

**SECONDARY EDUCATION**  
**WITH SPECIAL REFERENCE**  
**TO GRAMMAR SCHOOLS AND**  
**TECHNICAL HIGH SCHOOLS**

**LONDON**  
**HIS MAJESTY'S STATIONERY OFFICE**

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BOARD OF EDUCATION

Report of  
The Consultative Committee on  
**SECONDARY EDUCATION**  
WITH SPECIAL REFERENCE  
TO GRAMMAR SCHOOLS AND  
TECHNICAL HIGH SCHOOLS

*"Chacun doit être à portée de recevoir l'éducation qui  
lui est propre."*—ROLLAND D'ERCEVILLE, 1768

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## PREFATORY NOTE

This report deals with a reference which was given to the Committee in 1933. Its recommendations are far-reaching, and their acceptance would involve substantial changes, not only in the public system of education in this country, but also in the administrative arrangements which govern it. To defer publication until the Board have reached a decision on the many issues raised would involve a delay in its presentation to the public which would be unacceptable to the educational world, and which the Board themselves would regard as undesirable.

It will be understood therefore that in publishing the report forthwith, the Board must not be regarded as committed to acceptance of its conclusions and recommendations. But whatever decisions may ultimately be reached on these matters, it is abundantly clear that the report deals in a most comprehensive manner with a difficult and complex subject, and in commending it to the careful consideration of all those who, as teachers, administrators or members of the general public, are interested in the educational system, the Board desire to acknowledge their great indebtedness to the Chairman and members of the Committee for their labours.

M. G. HOLMES.

17th November, 1938.

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### NOTE

The estimated gross cost of the preparation of the appended Report (including the expenses of the Witnesses and Members of the Committee) is £2,896 6s. 2d., of which £619 0s. 0d. represents the estimated cost of printing and publishing this Report.

**NAMES OF THE MEMBERS OF THE CONSULTATIVE  
COMMITTEE**

---

**Mr. WILL SPENS, C.B.E. (*Chairman*)**

**Dr. M. DOROTHY BROCK, O.B.E.**

**Mr. W. A. BROCKINGTON, C.B.E.**

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**Mr. J. A. WHITE, M.B.E.**

**Dr. R. F. YOUNG (*Secretary*)**

The late Miss E. R. Conway and the late Canon Sir Edwyn Hoskyns were also members of the Consultative Committee.

**TERMS OF REFERENCE**

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To consider and report upon the organisation and inter-relation of schools, other than those administered under the Elementary Code, which provide education for pupils beyond the age of 11  $\frac{1}{2}$ ; regard being had in particular to the framework and content of the education of pupils who do not remain at school beyond the age of about 16.

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## PREFACE

We began our consideration of the present Reference in October, 1933 after we had completed our Report on *Infant and Nursery Schools*.

The Full Committee sat on 74 days between October, 1933, and September, 1938, and examined 150 witnesses. In addition Sub-Committees appointed to consider various aspects of the reference from the Board sat on 36 days and examined 22 witnesses. The names of these witnesses are given in Appendix I.A.

In March, 1935, the Consultative Committee appointed a Curriculum Sub-Committee to explore thoroughly the content, significance, and interrelation of the various subjects and activities of the traditional curriculum for Grammar Schools. This Sub-Committee, which consisted of 12 members of the full Committee, with the Master of Corpus as Chairman and Dr. R. F. Young as Secretary, was vested with power, subject to the approval of the President of the Board of Education, to co-opt members from outside.<sup>(1)</sup> In this way, it was fortunate enough to secure the services of Mr. John Bell, High Master of St. Paul's School and now Head Master of Cheltenham College, Miss I. M. Drummond, Head Mistress of the North London Collegiate School, Professor Sir Percy Nunn and Mr. J. Clement Platt, Head Master of Chadderton Grammar School, who placed at its disposal their wide knowledge and sound judgment in the preparation of Chapters IV, and VI of the Report dealing with the curriculum for Grammar Schools. To Sir Percy Nunn we are specially indebted for a valuable memorandum on the principles of the curriculum, which was of great use in the preparation of Chapter IV. This Curriculum Sub-Committee sat on 25 days between March, 1935 and June, 1938.

In February, 1936, the Committee appointed a Drafting Sub-Committee consisting of seven of its members, with the Master of Corpus as Chairman and Dr. R. F. Young as Secretary. This Drafting Sub-Committee met on 28 occasions between March, 1936 and October, 1938.

We take this opportunity of thanking our witnesses for the valuable evidence which they put before us, and also those other organisations and persons (whose names will be found in Appendix I.B.) who were good enough to furnish us with memoranda, statistics and other data bearing on our Inquiry.

