

FORUM

for the discussion of
NEW TRENDS IN EDUCATION
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OUR CONTRIBUTORS

Joan Simon: parent and educational journalist. Has recently translated from the Russian and edited Professor A. R. Luria's *Speech and the Development of Mental Processes in the Child*.

Jocelyn H. Hurdley: founder member and later secretary and chairman of the Birmingham and District Federation of Parent Teacher Associations; founder member and first chairman of the National Federation of Parent Teacher Associations.

George Freeland: headmaster of the new Mowmacre Hill junior school, Leicester. Previously head of Taylor junior school, Leicester, the unstreamed school described in *New Trends in Education*. Ex-president of the City of Leicester Teachers' Association (N.U.T.).

A. V. Judges: professor of the History of Education at King's College, London; member of the Central Advisory Council for Education (England). Professor Judges is an historian and has contributed to and edited several books on education.

J. S. Flavell: headmaster of Wheeler's Lane junior school, Birmingham. Ex-president of Birmingham Teachers' Association (N.U.T.). Has written in N.U.T. and university journals on mathematics teaching and spoken at various conferences.

John V. Trivett: head of mathematics department, Hengrove comprehensive school, Bristol. Secretary of the Bristol branch of the Mathematical Association. Previously taught in modern secondary schools, a technical school and a U.S.A. high school.

R. L. Goodstein: professor of mathematics in the university of Leicester since 1948. Editor of the *Mathematical Gazette*, the journal of the Mathematical Association, author of *Mathematical Analysis*, *Constructive Formalism*, *The Foundations of Mathematics*, *Axiomatic Projective Geometry*, *Mathematical Logic* and *The Recursive Number Theory*.

Margaret Miles: head of Mayfield school, London. Previously head of Pate's grammar school for girls, Cheltenham. Chairman, management committee, Council for Education in World Citizenship. One of the United Kingdom delegation to the conference on comprehensive schools organised by the Swedish government in August, 1958.

The front cover of FORUM was designed by Frank Haddon, head of the Art Department at Great Barr comprehensive school, Birmingham.

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First Reactions

THERE HAS BEEN a generous response to the first number of FORUM. The *Manchester Guardian* welcomed its concentration on "new experiences in practice"; the *Local Government Chronicle*—itself a journal of long standing—congratulated the enterprise that had led to its publication, and hoped that FORUM would have the success "which from our study of the first number it clearly deserves." *Education for Teaching* commented that "the articles are refreshingly hard-hitting and therefore likely to provoke thought and keen discussion amongst students." The educational press generally included notices of the first number, *The Times Educational Supplement* stating that "much useful criticism can come from this wing of educational debate, and if FORUM gains support enough to come out every month so much the better." *Nature*, in a generous assessment of the first number, raised the question as to whether this "courageous experiment" can survive at its present price, while the *Local Government Chronicle* also pointed out that "under present conditions the launching of a new journal is a hazardous undertaking."

We fully intend that FORUM shall survive, and readers may be interested in the present position. Of the print of 2,500 of the first number, some 380 were distributed as specimen copies. The number has now almost sold out, giving a paid circulation of over 2,000. This is quite a good start. Subscriptions now total 1,350. But it is still necessary to raise the number of subscribers since only this can give stability to the journal. A leaflet advertising this issue, and including a subscription form, is included with each copy of the journal, and we would like to ask our readers to help us by using this leaflet to gain another subscriber. Further copies are available on request.

Subscribers have a right to know that the

Editorial Board of FORUM is a working board and no sinecure. It meets three times a year and at each meeting assesses the previous number and plans two (and sometimes more) numbers ahead. While leaving a certain flexibility in the hands of the editors, it is the Board as a whole which makes the main decisions as to which subjects shall be treated. By this means we hope to ensure that the journal is really responsive to the requirements of teachers, and of its readership generally.

As a result of representations from junior school teachers following the first number, the Board has decided to co-opt two more junior school teachers; we intend to give an adequate amount of space to the consideration of junior school problems. Mr. Freeland's article was commissioned by the Board in order to raise these general issues, which we hope will be taken up in the form of discussion, and through further articles in the future.

With this number a new feature is included, the "Discussion" section. We expect this to be a permanent and important part of FORUM, and hope that our readers will send in their contributions on the matters raised in the main articles (or in the discussion itself). These should be limited to 800 words and may, of course, be less.

In two or three areas there is talk of forming FORUM groups for the discussion of articles and issues raised in the journal. We would be glad to help anyone who wishes to take the initiative in forming such groups and will send, on request, the names and addresses of FORUM subscribers living in the area.

FORUM is now definitely launched on its career. We hope that it meets with your requirements, and should be glad of any comments and suggestions. Above all, we should appreciate any help you can give in widening its readership.

Report from South Wales

JOAN SIMON

IN THE INDUSTRIAL DISTRICTS of South Wales there is a strong tendency to reject tripartitism and to aim boldly at a comprehensive system which will supersede 11 plus selection and provide a genuine secondary education for all. This is the declared policy of two county boroughs and other authorities are feeling their way towards it. In the rural counties the same movement is discernible.

The Welsh background

Before outlining the facts leading to this assessment—gathered in education offices, schools, among teachers and from parents during a recent tour of South Wales—a word is necessary about the background of Welsh secondary education.

This is remarkably homogeneous by comparison with England. The former special class of 'intermediate' schools has been brought under the control of local education authorities since 1948 and there are only four direct grant schools. The main unit of post-primary education has always been the local grammar school. Central schools were never popular, nor were technical schools, not least because of the technological backwardness of the basic industries—mining, and iron and steel; and with the onset of the depression the Hadow Report remained virtually a dead letter.

In the 1930's the flight from mass unemployment brought a heavy fall in the school population; it dropped from 482,000 in 1928 to 415,000 in 1937—14% in eight years. In Rhondda and Merthyr Tydfil, where conditions were worst of all, the schools lost a quarter of their pupils.

It was during this period that the proportion of children attending grammar schools began to rise steeply. Apart from the deep-rooted desire for education, typical of Wales, it became at this time the only avenue of escape from a hopeless industrial situation. So grammar school places were filled, at a time when overall numbers were much reduced. While in 1929 the proportion of children receiving a 'grammar' education was already substantially higher than in England, at 18%, by 1937 it had risen to 27% and by 1949

to 33%. The school population then steadied and has latterly begun to rise and the figure for 1957 was 30%, by comparison with under 20% in England.

This "distinctive feature of Welsh education" has persisted "in defiance of the declared educational opinions" of the Ministry—as the latter's report for 1950 ruefully remarks. A notable aspect of present developments is the determination of Welsh authorities to maintain a high proportion of grammar places. At the same time they are working to repair the ravages of the past and provide equality of opportunity.

The impression gained, however, is that they have not had a fair chance, for two main reasons. First, successive restrictions, notably now Circular 238, have prevented the building of schools in districts where there is an immense leeway to make up; in the Rhondda, for instance, there has been virtually no 'bulge' allowing for new building and all 'modern' children are housed in old elementary schools. Second, local plans advanced to meet educational needs have too often been obstructed by a Ministry which is prisoner to fixed conceptions of education and school organisation.

It is well known that Newport, Monmouthshire, decided a year ago to move over to a fully comprehensive system and abolish selection by 1960. Here all schools needed replacement. After 1945 children were simply reshuffled; where boys of an all-age school had been upstairs, girls down, seniors were put up, juniors downstairs—an adjustment of lavatory accommodation and a hut for a laboratory or workshop completed the establishment of a 'modern secondary' school.

Newport's plans

The committee originally planned to group new schools of different types on four bases. Later the development committee unanimously decided to make all the units comprehensive; a step which involved extending the town's grammar schools—one of which, Newport High School, is a former intermediate school—to pro-

vide two of the comprehensive schools. The education committee approved this step by 28 votes to 2, with 2 abstentions, though the Labour Party then had less than a two-thirds majority on the council. Plans were carefully worked out to use old buildings as 'lower schools' until the comprehensive school buildings were completed in 1965.

This policy was put to the test at the May elections, when the Conservative Party made opposition to the plan the chief plank of its platform, issuing a pamphlet with a cartoon illustrating the dire effect of comprehensive education on children. The outcome was four additional Labour seats on the council.

In June, Sir Edward Boyle made a flying visit to survey the town. Subsequently he chaired a meeting at the Ministry where the authority's representatives were told that the 'destruction' of grammar schools was inadmissible and only two of the proposed comprehensive schools would be allowed. After registering strong protest, and reaffirming its intention to eliminate 11 plus and segregation of pupils, the education committee has temporarily readjusted its plans.

At present it is concentrating on the two new comprehensive bases which are situated outside the boundaries of the borough to the south-west and east. Each of these will have three buildings which are now planned, not as separate schools, but as a single unit to take up to 2,000 pupils. One building is now in use, and one under construction, on each site.

The end of selection ?

The first, Duffryn High School (as it is named to correspond with existing schools) has opened this year with a 6-form entry, including three 'grammar' streams drawing selected entrants from the whole of the west side of the town. This because, with new accommodation available, the grammar intake has been stepped up again to the former 28%; and because Newport High School for boys, which is in old buildings and has been much overcrowded, is to be reduced from a 3-form to a 2-form entry—the same size as the parallel girls' school. Since the Ministry has refused permission to extend these into a comprehensive school, the committee is negotiating for a new site to the north-west.

On the east side of the town there is the only secondary school built between the two world wars, completed in 1939, with plenty of land adjacent for development into a comprehensive school. For the moment, however, the authority is developing the second new comprehensive base, Hartridge High School, which has just admitted 300 first year boys and girls and has at present two 'grammar' streams. Next year admissions will be similar, but with the completion of buildings in a few years' time this will be organised as a comprehensive school with an annual entry of nine or ten forms; though three or four of these may continue to be labelled so long as a separate grammar school remains in the same area of the town. However, the possibility of modifying or largely dispensing with selection procedure is still under active consideration, for it has always been envisaged that the new schools should be fully comprehensive with no labelled sides.

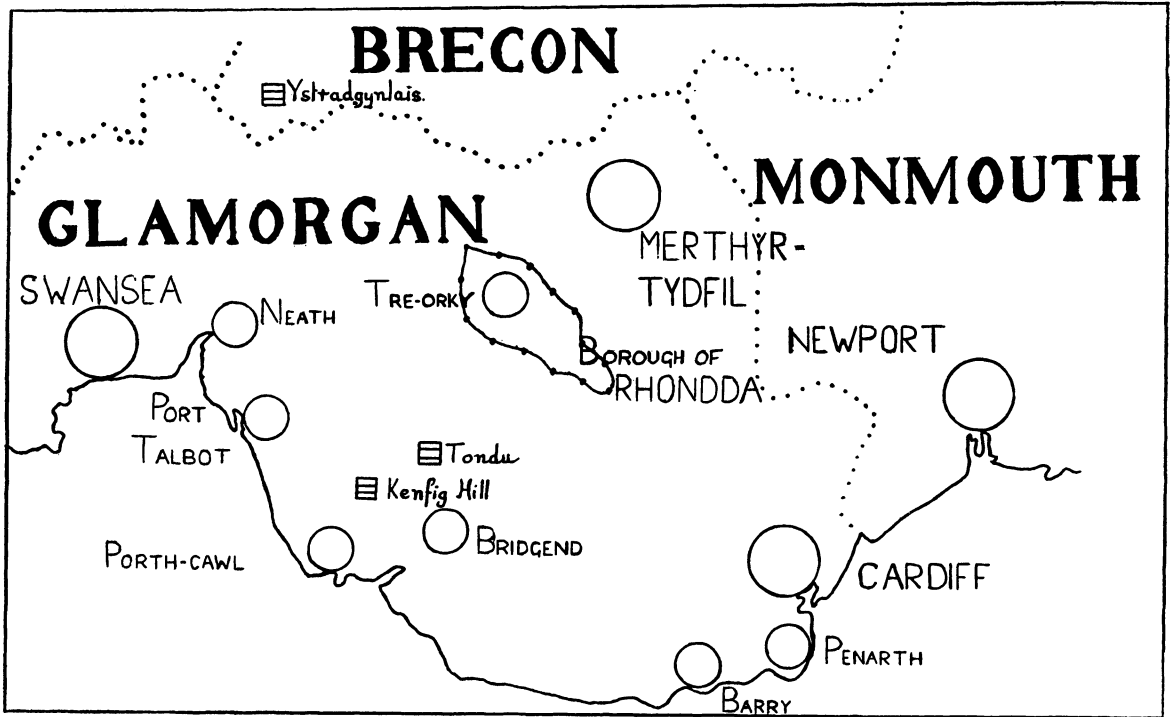
As they develop, old 'modern' schools will close. Meanwhile Hartridge will take in pupils of 14 who guarantee to remain in school for two years, while others will go to a former selective central school in the centre of the town. Another intractable problem is also being solved on the comprehensive pattern with plans for a Catholic comprehensive school situated near Duffryn High School.

Developments in Swansea

In Swansea the education committee has, from the outset, planned a comprehensive system. Here, again, all pre-war secondary schools had sub-standard buildings and sites and the original development plan, submitted in 1947, proposed six new multilateral schools to serve a town zoned into three areas.

This plan was returned in 1948 for revision of the scheme relating to primary schools. When submitted anew in 1953 the revised primary plan was approved but not the secondary plan. This was finally rejected in 1955, after the authority had proposed to accommodate some unselected forms in two boys' grammar schools. The Ministry then insisted that all grammar schools must retain their original form in the present and the future.

By this time the building of two multilateral schools was in train—the committee, which never



intended to provide modern schools, having, like Newport, erected new schools on a comprehensive site. The first 6-form entry instalment of Penlan County Secondary School for Boys opened in 1956; a similar instalment of Mynyddbach County Secondary School for Girls, in the same area, in 1957. These were authorised as an experimental venture.

Under the new secondary plan, approved in 1958, they will be extended to take a 12-form entry. Otherwise grammar schools will be re-built on each of the other available sites (as single sex schools with a 5-form entry, 4 grammar and 1 technical) while 9-form entry modern-technical schools will go up beside them. Thus there could be further development in a comprehensive direction. As the committee notes, it is bound to provide for this possibility, should the pilot multilateral schools prove successful.

It is now proposed to transform these into fully comprehensive schools because the multilateral pattern has proved cramping. Both schools began with some children transferred

from modern schools and a new 7-form entry, 3 selected and 4 unselected forms. Children entering the former are placed according to the authority's selection procedure; the rest simply enter from the immediate locality. Once in, whatever the needs of school organisation and the children's achievements, pupils cannot be transferred from one stream to another without reference to the authority; a position which no head can be expected to welcome and which defeats the whole purpose of the single school.

It is because otherwise the schools have developed on comprehensive lines (with a more or less common course for the first two years, staff teaching throughout the school, additional G.C.E. entrants emerging from the unselected entry) that this rigidity has become a bond to be broken. Both heads told me that they and their staffs are in favour of the proposed change. Thereby separate sides, providing for imaginary 'types,' can be replaced by a flexible organisation of forms with some setting.

