good or better than those following conventional teaching. We have achieved this ourselves with primitive pencil and paper devices. One feature which will be of significance if programmes are used in schools, is the considerable variation in times between students; this could lead to administrative problems. Possibly allied to this are the controversial claims that performances after programmed instruction are less dependent upon general or special abilities than is the case after conventional teaching. Unfortunately these claims are difficult to test in our secondary schools which are either based on an I.Q. selection system, or organised on a basis of streaming—or both. Here is an interesting dilemma, that information which may be relevant to the need for streaming cannot be obtained because of the existence of streaming.

(Continued on page 51)



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Experimental Work with Teaching Machines

J. F. LEEDHAM

Mr. Leedham is head of South Wigston junior school, a school in the Leicestershire Plan area where the 11 plus has been abolished. His school is unstreamed, and he has for some years been experimenting with teaching machines and programmed learning. In 1962 his work was recognised by the award of a research grant by the Ministry of Education through the University of Leicester, given to enable him to develop his researches in this field.

There will be few teachers who are not by now aware of the eruption of teaching machines and programmes into the field of education. There have been many articles, many lectures but so far little account of what actually happens in schools which have used the techniques. This, it is claimed, is natural because the ideas and techniques are so new. C. F. Williams, writing in *Educational Research* (June, 1963), defends his theoretical examination by claiming that speculation is bound to be the prelude to this type of development.

In fact, work has been under way in this country since 1959 and in America since 1957. In spite of this, discussion of programmed learning still tends either to be primarily speculative or else abstracts of reported experiments in the United States. There is one very good reason for this, even if it is rarely mentioned by the enunciators of theories; it is that there are no programmes. Programmes, it is claimed by many psychologists, are only worthwhile if they

emanate from the clinical certainty of laboratory arrangements.

This may be the reason for so many fallacious presumptions. For much of the 'classical' research was based on programmes designed for teaching psychology to post-graduate students. This can be a far cry from the situation in the normal classroom—and this article is written from the experiences gained in that situation. No claim is made to superior insight—the experience itself has been limited; but a definite claim is made for the ability of teachers successfully to adapt these ideas to the classroom situation.

It is well known that there are two main lines of attack: the Linear, or Skinnerian, approach and the 'Branching' approach associated with the ideas of Crowder. It is not my intention to examine the history of this development; reference may be made to any of the texts on the subject—Richard Goodman's *Teaching Machines and Programmed Learning—an Introduction* is perhaps the simplest. The most obvious way for a school to start experimenting would be with a simple linear programme and a simple device. This was the approach originally undertaken in my school in 1960. The first programmes used were the arithmetic programmes produced by TMI/Grolier of America. These were used in conjunction with their first linear device but as this was designed to use up the programmes (at £2 a time) the answers were written on specially duplicated forms. This gave the child ample opportunity to 'cheat' and much of this went on.

Our first trials were with six girls who were able readers but poor at arithmetic. They used the Multiplication/Division programme which approaches the subject from the beginning and takes 1,600 steps to arrive at a low third year junior standard. The

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Our ideas of how to group children for instruction may be modified, in any case, by the simultaneous occurrence in schools of individual instruction by machines and large group instruction via television, films, and so on. In other words, it may be more appropriate, on occasion, for children to work in groups—some large, some small—or individually, under the direction of a team of teachers, rather than in the current 35-unit classes.

These modifications in school organisation may also have their effect on school design and building. Harvard psychology students already have unlimited access to a library of programmes which they can work through in machines housed in small booths.

However, at present, much of this is speculation. Suitable programmes do not exist in sufficient quantity for us to examine many of the claims for programmed instruction, nor to assess its place in school work—which brings us to one final point. Someone must write the programmes we need; although this is an arduous and time-consuming exercise it is a most enlightening experience. To set one's ideas down on paper and present them to children leads to at least two conclusions—first, that much of our teaching is obscure, confused and ambiguous, and secondly, in view of the fact that they still manage to learn from (or in spite of) us, perhaps our children have more intelligence than we give them credit for.

results were surprisingly encouraging. Pre-test to post-test was bound to show a gain because these girls were going over, in a new way, material that had been presented many times before. An important outcome lay in their different attitude to ordinary computation. The pupils' class work included plenty of experience other than sums and they were able to advance more readily on the Dienes apparatus in Algebra because of their experience with the programmes. Some of the boys who were lagging in the fourth year in Algebra were also tried with the 'Fundamentals of Algebra' programme, although it appeared rather unsuitable. They did, however, manage up to frame 200 with considerable advantage. They were taken off the work at that stage as the idiom and conventions became too unfamiliar. These first general experiences were gained with one device and two programmes. A further programme 'Punctuation' was received with boredom and it never really got under way.

Our first programmes

These programmes were imported direct from the United States. They were obviously too few and too unfamiliar in background for our wider use. So, without any clear-cut plan, we commenced the production of programmes ourselves. At this stage, in 1960, we had the clear advantage of books and articles now quite easily obtainable, though reading to an unfortunately wide extent was responsible for some early misguided decisions. For example, it appeared to be axiomatic that a frame in a linear programme should not exceed 15 words. Greater length of exposition appeared to belong to the school of the 'branching programme'. We did not realise the limitations of this information at the time and accordingly we experimented for four months with a programme on the alphabet and simple sentence to arrive at the 'correct frame size'. The solution appeared to be a frame size of $3\frac{1}{4}$ by $1\frac{1}{4}$ inches—this enabled *junior* children to write their answers properly and limited the information provided to what could be absorbed.

Using a simple presentation device called a 'Probox', card programmes were compiled for English. These consisted of packs of about 120 frames, each pack dealing with a specific point. Simple punctuation, spelling and vocabulary extension were obviously modes for linear presentation, and, after trials in three schools, some of the work was put into print for use with a linear machine designed by ourselves as being well adapted for use in the junior school. At the same time, other programmes in number, fractions, simple algebra, European economics, telling the time, were being actively tested, and eventually were available to us

in printed form for validation purposes. We were becoming aware of some of the advantages and disadvantages of our mode of programming but it was necessary to get material under fair test in order to check these impressions.

The necessity of defining just what the programmes were for arose quite quickly. No information had previously indicated that a careful estimate of the programme's vocabulary was an absolute essential if a teacher was to use a pack usefully. For example, the early frames of our programme were made to conform to a prescribed reading age. It was only experience that showed that the mode of programming could absorb reading difficulties. It soon became obvious that the work was useful in a remedial sense but that further help was often called for with programmes that endeavoured to teach new ideas merely by written question and answer.

Each programme contained a test, or sometimes two tests. It was customary with the spelling programmes to find that children learned to spell some 40 per cent better, judged on their pre-test scores, and that this was retained on a later test. This does not mean a great deal. If a child spells 9 words right out of 20 and then improves to 13 right out of 20 the only claim one can make is that the machine and programme have relieved the teacher of a small job. The real gain lay in the fact that the children improved their attitude towards spelling and saw a reason (and a pattern?) for getting things correct. It was clear, too, that the new words found their way into their ordinary work.

Post-test gains

So far as mathematics was concerned, where the programmes were undertaken by the children for whom they were designed, the results showed that they gained something on the first occasion, but much more on a second run through. With programmes such as equivalence calling for more able children, the post-test results always showed a good gain. It must be emphasised, however, that gains here are rather artificial except that they are 'gained' only with the aid of programme and machine. It would be possible to report individual highlights such as quite startling performances by children who suddenly learned to tell time by going through the programme once, but in fairness one would have to say that after a year of solid testing and repeating, this particular programme can still bemuse the odd backward child.

It is true to say that the limitation of frame size, and the limitation of material to work that was largely remedial, created the urge to open up horizons. It was then that many of the precepts advocated theoretically become redundant.

One useful exercise was a fairly carefully conducted experiment (reported in *Programmed News*, November, 1963) into reading. A well-known Reading Scheme was programmed at the introductory stage and taught under exactly matching conditions to ten children who were compared with ten children being taught by the Augmented Roman Alphabet. The circumstances of the experiment, carried out over 22 weeks, were known to the author of the scheme and the national director of research for the new alphabet. The results showed that the programmed work yielded an excellent result, but that the group using non-programmed work with the new alphabet did even better. The net result was the creation of a specially programmed pack for the instruction of teachers in the Initial Teaching Alphabet (the renamed Augmented Roman) in order to reduce the cost of setting up the work throughout English-speaking territories.

This pack is completely different in construction from the normal method of programming and relies, to some extent, on the ideas expressed by the 'Mathetical' school. It is under large scale validation tests and appears to be worthwhile. If it proves successful it might well be another approach, in simple fashion, towards providing programmed instruction to the more able section of the student population. Equally the format has suggested other ways of dealing with the slower pupil. It would be difficult to imagine how one could have arrived at the practice without the initial experiment that 'failed'.

Branching machines

It was also necessary to see if sophisticated branching machines presenting more advanced work could be usefully handled by younger children. The only possibility at the time was the Autotutor Mark 2 and the 'O' level mathematics programme. The machine was hired and the first five chapters on Symbols, Literal Number, Equations, Fractions and Decimal Fractions were presented in four schools to 23 children. The results have been set out in a special report, lodged for information wherever requested. In summary, I wrote that the errors made were astonishingly few, that children did not particularly enjoy their spells at the machine, that half an hour appeared to be plenty and that, measured again by pre-test to post-test gain, they did very well. And, in conclusion: 'One could make no greater claim than to say that with able junior school children, a sophisticated branching machine did not impede their ability to learn fresh material, that this learning appeared to be retained and that it was gained with only the assistance of machine and programme.'

It is only of late months that material has been

available in sufficient quantity and range to make it possible to comment on the practical issues involved in the administration of the work. As teachers will expect, the outcome differs considerably not only from school to school but also from the imagined procedure advanced by some writers whose last sight of a school classroom makes hindsight rosy.

The machine which we devised to overcome the disadvantages of previous machines has disadvantages of its own. Teachers prefer, on the whole, to use one linear machine for any particular piece of work that a particular child may need, and to make masks in order to keep the other programmes in use. Since all the programmes were designed to be used by small groups they tend to appear 'bitty' but have had an undoubted worthwhile effect on the slower part of unstreamed classes. The children continue to be very keen to use the material, more especially simple linear devices. It is a fair comment that none of them particularly cared for the Autotutor machine although they enjoyed some of the programmes. None of the schools concerned (all junior and non-streamed) appeared to find the accommodation of the work difficult; all the schools, except one, commenced to produce their own programmes. Three or four programmes of about 120 frames have been produced in one school merely to emphasise particular points in the classroom which the teacher finds it useful to put over in this way.

At one time it was anticipated that the provision of blank programme spaces would lead to the extension and improvement of the issued programmes according to local need. There is no evidence of this at the moment, but it must be borne in mind that the trials are limited in scope. Moreover, it has not yet been the practice to treat a programme as suitable for use by a class as a whole. One has only to employ half a class on programmed work with devices to realise that, however good the device and organisation, the differing rates of progress make for very special administrative problems. For example, if one poses a 700 frame programme on fractions to a class at the top of the junior school it is a perfectly fair assumption that if it starts at the beginning it is redundant for a good many children who will romp through to the more advanced stages. The spread and the administration of the detail can be coped with in an experimental design, but since they are useless for a class as a whole it is doubtful if experiments on a class basis are fruitful in junior school.

Experience has shown the truth of the following general points: first, that programmes can be

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Discussion

The School and Academic Year

The disposition of the school holidays whereby almost half is taken in August and contiguous weeks has produced a school or academic year extending in England from 2nd September to 1st September twelvemonths, dates fixed by the M. of E. Circular 4/62. It is an entity which is quite fundamental. Certainly from the junior school onwards the calendar year no longer operates for schoolchildren as schoolchildren (or for students as students) until their formal education ceases. Transfer of class and school are made according to it, examinations are timed to be set within it, comparisons of progress are made within it—rarely across it, e.g. Ann 2/9/50 with Mary 1/9/51, not with Jane 1/9/50. It has produced the 'plus concept' by which children are no longer 7 or 11 or 18, but 7 plus, 11 plus or 18 plus according to the year in which their 7th, 11th or 18th birthday occurs (the average age for taking the 'eleven plus' tests is actually 10 years 11 months).

A school year from September to August is common throughout Europe; elsewhere its incidence varies—in Australia it coincides with the calendar year. In some countries it is divided into semesters with school transfers at the beginning of each semester, as in the U.S.A. with two semesters. Surprisingly enough there are variations on the set pattern even in this country, notably Huddersfield which uses the calendar year for determining eligibility for primary/secondary transfer, e.g. pupils transferred in September, 1962, were all born in 1951, and were thus from 10 years 8 months to 11 years 8 months at the date of transfer instead of from 11 years to 12 years. It is claimed among other things that administrative simplicity is gained thereby.

Huddersfield, though, still transfers children at the beginning of the school year. Is it possible that to make the school and calendar years truly to coincide at every point would bring advantages additional to that of administrative simplicity with no serious disabilities?

The course of things would be like this: Infants admission would be in the January of the calendar year in which the fifth (or sixth) birthday occurs—a cold coming of it, but some enter in January at present and seem none the worse for it, and the attendant mothers of the present September entries would be spared a half, at least, of the winter months. Note—the discontinuance of terminal admissions is proposed.

Transfer to the juniors would be in January—after an Autumn term in the infants to restore the relapse after the long summer holiday.

The 'eleven plus' tests would be set in the Summer term of the junior fourth year—without the decimation of candidates through a 'flu epidemic or arctic conditions as can occur with January tests.

Transfer to the secondary school would occur at the end of the Autumn term.

The two school leaving dates would be July and

December, or if the latter, through seasonal unemployment, be considered a bad date, July and the following Easter. The G.C.E. examinations would still be sat in the summer months.

University entry would be at the beginning of the Lent term—with a challenge to the schools to make something of the post-examination term, or for the pupils to use it as a valuable interlude between academic studies in voluntary service or paid employment. The adjustment of dates at this point would be the most valuable consequence of the change that is here proposed. At present, about three-quarters of applicants for provincial universities have not taken 'A' level at the time when their applications are being considered. Universities must therefore rely upon out-of-date 'O' level results, reports from heads of schools which inevitably display differing standards, and interviews which take up much of the university lecturers' time, involve the candidates in long and expensive journeys and produce results only weakly correlated with university performance. Indeed, with the increasing pressure on university places, this change, quite apart from any other, might be considered imperative. The anxiety and the heartbreak over the provisional acceptance and the reserve list, the unsatisfactory setting of conditions in respect of forthcoming examination standards, the rush of marking in order to get results out in time, the confusion of late withdrawals and unfilled or overfilled places, the bedevilment of sixth form time-tableing for the ensuing year, the last minute job-finding of enforced school leavers—a full term between examination and university admission would obviate such chaos and remove its scandal.

Lastly, Finals would be in Trinity term as at present—with avoidance again of the rush in assessment, and with the Advent term which follows for post-graduate study or supernumerary teaching, punctuated with interview for jobs or second degree courses. Is this more than an interesting speculation?

G. V. PAPE.

(Mr. Pape asks us to say that his views do not necessarily reflect those of his employers, the London County Council.—Ed.)

Headteachers and Status

Mr. Stones' laudible article (FORUM, Vol. 6, No. 1) spotlights a generally ignored but nevertheless most crucial problem in the way of educational progress. Indeed it is purely owing to the apparent impossibility of amending the present system that despondent teachers have resigned themselves to their fate. However, now that the spirit of change is upon us, nationally, I (and I feel sure this sentiment is widely shared) should like to see this problem tackled much more vigorously (via FORUM?), to the setting up, perhaps, of a committee to collect data revealing the widespread character of—to call a spade a spade—despotism among head teachers, and to petition for a fundamental reform of the system of appointing them. The results of such a committee's investigations would be most revealing, especially to parents and administrators.

Of course, the body best fitted to do this, i.e. the N.U.T., is as Mr. Stones observes, itself largely controlled by head teachers.

To my mind the quickest solution would be for the N.U.T. to pass a resolution debarring head teachers from membership (there is still the N.A.H.T., etc.)! This, I believe, would go a long way towards establishing the professional standards we sadly lack, for the latter will never come and teachers never be comparable to lawyers or doctors until a similar democracy within the profession prevails. S. G. IRVING, Aylesbury.

Poor-relation Status?

When I first read Mr. Jones' contribution to 'Discussion' (Vol. 6, No. 1), I dashed back to re-read my own article in the hope that I had not in fact written all he said I had. I can see now that I did not express my points as well as I might have done and would like the opportunity to answer some of Mr. Jones' criticisms.

The part which he quotes was meant to illustrate a deplorable, but existing, state of affairs in further education in particular and the whole education system in general. I do not advocate 'churning' anyone out of anywhere. Secondly, I am on the same side as all the star-spangled committees which Mr. Jones reckons I've never heard of—let's have physical ties with the university. Lastly, I wrote, 'the opportunity should also exist for a student . . . to pursue his own interests up to university level'.

My whole article was designed to advocate a composite campus, intermingling of students of all kinds, opportunity to attend university lectures in one main subject and finally, new, challenging ideas of education to be developed by the colleges away from the narrow pursuits of an academic education. The poor-relation status will exist as long as these physical and intellectual divisions and the 'honour of such a status (in school)' remain low. Perhaps that explains why Mr. Jones is now teaching in a Training College.

A. D. S. CALDWELL.

Discovery, or Class Teaching?