The Ministry has cautiously extended ap-

proval in principle while inviting public reactions. The authority is now planning meetings and a pamphlet to explain its plans, which may well involve zoning the schools with a definite catchment area. If so, the superseding of 11 plus here would be possible, though to do this in one part of a town involves some complications. The schools themselves do not demand examination results. The heads find the varied information on record cards most useful for initial classification, supplemented by consultation with primary heads; later, as education proceeds, children select themselves for different courses.

Modern school examinations

Meantime, most of the 'modern' children in the upper forms of both schools have taken the Swansea leaving certificate, completing a final year to do so. A pass in English, arithmetic and two other subjects is the basic essential, but the majority take 6 or 7 subjects and some 10 or 12. Such pupils go on to take G.C.E. or find themselves with exemption from the pre-technical course which usually takes up to two years evening work.

A fifth year pre-national course is now starting at the boys' school which will enable 16-year old leavers to proceed directly to national certificate work, eliminating the awkward gap between leaving school at 15 and entering technical college at 16. The girls' school already has a fifth year commercial course leading to the R.S.A. examinations. By such means the problem of leaving in the middle of the school year has been tackled at the roots—indeed children are staying until 17—and, too, the technical college is getting more and better grounded recruits.

It is worth noting that the Swansea leaving certificate, first introduced in 1955, has prompted much thought about syllabuses and standards in the town's modern schools. English, arithmetic and science papers are now common to all schools; others are set within each school, standards being supervised by moderators appointed by the examinations board. The pass standard has perceptibly stiffened since the scheme began and is now thought to be equivalent to the old Oxford Junior Local Examinations or somewhere between the preliminary and first stage of the R.S.A. examinations. Child-

ren who pass well may transfer to grammar school at 15 plus and take G.C.E. there.

The county of Glamorgan also has a leaving certificate, introduced last year, which is creating a bridge from modern schools to technical college with the active co-operation of the latter. Cardiff began awarding a 'certificate of merit' in 1956 and has also instituted five-year vocational courses in modern schools leading on to various further education courses.

In addition, Swansea and Cardiff have instituted G.C.E. courses in modern schools. In Cardiff, where reorganisation has hitherto taken place in the framework of a tripartite system, classes of 30, selected on the city's examination, have been established in ten new modern schools this year. Thereby the proportion taking grammar courses, which would otherwise have dropped to 21%, has been maintained at 28%. Even so, after only a month or two, parallel G.C.E. courses of unselected pupils are developing in some of the schools concerned.

Education was also a major issue in the Cardiff local elections and a Labour majority was returned for the first time in the city's history. The education committee has since received reports on functioning comprehensive schools from the director while a delegation which had spent two days visiting schools in the experimental areas in Leicestershire reported early in December. It is generally supposed that, in the coming months, steps may be taken to dispense with the present 11 plus examination.

The fourth county borough, Merthyr Tydfil, has been unable to build any new secondary schools since the 1944 Act. Here 35% of children enter grammar school at 11, and more at 12 and 13, so that 40% of the 13-14 age group are following a 'grammar' education.

Problems in Glamorgan

In Glamorgan, also a longstanding Labour authority, there were originally some thoughts of providing single secondary schools on a territorial basis, with district grouping of sixth forms. But before these were properly formed the Ministry conveyed that the single school was only acceptable if extremely large. Narrow valleys, already much built up, do not offer sites for large schools; nor, where populations are relatively scattered, can children be transported

by awkward routes. Eventually, therefore, the development plan, submitted in 1949, proposed a two-tier system of grammar-technical and modern-technical schools (according to the recommendations of the Welsh Central Advisory Council)¹) with comprehensive schools confined to the coastal areas.

Four of these were eliminated by the Ministry; two at Barry and one at Penarth because existing grammar schools would have been absorbed, one at Tondur because a 7-form entry mixed school was 'too small.' In the excepted district of the Rhondda, however, the absorption of a grammar school into a 10-form entry comprehensive school has, for once, been approved; this at Treorchy, which offers the only large site in the Rhondda Fawr valley. But only a 2-form entry instalment has reached the building plan, as replacement for a girls' senior school; this seems a niggardly beginning for a new venture in a district which surely deserves special consideration.

A new comprehensive school

Two comprehensive schools have, however, been initiated on new housing estates. Kenfig Hill is at present a 6-form entry instalment of a 9-form entry school, with 2 selected and 4 unselected streams; but, as the estate it serves develops, it should become fully comprehensive. Sandfields Comprehensive School, at Port Talbot, is one of which any authority might be proud.

Here some 740 boys and girls assembled—in an imaginative new building with splendid libraries, halls, laboratories and workshops—in September. Most simply transferred from the three junior schools in the catchment area, without exception or alternative choice, at 10 plus; for selection has been abolished here. About 200 came from modern schools and are successfully providing the head girls and prefects, a G.C.E. class and one working for R.S.A. examinations.

So well had preliminary arrangements been made—from the designing of uniforms and individual approaches to parents to planning of school organisation down to the last detail—that the whole school was at work after break on the first day; all but a handful wearing the

new grey and red uniform with a badge representing a hand grasping the torch of knowledge to gain the laurel wreath of success under the motto "Man's right his opportunity."

Though there is a special building for a lower school, accommodating one year, organisation is on the house system with six houses named to recall achievements in science, the arts, exploration. Instead of form masters there are tutor groups which cut across forms to provide social groupings and, besides meeting for registration, spend one period a week discussing social matters. If a child changes his form he remains under the same tutor who is concerned with all sides of his development. Ultimately eight or nine tutor groups will go to make up each house. The school is expected to reach its full complement of 1,650 in four or five years' time.

There are no labelled sides nor obvious streams. The ten plus entry has been classified in four upper, three middle, three lower forms and one retarded class (on the basis of consultations with primary heads, school records and age) and there is setting for English and mathematics. The aim is to maintain the framework of a common course without holding any children back; there have already been many promotions, allowing for smaller groupings at the bottom.

All the staff seem young, full of enthusiasm and bursting with plans which it would need a separate article to outline. No academic dress is worn and, in the frequent discussions held, varied experience gained in all types of schools is pooled on equal terms. An important development is the close co-operation already established with primary heads. Targets the primary school should set out to achieve in English and arithmetic have been discussed, as also common methods of teaching; while elementary science and physical education, formerly crowded out by 11 plus, now find their proper place in the primary curriculum.

Further plans

The new school bids fair to become a real community centre. The Arts Council has already presented two plays in the hall; an opera and festival of folk dancing are to be staged shortly. Eventually there will be athletics tracks and a swimming pool, besides playing fields, which will provide a focus for sport too.

¹) *The Future of Secondary Education in Wales, 1949.*

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In July, with this school in view, the Port Talbot divisional executive approved a plan to abolish 11 plus throughout its area. It envisaged turning six modern schools into high schools with transfer at 13 plus to the two grammar schools; this in the light of parents' wishes, school records and heads' recommendations considered by a panel of head teachers and the inspectorate.

Glamorgan Education Committee has not proceeded with this matter but has plans for another comprehensive school in this area. One is also planned for Porthcawl. Otherwise separate grammar-technical and modern-technical schools would make for continued selection. But where such schools have been built (many plans are necessarily still on paper) they are usually nearby and differ mainly in that the former have advanced laboratory and workshop provision. As at Swansea, therefore, transfer to a comprehensive system would be possible.

Towards a common education

Developments in South Wales must be seen in the wider framework of resistance to tripartitism in Wales as a whole; initially, perhaps, because the provision of separate schools in sparsely populated areas would have been expensive and absurd but now as part of the turn away from 11 plus. Anglesey, of course, has four comprehensive schools and abolished selection in 1953, but other rural counties have bilateral schools with a comprehensive intake which have allowed for the superseding of selection. In Montgomeryshire, for instance, most children pass automatically to the nearest school; though there is a test it acts chiefly as a guide to heads in classifying children within schools where the terms 'grammar' and 'modern' have been abandoned.

In the south-west Pembrokeshire now has three bilateral schools taking in all pupils, though these have separate sides. Carmarthenshire amalgamated a modern and grammar school to establish a comprehensive school at Llandovery in 1957. Breconshire, which also has bilateral schools in most areas, opened a comprehensive school at Ystradgynlais, near Swansea, in 1954; this successful small school (7-form entry mixed) has made possible the abolition of 11 plus in the surrounding district⁽¹⁾.

⁽¹⁾ The organisation of the Maesdydderwen County Comprehensive School is described by the headmaster in *Inside the Comprehensive School*, pp. 115-22.

One heard of other projects in the air. With the leaving age rising to 16 and 17, and more and more children working for various examinations, the smaller comprehensive school can no longer be dismissed as uneconomic and restrictive; whereas these strictures obviously apply to separate schools and the whole cumbrous machinery of early selection which they necessitate.

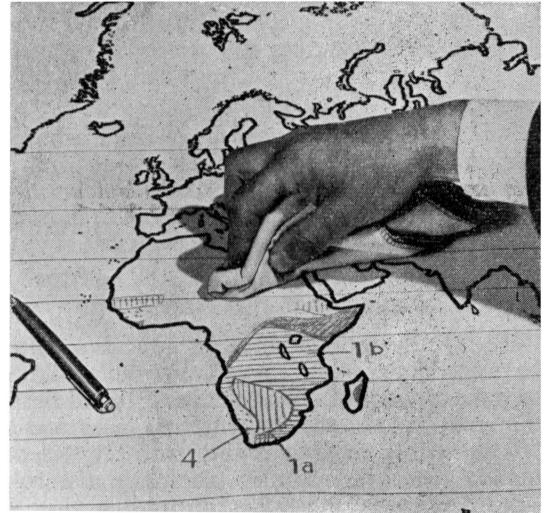
Will Wales lead ?

In sum, two of the four Welsh county boroughs are, within the limits imposed, successfully accomplishing the leap from the all-age schools of the past to the comprehensive school of the future. Elsewhere the accent is on increasing educational opportunity and lengthening school life, with growing stress on a comprehensive solution.

Certainly there was never more need of rapid advance than now. Of the children who left school in Glamorgan (county boroughs included) last summer, close on 4,000 were without jobs in November and Christmas leavers have since swelled the numbers. Though the schools cannot solve economic problems, all educational organisation must take account of them; and, it was put to me, in terms of effective raising of the leaving age rather than palliatives for unemployed youth. Against this background, official insistence on certain types and sizes of school, regardless of local needs and possibilities, appears as a disservice to a nation which, more than most, needs a high level of education and has striven to provide it.

There are, of course, also people in Wales (education committee members, officials and teachers among them) who find it difficult to see beyond the grammar school, since this has long focussed the feeling for education which is so essential an ingredient of the Welsh national outlook. But others recognise that a comprehensive system, far from destroying this tradition, can develop and enrich it in terms of the modern world; that the comprehensive school is, in fact, designed to extend the equivalent of a grammar education—a sound and systematic education in tune with mid-twentieth century needs—to everybody's child.

It may well be that, as it has surpassed England in grammar school provision in the past, Wales will again lead the way with the abolition of 11 plus; with systems of schools which, in their whole organisation and outlook, are genuinely comprehensive.



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Parent and School

JOCELYN H. HURDLEY

I remember an occasion, many years ago, in a grim Church school in the centre of a city. It was a spring night and we stood in the school yard, not many square feet in size, while the vicar dedicated a sandpit which some fathers had made for the youngest children. Parents had raised the few pounds necessary to cover the cost, and the most moving aspect of the little ceremony was their happiness to have done something for the school. They had given, not for their own child but for all the children, and they felt better people for it.

Today the motive force in education often comes from parents. People want their children to have a good schooling, more of it and better than ever before, and governments will stand or fall according to their ability to meet this demand. Teachers are also playing a new role. The parent-teacher association finds a place in schools because many teachers are willing to co-operate with parents in creating a new school environment and find in them eager allies.

No one knows the exact number of associations in existence, though surveys have been attempted, but there has been steady development. Since 1947 local federations have been formed and the establishment of the National Federation of Parent-Teacher Associations in 1956 gave a new impetus to the movement.

There is often much activity in areas covered by a local federation, where teachers and parents join in calling for improved schools, smaller classes, better pay and training for the teaching profession. This often means the founding of associations in fresh schools, for it is often only lack of confidence which prevents their formation; teachers tend to lack confidence in their ability as leaders.

Education officers and their staffs generally support parent-teacher co-operation, as does the Ministry. In the course of eleven years' travelling up and down the country, speaking at meetings of all kinds, I have met with nothing but support for our work from members of education committees and offices. This is not to say that there is official pressure to form associations, and certainly no one would want to see legislation enforcing this step. Such a movement must come from the school outward; unless teachers are wholeheartedly in support of it there can be no fruitful co-operation.

Since the war more and more so-called middle class people have been sending children to maintained schools and they are taking a new interest in State education; working class parents, themselves better educated than before, want more opportunities for their children. I have met members of local associations who, in their interest in education, understanding of their own problems in relation to their children, and desire to assist the school they attend, are second to none. All appreciate the activities of the P.T.A. and find that it helps them to a more profound understanding of their children through the various stages of their development.

The head teachers who run successful associations have special attributes; in particular, that of giving themselves. They are not just interested—as all good teachers are—in the child himself, but in the child as a member of the family unit. Every good head wants to know about the family which has formed the child under his care. In giving of his understanding and interest he claims families as part of his school. There are scores of such head teachers who, drawing on the fund of goodwill among parents, create the feeling of “our” school. How different this is from “my” school, which implies a barrier between school and the outside world.

Mutual assistance

Not long ago I met a headmistress who felt she could get all the necessary co-operation from parents without an association; that is she could always get ready assistance in the matter of funds or work for the school. But this leaves out of account that co-operation can, and should, be many-sided. It is mutual help and support through an association that

creates the link between home and school which answers the child's needs.

Associations do invaluable work in providing amenities, from sandpits to swimming pools, vases to stage curtains, library books to film projectors. It is sometimes said that they should not raise money for things it is the duty of the authority to provide. But parents love to provide things for "our" school, not least when working parties are needed for special tasks, and some authorities give encouragement by contributing some of the money required. Besides this, parents organise trips and parties, cater and sew, make scenery and equipment; tasks which considerably lighten the teacher's burden.

Parental education

The education of parents is one of the most important aspects of the P.T.A.'s work. Meetings provide opportunities to discuss common interests with other parents, or special difficulties with teachers, and to hear what the school is trying to accomplish. There are often lectures, films, forums, on educational topics. Methods of teaching have changed so much in recent years that much of what goes on is mysterious to the average parent. He has a right to know what it is all about, to be given an opportunity of understanding how his child is being taught and why. The fact that meetings are held where the children live and work most of the day in itself develops the idea of "our" school.