Mr. Rubinstein hurls a pretty hefty brick at 'project' and 'discovery' supporters in his article on 'Secondary Education-Aim and Methods' (FORUM, Vol. 6, No. 1), but whilst it might knock flat some of those who follow such methods *only* because they appear to please 'inspectors and teachers of teachers', those who understand the educational value of the self-involvement of the pupil will stand the knock well enough.

Of course, Mr. Rubinstein's subject, history, is almost alone in one sense in the curriculum: it is notoriously a difficult subject for immature minds and, apart from the ability to regurgitate a lot of undigested facts, one often wonders what real historical understanding a young mind can possibly achieve. What, for example, do teachers know of children's sense of time and how it matures? History may not be *about* dates but no amount of detailed knowledge of, say, the events leading to

Peterloo is of much value, historically speaking, if the youngster having it really imagines that his grandfather perhaps took part in them.

My point briefly is that the sources of history and ways of looking at them historically might be better in developing a sense of history than the alternatives usually offered in school. In this context it wouldn't much matter what the youngster studied or how he recorded it (i.e. in written form, models, pictures, etc.) providing he was involved in wanting to find out and could with the teacher's help set about the task.

Mr. Rubinstein is quite right in that some children would study in any depth only a very narrow front indeed. But again, what is the alternative? Is it a series of potted accounts of this or that event, trend or movement boiled down by the teacher according to his predilections without regard for the children's interests or experience? If the intention is to pass on, in digest form, 'the best of past and present literature and the arts, etc., etc.', the pupil would be born, grow old and die in the classroom without having heard a fraction of what there is. Mr. Rubinstein might recall that Professor Tawney also enjoined upon students of history 'to don a stout pair of boots' rather than to spend all their time on the written sources.

But one can expatiate on this theme. Mr. Rubinstein has raised some dust with his brick-throwing but this should not blind him more than the 'educational' mote already in his eye. Is there something so awfully wrong in children 'spending ages looking for books, going back and forth between library and classroom, unsupervised and gossiping'? The suspicion is that Mr. Rubinstein is not so concerned with history education as with rectitude. He should realise that neither of these can be 'taught' but only 'learnt'.

G. PRICE,
Chorley Day College.

FORUM

SUMMER 1964 (VOL. 6, No. 3)

The next number of FORUM will contain:

Symposium on the Robbins Report

W. H. G. Armytage, F. C. A. Cammaerts,
Tom Driver, Jean Floud
(see page 46)

The Swing Towards Comprehensive Education

A group of articles on the new plans for secondary education at Manchester, Liverpool, Sheffield and elsewhere

by

W. Emrys Davies, Harold Hayling and others

Further articles include

Creative English by A. W. Rowe

Communications with Parents

by Michael Marland

Types of Teaching Machines

RICHARD GOODMAN

Mr. Goodman is head of the department of Computing Cybernetics and Management at the Brighton College of Technology. He is at present engaged on a programme of experimental work on the use of teaching machines.

Excluding American manufactured teaching machines imported (in the main by INADCON) into this country—most of which are linear machines in the price range £3 10s. to £50 and beyond, the machines available in the U.K. at present are:

- (a) **AUTOTUTOR** (U.S. Industries, Great Britain Ltd., 1/5 New Bond Street, London, W.1). This machine cannot now be bought outright and a rental service operates. The programme is presented on coded 35 mm. film and is costly to prepare or modify. The programmes presented are of the original intrinsic programming type developed by Crowder. Most of the programmes are in black and white but some colour programmes will, it is understood, be available soon. The machine was originally available for purchase at just over £400, but this was subsequently reduced to £295 for the British market only. Electro-mechanically the machine is now fairly reliable but it is still noisy. Programme layout and display have been greatly improved. A fair range of programmes is offered again on a rental basis but with the exception of what is in fact an experimental G.C.E. 'O level' mathematics programme, all are of American origin and orientation.
- (b) **GRUNDYTUTOR** (International Tutor Machines, Ashford Road, Ashford, Middlesex). Price £230 or on hire. Apart from one or two experimental programmes and programme fragments written for the machine by independent workers, only a few programmes are available and these vary considerably in standard. The light distribution over the screen is still poor as compared with that of the **AUTOTUTOR**, although variable focusing is provided. Like the **AUTOTUTOR** the machine is extremely noisy. I.T.M. market a number of other devices including the **CRAIG Reader**, a very useful machine designed to improve reading speed without sacrificing comprehension, two good overhead projectors, an episcope. A language laboratory using a magnetic drum rather than tape recorders is being

developed and it is understood that the first installation will be made early in 1964. A linear machine in the £15-£20 price range is also under development.

- (c) **EMPIRICAL TUTOR** (Lamson Technical Products, Lingmoor Works, Hillborough, Herne Bay, Kent). A programme of linear or limited branching character which can be printed or typed on fan-folded paper can be coded easily to control a tape recorder, slide projector, working models, etc. By 1964 will exist in a number of 'marks' in the price range £220-£440. The later models are generally considerable improvements on their predecessors. The policy of the company is to encourage customers to write their own programmes, thereby meeting specific requirements. The Empirical Tutor is also important in so far as it can be used for language teaching. It is probable that a number of other machines will be marketed by L.T.P. in the future.
- (d) **CLEMENTS TUTOR** (Clements Bros., Worcester). Price £130, without ancillary equipment. Programme is presented on 35 mm. slides and specially prepared diagrams can be separately presented. The machine has potentialities for development.
- (e) **VISTATUTOR** (Elliott Bros.). The machine is announced but not so far as is known in production. Uses audiotape to present the instructional material with visual presentation of supporting material.
- (f) **ESATUTOR** (Educational Supply Association, Harlow, Essex). Price about £14. Two elementary programmes available. Both the programme presentation and response sheet control are mechanically not very reliable. The machine is cumbersome for what it does—presentation of a linear programme.
- (g) **CYBERNETICS DEVELOPMENTS LIMITED** market several special purpose trainers, such as **SAKI**, **CYBERNEX**, etc., which are essentially more adaptive than any general purpose machine so far available. It is understood that two other machines, one to teach the use of teleprinters, the other to teach morse-code, are being or have been designed.

This list does not include a number of devices, usually of a linear type, which have been produced privately or semi-privately on a very limited scale. Prototypes of more sophisticated machines have been built by the National Physical Laboratory, Ferranti, A.E.I. and the University of Sheffield.

Some criticisms and reflections

ERIC LINFIELD

Mr. Linfield was until recently the head of a junior school in Hampshire. He is at present Senior Lecturer in Education at Newton Park Training College and a member of the FORUM Editorial Board.

No one wishes to underestimate the value of new approaches to learning and new techniques of instruction but it is often necessary to keep these two aspects of systematic education separate. The lack of funds for educational research, as described so regularly and effectively by Dr. W. D. Wall, the Director of the National Foundation for Educational Research, must be reckoned with whenever one is concerned with assessing either new approaches to learning or new techniques of instruction. From time to time one must stand aside and review the changing educational pattern, although ill-equipped for the task, otherwise the 'checks and controls' which we teachers feel that we have, may be lost or diminished. This article makes a preliminary attempt to assess the impact of teaching machines on the educational climate of this country and its significance, although lacking much evidence, either reliable or even anecdotal. In other pages of this issue of FORUM, men with first-hand experience of programming and using teaching machines have written accounts of their findings and have given accounts of the background to the teaching machine movement and of the types of machine available.

At the moment, most research on and use of teaching machines (as with electronic computers) originates in industry and in the armed forces where more capital is available for the basic equipment. The manufacturers of the more expensive machines are now making their products available on a short-term hire basis and other designers are working hard on simplifying the mechanisms so that cheaper models are possible. Very few accounts of the use of teaching machines in school, training college or university learning situations have been published at the time of writing, although very interesting research work is proceeding in certain schools and universities. In the meantime, teachers are being bombarded with information from press, television and radio, from educational journalists and from advertisers, making claims for teaching machines without their having any reliable body of critical opinion to refer to.

Learning theory and the psychology of programming and machine instruction

In the mass of literature on teaching machines which I have read, and from the conversations which I have had with some of the first users of teaching machines in this country, the most significant points which emerge are these.

(i) Since learning is a highly individualised process, although it takes place within a social context, a teaching machine caters most satisfactorily for single person learning. Everything, including motivation, depends on the individual's relationship to the machine and the essential control in this learning situation is the individual's decisions and responses. This will vary according to the type of programme being presented. A linear programme presents 'every student regardless of his level of knowledge, ability, and performance under tuition with exactly the same sequence of instructional items and tests, that is, exactly the same programme'. (This is linked with B. F. Skinner's own learning theory, which is radically behaviourist.) Non-linear or branching machines using non-linear and branching programmes and the adaptive types of computer as designed by Gordon Pask are more flexible in their approach and, in the case of Gordon Pask's machine, very much more expensive. Learning depends as much, and in the case of younger children much more, on actions as on reactions. Learning is an active process whereby an individual utilises the information which he discovers or is supplied with. If the teaching machine is to be used as an ally of the teacher in the classroom, it must possess some of the adaptability and the supplying of alternative modes of skill-learning which one associates with the good human teacher.