Parent-teacher associations have always flourished at the primary stage but now there is a growing number of parents' associations in grammar schools, founded with the full support of head and staff. London comprehensive schools also seem very interested in the movement. Unfortunately fewer modern schools have associations; their children are still too often looked upon as failures and parents may not be as interested as they should be. But this is to touch on an obvious problem of a wider nature.

People often say that an association is not much good because the parents with most difficulties do not attend meetings. Teachers tend to call these "bad" parents, but to know their problems might be to see them in quite a different light. While everything must be done to contact all parents, the fact that some do not co-operate is no reason for depriving the school

of the interest and help of the rest. And by starting an association one is at least creating a means of attracting parents who are less interested than most.

Since the national federation was formed links have been established with parent-teacher movements in many parts of the world. We have heard of work in the United States, Canada, Australia, and had visitors here from Egypt, India, Kenya, British Guiana and many European countries. This alone has justified the national body and its magazine now goes all over the world.

What of the future? The work has been advancing steadily in spite of some opposition; opposition which, it must be said, comes from teachers. Their holding back constitutes the greatest problem. But training colleges are now sending out students who enter the profession with a positive attitude to parent-teacher co-operation and this example should help to break down prejudice. Further spreading of information about well-organised associations, which contribute so much to parents' knowledge and the well-being of child and school, must also in time encourage doubtful heads that these are worth while; that, through them, the school can fulfil its true function as the centre of the community it serves.

(Continued from page 72)

section. Experience, however, shows that the largest group of pupils in this section still requires further general and practical education of a type which might help them to find themselves personally, vocationally and socially. This group cannot fully and adequately be served by teachers preoccupied with traditional subject-matter and with a tendency to press grammar school standards upon these youngsters. Nor can they be served by class teachers who treat them as if they were still children in an elementary school. Though not grown up enough for any narrow specialisation, most of these youngsters want to concentrate progressively upon activities and subjects which will help them to mature.

As the Board of Education has pointed out, a large group of pupils in the upper section requires teachers who are competent to cover a wide educational field. Different degrees of comprehensiveness as well as concentration must therefore be provided for in the training of teachers. It will also be necessary to help the teachers to keep up to date with such topics as the development of adolescents, and new approaches to the guidance function. For it must be remembered that a school system can never be better than the people who carry out its programme.

The Junior School To-day

GEORGE FREELAND

THE JUNIOR SCHOOL as we know it was born nearly thirty years ago. Its birth cannot be said to have been particularly planned. It owed its separate existence to the Hadow reorganisation of that period which was primarily concerned with the education of the adolescent. Nevertheless at its coming the junior school was welcomed and much expert thought was devoted to the problems of teaching children at this stage. This was embodied in the Report of the Consultative Committee on the Primary School (1931) which has served as a blueprint for most subsequent development.

How far do the concepts of the thirties match up to the demands of the technological fifties? Are they in tune with current changes occasioned by the modern state's insistent demand for more highly educated citizens? A panel of practising teachers, convened appropriately by the National Union of Teachers, has recently published a report on *The Curriculum in the Junior School*⁽¹⁾, which helps to answer these questions and also stimulates further thought on the role of the junior school today.

Current educational changes, like those of thirty years ago, have been mainly at the secondary level. Unhappily, since the war, their chief effect on the junior school has been to imprison its curriculum within the limits of 11+ requirements. Teachers have done their best to educate the children under their care despite this pressure. But, all too often, thorough teaching of the basic skills has been obscured in favour of helping children to a knowledge of how correctly to answer certain types of examination question.

The underlying purpose

As a result, we have almost lost sight of the conception of the junior school as the basic stage in the educational process, and of the need for all children to attain certain standards by the close of the course. This, at a time when there is a growing demand for higher standards

which implies a raising of the level of attainment throughout the school system.

It is, therefore, refreshing to find the N.U.T. panel affirming that it must be the junior school's aim to teach children to speak well, read well and write well. This may seem a truism. But, in fact, to accept all-round literacy as a realisable aim is to undertake a comprehensive and extensive task. Indeed, to relate this aim to many of the lower streams in junior schools today is to recognise that it has revolutionary implications.

The learning process

My mind immediately turned to the steps necessary to realise this aim—steps relating to methods of teaching, the subject-matter to be taught and school organisation.

The factors which produce literacy are manifold. Some are outside the school's control but within the school itself both direct and indirect teaching are involved. The former is mainly concerned with the mechanics of mastering reading and written language. It would seem that the techniques making up these basic skills should be carefully broken down into steps through which children can be taken at the correct stage of development.

This raises, at the outset, a general question of great importance. If such methods are to be effective, we need much more knowledge than we now have of the actual process of learning. Only if we can define the stages whereby experience of material things is converted into concepts in the child's mind, and understand the part which language plays in this process, can we develop appropriate methods of teaching. Unfortunately psychologists have been so much concerned with individual differences that they have had little time to investigate the ways in which all children learn. A change of emphasis here would do much to help the junior school.

The most important field in which direct teaching takes place is reading. Here both the infant and junior school are concerned. Since

⁽¹⁾ Schoolmaster Publishing Company, 7s. 6d.

the war, with the development of a more informal approach at the infant stage, the task of teaching reading has devolved almost entirely on the junior school. At the earlier stage, pre-reading activity is undertaken which yields a look-and-say acquaintance with words of immediate interest and significance and with the controlled vocabulary of the first books in the chosen reading series.

Mastery of language

This development has not in any way been planned, but it must now be taken into account. Should there be a return to more formal methods in the infant school? Or is it educationally correct to maintain the informal approach at this stage and only embark on more formal teaching at the age of 7 or 8? This must be decided before work can be co-ordinated and planned. It is for primary teachers to consult together and reach clarity on this point.

At present most junior teachers teach reading by a mixture of methods; that is, they usually augment look-and-say with phonic drill because this seems essential to progress. Without going too deeply into this thorny problem, some questions can be posed. Do we know how effective the present mixture of methods is? If effective, could it be better planned? Is it possible to teach reading, from the beginning, with a vocabulary of words which conform to phonic analysis when the child is ready and able to apply this? But reading is more than looking; more, too, than barking at words. The techniques we devise, while designed to perfect a skill, must also be such as to help, and not hinder, the quest for understanding.

In the face of some current theorising about free expression I would contend that mastery of written language is also largely a matter of direct teaching. This is not to suggest isolated, mechanical exercises divorced from a real context. But rules of spelling, points of simple grammar, some grasp of what is a living pattern of development, are necessary to guide children as they write. Must not these be directly and systematically taught? If so, it is for us to find the correct ways, and the correct stage, in relation to the educational process as a whole.

Children must also be taught to speak; this is often overlooked. In fact, oral expression is the natural precursor of written language; most children will not write well before they can speak

well. So far as the latter is concerned, more opportunities for children to talk in a connected way are a first essential. But this brings us to consideration of the more indirect ways in which children can be helped to master the fundamental tools of social living.

If the junior school is to promote genuine literacy the whole curriculum must be planned to encourage correct reading, speaking and writing. The ground covered by history, geography, science, provides innumerable opportunities for connected speech and purposeful reading. These aims can also be realised through almost every other activity. To read poems and stories aloud, play records and make music, take an active part in drama and create pictures and patterns—all these enrich the child's background, extend experience, and so provide the material which speech and writing can be perfected to express.

All this implies that, starting from the need to teach the basic skills systematically, we at once become aware of the complementary need to inspire enthusiasm for learning in the children and recognise this, too, as a fundamental task of the junior school. Many questions arise here, in particular in relation to teaching history, geography, science—for, as the N.U.T. panel implies, we can no longer be satisfied with "nature" in 1958.

How far should these spheres of knowledge be treated as separate subjects in the junior school? Both the 1931 report and the present panel are, in the main, against sharp subject divisions and definite syllabuses. Are they right? For instance, can a scientific approach be taught without systematic teaching of the subject-matter of science, however elementary the level?

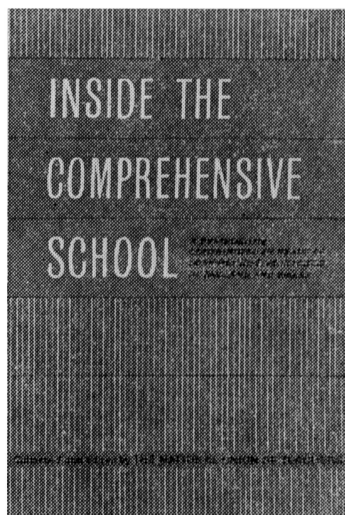
Minimum standards

There are no such dilemmas in connection with number, insofar as there are definite techniques to be acquired which have to be taught, once more, by the direct method. In fact, these lend themselves rather more easily to a graded and ordered approach than do the techniques relating to language. The N.U.T. panel tends to think that minimum standards of attainment should not be emphasised. But it is, surely, essential to ensure mastery of the four processes, including a knowledge of the basic facts and tables involved? This, of course,

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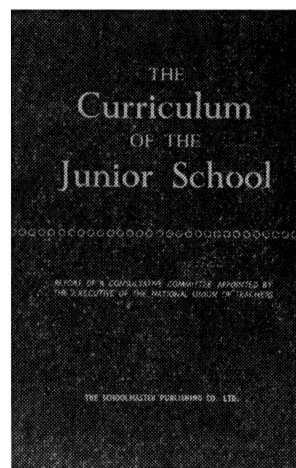
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should not exclude the equally necessary task of providing experience which gives such knowledge significance.

None of the tasks outlined can be successfully undertaken unless the primary capitation grant is such as to allow for sufficient books and other equipment. There have never been so many well-produced books in circulation; the pity of it is that the children most in need of them never see them in school. To go a step further, how many junior schools are there without a sound film projector? Presumably by far the majority. Yet this could not only widen horizons immeasurably, and aid teaching, but also bring the school into relation with the world the child knows. So long as they are starved of the latest technical discoveries and aids, our schools run the danger of becoming as out-of-date as a Victorian grandmother. The learning they seek to impart is, by the same token, brought into disrepute.

The demand today is for a general raising of educational standards and this can only be achieved by breaking down barriers all round. There are now welcome signs that the rigidity of the tripartite system and selection is being broken down by pressure of public opinion. This opens up new opportunities for the junior school.

Are we ready to take advantage of them? I do not believe that we shall be unless careful thought is given to some preconceptions, the most important of which are connected with 11+ and the I.Q.

The 1931 report, starting from the premiss that all children have an inborn and unchanging amount of intelligence which can be accurately measured, logically recommended that junior schools should stream children according to "their natural gifts and abilities." This conception is no longer accepted by psychologists themselves, who now state that inborn intelligence cannot be directly measured by any test. In addition, the whole idea of a fixed, hereditary potential has been subjected to a radical criticism, and today the tendency is to stress the formative power of education.

Should we stream ?

In the light of this, what of streaming in the junior school? This subject was raised in the last FORUM but, in my view, in a somewhat mechanical way. Organisational difficulties

apart, what of the educational implications? If it is the task of the junior school to lay firm foundations for learning and life, can we afford to rush even some children through, quite apart from the effect on those left behind?

Here the whole theme of this article is recalled; namely that, though teaching the techniques of learning and achieving certain minimum standards of attainment is of central importance, junior school education as a whole comprises much more than this. The wider education provided, the influence of school life on the child, does not merely depend on exercising professional skill in certain directions. It depends, above all, on creating a happy, confident, united community, engaged in mastering the means of living creatively, co-operatively and to the full.

This must be the greatest concern of the junior school today. Many of the current plans to "abolish" 11+ consist merely in thrusting responsibility for the odious task of selection on to the shoulders of the junior school teacher. Instead of a test on a single day, there are to be tests throughout the junior years. Will this be conducive to the kind of developments we want? At least this is open to doubt and deserves serious consideration.

To keep before us the *educational* aims to be pursued, to reach clarity on how these are to be achieved—these, as I see it, are the fundamental tasks before junior school teachers. All organisational matters must be made subservient to the needs of education at this first, and most vital, stage of schooling.

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DISCUSSION

JUNIOR SCHOOL STREAMING

(1)

A junior school head who was thinking of 'experimenting' with unstreamed classes wrote to the head of an entirely unstreamed school for information. Here, with local references deleted, is the reply he received.—Ed.

AFTER MANY YEARS as a teacher in various types of school and a few years as educational psychologist to a local education authority I became the head of one of their new junior schools. This is our fifth year. The school has two classes of unstreamed children in each age group—right through.

It has proved a most successful venture in education. Grammar school results are more than double the average of the authority. This is accounted for by the fact that a considerable number of children, who would have been 'B' or 'C' in other schools, are given full opportunity here to develop under the stimulus and get to selective schools. As for the bright children—I say that their work is better than if they had been in an 'A' stream. The idea that non-streaming "inhibits" bright children

is nonsense! But I am more pleased with the results of the less able children. Living and working in a free population, the better children seem to lift the level of the slower members of the class. Last July, the average attainment ages of the Standard 4 children were:

Reading Recognition (Burt)	..	13.4 years
Comprehension (Schonell 'B')	..	12.4 years
Spelling (Schonell)	..	11.5 years
Mechanical Arithmetic (Schonell)	..	12.8 years

A healthy democratic spirit pervades everywhere. During the last two years the children seem to be "cleaning up" all awards in sport and athletics—frequently against schools of much larger populations.

I think that being "educated" is a social experience. All can take part—giving what gifts they have to the general good. Motivation to learning, doing, playing is the result of social stimuli, and I'm sure this accounts for our most satisfying results in all directions.

All this is in answer to your question about "part-streaming." You can't do a bit of streaming in the school. It's like having formal discipline in the morning, and free discipline in the afternoon! It just leads to mental and social confusion.

With 80 children coming in from the Infants, I divide them into 2x40. Each class is composed of children selected on their reading standards on leaving the Infants. So each of the two teachers will have in her class some good readers, others learning at various stages and a tail of children who know nothing. On this first 'reading' selection, the children are left to progress through the school as a complete unit. In the first few weeks a sharp attack is made on the "non-readers" in Standard 1, so that before Christmas we have a literate population there. This reading effort is very important I think—because as soon as children can read they need no longer waste any time in the junior school.

A word about staff. I take them as they come—explain what we're doing and they always seem to meet the challenge with enthusiasm and skill. I don't believe in 'B' or 'C' teachers any more than 'B' or 'C' children. The schemes are loose, the timetables are free, we live and work together as a team. My job is to praise, encourage, suggest and to ensure they teach "themselves" to the class and not out of any schemes written by me.

Enclosed is the school report form which goes out once a year. You'll notice there are no 'merits.' The child who is borderline defective can take home a highly satisfactory report if he is doing his best.

The brilliant child who would perhaps be a "top boy" without mental effort can take home a bad report if the teacher feels he is not extending himself.

All this work started in an area traditionally "streamed," and with hostile parents. So I immediately formed a Parents Association—held frequent meetings

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DISCUSSION

and allowed parents to throw all the bricks they liked. But results soon began to tell and prove my words and I think there is now more or less common consent in the neighbourhood that "the thing works."