(ii) Speed of learning (or of absorbing information) has been shown to improve most significantly when students have been set to learn certain mathematical programmes by using teaching machines and when their performance has been compared with a control group of students taught by a human teacher in a conventional way.

Whenever one wishes to evaluate one method of instruction against some other method, the time of learning is a convenient measurable factor. So if a teaching machine caters for learning at various speeds according to the ability of the student and yet the overall learning time is decreased, one has to consider the application of this method of instruction very seriously. Most programme material at the moment seems more concerned with knowledge possessing a strong factual element or logical development within its discipline of study, but in the United States some critical and creative pro-

grammes have been devised in modern poetry and the novel. We need more information on the limitations of programming, as it would appear most inappropriate to call all existing teaching plans, schemes of work, syllabuses, etc., programmes.

The social implications of programmed learning and teaching machine instruction

Every teacher in this country has some basic philosophy of education behind the teaching method which he adopts. He may not be able to express this viewpoint very explicitly as it so often consists of an amalgam of ideas derived from his own personal education both at home and school and of his experience of teaching in different schools. He may be more concerned with passing on information to his pupils than with the example which he represents as an influence on younger minds. If human teachers have the imparting of information as their basic aim, then it would appear that teaching machines would in many instances do this much more efficiently. However, if there is a 'good teacher' shortage, the national supply position might be altered by improving the social status of the teacher in economic terms, by giving much higher salaries, or by deliberately fostering a concern for the social value of education. The ultimate worth of a society depends on the intellectual, physical, mental, and emotional maturity of its members and the cohesiveness which results from this. It seems highly significant that teaching machines are being introduced into the more authoritarian types of teaching situation where the 'checks and controls' to which I referred at the beginning are not so obvious nor so immediate. One needs to champion every form of audio-visual aid in education today if the mechanical aid can be used as an ally and not as a master.

Teachers decide ultimately on the content of the learning activities in the schools of our democracy and one hopes that all the power groups in English education today can be united in order to make more research facilities available on educational matters. The introduction of reasonably cheap teaching machines might give all children the opportunity of individual tuition and many learning difficulties, in mathematics for instance, could be overcome more easily. However, the classroom involves the teacher, and perhaps we all ought to be more concerned with the techniques of programming and of deciding on programme content instead of the type of machine which merely transmits the programme. The teaching machine could prove as

important to the child of the twentieth century as the textbook did for our grandparents, when rote learning was common practice, and schools were more concerned with instruction, but to all who hold a broader view of the function of education, its advent must be welcomed with caution. Our schools are providing the citizens of the future, and in society a concern for the acquisition of social skills is of prime importance. I wonder how the teaching machine can assist us in our task of helping the growth and development of integrated human personalities, who realise their full potential as responsible citizens in society. Man does not live by information alone.

EXPERIMENTAL WORK WITH TEACHING MACHINES *(continued from page 53)*

extremely useful to the individual child; second, that we need to brighten up our programming techniques in the light of what we find, not particularly of what we read; and third, that, so far as can be seen, this technique is best adapted for work by individuals and small groups.

Much of what is reported here has been set out in more detail in reply to specific enquiries. It is clear that most writers on this topic consider it safer to reproduce American theory. This is to be regretted. We now have our own indigenous experience to guide us. The major need is for the creation of new types of programmes for the individual and for the small group. Plans for such programmes and for their use have been made by us for some time and the results of their first application should be available during the next few months.

★ ★ ★

I wish to pay tribute to Mr. R. Bews, of Linden Junior School, Leicester, to the heads of the various Leicestershire junior schools who have co-operated in this work, and to the staff of my own school. The work that is being carried on by the Programming Group at the University of Leicester School of Education should also be gratefully acknowledged. Enquiries arising out of this article should be addressed to me at the University of Leicester School of Education, 328 London Road, Leicester.

Threat to the Foundation of British Education

D. E. M. GARDNER

In view of the campaign that has now been carried on for some months in favour of raising the school entry age to six, the Editorial Board of FORUM, at its last meeting, decided to commission an article on this particular question. We are very glad indeed that Miss Dorothy Gardner was able to meet our request. As our readers will know, Miss Gardner has done pioneering work on the education of young children, and has for many years been head of the department of Child Development at the University of London Institute of Education. There is no one more qualified than her to make the case for retaining five as the age of entry to compulsory education, and to bring out the essential educative value of early schooling.

It is disturbing to those who have knowledge and experience of the education of young children to read in the press various recommendations that the extension of the school age to sixteen should be purchased at the expense of the education of five-year-olds.

It is time we gave consideration to the fallacies of such proposals and that those who believe what psychologists have taught for very many years that the early years of childhood are the most formative in life of character and attitudes, should be as articulate as are those who are always eager to attempt to solve all educational problems at the expense of the youngest children.

Can we not resolutely determine on a policy which values education sufficiently to refuse to sacrifice what is already so good in our educational system? When further expansion is needed, let us seek some other means of achieving it.

Compulsion at six?

One recent article stated that all other 'advanced countries' start compulsory education at six. It failed to point out that in such 'advanced countries' the five-year-olds are generously provided with 'kindergartens', so that any parent who wishes it can send a three-, four- or five-year-old to a school very comparable to our good Infants Schools, *not* to schools which (to quote again from this article) 'are cheaper to run than true schools, because they employ relatively unqualified staff!' Mercifully this statement is not true of our Nursery Schools. Fully qualified teachers are, it is true, *assisted* by less fully-trained helpers, but the education of young children, which requires all the skill, sensitivity and intelligence of the best quality of teacher, is in Nursery Schools under the direct supervision of a fully trained teacher for each group of children.

Moreover, the article ignores the fact that educationists in most of the 'advanced countries' have a deep admiration for our Infant Schools, which are frequently described by overseas visitors to this country as the best part of our educational system. Apparently the writer of the article would be prepared to sacrifice, without a qualm, the foundation of our educational system, which has made and is still making a vital contribution to education as a whole.

A false suggestion

Moreover the writer cheerfully states that working mothers could send their five-year-olds to Nursery Schools. Could they indeed? The provision of Nursery School places is lamentably small and waiting lists of children under five who are in great need of places are so long that superintendents often decide that it is kinder to close their lists, than to give parents false hopes by entering the child's name. Many people seem to be unaware that the Ministry's circular 860 still prevents Local Education Authorities from increasing accommodation for children below statutory school age and that the number of children so provided for was published in January 1962 by the Nursery School Association and was only one per cent.

What is to happen to the few under-fives who usually owing to special need are fortunate enough to get admitted to Nursery Schools, if their places are taken by five-year-olds? The price we shall pay for compulsory retention of children at school for one more year is too high, if that price is the suffering and deprivation of educational opportunity for them. In very many cases the word 'suffering' is not at all too strong. One has only to consider the conditions under which many young children live today (for example, in our crowded cities) to know that

it is indeed a fortunate child who can have anything like the educational benefits of a good Infants School, if he is denied admission. Moreover, it is not only mothers who go out to work who care about the early education of their children.

A statement was also made that children can 'learn more easily at six than at five'. This suggests a very narrow concept of what is meant by 'learning'. If learning is taken to mean merely a matter of acquiring the tools of reading and arithmetic, there are some children of whom this statement is true, but if one thinks of education as providing the basic experiences which make these tools meaningful and lay a foundation for later studies in many other subjects, as well as providing education in social living with other children and keeping fully alive the intense zest for learning which is so evident in young children, one rejects this statement as nonsense.

Learning before five

Long before five, the child is capable of learning, as is clearly shown by his acquisition of language and understanding of the phenomena of the world around him, of which as an infant he was totally unaware. In the first two or three years, if he is in a good home, with a mother who has time to attend to his needs for learning as well as to his physical care, he does very well, but as he grows older he needs to explore further and his education makes greater and greater demands on the time and resources of the adults around him.

At the times of day when he is most fresh, energetic and ready to learn, most mothers are fully occupied with essential household duties, even when they do not go out to work, and their inability to give time and sympathy to the child's investigations is very liable either to make the child rebellious or to have a damping-down effect on his desire to learn. Headmistresses of Nursery and Infant Schools often find that mothers who are eager for their children to enter school complain that they are 'naughty' at home. This 'naughtiness' consists of the child wanting to experiment and explore, to move about and make a noise at times when the mother is urging him to be quiet, keep still and refrain from touching objects.