About subject teaching, arithmetic, with its ordered progression and its relationship to specific ability and maturation, is the only subject which can offer difficulty in an unstreamed class.

We have a progressive scheme for each year. To the young teacher I suggest the "quota system." A method is taught to the class as a whole, and a large number of mechanical sums followed by problems are set on the method. Each child can do some of the taught method—the poorest the early easy ones and the best children can get to the problem stage. This enables the young teacher to command completely the progress of the class and establish an arithmetic discipline. When I see this I suggest more grouping into ability and speed groups. (I advise the teacher not to devote much time to the very dull children with little or no number sense. It's waste of time—and God always gives these dull ones a sense of money values, so why worry).

Streaming is a pernicious cancer in our system and needs cutting out. So I do hope you will develop non-streaming through the school. It's completely anti-Christian to label little children 'B's' and 'C's'.

(2)

NORMAN S. SPIRES

Headmaster, Clapham Manor Junior
Mixed School, London

J. E. BROWN'S ARTICLE on the junior school survey on streaming (FORUM, Vol. I, No. 1) leaves me in a very thoughtful mood. Here, in my junior mixed school, I have adopted a 'middle of the road' policy which appears to suit all the needs of child, teacher, and school.

I do not stream the juniors at all during the first two years. At the end of this period two things will have happened. First, the children will have acquired the main part of the basic skills. They will be able to express themselves in words and in writing; they will have mastered the mechanics of reading and will have some knowledge of number. Second, I will have enough information about each child to appreciate the individual intelligence, attainment and character. As the children enter the third year they are streamed in as much as the more able are diverted to one class to begin a two year course of slightly more advanced and faster work than the less able. In the fourth year, except for revision where necessary, the streaming continues.

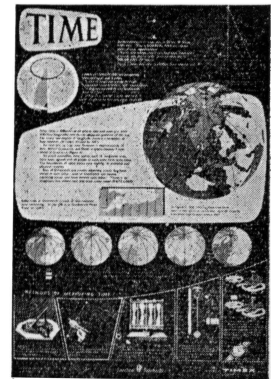
The more I examine the details of the survey on streaming the more I am tempted to ask the question, "Do we stream only because the selection examination forces us to do so, and are we too insistent that this particular 'bogey' be given priority over most other claims of education?" It's no good hiding behind a pile of homework marking and saying "Of course, we know it is done but it does not happen here. Whv! after the examination I've wonderful plans for the class." That is not education in the fullest meaning of the word.

In the traditional grammar school, the stream system exists also. Upper, middle and lower forms are but a secondary version of streaming. If we in the junior school are to use the more formal methods of teaching, then streaming is amply justified. If a more modern approach is made by working through the individual child, the group having differing interests, topics, projects, creative activity and freedom from timetable restrictions, then there is no justification for streaming.

The point now arises—can we do as much in an unstreamed school? After all, the children have to be split into convenient class numbers by *some* means or other. To the teacher who relies on more rigid methods, a wide scatter of ability is far less favourable than a set of either high, medium or low ability—and remember that there are still quite a large number of teachers in that position. Proof of this is to be found in the revelation that 73 per cent. of heads *preferred to stream*. Perhaps the head is wrong in not forcing through that 'ideal' situation already referred to—where (I am told) it is quite wrong to put a cross against an incorrect sum for fear of the inward harm it may do the child—or perhaps it is the teacher who is wrong for wanting to adhere to tried and tested methods.

Parents' reactions to the subject, as indicated in the survey, are somewhat negative. This is understandable, because I have noticed that, whereas the children can well understand the ramifications of a streaming system, it is the parents who are unable to comprehend it. Furthermore, I am not prepared to accept the theory that the children in lower streams are 'inwardly hurt.' In an unstreamed school they would be in the lower

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group anyway. Children can accept that there are others more clever than themselves. They will have to contend with this fact in life itself, so why shield them from it now? The failure of parents to realise that there are, perhaps, 70 other children of similar age in parallel classes is a thing that suitable propaganda can correct.

In this school, streaming in the upper two years has provided a more ordered arrangement. We all know where we are going, the target—whether it be high or low—and what we can expect from children at a given place and stage. That is why we use the streaming system here. It works.

SCIENCE IN THE JUNIOR SCHOOL

(1)

ERIC LINFIELD

Deputy-headmaster, Bandle Hill Junior Mixed School, Stevenage

THE SYMPOSIUM ON "Science Teaching in the Nuclear Age" (FORUM, Vol. I, No. 1), although it was mainly concerned with the latter part of the child's school career, raised issues related to science in the primary school which need examination. In some primary schools elementary scientific work has been introduced and has been an accepted part of the child's learning environment for some time, but only recently has the 'urgency' stressed by your first contributor grown more widely appreciated. During the past year, more articles have been written and more meetings and conferences arranged on the topic of junior school science than previously. My comments are confined to the junior school, although I know of several infant schools where interest in scientific phenomena and apparatus has been successfully encouraged by teachers with scientific interests themselves.

About a year ago there was an opportunity to do some elementary general science with a class of fourth year juniors in the school where I am teaching at the moment. I have met and talked with other junior school teachers who have been attempting similar work and I have investigated most of the books and articles written so far on junior school science. I have noticed that ideas begin to polarise themselves into the "science is to be taught" and the "science is to be caught" attitudes; some would introduce a carefully planned four-year syllabus for junior science, perhaps avoiding a watered-down secondary school approach but probably tied to a science room or even a laboratory and a regular science specialist teacher, while others would expect the class teacher to introduce scientific methods and a scientific attitude in the course of his or her general social studies work. However, there runs through both approaches the underlying belief that the modern atomic and space age demands, and indeed the modern child needs, the introduction of a scientific attitude at a much earlier age than was hitherto thought either practicable or possible.

When I began to plan my junior school work with a large unstreamed class of 10-11 year olds, certain difficulties confronted me. (Some would not arise if the nature study and geography and history projects were broadened earlier, but the overall social studies approach

including science for juniors takes some time to develop in educational circles). First, the children had had no previous scientific teaching apart from that which arose incidentally in the course of geography and nature study work in previous years. Secondly, they had not been introduced to the basic ideas of experiment and careful observation, followed by classification, which are so essential to all worthwhile science. I bridged the gap by a two-fold method initially, and subsequently it broadened out; this method included using the B.B.C. general science programmes (really intended for lower forms of secondary schools) for building up the vocabulary and framework of scientific thinking, and telling the children continually of the naturalists who became scientists in order to discover more knowledge than their field observations would provide. At the end of the school year there was considerable evidence that the children had become little scientists instead of little naturalists. Several children in this class have told me that science is now their favourite subject in the secondary school this term.

My work and my own personal approach tended to underline the view that the creation of an objective scientific attitude was more important than the accumulation of a mass of undigested scientific data; I am aware that some highly intelligent children may need the data earlier than others but I feel that most of this should be left to the secondary stage. My efforts to organise a variety of simple experiments in the classroom suitable for the children to conduct have shown that one must keep books of experiments away from the children, otherwise they tend to anticipate their conclusions and results. Also one must have a considerable basic stock of simple and improvised apparatus and sets of cards giving clear instructions for any experiments which one is wanting the children to perform. The scientific attitude can be introduced to the primary school child by means of a classroom museum which has an "investigation" section; for collection of specimens has frequently preceded important scientific discoveries in the past. In this practical way the children can learn the value of classification.

Finally, as your previous contributors have pointed out in their different ways, the scientific demands of the society of the future will be very different from those of twenty years ago and all citizens will need some basic scientific knowledge even if their daily tasks are not scientific or technical. Teachers at all levels of primary education will have to be kept informed of new scientific developments so that they can assist in answering some of the scientific questions which their children ask them. Perhaps one day, as the scientific attitude spreads, society will have evolved an educational atmosphere where understanding will be commonplace and ignorance rare.

(2)

WYATT RAWSON

THE SYMPOSIUM ON science teaching contained a number of references to science in the primary school. As a member of a committee of the English New Education Fellowship which has been studying this problem since April last (we hope to issue a report in book form next year), perhaps I may be allowed to contribute a few

DISCUSSION

observations. The committee has found itself in complete agreement that it is not a question of introducing special science courses at the primary level, but rather of so organising the work of the school that problems arise naturally which need to be treated in a scientific manner, that is by means of direct observation, clear records and an attempt to solve simple problems. This seems in line with the view of the three contributors to the symposium, if one is to judge only by their references to 'observation,' 'practical sense experience,' not 'dogma,' and by the stress laid by one of them upon the value of 'analogy' and of the formation of 'a flexible and analytical quality of mind.' But it is highly probable that this is not the conclusion they would themselves draw from these principles.

For us, however, it appears certain that the only way to stimulate scientific interests and secure a scientific approach to reality in the primary school is that of active exploration, by means of which science is integrated into the whole educational programme. Thus a child looking at a tree may wish to find out its height, or to discover whether its timber makes good carving wood, or, struck by its beauty, may prefer to write a poem. For the young child there is no divorce between such activities, nor should there be for his teacher.

Another point upon which the committee was agreed was that 'science' does not mean just nature study and the physical sciences but is an attitude of mind as applicable to human problems as to the non-human world. If a class is going to interview the district nurse, an analysis of her work must be made, i.e. what she does in the clinic, in the home, in the school. An ordered arrangement of

questions will be required. How many will there be time for, and how long should each take? But this education in scientific method is accompanied by other things. For many lessons in group life will unavoidably arise, the need for a chairman, for preparing and taking notes, for politeness and mutual respect. All this will be learnt in the process of 'doing,' of finding out what you want to know.

This emphasis on 'doing,' on active exploration, seems to us the key to true scientific work. It should not consist in courses planned by the teacher, in which the teacher sets the questions and provides the answers, but in the observation of external realities by the children themselves, either at school or on school visits and journeys. A set curriculum will only provide information. What children need at this stage is to search, to be given the opportunity to go ahead and find out, to try and solve their own problems in their own way, which of course does not exclude the teacher's or any other adult's help. This provides the eagerness and enthusiasm which may often be lacking where a set course strait-jackets the child's imagination.

Of course in practice such freedom is not easy to organise within the limitations of school life. But that it is being successfully done we know. The experience of 'activity' schools both here and in other parts of the world shows that once children's imaginations are aroused by the suggestion of a scientific inquiry, they are capable of setting and solving for themselves problems often thought to be wholly beyond them. All the necessary scientific disciplines arise quite naturally from this first imaginative impulse; the need for comparison, for sorting

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and arrangement, for precision and accuracy, and indeed for tool-making as well. Moreover, there are no inert ideas. Children can be asked to think for themselves, can be given traditional methods to use or to challenge. There would then be no possibility of a student leaving college saying, as one did recently "I've been well educated, so now I don't know what I really think or what I really feel."

Our committee has no illusions about the difficulties facing teachers if this method of active exploration is to be made the foundation of science work in the primary school. In fact our report will be much concerned with ways in which these difficulties can be overcome. But the pioneering work has been done, both here and abroad, and we feel confident that an approach to science teaching along these lines will not only form a firm basis for further secondary school work but will also affect it in its turn. It is also one way of beginning to close the gap between the ordinary man and the 'scientist'; for all will have been 'scientists' in their younger years. Nor will it be customary to make any sharp division of the time-table into science work and work in the arts and crafts. Thus the present gap between the arts student and the scientist may be diminished. For it will help each to realise that if one wishes to remain a whole person neither way of approaching reality must be abandoned.

LABORATORY TECHNICIANS FOR MODERN SCHOOLS

R. J. BALDWIN

Head of Science Department,
Shirley Warren Technical Secondary School,
Southampton

THE PROSPECT in my title might make many a ratepayer groan at the thought of the cost to the rates. Conscientious science masters who fully realise the need see little hope of getting their skilled assistants. The answer of many authorities would be that the men are not available. All the signs are, however, that this will not be the position for much longer, and skilled wood and metal craftsmen may be available if only people can be made to realise that money spent on skilled technicians will be well spent.

Where authorities are alive to the needs of the new trends in education a start in providing technicians has been or will soon be made. Elsewhere the chief obstacle seems to be that people are still thinking in terms of the modern secondary school of the immediate post-war years and before. In those times academic science teaching in the average 11-14 age-group school was 'out' and science teachers were criticised by the inspectorate for teaching too academically. Nowadays better qualified science teachers for a good fraction of modern pupils is the prevailing cry. The children are a year longer in school, and the 'no homework' and 'no undue strain on the pupil' section of the teaching profession has been overwhelmed by the child's desire for success, the parents' desire for their children's success, industry's

desire for increased technological success, and the nation's desire for international success.

The great demand for more and better scientific education has quite transformed the work of the modern school science teacher. With the bulge even the old free and easy approach would have provided a heavy load. But in the present circumstances about half the modern secondary population may be doing homework in preparation for external examinations of one form or another. No longer can the weeks roll by while boys make science models or listen, for example, to accounts of the discovery of penicillin from their science master, or accounts of the beginnings of powered flight by the Wright brothers, or spend weeks intermittently reading watered down 'science' textbooks. Now the same boys are being taught at examination pace for examination results. Provided the results are obtained everyone is happy.

A paradox can now be seen between the science teaching situation in progressive modern schools and grammar schools of similar size. The aim of the grammar school and of a good part of the modern school is the same—G.C.E. The grammar school master has generally smaller classes of boys of better average ability than his modern school opposite number. The better average ability in particular makes the marking task of the grammar school master much less frustrating. Next, bear in mind that the money allocation for apparatus and books is likely to be less in the modern school and heightens the need for apparatus and teaching improvisation. Finally, to make the paradox complete, the grammar school is likely to have better equipped laboratories with laboratory technicians—up to three in number—actually on the premises.

The requirements for success as a science specialist in a modern school of five hundred or over are very great. To do his job to the extent his conscience tells him it ought to be done the teacher must be prepared to be something of a paragon of all the virtues. He must arrive at school early and leave very late. Playtimes and lunch hours will generally find him grappling with apparatus. He will be well-known to the school caretaker in holiday times if he wants to make much or repair much or investigate much the state of his heterogeneous articles of stock. Women science teachers in particular shy away, it is said, from constructional apparatus work.

There are many pitfalls which impede the progress of the science masters' or mistresses' work. Unless they are good at organising pupils much of their time will be wasted keeping the place in some sort of order. If they concentrate on marking they may find an ebb in the practical work. If they fail to take on the whole task properly because their common sense tells them it is a tall order then the results will be, from the examination point of view, largely failures. In some cases they may be surrounded by authorities who do not know the difficulty of the new science teaching situation.

If society wants good value for more money to be spent on science education then the provision for laboratory craftsmen on a shared basis or working in each progressive modern school should receive priority. When this is done more students, perfectly capable of becoming science teachers, may actually take up this vital branch of the teaching profession.

Agenda for the Non-Selective Schools

A. V. JUDGES

Given as the opening address to the summer vacation course on "The comprehensive school in English Education today," at the University of London Institute of Education, 25th July-1st August, 1958.

SINCE THE OTHER contributors to this course, for the most part heads of schools and experienced practising teachers, are dealing with particular aspects of school planning and cognate questions that arise inside and outside the field of the curriculum, it seems to fall to the contributor of the inaugural address to look at things in a more general sort of fashion and to try to take stock of our prospects at large.

First let me put into words what many of us must have been thinking about our programme—that this is not a defensive or indeed an offensive operation. We are concerned, not to buttress a case against sceptics and detractors, but to examine the problems of the non-selective school on their own merits in an educational setting.

Education and politics

In other words, for the coming week we shall be free from party issues. The greatest disservice to those who teach and receive instruction in the schools in question is performed by people of strong and passionate views—only a few of them are teachers—who are tempted to make political capital out of current educational controversies. I have read widely in the press about the threat to academic standards and the diminished chances of clever children which non-selective secondary schooling is held to offer. I have collected press cuttings assiduously in the hope of discovering how these threats are in fact being brought to bear; but never, anywhere in the periodical press, have I come upon a statement of this nature which is based on any familiarity with what happens in the schools and how the schools deal with children of more than average talent. Some schools are unquestionably stronger in this respect than are others; some are favoured by fortune and exploit their opportunities to the full. And we could do with more information about the extent to which various factors assist this kind of exploitation. My complaint is about criticism which lacks the support of evidence, particularly from people responsible enough to know better. There is an old quip to the effect that any stigma is good enough to beat a dogma with, and we must agree that some of the stigmata have

been curiously unreal and far-fetched. However, turning to the other side, I am bound also to say, "Save us from our friends." The soap-box case for root-and-branch reform is often argued with so crass a disregard for the realities of child life and the loyalties which maintain a community in being that I begin gloomily to reassess the I.Q.s. of some of our ward politicians.

Without politics an educated democracy cannot live; but politicians should not let doctrinaire notions about equality distort their views of history. And it is only when Mr. Shinwell, the old war-horse, dares to come out in public and remark with some bitterness that his parliamentary colleagues, whilst afraid to tackle the public schools, seem to have no compunction about trampling roughshod over good grammar schools—schools which among all our social institutions have been pre-eminent for creating the educational ladder of a broad-based democracy—that I begin to recover hope that an intelligent and generous attitude may yet break through.

Surely one is right in saying that those who join this summer school have no quarrel with the county grammar schools: we are far too much in their debt. Indeed, if anything, this debt and this powerful tradition are a little too much present in the thoughts of those who are responsible for the building up of comprehensive schools. We cannot resist the wish that our best products shall show up well in the examination room and on the statistical tables. It would have been humiliating had this wish been denied.

Present developments

A few days ago I listened to the head of one of our most vigorously publicised non-selective schools in London giving her report on speech day. (I cannot call it a prize-day. There were plenty of books in evidence. But instead of being removed from the platform during the proceedings, they were steadily building up on the chairman's table. It was a kind of inverted prize-giving: the school received the books which the pupils thought were the library's due). Now what the head said was: "The essential part of the school's work is done in the classroom: the most important relationships are those between

teacher and pupil: it is there that the teacher gives what is best in her to the children and sets them standards of work, gives them a sense of values, helps them to develop their individual qualities. If the attitude to work is right, if the children's aptitudes are found and fostered, if they are stretched to the limit of their capacities, then everything else falls into its proper place." Who would wish to dissent from this? And the head went on: "What of the work we do? Our examination results have improved each year in number of candidates and number of passes: we have a growing sixth form taking an ever widening range of subjects in Advanced courses. We have made our first links with further education—university, technical college, training college, hospital training school. An increasing number of girls are staying for extended courses in the fifth form." Knowledgeable observers will remark that this fifth-form development is the certain and infallible sign of progress in a new comprehensive school. The head concluded, with manifest satisfaction: "The standard in school examinations is higher; there is improvement in written and spoken English."

Now since I have been associated with this school, even in its embryonic life, when sheep were grazing on the site of the present vast assembly hall, I confess I have always longed more than I can say to hear these words; and I applauded gratefully. But I began to reflect on other essential parts of the school's work which are also accomplished in the classroom, and will never be brought into prominence in any school statistics.

These aspects—the reclamation of failure; the stimulus among dull boys and girls to hard-won literacy; the banishment of the sense of rejection; the opportunities offered to challenge one's intellectual superiors on nicely chosen ground; the personal discoveries of limited but very real vocations; the shared belief that no one should or could be finally written off—these will never figure conspicuously in the reports. Nor need we be sloppy or sentimental over them. Still, they may well be the things which teachers will recall most warmly after retirement from a school.

Earlier attitudes

Here at any rate are the fields in which published experience is most clearly called for, and where investigations will prove the most rewarding. They are also the fields in which criticism of methods and ideas will be constructive, inasmuch as most of it will emerge within the practice of the schools; and it may be years before outsiders discover the real nature of the problems.

It is important none the less that teachers at large should be watching developments of this order in the field of comprehensive schooling. Oddly

enough, in the period following the appearance of the Hadow Report in 1926, when the situation was fluid and ideas were very fresh and unsoiled, all the questions touching the educational possibilities of the less academic child in the secondary setting were rehearsed in a most interesting way by the teachers of the day. Strikingly enough, it was not the grammar-school teachers who found they were opposed to non-selective secondary schooling: they did not then describe their own schools as "secondary grammar schools." Two at least of the Joint Four associations then expressed themselves in favour of an extension of the institutions they already knew. They considered the meeting of the needs of all adolescents by a kind of vegetative reproduction of the county secondary schools of the nineteen-twenties, rather than the approval of the alternative scheme which would detach higher tops from elementary schools and rename them "secondary". The N.U.T. too were much less cautious in the support of non-selective schooling than they later became.

Today's critics

It was, I think, the authors of the Spens Report in 1938 who finally stopped the friendly talk along these tranquil currents of common-room discourse. They elected for tripartitism. Even so, their criticisms of the disadvantages of the multilateral (as they called it) solution were even-tempered and tolerably sympathetic, being concerned in the main with economies of organisation. Their chief reasons for criticism were grounded in considerations of expense in men, women and materials; and they were obviously in favour of some degree of experimentation. The (on the whole negative) argument is there in print for all to see, and I mention it because it still contains warnings for us to take note of. Frankly, it is the best, because the most intelligent, adverse comment I know.

New lines of criticism have since appeared—based as a rule on very little exact information—such as that reformers want all children to be forced to be equal; that they are trying to squeeze living tissue into utopian moulds; in other words that non-selective schools, being founded on rigid ideas and doctrinaire planning, must necessarily be educational failures. And from time to time new thoughts appear, as in the *Economist* a few weeks ago, which expressed solicitude for the new strains on the teachers; and spoke of the extinction of many desirable headships; and concluded that a political party "cannot cure snobbery any more than it can cure adultery; there can always be a U-comprehensive school at one end of the town and a non-U one at the other end."

Well, this variation in esteem between one school and another is indeed very likely to happen; but I wonder very much whether comparative educational

AGENDA FOR THE NON-SELECTIVE SCHOOLS

success rather than the social status of the parents will not determine the valuations.

A disappointing feature of all the present-day resistance to comprehension is its lack of precision and succinctness. So far as I know, no attempt has been made to expose the logical difficulties which lie in wait for those who argue too carelessly the pure theory of non-selective school planning.

For there is, as you probably realise, some incompatibility between the notion of a neighbourhood school and the desire of reformers that such a school should hold a cross-section of the social community at large. Thus a collection of housing estates created out of a clearance programme can throw up anything but a representative group; and when you proceed further to desiderate not only a representative community of children, but also a typical spread of all ability ranges, you may discover that in terms of measured intelligence your neighbourhood population is giving you a highly distorted sample. The square mile of North Oxford for example, or the residential area abutting on the Backs at Cambridge would produce a very different neighbourhood choice, when it came to I.Q.s., as distinguished from Notting Dale or Ancoats or Scotland Road on Merseyside. Clues which point to the reasons why children's ability is not evenly spread in urban localities have been brought together in recent publications that examine environmental factors, and, though I commend these studies to your attention, we need not stop to examine them.

The neighbourhood school

Now, are L.E.As. to be encouraged to play ingenious tricks in the shaping of their catchment areas so as to avoid such incongruities? And, if so, what happens to the neighbourhood conception; and, further, what happens to the important principle of parents' choice which is enshrined in the Act of 1944, or (should I say?) embalmed in that Act? We must be prepared to face a world of inconsistencies which defy abstractions, and to realise that a non-selective school may have to face an unpromising start (a) if the presence of one or two good independent day schools in the locality automatically creams off 5% of the most likely talent—this could pretty well constitute a lethal situation in some circumstances—or (b) if the occupational range of the area is heavily biased by the presence of numerous unskilled or semi-skilled householders.

As for the idea of a neighbourhood school, many of us find it extremely attractive. I do, because I felt the compelling attraction of the Peckham Health Centre—a real local community scheme if ever there was one—and have always mourned its dissolution. With every pupil within easy range, it is arguable that after-school activities should be doing a roaring

business. That this enlargement of informal association does not come about quite so easily is one of the matters which deserves inquiry. In London, I gather, it has not been so easy. The teaching staff cannot all be moved into the immediate neighbourhood, and staff may have to be wooed and cajoled into giving up a substantial part of their freedom; and as usual it is the zealots and the mugs who most readily stay, the former because their light burns fiercely and they enjoy it, the latter because they fall easily for a mug's game; and the mugs in my experience are the salt of the earth.

Again, if I read my theory correctly, a school must aim at a high state of parent-teacher confidence, which means regular contact. That is the ideal. Interfering though well-meaning parents and parents with a chip on the shoulder can, I know, be a menacing part of the school's environment. But it is right and proper that parents should be talking with *one another* much of the time about their offspring, with inside knowledge of what goes on—and this over the garden fence, in the launderette, in the public bar of the local, and in that flourishing survival of social selectivity, the saloon bar of the station hotel.

But we must not be too dewy-eyed in looking out on the neighbourhood: few teachers are. The social psychologist now tells us that the environment of street and alley and cinema and espresso bar is more pervasive as a truly educational force than formal schooling. Whether that is true or not, certainly it can be held that the neighbourhood, with all its potential strength as a social solvent, is not necessarily the right environment all round the clock for every child. It can be too influential. A solicitor I know, who lives in Stepney, has been asking me about secondary schools to which his children might go; and when I offered some first-rate schools within walking distance, he said "Yes, but we think it would be good for the children to see a wider world and get away part of the time from their friends who ride bicycles so adroitly on the footpath of our own street." Following this principle, we have found a good school involving a 4d. bus ride, and, parents' choice being more effective in the case of very bright children, the authorities have consented to a waiver of local Divisional claims. Even admitting some of these objections, it seems clear that the comprehensive school is the more successful when geared with a sense of mission to neighbourhood purposes.

Problems for the staff

The level of controversial interest being what it is in the public sphere, it is a relief to discover that most of the real points of concern, certainly those with a pedagogical significance, are now debated within the schools themselves. The arena has

shifted to the staff-room, and it extends over a fascinating field: the rights and wrongs of narrow precision in grading, for example, and the area of work it should properly embrace; the case for and against a universally followed modern language in the lower school; the proper age-level at which to allow questions of future specialisation to take charge of setting and of the curriculum; questions relating to a second modern language; the planning of the onset of pre-vocational study; the arrangement of the final period of work of the probable early leavers, those who can and will follow their statutory right to leave school without completing a four-year course; the link-up with part-time day release; the content and vast range of fifth-year studies and what they are really to signify; the extent to which strictly technical interests should be allowed to dominate the class-work of those destined to be trade apprentices; the whole anxious, complicated tangle of issues touching sixth-form studies, now about to engage the attention of non-selective schools old enough to have their age-groups coming into balance.

Class organisation

One senses considerable difference of viewpoint about the length of time over which the common curriculum of the lower school should prevail. To hear some speak, the first two years have a terribly diagnostic sound. Other school planners seem to carry the common curriculum right through three sessions and are less strict about the area of study in which the so-called "selective" groups—this is a new and horrible word—are briskly ushered along towards higher things. But the remarkable thing for me is the practical unanimity of viewpoint among teachers about the propriety of streaming the whole lower school through the central-core subjects of the curriculum, remarkable because the practitioners have coolly left the pure theorists and the utopians and the sentimentalists, and their preaching of something like random admixture, on one side, while they proceed to see that the able children jolly well respond to the stimulus of hard work and the conspicuous carrot, and the weaker get on in separate groups at their more leisurely pace.

What is left of the view, implicit, I seem to remember, in the earlier literature of comprehension which allowed one to believe that no *general* factor of ability or response to curriculum stimulus could be subsumed, and that each subject might call for a fresh arrangement of the class registers? The issue between selective sets and mixed-ability groups would seem now to be concerned, not with the principle of selection, but with the scope of selective operation permissible in the face of certain egalitarian ideals.

One notices a tendency among teachers to approve the idea of mixed ability grouping, provided

the subjects chosen are somewhat remote from their own; and this goes not only for upper-school specialists, but also for those who have the high ability to bring on backward pupils. We all know that some subjects at the art-and-craft end of the spectrum are held to justify organisation into mixed groups. Physical education and religious instruction are often conveniently popped into the same bracket. And all this may be a concession made on behalf of some principle which can be trusted at the periphery but not at the core. Or should we take it that there is a strong body of belief that at the periphery children's talents are differently arranged? Admittedly retardation can be highly specific, and the explanation of it may be specific too. I asked the head of a music department the other day whether his experience approved the assumption that a different setting or even a random order of grouping offered better scope on instrumental and choral work and also on the theoretical approaches to music; and his observations made it pretty clear that the ranking order of ability in what we may call the humanities was found to apply with few exceptions to music as well, though oddities are of course more numerous, and it is not unknown for a young intellectual giant to be tone-deaf. My informant said that quality "would out"; and he would have preferred the batches created by standard streaming in the interests of all pupils.

Obviously there is work still to be done in proving or disproving the assertion that the farther one gets from the verbal and intellectual core studies, and the nearer one gets to subjects calling for the use of hand, eye and muscular control, then the more the young person's endowments are eccentrically disposed in relation to their grading on a verbal intelligence scale. Here, as in all paper exercises which play with ability and performance, mathematics throws up remarkable points of interest, and it remains the joker in the pack. How soon will the experimental atmosphere of the new schools be helpful in enabling us to discover more about this subject's evasive attractions?

New opportunities

You will observe that an opening lecturer in the kind of summer conference in which we are engaged cannot spare time to fulminate against eleven-plus examining, or to expound any laudatory rhetoric in honour of the comprehensive principle. Why should he? Comprehension in 1958 seems to me to be a well established thing; and the coming week's endeavours will be those of a serious working party, not those of an evangelical band of hope. The great interest of this present stage in the history of English secondary schooling lies partly in the opening up of a period of experimental work and investigation in what are certainly most favourable working conditions in areas where such conditions are offered.