The teacher's role

In a good Infants School, the teacher is free to encourage conversation, with consequent enrichment of the child's vocabulary and powers of expression, and to plan an environment designed to encourage

the child's learning. She will promote experiments and lead the child on to further discoveries, both in and out of doors. Her training has made her alert to recognise and foster the child's growing powers of reasoning and thought and to help him to establish harmonious relationships with other children of his own age. She is well aware how much his mental health depends on his finding opportunities to be creative and helpful. Moreover, she has time to enlarge his horizons by telling him stories which will introduce him to the world of books, to provide musical experience and the opportunity for adventurous physical exploits. Children are often at their most imaginative and creative level when engaged in common achievements with other children, but five-year-olds find it difficult to sustain this co-operation unless supported by the friendly watchfulness of a wise and experienced teacher.

The Butler Act

The same article refers to the Butler Act as foreseeing the raising of the school age to sixteen, but it does not point out that this very Act makes it obligatory to provide Nursery Schools wherever there is a need. We ought to be apologising for neglect of Nursery Schools rather than considering for one moment assigning five-year-olds to the category of those for whom we do nothing until the needs of children of statutory school age have been met, which would be their inevitable fate if the doors of the Infant Schools were closed against them.

If it is really impossible to recruit more teachers by a more generous educational policy, it would surely be wiser to allow the steady increase which is now taking place, of voluntary attendance of secondary schools after 15, to go on developing rather than to apply compulsion to those who wish to leave and to imagine that by sacrificing the foundations of education we shall erect a sound structure. If mental resilience is safeguarded in the early years, a wish to continue education should go on growing. It is very doubtful whether any great good will be achieved by applying compulsion to those who are already impatient with school life, and it is very certain that the neglect of the younger children will do harm.

The lost year

Quite recently an Infant School teacher said to me how difficult it was now to do good work in her school because, owing to overcrowding in the district, she could not admit the children till they were six. She said, 'It takes almost the whole year

from six to seven to make up for what they have lost. They have got into bad ways through not having enough to do. They are "wild" and have lost the habit of concentrating on anything.'

Her words reminded me vividly of what we saw in our cities in the early stages of the last war when the Infant Schools were closed. To those who remember this and who know what Infant Schools are doing it is hardly credible that people can be untroubled at the thought of cutting these schools in half or throwing them away.

An argument of expediency

Let us admit that this cannot be justified on educational grounds and when arguments are produced for turning out the five-year-olds the motive behind them is one of expediency. It is sometimes stated, for example, that the school day is too tiring for them. Have those who say this any experience of seeing how absorbed and how relaxed children are in good Infant Schools? There are, of course, some schools where there is over-pressure and too much sitting still, but these are becoming steadily fewer. Most Infant School teachers are wise enough to modify the school day to suit individual new entrants and to provide for rest as well as activity, but, as most parents would bear witness, five-year-olds do not require a long period of afternoon rest and are more relaxed when engaged in absorbing occupations than when bored.

If the motive in sacrificing five-year-olds is to keep fifteen-year olds off the unskilled labour market, let us at least have the honesty to say so and not blind ourselves by unthinking acquiescence in such false theories as that five-year-olds are incapable of learning and that the work of skilled and devoted Infant School teachers has therefore been a waste of time. Their work would be even more effective if we did not neglect our under-fives and it is sad that the year which marked the centenary of Margaret MacMillan's birth could not have been celebrated by an increase of Nursery Schools.

Whenever it is pointed out to us that our pre-school provision is probably the lowest of any civilised country, we are now at least able to reply that all our five-year-olds are being educated. Countries often seem to be unaware of the very matters in which their greatest strength lies. I should like to see more pride in and recognition of the work of our Infant Schools, which sometimes appear to be more appreciated by other countries than by our own.

The Modern World

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From Forum to Plowden

GEORGE FREELAND, EDWARD HARVEY, NORMAN T. MORRIS

This 'Open Letter' from the three junior school headmasters who are members of the FORUM Editorial Board, may be taken as an editorial statement. The Editorial Board intends, at a later stage, to present evidence to the Plowden Committee, particularly, but not exclusively, on the question of streaming. Readers are invited to send material (suggestions, or actual concrete evidence) for inclusion in our submission, to the Editor by the end of February.

FORUM welcomes the Minister of Education's decision to institute an enquiry into Primary Education. The role and purpose of the primary school are necessarily affected by current modifications of the educational system and the further developments envisaged in recent reports. Neither Newsom nor Robbins can be adequately implemented without a thorough review of what goes on at an earlier stage. Indeed, for this very reason, it may be felt that the appointment of the Plowden Committee is belated. We would have preferred to see primary education considered concurrently with the later stages to which so much official attention has been given in recent years.

There have also been reservations about the composition of the body entrusted with this task—*The Teacher* reported receiving over 500 letters on this subject—for among two dozen members only three, if we have counted rightly, are practising primary teachers. By comparison nearly a third of the members of the Crowther Committee were secondary teachers, though the enquiry was less strictly concerned with the schools. One grammar school teacher figures on the Plowden Committee but doubts are again raised by the fact that there is no representative of comprehensive schools nor of the secondary modern schools which at present take the vast majority of primary pupils. Does this mean that selection is still regarded as the main function of primary schools? At best a difference of attitude towards primary teachers is implied, an underrating of the contribution they have already made to shaping education at this very vital stage. Political leaders, heads nodding in unison, are now wont to observe at the end of any discussion on education that it is the primary stage that is really important. They are not the first to discover this but now they have done so it is vital to ensure that the recognition does not remain merely formal.

The Plowden Committee's terms of reference are comprehensive enough—'to consider primary education in all its aspects and the transition from primary to secondary education'. Within this framework it is possible to ensure that all the important questions at issue are fully reviewed. The delibera-

tions of a committee depend largely on the evidence it receives and we hope this will be forthcoming in abundance from the schools themselves. There are a great many points on which definite decisions are needed.

Some important questions

In the first place, what is to be the range of primary education? At present it is from 5+ to 11+. But to follow up the social implications of the Newsom Report is to arrive at the urgent need for a nursery school system from the age of three. At the other end of the scale, if a sound basis is to be provided for the kind of secondary education now advocated, can this be achieved by the tender age of 11—or should primary education go on, as has been suggested in some quarters, to 13? There have, of course, been suggestions that the age of entry be raised to six but these have less to do with consideration of children's needs at this stage than with doubts about the supply of teachers, particularly of an adequate number to allow for raising of the leaving age. Here it may well be suggested that skilled teaching in the early years is one of the best ways of ensuring later success and so solving the problem of providing sufficient teachers on a long-term basis. There is nothing to be gained by a policy of robbing Peter to pay Paul.

If it is necessary to hold what we have and maintain the age of admission to primary school at five, there is a case for reviewing the possibility of a shorter school day for new admissions. Under present arrangements it is quite possible for first year juniors, at the age of seven, to spend longer on school premises than the oldest secondary pupils. It would be interesting to have views on this question.

In some respects age limits can be a matter of administrative convenience rather than an educational necessity, and there might be much to be said for extending the discretion of head teachers to promote children earlier or later. Attention should certainly be given to the case of those with 'summer birthdays' who at present seem to be penalised all along the line. A curtailed life in the infant department, of two years and a term, may often mean

classification in a B stream (or lower) in junior school and this implies a handicap which merits a pretty heavy 'age allowance' when assessments are made later. Not only the age of entry but age of transfer is involved.

The most important aspect of the primary school is, of course, the curriculum in its broadest sense—the social, physical, emotional as well as intellectual aspects of education. The consultative committee's report of 1931 recommended that the primary curriculum should be thought of in terms of activity and experience rather than knowledge to be acquired and facts to be stored. How far should this precept, which has done much to revolutionise life in the primary schools, be applied in future? Perhaps the main need now is to pose further questions. What form should activity take? Is it enough to suggest any activity, or should it rather be a commonly shared activity specifically undertaken to provide a material basis for the social interplay of language and thought? This, of course, raises one of the fundamental questions, the extent to which the curriculum can be centred on the child or to which it should be planned.

If the primary school is to provide an adequate foundation for future development it must clearly be concerned to foster basic skills and the formation of basic concepts. This at once brings us up against the problem of planning, of working out the best order of development to follow. How systematically should this end be pursued? What has programmed learning to offer here? To what extent should we try to define the standards to be reached? These questions have been reviewed in FORUM at various times, but there remains much to be said.

The transition between schools

In this connection the question of liaison with the secondary schools arises. We feel strongly that it is in this sense that 'the transition from primary to secondary education' needs to be discussed, not in the old terms of assessment and selection but in quite new terms, in relation to new developments at both stages. In the primary schools, for instance, nature study is moving over to science, arithmetic to mathematics, while in some cases a second language has been introduced. How do these developments dovetail in with the early stages of secondary education? Do they imply a new kind of basic course more varied than before on which the secondary schools can build? To draw attention to such questions is not to overlook the urgent need, often underlined in these pages, to standardise certain aspects of the teaching of basic subjects—ways of working sums, the colours used in sets of arithmetic apparatus, styles of handwriting, the use of

enlarged alphabets in the teaching of reading, and so on—at least in primary schools serving a single secondary school. If the Plowden Committee ensured that effective steps were taken in this matter, so vital to the children's learning, and worked out a plan whereby agreement could be reached, this alone would be a considerable contribution.

The psychology of learning

The committee would, indeed, be doing a splendid service if it reviewed 'The Teaching Situation' on the same kind of lines as in the second part of the Newsom Report. There is need for systematic research into the situation in which the primary child actually 'learns', with particular attention to techniques of helping pupils whose abilities are artificially depressed by environmental and linguistic handicaps. What is needed is a fundamental attack on the whole question of the psychology of learning—on how abilities and mental operations may be *developed* in the child in the process of learning, on discovering what are the components of such abilities and how they may be actively formed in the school. Such research, based on the developmental approach to children's mental formation, is only just beginning in this country. Yet knowledge of this kind should underly the practice of teaching in the schools.

In this respect the matter of internal school organisation is vital. As is well known, it was the 1931 Report that first officially advocated streaming in the junior school. But the theory underlying this view has since been increasingly questioned; such psychologists as Professor P. E. Vernon have underlined the grave harm that can be done by differentiating children at this age, and there is now a considerable amount of evidence to be gathered from schools which have ceased to stream. The whole matter is now under investigation by the National Foundation of Educational Research, which has received a grant of £60,000 for this purpose from the Ministry of Education. No doubt the Plowden Committee will be kept informed of the results of this enquiry, one of the largest research projects in education ever undertaken in this country. The time is ripe for an entirely new assessment of this matter—and not only with reference to the schools themselves but also to the training of teachers.

One of the most encouraging developments, chiefly in those areas where the pressure of the 11+ has been removed, has been the widening of the primary curriculum. This, in itself, gives rise to new questions about school organisation. For instance, a foreign language has been introduced in some schools. Does this imply a more specialist approach,

the need for subject teachers rather than a class teacher in the junior schools? The need can be met by introducing a specialist teacher over and above the normal staffing ratio. But if this is done in the case of French, why not also for Music, Mathematics, Science, Physical Education, and in the extremely important department of diagnostic and remedial techniques? Special teachers are sometimes called 'consultants' and it is held that their work with one class effectively influences the rest of the school. But though this argument may serve in the case of art or drama, it can hardly apply in relation to, say, science and mathematics.

New developments

It is precisely in this kind of matter that a committee of enquiry has a fruitful task to pursue. There have been encouraging innovations, on the part of the more fortunate schools, which none the less have only been made possible by ingenuity and adaptation. Are these changes desirable for all primary schools? If so, the necessary conditions must be provided. In particular, if there are to be more primary teachers with specialist qualifications of one kind or another, then the question of improved salaries and status arises sharply—no less than fundamental questions of school organisation. Unless such questions are dealt with discussion remains an academic exercise. It may be hoped, for instance, that the Plowden Committee will not establish, yet again, that one of the most urgent tasks is to reduce the size of classes in primary schools. Rather, taking this conclusion as read, it might see its task as providing a clearly worked out plan *and* timetable to ensure the end is achieved.

Much has been said about encouraging married women to return to teaching—an aim which itself calls for both the improvement of primary schools and an extension of nursery education to provide for their children. But however welcome such a step may be—married women working part-time might well provide some of the specialist teaching now increasingly called for—this alone is not enough to meet staffing needs. Here a particular question to be investigated is the desirability and possibility of encouraging more men to enter primary teaching.

One of the most exciting sections of the Newsom Report is that dealing with school buildings, particularly the practical plan illustrated on p. 93, which bears witness to the capacities of the Development Group of the Architects and Building Branch of the Ministry. The tragedy is that such ideas have not more frequently been translated into practice. Here again the Plowden Committee has an opportunity, not so much to describe at length the kind

of conditions we all know exist too frequently—to salve consciences, as it were, by a full confession of sins—but to describe precisely why and how it is that the fundamental stage of education has hitherto been neglected in order to make sure that it is never allowed to happen again, that plans are advanced which cannot be ignored or thrust aside.

Enough has been said to illustrate our belief—which we think is generally shared—that what is needed is a *fundamental* consideration of primary education in all its aspects. The children born today are those who will profit from the Robbins reforms in 1980 but they will only be enabled to profit fully both at the secondary and higher stages of education if the foundations are soundly laid. Indeed it is at the primary stage that most is and can be done to mitigate inequalities of income and opportunity, to set all children on the highroad to development. It is a measure of our failure to live up to our precepts that this stage has hitherto been allowed to remain separate from the later ones and so subject to administration 'on the cheap'. But there are today many signs that parents are alive to the problems and prepared to add their voice to demands for a changed outlook. FORUM would be glad to have the views of both teachers and parents in the coming weeks to enable the preparation of evidence to lay before the Plowden Committee.

TEACHING A COMPLETE YEAR GROUP— *Continued from page 66*

This could be done whilst still preserving the form as the main teaching unit; it would also enable larger groups to be the units, with certain choices operating within the group. In the first two years of secondary education it might be possible to organise the curriculum into three or four areas of study: humanities, language, number. This would continue and enrich the kind of learning pupils enjoy in the best of our primary schools, and prevent the too sharp break that occurs at present between primary and secondary.

There is much to be said in favour of teaching as a member of a team that is thinking not in terms of separate forms but of a complete year group. It is a form of teaching that should be encouraged by those teachers who are anxious to counteract the harmful effects of streaming and over-specialisation.

Teaching a complete Year Group as a member of a team of teachers

HUGH CUNNINGHAM

Mr. Cunningham, who is concerned here with a new technique of teaching, has taught in secondary modern and bilateral schools. He is at present head of the Middle School at the Swinton Comprehensive School in the West Riding, and it is here that the experiment he describes was undertaken.

The proposal of the Stoke-on-Trent Education Committee to introduce the practice of teaching groups as large as 150 through a combination of the lecture and small seminars merits serious consideration on the part of teachers. Over the last twelve years, and in three schools, I have taught fourth year school leavers organised not as separate forms but as a complete year group. The work has usually been a development of the History and Geography schemes of work, the two departments agreeing on an area of study and on methods that will bring out the interdependence of the work done. Along with this, visits and career talks have been made part of the work, particularly as a means of local study. At my present school a fourth year group of 130 pupils is following such a course, and on a Friday afternoon is taught as a complete group: the afternoon begins with a lecture-lesson to the complete group, which then is split into smaller groups working on individual assignments.

I have found that such an approach to fourth year pupils has advantages for pupils and teachers alike. For the teacher the experience of working as one of a team tackling a common problem (and for the secondary school one of its most difficult problems) can promote a greater sense of purpose. Content and method can be discussed and reviewed; ideas argued over and put into practice. The teacher can arrange for the type of work and the size of group he wants to be organised within the larger groups. It enables a greater flexibility in organising various activities—group and individual assignments, visits, talks, films. But the team of teachers at all times can control and guide the work—not surrendering to the transient, fluctuating interests of 'The Child', which David Rubinstein puts as (apparently) the only alternative to class teaching (FORUM, Vol. 6, No. 1). It is precisely this control

exercised by the teacher-team that makes it so valuable an experience, particularly for the young teacher.

The pupils, too, have responded well to such an approach. The courses have never achieved the success aimed at, largely because of a lack of facilities; nevertheless there has been a marked improvement in attitude on the part of the pupils. The work has seemed to have more purpose and a greater relevance to their needs. Because it is related to their environment and to the links between the immediate environment and the world outside, it is more possible to encourage individual and group activity. The emphasis at all times is to enlist the feelings and imagination so that the pupils become active, thinking participants in the process of learning. The final year ceases to be a time of endless revision and can become more obviously a necessary culmination of a general education. Too often, however, it is hampered by the conditions under which we teach.

I have been fortunate enough to teach in modern schools, buildings of light, air and colour. When I think of the schools where many of my colleagues have to work, I realise that what I have to say may sound peevish; but the fact is that the design and the facilities of these schools all too often frustrate the development of team-teaching. My present school, a handsome building opened in 1960, has no small hall that may be used as a lecture room. Each Friday afternoon begins with my talking to 130 pupils in the hall, whilst in the main part of the hall dinner ladies are still clearing tables and sweeping the floor. When speakers come we must either use laboratories, the only rooms that can seat more than 36 to 40, or the hall—if it is not required as a second gymnasium.

School design

Ideally, work of this nature should take place in a block of rooms: a lecture hall that can be blacked-out for the showing of films, some small rooms for discussions or group work, a room equipped for practical work (such as map-work) associated with some part of the course, and a library. The library, we are told, should enter into every aspect of the curriculum, assisting and inspiring work. Unfortunately the architects are either inspired by the monastic ideal, and make it a remote secluded cell, or plan it as a Pullman carriage. At my last school the library was on the first floor at the end of a long corridor of classrooms designed for classes of 25 but holding classes of 36. In my present school the library also acts as a corridor between the staff room and the boys' lavatories. From my experience, the schools of the fifties do little in their design and planning to encourage a greater flexibility in our

teaching; despite the glass and Swedish wood, they still remain a collection of boxes for the promised land of thirties.