AGENDA FOR THE NON-SELECTIVE SCHOOLS

We really can expect to achieve progress in practical investigation. Thus the study of backwardness is still only in its infancy, though to be sure we are willing to talk about reading difficulties with some assumption of knowledge. How to distinguish the congenitally dull and word-blind from the retarded child, and how this knowledge will make it easier to teach them both, belong to the tasks in which more can be done.

To my mind the question of the late developer, which is actually quite a different question, is a line of inquiry that deserves enormous patience, trouble and time in the coming years. If ever a category of young people stood in need of the special services of the comprehensive school, this is the one. Some psychologists (lacking, I think, somewhat in common observation and imaginative understanding) have even denied the existence of such a category. But I am sure that they are wrong, and that here we have one of the prime tasks for teacher research.

Other matters that call for investigation and the pooling of ideas are the nature of the educational principles which govern or should govern the fourth-year syllabus; and again, farther up the school, a whole range of questions which arise in connection with the beginning of examinations at ordinary level and the approach to the other less exacting public tests of ability which are now multiplying around the age of sixteen.

School and work

And, above all, one senses the need for informed discussion about the planning and especially the timing of entry into courses with a strong vocational interest. Admittedly you will not hold some children at all unless the practical incentive is waved at them enticingly before the time of statutory termination of schooling. Yet to postpone the day of practical career preparation, which is only an "evil day" when it comes too soon, is to avoid the waste of good educational time, suitable for the liberal arts; and this opportunity we should now know how to use in a better way than by clattering away on office typewriters to acquire precocious speed. However, once the teacher and the pupil are quite clear about the desirability of extending the school career well beyond fifteen-plus, *then* I would venture to say that you can hardly take too much trouble with technical training or be too technically committed or vocation-biased. Not that it matters in all cases that the boy or girl should ultimately adopt precisely the career in question.

Further, of course, the whole question of full-time preparation for apprenticeship needs rethinking, with the school's potential contribution very much in mind, and the possibility of remission of industrial service time.

It may be held that one of the functions of an opening address is the tossing out of provocative remarks, and so I will risk the displeasure of some of our members who hold decided views and finish by asking you to consider three "Don'ts for comprehensive schools."

Some advice

First, do not be afraid of a strong vocational bias at the top. The majority of your pupils will live to bless you for your courage. Do not hesitate to make good *general* use of the labs and workshops with which generous L.E.As. endow you to the envy of all other schools. See, moreover, that the academic Sixth becomes contaminated and remains contaminated by regular benchwork and workshop experience. The surviving prejudice against the wearing and dirtying of overalls is really a throwback to the early days of the working-class left; and it is this now quite outmoded and unjustified respect for the white-collared clerk's road to security that needs to be diminished.

Secondly, do not relax the effort to bring along the unacademic pupils into the upper-school, even if people accuse you of aping the junior technical college and the secretarial finishing schools. We are not without A-level opportunities nowadays in this field, and we have some things to offer that technical colleges cannot give. Do not attempt to encapsulate the academic Sixth in a world of their own, fit only to serve as nursery slopes for the future aspirants to Greats at Oxford. In other words, I am saying that there is no sense in trying to propitiate right-wing educational opinion by appearing to recreate the grammar-school Sixth behind a tidy fence in the untamed bush. You will need these young people to colonise and subdue the bush.

Thirdly, do not in any circumstances let anyone cut your school's head off, or remove your specialist pupils into some fancy pseudo-college. This would convert your school into what it must not be. So you must beware of devices hatched in administrators' offices, and be prepared to defend the integrity of the upper school with your last breath.

The Executive of the National Association of Labour Teachers is seriously concerned by the recent announcements about changes in organisation of the 11 plus examination in various parts of the country. It draws attention to the excellent passage in *Learning to Live*, which reads: "When we notice the efforts now being made to think up new 'selection procedures' we can only regret that so much time and energy is wasted in searching for the best way of doing the wrong thing. It is the separation, quite apart from the methods of separation that may be adopted, that we wish to see abolished."

Mathematics for Everyman

(1) THE PRIMARY SCHOOL

J. S. FLAVELL

I HAVE OFTEN been surprised that Mathematics, the quintessence of Truth, should have admirers so few and languid," wrote Samuel Taylor Coleridge in 1791. The same observation is made, from another angle, today. They "prefer almost anything to mathematics," "most shun anything mathematical," report training college principals of their students.⁽¹⁾

This aversion originates in the schools, largely because practising teachers themselves regard mathematics as a rather tiresome, meaningless mystique; a mere matter of sums which must be done strictly according to the dictates of high priests, the educational psychologists and statisticians. Mathematical thought must on no account be allowed to interfere with the ritual performance of these sums. There is no place for commonsense; individuality and originality are taboo, a sin against the mystery of number—"the magic of numbers that brings about a suspension of commonsense." What a preparation for twentieth century living!

The problem is traced back to the primary schools by Dr. Kathleen Ollorensaw of Manchester Education Committee. As now taught there, arithmetic causes "fear, hatred and boredom" and this is "the greatest single cause of the shortage of mathematicians." Powerful pressures of conservatism and tradition have, in fact, limited primary teaching to computation. The 10-plus examination has emphasised this, sums being so easy to mark; though, in reality, very little of value in primary mathematics can be tested. Available textbooks present dreary, indigestible masses of sums, instead of challenging children to think, to reflect on "how, when and where" with numbers and space relationships.

A new approach

Yet, over the past thirty years, warnings of the dangers of mechanical manipulation of numbers have been sounded by discerning educationists—from Godfrey Thomson to Renwick, Lamborn and Wheat, whose monumental work marked a milestone in the progress of mathematical teaching. Symbol pushing can hide such poverty of thought. Now the argument has been carried to its logical conclusion by that leading educational thinker Piaget. He holds that the understanding of certain principles

is essential to an appreciation of number relationships, without which the teaching of computation is largely a waste of time and a source of trouble to come. To Piaget the valuable aspect of a mathematical exercise is "the thoughtwork on the experience."

There is a remoteness, an artificiality, about most junior school mathematics that is deadly. It is a series of tricks, sometimes good fun to do if you are one of the lucky ones, but having little connection with the exciting business of living the life of a child. Christopher Fry's 'calculating twilight' persists. And the teaching is obsessed with a craze for dull uniformity. In the name of efficiency, real or alleged, certain ways of setting down sums are adopted as superior to others. The criterion of superiority is always a statistical one; more sums are got right by the chosen method. Such a claim is wholly unconvincing. To quote Disraeli, "There are lies, damned lies and statistics." To base standardisation (better it were called fossilisation) on such evidence is just bad policy. Surely the important aspect of any method in school is the mathematical one, not the statistical. Which gives the clearer insight into number relationships? Which adds the more to the mathematical growth and maturity of the child? The so-called standard method is an end product, the result of much thought and study, the streamlined model. Streamlining may be an admirable industrial technique; it is a bad educational one. To confine a child's mathematical thought within the straitjacket of a standard method is just bad teaching. The only standardisation needed is a common basis of understanding.

The need for freedom

Until teachers understand mathematics and have the courage to subordinate statistical gimmicks (standard methods, arithmetic ages, norms and the like) to the true aim of the course, which is the development of mathematical thought, these gimmicks were better put away. Schools want freedom from such taskmasters. Give them the freedom to develop their mathematics as a reasonable, logical body of knowledge, the second basic language. Give them freedom to experiment and discover and to express their discoveries in the ways best suited to the maturity of their pupils. How often do children have the opportunity, the thrill, of discovery in mathematics? How often are they en-

¹) *The Supply of Mathematics and Science Teachers.*

couraged to show originality and initiative? This they can only do if there is freedom to think rather than blindly following a prescribed recipe leading to a teacher-desired result, usually entailing the minimum of thought. They must be encouraged to apply commonsense to their work, to replace the mystique by technique.

The operations of mathematics—addition, subtraction and the others—must be rationalised and translated into the child's everyday vocabulary so that, for instance, multiplication no longer means making bigger, but bears its true mathematical connotation of the regrouping of a number of equal groups into one new group, there being the same aggregate before as after. In life, this is collecting equal groups. Addition is the collection of unequal groups. Subtraction and division are both forms of sharing; the former into two usually unequal groups, the latter into several equal groups. The symbols, x and so on, must be understood before manipulated. Then there must be a new approach to the conception of the zero, looking upon it as a placeholder and no more. No longer can it be treated as a numeral in such ambiguities as 7×0 . How can this be explained to a young child? Banish such unnecessary statements from our schools and apply commonsense to the zero when it is met in computation. In most cases it should be intelligently ignored. In no case at all is it necessary to manipulate it.

A progressive development of the powers of approximation and of estimation is an essential part of any sound primary course. Approximations must be based on round numbers, an important mathematical concept. Despite Dr. Johnson's dictum, "Round numbers are always false," they are the foundation of the work in approximations. In estimation we must depend on the child's practical experience of the commonly used measures. Without this practical background manipulation of these measures, lengths and the like, is futile and in any case has no place in any primary course.

Mathematical thinking

An interesting feature of primary mathematics teaching now receiving attention lies in the evolution and use of suitable mathematical situations as the basis of the required mathematical thought. Here such topics as time, length, weight, simple surveying, height measuring, ratio and proportion, have an important part to play. Here, too, is great scope for fun with numbers, involving simple

study of the properties of numbers—odd and even, patterns of tables, perfect numbers, figurate numbers, amicable numbers, magic squares, series and vanishing triangles, codes, think of a number, casting out nines, duplication and mediation, and so on.

These topics are the raw material from which and with which the child shapes his number thinking; the richer the background the more extensive and enterprising will be his mental reactions, the more rapidly will grow his confidence in his ability to cope with quantitative situations. With this growing confidence will develop his power to make decisions, and what a boon this is in a world increasingly filled with number propaganda and advertising, much of which is so misleading!

Brief reference must be made to some other aspects of mathematics which have a place in the primary school. Instead of exercises, so often seen in textbooks, such as: find the missing number in $6 \times _ = 18$; why not: find x in $6 \times x = 18$? This soon leads to $6x = 18$ and simple algebra has begun. Algebra for infants!

There is room for much simple geometry, dynamic not Euclidean. Let children discover some of the properties of figures by experiments with elastic bands and nailboards, Cuisenaire or Stern rods and other such apparatus. Let them measure heights with a home-made altimeter, just a set square with a horizontal base. Such work leads easily and simply to similar triangles. Let them make simple scales, and calibrate them, and follow with a home-made steelyard. Let them make water clocks, candle clocks and so think about time. Treat mensuration as space filling, using handy units, pieces of paper, books and what have you at first, and leading to the standard units later when the basic principle of area is appreciated.

There is almost unlimited scope for research into exercises of this kind. In the situations so contrived it is the thinking that is so important, the computation being secondary. Mathematics is alive, perhaps for many children for the first time. Maybe then Housman's lament may lose some of its force . . .

To think that two and two are four
And neither five nor three,
The heart of man has long been sore
And long 'tis like to be.

In that golden age, who knows, Coleridge's few languid mathematicians may become a multitude of eager, enterprising enthusiasts.

(2) THE SECONDARY SCHOOL

J. V. TRIVETT

CURRENT TEXTBOOKS for grammar and technical schools indicate that the mathematical work done for G.C.E. and other examinations is very

similar in content and approach to that of many years ago, though books are more attractively set out and there are sincere attempts to relate work to

the pupil's own experience. On the other hand the majority of children, in 'modern' schools, are gradually receiving a new literature in the subject. Gone are the days when pupils were forced to endure a few more years doing dull, routine lists of sums. Instead there is practical application of mathematics in surveying or navigation and correlation with other activities, while the elements of geometry and algebra are also taught in more interesting ways. It is to be hoped that these trends will develop and be consolidated.

Those who believe that real mathematics is only for the few, the 'bright' or the interested, may feel this is all that is needed. But some teachers are asking: "Do these improvements go to the heart of the matter?" "Is it enough to teach mathematics in this way?" The real point at issue is whether we have yet discovered how to teach mathematics to everyone.

Undoubtedly some people master mathematics, but it is not certain how this happens. Is tuition responsible, or does this, perhaps, play a relatively minor part despite the exertions and skill of devoted teachers? We must not forget the vast number, subject to five mathematics lessons a week for years, who consider that much of this was wasted time; either because they 'couldn't remember,' 'saw no point in it,' 'missed the fundamentals' or 'hadn't that kind of brain.' Yet most of these would have liked to conquer at least the elementary parts.

This suggestion of 'conquering' provides a valuable clue. Let us take as a basis for discussion the addition of fractions, selecting examples from typical textbooks. In the primary school children are expected to be able to add $\frac{1}{2}$ and $\frac{1}{3}$; a little later they progress to $\frac{2}{3} + \frac{1}{5}$. During the first secondary year examples such as $\frac{7}{15} + \frac{8}{21}$ appear and $\frac{1}{a} + \frac{3}{2a}$ creeps in; a year later and sets of exercises include $\frac{2a}{x} + \frac{y^2}{x^2}$. Gradually examples increase in difficulty and in the fifth form we find such complications as, say $\frac{x+3}{x^2-y^2} + \frac{y^2-5}{x+y}$.

Common principles

Yet, from the aspect of knowing *what* to do, all these examples are, to the mathematician, of the same form. Leaving aside the possibility that refined techniques can be employed, some denominators can be factorised, numerators may have simpler equivalent forms and the reduction of the final fraction-sum—the *algebra* of the situation is merely repeated. The fact that the last example is written in letter symbols and takes up more print, and that the meaning of the symbols may not be fully appreciated, does not affect understanding of *how* to operate the addition. The thinking experienced, the mental 'gestures,' are precisely the same in each case: those summed up in the words

'the result of adding two fractions is another fraction whose numerator is the sum of the two products obtained by associating one of the fraction numerators with the other denominator, and whose denominator is the product of the separate denominators.'

Another example may be cited from geometry. Most textbooks give the construction for bisecting an angle and another for drawing a perpendicular to a line from a point of the line. Why? These are two examples of the same general construction, the angle in the latter case being 180° and a special case of the former. Would it not be possible, then, instead of presenting two apparently unconnected pieces of geometry, to realise their unity and so reach greater clarity and understanding?

Conceptual development

Again, we often find two methods of proving that the sum of the interior angles of an n -sided polygon is $(2n-4)$ right angles. The pupil is instructed either to connect one vertex with all the others, forming $(n-2)$ triangles, or to select any point inside the polygon to which the vertices are joined. This time there are n triangles and their angles for consideration. But if we imagine *all* possible positions of the selected point in the latter case, and have the sense of a moving point, the invariance of the angle-sum can also be seen. When the point coincides with one of the vertices the first proof is seen as a special case. There is every reason why we should also consider the moving point to have taken up a position on one of the sides and, indeed, outside the polygon. Only then can the situation be completely understood: it is 'conquered' by the pupil.