It is not only in design that our schools are lacking: we also require a more generous quota of auxiliary help. How many schools have a full-time librarian? I do not mean a teacher who spends two-thirds of his time teaching but a qualified librarian. After all, many school libraries are already far larger than county branch libraries. If teachers wish to prepare duplicated material (and this becomes even more important if individual and group assignments are to be prepared) they either have to type it out themselves, write it out for a Banda machine, or go on their knees to already overworked school secretaries. And this at a time when in many parts of the country, certainly in mine, girls of 16 and 17 with 'O' level passes in commercial subjects are unable to obtain jobs as typists and junior clerks. If the Ministry were more lavish in providing this kind of auxiliary help, it might find teachers less suspicious of auxiliaries of another nature.

Certainly on our part we should be prepared to experiment more boldly with teaching groups other than the class of 30 plus. For my part I welcome the idea of planning for a complete year group. In the first place, a team of teachers have to choose an area of study, decide on content and approaches, and so must, of necessity, escape from thinking in terms of 'subjects'. It is a step towards that integration of knowledge that is so necessary if secondary education is to become in truth a general education. Furthermore, the teachers are forced to plan the work in such a way that it captures the interest of the vast majority, allows the least able to grasp the important points, and stretches the most able—partly by allowing them to take responsibility for the success of parts of the learning process. In this respect it is a step away from the concept of the homogeneous ability-stream, the myth that dominates so much of our educational thought and practice.

The present shortage of teachers, one which is likely to be with us for a long time, is a further reason why we should examine ways and means of teaching other than in form groups. Many of us attack streaming because it penalises pupils whose intellectual development is stunted by being taught as 'B' or 'C' (even 'F', 'G', 'H') children, only capable of attempting standards of work markedly below their superiors of the 'A' stream. There is another, perhaps even more pernicious, danger to our pupils—suffering a succession of poor, uninspired teachers. In our professional organisations we avoid discussing this, but we see it happening in

our schools—and it is a brave headmaster who decides that his 'C' forms must have the best teachers. This is not to argue that we can solve the problem through a twentieth-century monitorial system, but the impact and influence of the best and most experienced teachers could be felt by a larger part of the school. The greater flexibility allowed through teaching as a member of a team will enable us to vary the size of the group and the style of the teaching; it will also make it easier for us to tackle the oft-repeated complaint of training departments—that the young inexperienced teacher is too often flung in at the deep end. The important thing is that in our thinking about professional training and the design of our schools, we must insist that it be for the practice of the next and not the last decade.

Extension of team teaching

So far, my experience has been limited to 15-year-old school leavers and to areas of study that involve the History, Geography, and, to a lesser extent, the English departments. I believe that it could be extended. If it is felt necessary that a greater proportion of our pupils be graded by external examinations, schools can frame their own syllabus for the C.S.E., which we are told is to be teacher controlled. Then, if we are to control it, let us ensure that it be an examination centred on the practice of the school, and not on the 'candidate' of a remote examination board. It could also be used in the fourth and fifth years to rescue general education from the pressures of time for 'subjects'. At the moment we are in danger of being swamped by subjects, all of which can make a case for being taught to examination standard and all of them, therefore, making a case for extra time.

Surely it is time we began to ask what a general education should consist of and to reduce the number of subjects, so avoiding early specialisation. It could lead to greater opportunities for Music, Art and Drama, which at the moment play such a small part in the education of the majority of our fourth, fifth and sixth forms. We are constantly being told that we are lagging behind in a scientific education, but all our science masters can recommend is more and more time being given to their subjects. In the technical subjects, Woodwork, Engineering and Technical Drawing are subjects at 'O' and 'A' levels, but so far as employers and Technical Colleges are concerned the subjects that matter are Maths., Physics and Chemistry. Could not the status and the educative value of Handicrafts be best served by associating the work more closely with the Sciences?

(Continued on page 64)

Book Reviews

Programmed Teaching

D. H. HOLDING

Mr. Holding is Lecturer in Psychology in the department of Psychology at the University of Leeds.

The Learning Process and Programmed Instruction, by Edward J. Green. Holt, Rhinehart and Winston (1962), 228 pp., £1 12s.

Teaching Machines and Programmed Learning, by R. D. Gee. Hertis Technical Library and Information Service (1963), 68 pp., 4s.

Programmed Learning, by Wendell I. Smith and J. William Moore. Van Nostrand (1962), 240 pp., 15s.

Programmed Learning and Teaching Machines, by Richard Goodman. English Universities Press (1962), 39 pp., 2s. 6d.

The Arithmetic of Computers, by Norman A. Crowder. English Universities Press (3rd Ed., 1962), 472 pp., 25s.

Earth in Orbit, by Patrick Thornhill. Methuen (1962), 55 pp., 3s. 6d.

Teaching machines are devices for presenting programmes. Programmes, in this context, are written lessons which are intended to produce rapid, systematic, individual learning. They differ from spoken lessons, and from conventional textbooks, in several important ways. The material is broken into sequences of short items, each suggesting and requiring an answer from the student. The answers are immediately checked, so that errors cannot go uncorrected, and so that knowledge of being right 'reinforces' the acquired learning. Further, since the material develops logically, and the questions suggest or 'cue' the answers, the student nearly always is right.

All of this seems plausible enough, and seems to work out in practice. The learner, the theory runs, is actively attentive throughout the course; his activity is regularly rewarded, and he is led gradually from stage to stage in a way which leads to few misconceptions or failures. In the jargon of learning theory, he acquires new responses, and learns to discriminate complex stimuli to which he responds differentially. Of course, these procedures are very reminiscent of the 'behaviour shaping' carried out so successfully on Skinner's pigeons, learning to play ping-pong on a high reinforcement schedule. This is no coincidence. Despite Pressey's suggestions on self-scoring machines in the twenties, there is no

doubt that the teaching machine movement derives its historical impetus, and much of its current theoretical steam, from the animal learning laboratory. So much so, and despite the contributions from other disciplines, that the morale of experimental psychology has received a sharp filip. Learning theorists, after fifty-odd years in the wilderness of pure research, are glowing or glowering at the sudden change in their status, finding overnight that they are near experts in an unimpeachably practical field.

Something of this feeling of vindication comes through the pages of *The Learning Process and Programmed Instruction*. Not 'now it can be told', but 'now it will be listened to'. The book attempts to explain to teachers what it is that learning experimenters, particularly Skinner, have been trying to do, and to relate their findings to the mechanics of programming. This is an entirely reasonable aim. Unfortunately, learning theory lends itself readily to an arid, technical treatment, and one despairs of its ever appealing to a wide audience. The author's approach is abstract and solemn, with the American leaning towards Latin stems; and despite its basic accuracy and sensibleness, the book is unlikely to inspire amateur programmers with a gusto for the psychology of learning.

Programming, its techniques and its philosophy, have inevitably accreted a great deal of introductory, supplementary and experimental literature. The best part of the available material can be traced through the Hertis bibliography, *Teaching Machines and Programmed Learning*, which is well-organised and informative. Some original articles are reprinted in a paperback volume of selected readings, *Programmed Learning*. The first part is theoretical, and contains several papers which are, in a sense, classic. The final section contains a somewhat puzzling array of research reports, dealing with methods of reinforcing correct responses, ways of responding and individual differences; the glossary omits such established favourites as 'intrinsic', 'drop-out' and 'wash-back'. The middle section is a single article on how programmes are actually written, and is readable and competent. However, what it fails to say is of great importance, for it deals with *linear*, not *branching* programmes.

Linear, or Skinner-type, programmes are straightforward sequences of steps, through which the student works consecutively. It is possible, though, to introduce refinements which lead the student through extra material whenever he makes a mistake. Further, according to the kind of error he commits, so the remedial items may be varied. If this is done, we have a branching, or Crowder-type, programme.

AN EXPERIMENTAL STUDY OF MATHEMATICS- LEARNING

Z. P. DIENES

with a preface by Jerome Bruner

This is a full and definitive account of the research project undertaken by the author, in association with Jerome Bruner, at the Harvard University Center for Cognitive Studies.

The book opens with a consideration of free play and rule-bound play, and discusses the transition between play activities and the higher cognitive processes. Succeeding chapters deal, in turn, with *Abstraction and Construction*, *Generalisation and Analysis* and *Symbolisation and Interpretations*. Finally the educational implications of the whole project are considered.

224 pp 42s

THE POWER OF MATHEMATICS

Z. P. DIENES

The Power of Mathematics gives detailed consideration to the highly productive analytic phase in mathematics learning which follows the constructive phase described in the author's first book *Building Up Mathematics*. Teachers of the subject at the secondary level will find what Dr Dienes has to say particularly helpful and stimulating; all engaged in education will value his refreshing comments on the nature of the learning process itself.

168 pp 18s



Hutchinson

This deceptively simple distinction accounts for the existence of two factions within the teaching machine movement. The difficulty arises in this way. We wish to prepare alternative material in advance, to cope with certain types of error. If this material is to be appropriate, we cannot budget for all errors and sundry. We must lay down a schedule of 'permissible' errors; in other words, the programme becomes a kind of multiple-choice test. Thus, say the Skinner adherents, the student has merely a recognition task, and this is less conducive to learning than constructing his own responses. What is more, it is argued, since the likely errors for branching have to be discovered by preliminary testing of the programme, the same labour might be better spent in writing these errors out of the programme, by inserting extra steps. In any case, these errors should be as few as possible; and if the multiple-choice items are to be plausible, the programme is prompting errors.

Programmed Learning and Teaching Machines throws its weight on the side of the Crowder technique. This is an introductory booklet to the E.U.P. series of 'TutorTexts', which are all of the branching kind, it must be admitted. In style and content, this introduction differs markedly from the previous books. It assumes, heretically, that machines should attempt to simulate a human teacher, rather than to develop their own peculiar advantages; and these are described at the outset in a way which relegates Skinner programmes to 'the rather smudgy boundary between aids and machines'. Escape from the status of a mere teaching aid requires feedback *from the student to the machine*, it is suggested, and a branching type of structure. Such feedback is 'regarded cybernetically rather than as pedagogically or psychologically essential'. One imagines that pedagogical considerations will weigh rather heavily with many consumers.

The first of the TutorTexts is the pioneer branching text, *The Arithmetic of Computers*. This deals with the octal and binary number systems, and their use in codes built up for communication with electronic computers. The other programme to hand, *Earth in Orbit*, is linear; it covers those parts of a school geography course which concern the time, date and seasons. Both of these are 'scrambled textbooks', not material for mechanical presentation. Paradoxically, it now seems probable that a great many of the 'teaching machine' texts to be published will not require teaching machines. The machines themselves add novelty, but it is not yet clear how transitory is their resultant incentive value. Machines may be 'cheat-proof', but the disadvantages of cheating, by looking at the answers before responding, are immediately clear to the programmed pupil.

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General Editor : J. B. Palframan

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METHUEN

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Further, the machines tend to be costly and bulky, and require material in an unstandardised variety of formats.

Both programmes appear good. Appearances, however, are not enough in a field where objective measurements are possible; and it is surely desirable that published programmes should present data on the results of their experimental trials, in the same way that test manuals give details of their standardisation. After all, what matters about a teaching programme is whether it works. Admittedly, it is difficult to answer the general question, whether programmed teaching is better than ordinary teaching, since most experiments can only compare a particular programme with a particular teacher; and because it is universally reported that preparing programmes improves one's teaching.

On the other hand, it is argued that programming is inherently superior, that the remedy for bad programmes is better programmes, and that the process by which a bad programme becomes better is continually open to inspection and correction. Whereas, clearly enough, if one has given a bad lecture, the record of what one has said, and the details of where it went wrong, are just not there. This has always been true, but could be ignored when no rival method existed. Now, an extremely articulate rival does exist; and if nothing else, the advent of teaching machines will force us to take a long, clear look at the process of instruction.

Mechanisation in the Classroom, ed. by Maurice Goldsmith. Souvenir Press (1963), 236 pp., 25s.

This symposium covers a good deal of ground in its treatment of programmed learning. It tackles the job of making a comprehensive survey of the present range of programming techniques and devices. It would be nice to be able to say that it does it well. Unfortunately it is a shallow book in its total effect and likely to do more harm than good.

Most of the contributors do not seem to have seen beyond their noses; there is little indication that they have faced, even if they cannot answer, important questions about the theories behind programming techniques and the implications of their use in education and training. The article by Professor Leslie Reid, for example, is frightening in the inadequacy of its treatment of the case for Skinner-type programming in the classroom. In his desire to avoid jargon and committal to a particular theory, he throws everything away and can offer nothing to replace it beyond a few meaningless generalities. Even empiricism must have *some* intellectual discipline.

Two contributions—by B. N. Lewis and Gordon Pask—command respect if not agreement. For these, and for much of the factual information, the book is useful. I hope no-one will take it for a reliable picture of the subject as a whole.

DAVID WHEELER

Teach them Young?

Foreign Languages in Primary Education, Report of an International Meeting of Experts, 9th-14th April, 1962, presented by H. H. Stern. Unesco Institute for Education, Hamburg (1963), 103 pp., 9s.

This is the long-awaited full report from the Hamburg conference which took place more than a year and a half ago; it is regrettable that the report has been so long delayed, and that it is still available only in English, for 'French in the Primary School' is one of those topics (the use and abuse of Language Laboratories is another) about which there has been too much subjective, even emotional, reporting, and too little factual and objectively-presented evidence.

The present report is a conscientious attempt to present the background to the case for and against the early teaching of modern languages, so far as it is known at present, and to make abundantly clear how little is known, and how much research and experiment is still needed. Hitherto there have been glowing pictures of individual successes, and gloomy forecasts of general failure if we try 'to teach them another language before they even know their own': this is the first attempt to probe deeper than the symptoms (of disease or of robust health, depending on one's own point of view) and to study the organism itself. It should at least serve to put the two extreme views in perspective; the outstanding merit of the report is that it tries to give the full picture, and not only one side of it: 'Its results . . . suggest that it is indeed promising to teach and to learn a language in the primary years. But "Children do not, in short, learn foreign languages with miraculous ease in school settings".'

The conference set itself three main questions for study:

(1) What evidence is there to justify the recommendation that foreign or second language learning should be started at the latest in the course of the first few years of compulsory schooling, and in any case well before the teens?

(2) What experience has been gathered, and what experiments have been carried out in different countries in the teaching of languages to younger children? What methods and teaching materials have been developed? What results have been attained?

(3) What are the main problems which need further examination? What investigations are now required?

What emerges from a reading of the report is not a feeling of acquaintance with the views of the convinced enthusiasts, or of the entrenched opposition; it is rather the conviction that the material necessary for a legitimate study of this complex and swiftly-developing field is here in this admirably-documented report. The reader looking for a short cut to ready-made opinions will find the cautious summary on p. 81 disappointing: 'what has been reported is only a beginning, but a hopeful beginning'. Those genuinely concerned with development from this beginning will find the report an invaluable *point de départ*.

G. RICHARDSON.

Action and Reaction

Education and Society in Modern France, by W. R. Fraser. Routledge and Kegan Paul (1963), 140 pp., 20s.

It would perhaps be inaccurate to say of French education that '*plus ça change, plus c'est la même chose*'; yet the nicety of the balance of power between the reiterated drive for reform of the educational system in France, and the almost equally strong forces which seem constantly to succeed in frustrating it, makes a fascinating study.

La Chalotais, Condorcet, the thinkers of the Revolution, the *Compagnons de l'Université Nouvelle*, Jean Zay, Langevin, Wallon, Jean Sarrailh, Berthoin, and Billères—the names come as trippingly off the tongue as did those of 'admirals all' in the English elementary schools of thirty years ago. There is a refrain-like quality, too, in the chronicling of their failures: 'Various attempts were made in the nineteen-twenties to implement these proposals, but without success.' 'Zay's intention . . . was frustrated in 1939 by the advent of war.' 'The Langevin plan met fierce opposition. Some educationists wondered whether the new classes and methods envisaged by reformers would develop perseverance and stamina as much as curiosity and open-mindedness.' 'The Delbos Bill was presented in 1949 but the Chamber of Deputies threw it out.' 'French reformers introduced the "classes nouvelles". These are now fewer in number than they were.' 'The (Berthoin) bill lapsed with a change of government.' 'The (Billères) bill was hotly debated, but the debate was not resumed after the summer recess.'

Of his present book, Mr. Fraser says, 'It is one purpose of this study to seek out the factors which caused such confusion, heat and division as to inhibit decisive action by the National Assembly and to encourage postponement or inertia', and this theme he illustrates by 'original French documentary material translated and presented with a minimum of comment, so that the English-speaking student of French affairs can sense for himself the sharpness of French argument'.

Much of his book, in fact, consists of paragraphs set within quotation marks; the effect is one of immediacy, as though the Frenchmen of different opinions were each speaking for himself; and at the same time one of objectivity, since the author's own opinions never become obtrusive. His survey of 'The Education System and attempts to reform it' is followed by an admirably lucid analysis of the obstacles—administrative, professional, cultural, religious, political and others—to reform.

The documentation, whether in the text itself, the footnotes, or the select bibliography, is most detailed, and the whole offers an extremely competent survey which has the additional virtue—inevitably all too rare in books on other countries' educational systems—of being (for the moment at least) fully up-to-date.

G. RICHARDSON.

With or without illustrations?



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