This theme could be expanded by citing examples from the whole of the conventional syllabus. But enough has been said to suggest that the content of this is not presented in an order which accords with the ability of children to understand. For at the age of twelve or earlier children *can* add all the fractions quoted above, solve for x an equation like $(x + \frac{b}{2a})^2 + \frac{c}{a} - \frac{b^2}{4a^2} = 0$, appreciate the order of generality of quadrilaterals, or discuss academically the infinite set of common multiples of two numbers. Numbers, rather than being the symbols themselves, then become concepts which the children truly experience, giving rise to rich and imaginative possibilities.

In this case, number eight does not merely call forth the conditioned-reflex response 'twice four.' There is the immediate realisation that 'eight' is a family of equivalences some of which can be expressed as $\frac{1}{2}$ of 16, $7+1$, $\sqrt{64}$, $a+8-a$, $\cdot 8 \times 10$, $10-2$; and, if these are not the elements of the set first thought of, there are many others lurking at

the base of consciousness for recall should the occasion demand it. Thus a static, memorised thought is replaced by a dynamic set of ideas capable of much lively 'movement,' selection of what is most appropriate being made according to the circumstances. This is of the very nature of mathematical thinking: grasp of the generalised concept *from which* the particular example derives. Yet we teach that generalisations come only after hundreds of particular examples.

Teaching aids

This is no longer necessary now that teachers are discovering how to help children quickly to grasp concepts, which hitherto we have assumed can only come with maturity or to the more intelligent. To this end three main aids are used in the classroom: the coloured rods of Cuisenaire, the mathematical films of Nicolet and Fletcher, the geometry boards of Gattegno.

The use of these aids in their different fields can give all children, from the age of five, *deeply felt* experiences which are by nature mathematical. Having been personally involved, each child has a host of images and mental structures which the teacher then has to make conscious and precise. Thus for 7-year olds the addition of fractions becomes a question of simple gestures with coloured rods regardless of the actual numbers they represent and therefore for *all* numbers they can represent. When the pupil learns the conventional way of writing fractions he is reporting his own mental experience; accordingly the symbols used, *whatever they are*, reflect mental activity which has taken place.

The films show moving lines and points. The child watches a line rotating, intersecting another which remains stationary; the common point is emphasised and its movement seen. Or a circle is seen growing in size while another keeps its size but moves its centre. When the teacher subsequently asks 'What have you seen?' a circle is not merely the memory of a circle drawn on the board or on page 32 of the book; it is in process of becoming a set of ideas, dynamic by nature, powerful for use.

On the geometry boards—squares of plywood from which protrude small nails—the pupils make shapes with rubber bands. Each experiences for himself the beginnings of the immense idea that really underlies the meaning of, say, triangle or square.

Many teachers are convinced that the Cuisenaire material is one of the greatest educational aids yet discovered, but it is not the apparatus itself that is most important. What matters is that we now know that all children are capable of much more than we thought, that their latent mental energies have hardly been tapped. It is this realisation that must be our guide in reshaping secondary school mathematics.

During the first two years, whether in grammar or modern school, we should begin afresh. We want our pupils to realise that mathematics is not just an exercise in the manipulation of symbols, nor a subject taught only for utilitarian purposes, but a deeply felt, deeply understood experience of which every human being is capable at various levels. This is a growing body of knowledge, passed on as part of our cultural heritage, and the understanding of *any* part demands that it be recreated by every learner through his own experience so that it can be absorbed as part of his maturing personality.

To achieve this requires the thought, humility and help of all. We ourselves must understand more clearly and deeply what mathematics really is and how it is related to the structure of the human mind, especially the developing child mind. We must learn how to present a syllabus which helps pupils consciously to understand what they only know subconsciously or intuitively. As we discover how to do this, all the facts that children should remember will be learned, rules will be created as they are needed, examinations will still be passed. Indeed they will be passed by more, and at higher standards, and mathematics will take its rightful place for the young people of the scientific, electronic, space-travel age of the immediate future.

(3) THE SHORTAGE OF MATHEMATICIANS

R. L. GOODSTEIN

THE LIFELONG DISTASTE for mathematics with which so many children leave the primary school is a matter of grave concern to all the leading technological countries of the world. The parts played in forming this distaste by want of aptitude,

bad or ill-informed teaching, and psychological predispositions are still not clearly understood, but are the subject of active research. No one expects to be able to awaken a passionate interest in mathematics in every single schoolchild, but a reduction

of even 5% in the present wastage of potential mathematicians would make a very important contribution to the problem.

Certainly there are infant teachers who have been well prepared for their important task and who have real insight into the nature of number, and fortunate indeed are the children who take their first steps in number under their care. But in the very nature of the present organisation of infant and primary school teaching the majority of those who teach young children arithmetic have no flair for the subject itself and have been inadequately prepared by contact with only second rate minds wanting entirely in creative gifts. It is therefore evidence of the remarkable tenacity of the talented few amongst pupils and teachers alike that the present small percentage of successful pupils is not very much smaller.

If there were a simple remedy we should not still be looking for it. But, conscious though I am of my want of experience in this field, there are one or two suggestions which I should like to make. To underline the obvious we are at present suffering from a serious shortage of mathematics teachers; inevitably we shall be obliged to accept into the profession men and women less well qualified than they should be. These unsatisfactory teachers will increase the wastage of potential talent and so will add to the shortage of teachers. To escape from this vicious circle we must greatly increase the opportunities for contact between those who train the teacher and the creative mathematician; we must encourage the teacher himself to accept his duty to deepen his understanding of his subject—and the new vacation courses which some universities are running will play an important part in this—and we must seek to establish a thread through the whole hierarchy of mathematics teaching, from the infant school to the post-graduate research institute.

The teacher's task

It is often said that the teacher, even the sixth form grammar school teacher, in his professional life needs to use only a small fragment of the breadth of knowledge he acquired in his degree course; and apart from the rare teacher who engages in research, this is true. But it would be very dangerous to conclude that his teaching does not benefit from the riches then absorbed and perhaps no longer consciously remembered. A student is generally best prepared, not for the examination he is about to take but for the one he took a year or two before; for learning is best utilised when it is, so to speak, looked down upon from a greater height. Many of the grammar-school boys learning mathematics are preparing for a university course, and like an athlete in training they must be conditioned to run the whole distance, and not run themselves out too soon. It is precisely this forward-looking attitude to his subject that the teacher with more

advanced knowledge can give to his pupils. And to an even greater extent, it seems to me, must the primary school teacher produce this forward-looking attitude in his pupils, and to do this he must himself know what lies ahead.

The discoveries of modern science impinge so directly on the lives of all of us that nearly every child is aware that scientific research is something which goes on now, but very few children, or their parents, realise that new discoveries in mathematics are being made today at an even faster rate than in any of the experimental sciences. That so far from being a collection of museum specimens (though it is that too—and what a wonderful museum!) mathematics is a living adventure in ideas. The mathematician who is creative on the really grand scale is as rare as the great creative artist in any field, but every mathematician is fortunate by comparison with his academic colleagues. He can share the joy of discovery at whatever level his talent enables him to work, for the tree of mathematics does not only grow at the top but is continually sending out new roots and shoots; and if he has no creative talent then his subject still offers him deep satisfaction in the study of the discoveries which others are making, and he can seek for new proofs of familiar theorems or new ways of presenting old proofs.

The need for research

No crossword puzzle or chess problem can equal the variety, novelty and brilliance of the problems of which mathematics furnishes an endless supply. The teacher's task is to convey some of this joy to his pupils. It matters little, in my opinion, how much or how little he actually teaches them so long as he helps them to make discoveries of their own. Mathematics is so extensive that we cannot teach a boy, whether aged 9, or 15, or 20 years, all that lies within his capacity. We must therefore aim, not to be exhaustive but to stimulate the growth of curiosity and insight. Many new parts of mathematics can properly today find a place in the school course and much that is now taught should be omitted because it has lost its vitality.

In spite of the grammar school teachers who deplore the want of competence in simple arithmetic in their annual recruits, I think a great expansion in the range of mathematical ideas introduced in the primary school is essential. I hold it better for a boy to make mistakes in three different number scales than that he should be 'word-perfect' in the scale of ten alone! Teach him the binomial theorem before profit, loss and percentage, and finite differences before the decimal extraction of square roots.

I am well aware, however, that it is not enough just to exhort the teacher, or his pupil, or to offer new topics for old. The greatest need today is for systematic, sustained and co-ordinated research to find a more enlivening syllabus and more successful methods of presentation.

Comprehensive Education in Sweden

A Report by MARGARET MILES, who took part in a conference on this subject at Sigtuna in August 1958

THE HISTORICAL PATTERN of Swedish education is not unlike our own. The church-dominated mediaeval educational tradition gave way to the development of secular grammar schools, or gymnasia, with a strong Latin tradition. These schools, as in England, continued to prepare some boys for the university and at the same time to provide a general education for others. In the nineteenth century, the need for expanding the curriculum by the inclusion of some science and more mathematics was recognised.

The 1950 Act

From about 1840 *Folkskola* (elementary schools) were established by law in each parish, and during the latter half of the nineteenth century these schools developed senior classes ("higher tops"), and continuation schools were opened. In 1920 the Board of Education was established to be responsible for the central management of the *folkskola*, the higher schools, and the vocational schools. There have been various reorganisations of the Board since 1920, the last of which took place in 1952.

This very brief sketch shows that a situation developed in Sweden not dissimilar to that in England, in that a small group of boys and girls, often because of parents' choice, attended the grammar schools, and the other children got what secondary education they could from the extended *folkskola* course. (There are very few public schools in the English sense in Sweden and the state schools are therefore everybody's concern). In 1950 parliament enacted that this traditional pattern should be replaced by a nine-year comprehensive school for boys and girls from the age of seven to sixteen. This act was the culmination of a great deal of discussion and experiment about the need of modern society for a common school system, discussion which had been going on since the turn of the century.

Not surprisingly the changes involved in the development of a comprehensive form of school organisation have inspired considerable opposition, particularly, as in England, from teachers and parents too deeply rooted in the grammar school tradition. For example, although the

recommendation that final differentiation of pupils should be postponed until the age of 15, as in the nine-year school, is in line with the findings of the psychologists, this suggestion provoked much opposition on the grounds that standards would be lowered, able children handicapped and so on. There was, and still is, much anxiety about shortage of school places and scarcity of teachers, and this anxiety is made more acute as the school programme is expanded on the lines laid down by the 1950 Act—an expansion which involves an extension of the period of compulsory schooling by one year. In the debate on the Act the Minister of Education recognised the difficulties, but insisted that it was more important to decide on the direction and principles of school development than to fix a timetable.

Since 1950 over 70 districts have chosen to reorganise their schools in a comprehensive way, and there is an increasing interest in the possibilities of the new schools, probably because there is a growing awareness of an obligation to provide an appropriate secondary education for all, not only for a selected group.

During the parliamentary session of 1956 the Minister promised that a general survey of the outstanding controversial issues would be undertaken. He made it clear that, in agreement with the Board of Education, he expected that the comprehensive school system could be established throughout the country in the early seventies by which time the post-war 'bulge' would have passed through the schools.

The comprehensive school

The Swedish comprehensive school, which is co-educational, is divided into three sections, the lower school (age 7-10), the middle school (10-13) and the upper school (13-16); it therefore covers the whole period of compulsory schooling, but does not include the equivalent of the English sixth form⁽¹⁾. On the whole the lower and middle schools have form teachers and the upper section subject specialists. English, as

⁽¹⁾No limit to numbers is laid down, but the schools seem usually to be smaller than most English comprehensive schools.

the first foreign language, is introduced for all pupils at the age of 11. By this time it is expected that there may be some 'setting' according to ability so that the kind of language teaching given can be adapted to the ability and needs of the pupils. After two years it is expected that certain pupils will drop the study of English while others will add a second language. School progress reports and objective tests are considered in discussions between parents, staff and pupils before the final choice of course is made by the pupils in their ninth year (15-16). There are then three courses available, grammar, general and pre-vocational. In 1955-6 the proportion of pupils choosing these courses was one-sixth grammar, one-third general, and a half pre-vocational. These courses do not end in an external examination, but the school leaving certificate qualifies for admission to higher schools which will prepare pupils for the university, technical colleges, etc.

The Board of Education plan to build up a school psychological service so that each comprehensive school has on its staff a trained

educational psychologist to administer tests and to help pupils' adjustment in the large and mixed community. Vocational guidance is given to all pupils in the seventh and eighth year, and in the eighth year nearly everyone has the opportunity to use one month of school time to gain experience of work outside school.

Experience so far shows that the grammar course does seem to include the intellectually most able pupils and that these do not seem to have suffered from having been in the same school as their less able fellows. In fact, as in England, there are more pupils capable of taking the grammar course than would have been found if selection has been made at 11.

Teacher requirements

The evolving comprehensive school in Sweden is making tremendous demands on the teaching force, not only in the number of teachers it needs but the new approaches it requires from them; the teacher training institutions are very conscious of this problem and are giving considerable thought to it. There is a great need to expand the practical teaching in the general and pre-vocational course, and to produce scientists and mathematicians both from the grammar (which has a strong linguistic tradition) and the general course. Here again we find similar problems to our own.

A nineteenth century Swedish minister of education, F. Berg, stated as early as 1883 the truism that "differentiation is not the starting point but rather the outcome of development," and this is surely the main principle underlying the comprehensive school. A leading contemporary educationist, Dr. Yngve Norinder, who gave the opening talk at Sigtuna, summarises the recent developments in an internationally published paper and in conclusion I shall quote from his article:

The experience obtained from the comprehensive schools in Sweden thus far confirms the soundness of the fundamental principle of providing for all pupils opportunities to find themselves through varied learning experiences, guidance, and a free choice of study alternatives most suited to them. Though a continuous adjustment of this system certainly has to be made in the future, hardly any dramatic modifications seem to be needed.

The most impending problem seems to be how to supply the comprehensive school with the different categories of teachers needed for its heterogeneous student population. So far efforts and interest have mainly been concentrated on obtaining specialist teachers for its upper

(Continued on page 51)

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Book Reviews

The Teaching of Science in Secondary Schools (Revised Edition, 1958), compiled by a joint committee of the Incorporated Association of Assistant Masters and the Science Masters' Association (first published in 1947). John Murray. 17s. 6d.

The Provision and Maintenance of Laboratories in Grammar Schools, published for the Science Masters' Association by John Murray (1958). 9d.

FIVE YEARS' COMMITTEE WORK by 16 exceptionally able science teachers has resulted in a completely revised edition of the 1947 publication *The Teaching of Science in Secondary Schools*. It is addressed mainly to intending and newly fledged grammar school teachers, and to those planning or equipping new laboratories. It expands the November 1957 statement "Science and Education," widely circulated by the Science Masters' Association, and has the statistical backing of the joint enquiry by the S.M.A., A.W.S.T., N.U.T. and Joint Four on laboratory provision and maintenance.

Over half the book is devoted to the history, aims, functions and methods of science teaching. Sixty-eight pages deal with laboratory design and specification, 40 with apparatus and maintenance. There are short chapters on teaching aids, first aid and legal matters, while syllabuses are given only cursory attention. Advanced level work and examinations are given prominence. The problems of rural schools and of teacher training are dealt with briefly and the book finishes with an excellent bibliography.

The pamphlet on laboratory provision might be used as a bookmark, for its revelation of the staggering inadequacies of accommodation and finance go far towards explaining the frustration one feels as one reads so many sensible and inspiring suggestions and weighs up their immediate practicality. Only 44% of the grammar schools are up to Ministry standards of laboratory provision, only 20% of independent schools reach Industrial Fund standards. 43% of grammar schools have less than eight shillings per pupil-year for science, whereas ten shillings is regarded as a minimum. The particular handicaps in girls' schools are clearly shown. Here the book gives admirable goals at which to aim, while its apparatus lists will save hours of catalogue culling. Every reader can be well prepared for the next V.I.P.s visit.

At the core of the chapters on functions and methods, however, lies a weakness, too serious to overlook. In spite of a swing against general science, a plea for equal time for science for all pupils up to 'O' level, and for science for all sixth formers, the committee evades the central issues facing science teaching in the majority of secondary schools. Is the old academic type of education the best background for a scientific age? How far should workshop periods play an increasing role in the middle and upper school curriculum? How far are other subjects, particularly art, necessary for the production of good mid-twentieth century scientists? It is probably because the members come mainly from well-staffed, well-established academic schools that they do not tackle these problems which, however, affect so many of us.

Other weaknesses show themselves in the section on correlation with other subjects, which smacks of lip service to this much discussed, but little practised concept. Is this because the preface expresses the credo "ultimately the individual teacher must be free to work out the syllabus in his own way"? The section on correlation with mathematics does, in fact, contain many good points, but omits to mention the advantages of exchanging problems. The relation between science and history surely deserves at least a page, and Bernal's *Science in History* is worth adding to the booklist.

Sooner or later more must be known about the optimum size of classes for science teaching, and more detailed coverage given to practical work, book work, marking and lesson preparation. The central problem for most class teachers is the allocation of their time.

Here, in spite of criticism, we have a fine book; its production is a milestone in the history of science teaching. The next stage must be the setting up of a joint committee of all teacher bodies concerned with education, one that is truly representative of all types of secondary schools. Such a committee would be in the best position to consider the role of science in the developing secondary system as a whole; and let us have their report in time for the new laboratories we are all being promised.

MICHAEL ROBINSON.

BOOKS RECEIVED

<i>Religious Education in Schools</i> W. M. Wighfield ..	Blackie and Son	16/-
<i>Religious Education in the Secondary Modern School</i> Margaret Avery ..	Religious Education Press	7/6
<i>Complete English-Italian Course</i> Dr. C. Boni ..	Allman and Son ..	17/6
<i>Scientific Interests in the Primary School</i> ..	National Froebel Foundation	2/-
<i>Early Scientific Trends in Children</i> Nathan Isaacs ..	National Froebel Foundation	1/6
<i>The Junior School Today</i> Beryl Ash and B. Rapaport ..	National Froebel Foundation	1/6
<i>Teaching Mathematics in an Expanding Economy I</i> C. Gattegno ..	The Cuisenaire Co ..	2/6
<i>From Actions to Operations</i> C. Gattegno ..	The Cuisenaire Co	
<i>Art, Science and Education</i> ..	Joint Council for Education Through Art	
<i>The Commoners of England</i> H. Fagan ..	Lawrence and Wishart ..	7/6
<i>Alcohol and the Christian Ethic</i> T. G. Dunning ..	Religious Education Press ..	8/6
<i>Jesus, Friend of Birds and Beasts</i> J. M. Macdougall Ferguson ..	Religious Education Press ..	3/6
<i>Biology for the Young Citizen Book II</i> M. Wilkinson and E. C. Denne ..	Macmillan and Co	
<i>Forward to Drama III</i> G. H. Holroyd ..	Macmillan and Co.	
<i>Second Intermediate Comprehensive Mathematics</i> J. D. Hodson ..	Macmillan and Co.	
<i>The Bells of the City and Other Plays</i> Kylie Tennant ..	Macmillan and Co	
<i>A Dramatic New Testament Book II</i> G. H. Holroyd ..	Macmillan and Co.	
<i>Introduction to Metalwork II</i> Howard Thomas ..	Macmillan and Co	
<i>Technical Drawing</i> P. F. Harrop ..	Macmillan and Co	
<i>Picture Pageant: 3 Forestry in Britain</i> John Hornby ..	Macmillan and Co	
<i>Picture Pageant: 4 Roads</i> J. C. Uncles ..	Macmillan and Co	

The Rise of the Meritocracy, by Michael Young. Thames and Hudson (1958), 160 pp., 15s.

FAR BENEATH THE often superficial arguments over '11=' lie two different philosophies of life. These radically different approaches—significantly, and disquietingly, ignored by Labour's policy statement *Learning to Live*—have been examined in two recent publications: first, briefly, in Victory for Socialism's pamphlet *Equality in Education*, and now, more fully and from a different angle, in Dr. Young's satire.

The Rise of the Meritocracy describes the state of England in the year 2033. It assumes that, because the true issues were not understood, the movement of the 1950s and 1960s towards comprehensive education failed and that the practice of selection, segregation and differentiation according to merit ("I.Q. + Effort = Merit") proceeded to its logical end.

How reasonable it all seems! How easily it might happen!

Dr. Young's portrait of society 75 years hence is, very properly, a cartoonist's portrait. He exaggerates and simplifies in order the more vividly and effectively to get across essential ideas. For example we make the acquaintance of PAMELA, who is a much superior version of our own ERNIE. PAMELA, with her constant I.Q. of 100, is the national yardstick of intelligence, and all examination questions are put to her before being issued to schools and colleges. Mental testing is so thorough and frequent that no late developers are missed, and there is "no obligation on anyone to put anything more than his current I.Q. in his *Who's Who* entry." The old men, of course, step down in rank as their I.Q. and effort decline.

FORUM

The Summer Number, May, 1959

will include

Report from the West Midlands	B. F. Hobby
The House System at Coventry	H. E. Hopper
Experiences with a Backward Class	June Partington
The Cost of Educational Reform	John Vaisey
Symposium on English Teaching	Edward Blishen and M. M. Lewis

and articles on Education in the U.S.A. junior and modern schools.

To the Manager, FORUM, 71 Clarendon Park Rd., Leicester

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Who does the dirty work? Not machines, nor gamma and delta types who have to be conditioned by propaganda, but *the people who like doing it*: the peacetime Pioneer Corps of "men with large muscles and small brains, selected by other men with small muscles and large brains." By matching intelligence and job the wise folk of 2033 avoid neuroses and combine efficiency with humanity.

As a result of equal opportunity to be unequal both the Labour Party—which already, in the 1950s, was trimming its language and outlook to catch the middle-class vote—and the House of Commons are, by 2033, no longer important. Power has moved to the House of Lords as a result of reforms begun in 1958.

The fascinating thing about this picture is that there is so much we want to accept. It contains half-truths, even three-quarter truths: but not the whole truth. There are great differences of talent: people *are* happiest doing work which, while demanding effort, is yet within their capacity: we *do* want the ablest men and women to exercise (not 'possess') the most power and to bear the greatest responsibility.

But the distinguishable, measurable differences apply to what we can *do*, not to what we *are*. A human being is only partly a professor of history, a garage mechanic, a typist, a salesman. How reliable is the great man's judgment outside his own field? How can we measure his sincerity, courage, tolerance, or the way he draws the best from—or provokes the worst in—other people? And do envy, hatred, malice and all uncharitableness flourish less in ruling circles than among humble folk?

The great fallacy of the segregationist doctrine lies in its assumption that intellectual ability is *supremely* important for human progress and that social organisation must, therefore, be based on it.

Dr. Young suggests a different view in two notable pages (135-6). Necessarily, in a work of this kind, he refrains from doing more than plant the seed of an alternative idea. But his message, as I understand it, is that the classification of human beings on the basis of ability is too crude and simple to be either good science or good humanity. In modern guise, and addressed to the problems of our own time, it is part of a message now nearly 2,000 years old, of which man constantly needs to be reminded. Dr. Young has earned our gratitude for this particular reminder—not only for what he says, but also for the strikingly effective way in which he has said it.

ROBIN PEDLEY.

Teaching: A Psychological Analysis, by C. M. Fleming. Methuen (1958), 291 pp., 28s.

A RECENT UNESCO declaration states that the solution to the educational problem overseas lies in changes in methods and teaching patterns rather than in any particular kind of hierarchal organisation of schools.

This reminds us of a fundamental truth too easily forgotten. However schools are labelled (and why can't we get rid of the labels now?), there are only three kinds of schools—good, bad and indifferent. Our crying need is for better teachers ('teacher' here—dare it be whispered—subsumes 'head-teacher'). And, of course, for more of them.

BOOK REVIEWS

A school should be, in Sanderson of Oundle's words, 'a miniature copy of the world *as we should love to have it*' (my italics). The lead in building up a new school, or in changing an established one, must come from the head-teacher. His first task is to examine afresh with his staff their educational assumptions and how they daily put these into practice. Together they must hammer out common ground and unite in a common purpose so that they may move towards an agreed goal. No school, however small (or big), can do its job unless staff and head, forgetting self, can work together in harmony for the good of every child in it.

Readers of FORUM will, it need hardly be said, be interested in changing methods and teaching patterns. Many will feel the need from time to time to examine afresh their educational assumptions and how they daily put them into practice. In Dr. Fleming's book they have the ideal instrument to serve both interest and need.

The book is a survey of those findings of recent psychological research which are *directly relevant* to us as teachers. In the course of the survey, those educational stereotypes which we are apt to acquire because they provide us with a comfortable barrier against real thinking are efficiently shot to pieces.

The book is not easy reading. Though written with enviable intellectual clarity, it is very compressed. A few of the chapters, for instance, only "remind the reader" of important matters and are "of the nature of a summary rather than a survey." These in particular need to be supplemented by at least selected readings from the very full and invaluable bibliographies. Most of the chapters, however, are masterly and personal epitomes of the fields they cover, and are supported by equally full bibliographies.

The scope and balance of the survey may be seen from the titles of the seven major sections into which the book is divided: The Teacher in the Act of Tuition; The Teacher as a Student of Motivation; The Teacher as a Promoter of Learning; The Teacher as an Observer of Growth; The Teacher as Craftsman and Technician; The Teacher as Experimenter; The Teacher as Administrator and Therapist.

The approach is social, "admitting their (human beings) need for appreciation and participation." The key to the whole educational system, as Dr. Fleming sees it, lies in achieving an understanding of "the problem as to how social stimulation leads to acquired attitudes (or enduring dispositions), and how these in turn affect behaviour." Teachers should also concern themselves with the "quality of the stimulation" they offer. They should analyse the subject-matter they present and recognise the importance of thoroughness in its study. They should have knowledge and detachment enough to assess themselves as teachers, and courage enough to face "the issues involved in the educating of human beings who are characterised both by a wide range of individual differences and by the basic similarities of their common humanity."

The tone throughout is magisterial, but nevertheless full of a humane warmth. Only very occasionally is there a whiff of the preacher: the dedication reads, for example, *To All Ye Who Teach* (my italics).

Is Dr. Fleming too sanguine? Does she believe, with Helvetius, that *L'éducation peut tout*? Perhaps. But, as we *must* travel, is it not better to travel hopefully?

Some books are to be tasted, others to be swallowed. Here is one of the few to be chewed and digested, to be read by every teacher and everyone else concerned with education—wholly, and with diligence and attention.

A. W. ROWE.

Secondary Education for All, a New Drive. Cmdn 604, H.M.S.O. (December, 1958), 10 pp., 9d.

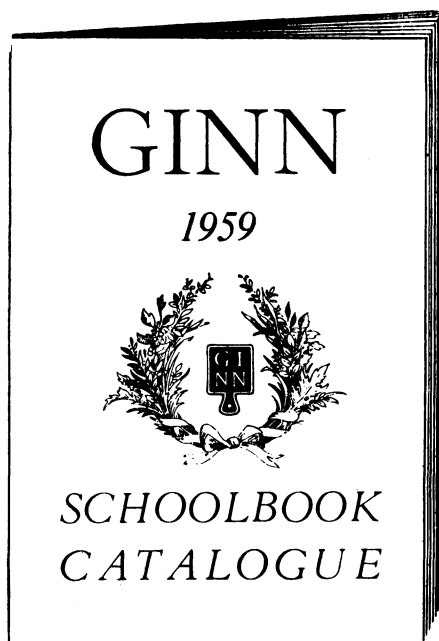
A DOWNRIGHTLY MILITANT political document," wrote the *Economist* of the Government's White Paper, adding a demand that the Minister look again at those labour local authorities (Newport, Derbyshire, West Riding, etc.) which have already announced plans to use "the steam-roller of comprehensivisation." Development of the secondary modern schools, said the *Times*, means that "the grammar school is safe." Of all the teachers' organisations it was the Joint Four which, significantly, gave the White Paper the most enthusiastic welcome, although the grammar schools are promised nothing beyond their continuation as separate selective schools.

We have here a bald reaffirmation of government policy on secondary school organisation, but one full of contradictions. Experiments with comprehensive schools "will not be ruled out" if proposed on "genuine educational grounds." Yet they will only be permitted in country districts with sparse populations and in new housing estates where there are no existing schools, grammar, technical or modern. The extension of a grammar school to become comprehensive is defined as forcibly "bringing to an end an existing grammar school . . . simply in order that a new comprehensive school may enjoy a monopoly of the abler children within its area," and as "completely abolishing" parents' freedom of choice. In a highly disingenuous section, the government confess to "serious doubts about the wisdom of establishing very large comprehensive schools," yet in fact it is the ministry that has always insisted on building large schools, sometimes directly against the wishes of local authorities. The genuine educational arguments for the abolition of selection and the development of the comprehensive school are nowhere referred to in the White Paper.

Although qualified approval of the Leicestershire scheme is implied (but not overtly stated), the main emphasis is put on the continuation of selection and the building up of advanced courses in separate modern schools. This very positive development was pioneered by certain modern schools often in direct opposition to official policy; its significance has been to expose concretely the futility of selection. It is a little ironic to find this development now being used by the government as the main argument for the maintenance of selection.

The White Paper is, in fact, a challenge to local authorities wishing to abolish selection by developing comprehensive schools. It serves notice that all such proposals (except possibly those based on a division at about 14), however widely supported locally, will be resisted from above. Although it seems a pity that the government has taken so doctrinaire a line, the White Paper has certainly helped to clarify the issues at stake.

BRIAN SIMON.



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