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<sup>(1)</sup> Under Clause 5 (iii) of the Order in Council of 22 July, 1920, reconstituting the Consultative Committee.



We desire to thank Professor H. A. Harris, Professor Winifred Cullis, and Professor Cyril Burt, who furnished us with memoranda on the physical and the mental development of boys and girls between the ages of eleven and sixteen, which form the basis of Chapter III of our Report. We are further indebted to Professor Burt for his memorandum on the history of the faculty psychology, written at the request of the Secretary, which is printed as Appendix IV.

We desire to thank Professor I. L. Kandel for his memorandum on the secondary school curriculum, printed as Appendix III; Professor H. R. Hamley for his memorandum on the cognitive aspects of transfer of training, printed as Appendix V; and Professor F. Clarke for his memorandum on some influences affecting secondary curricula in the dominions, printed as Appendix VI.

We desire also to express our thanks to the Secretary of the Committee, Dr. R. F. Young, and to Mr. R. J. Telling and Mr. W. H. Newell who in succession acted as Assistant Secretary. We owe much to their unremitting efforts, to their efficiency and to their patience.

To Dr. Young we owe a further and a very special debt. In almost every chapter our Report has gained much from his wide knowledge of educational history and systems. This is necessarily the case to a special degree in the Historical Chapter, and we wish to place on record that this important chapter is almost entirely his work.

We cannot end without recording our sense of the losses which the Committee has sustained during the preparation of this Report. Sir Henry Hadow, who had been Chairman of the Committee since its reconstitution after the War in 1920, resigned in January, 1934, owing to failing health. He had taken a leading part in the preparation of six Reports prepared by the Committee between 1920 and 1933. It is difficult to find words to express adequately the deep debt of the Committee to this distinguished scholar who presided with such distinction over their deliberations for fourteen years. In December, 1934, Miss E. R. Conway died and in June, 1937, Sir Edwyn Hoskyns. Miss Conway had been a member of this Committee since 1920, and had taken a prominent part in the preparation of several of our Reports, particularly those on *The Primary School* (1931) and on *Infant and Nursery Schools* (1933). Sir Edwyn Hoskyns was very specially interested in the problems concerned with the teaching of Scripture, and the ideas and constructive suggestions incorporated in Chapter V of the present report are largely due to him.

## INTRODUCTION

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The general purpose of this Introduction is to indicate briefly the nature of our principal recommendations, the inter-relations of these recommendations, and some of the most important considerations which we have had in mind. We believe that a preliminary sketch of this character will be of assistance to those who read our Report. For convenience of reference the Introduction is divided into six sections. In section I we explain the relationship of the present Report to our Report on *The Education of the Adolescent* (1926), and the nomenclature we employ in describing secondary schools. We also deal with recent proposals to establish multilateral schools, which raise questions antecedent to any consideration of grammar school education. In Section II we deal with the problems of the grammar school curriculum. In Section III we deal with vocational and quasi-vocational schools, and our recommendation that there should be a new type of secondary school, to be called Technical High Schools. In Section IV we discuss the interrelation of secondary schools and especially of Grammar Schools and Modern Schools; the allocation of children between these schools; and the extent of the provision which ought to be made for grammar school education. In Section V we continue this discussion in its special bearing on the later transfer of pupils, and on the necessity for parity of status among secondary schools; and we indicate a number of important administrative recommendations which are involved in our proposals. In Section VI we make some observations about "Education for Citizenship" which were of too general a character to fit easily into the Report itself.

### I. *The relation of this Report to the Report on The Education of the Adolescent* (1926); *Nomenclature*; *Multilateral Schools*

This Report is the third of a series in which we develop the theme of our Report on *The Education of the Adolescent* (1926). In that Report we visualised the education of the boy or girl as a continuous process, but conceived it as developing through two successive periods to which we gave the names of "primary" and "secondary"; and we laid down the broad lines for a new advance in the general scope of our national

system of education. In our Reports on *The Primary School* (1931) and on *Infant and Nursery Schools* (1933), we dealt with the special problems and opportunities of self-contained schools for children in the primary period of education which ends at the age of 11+. We now return to the education of boys and girls in the secondary period which begins at that age.

In our Report on *The Education of the Adolescent*, we recommended that education after the age of 11 should be known by the general name of *secondary education*, and that the two types of school which are mainly concerned with this secondary stage should be designated 'Grammar Schools' and 'Modern Schools'. 'Grammar Schools' we described as schools of the more academic type which are at present conducted under the Board of Education *Regulations for Secondary Schools*. In this category we include also those schools which are recognised by the Board of Education as efficient Secondary Schools (Board of Education, List 60, Part I). We gave the name of 'Modern Schools' to what are called 'Senior Schools'. This term is at present used by the Board of Education to designate both 'non-selective Central Schools' and also 'selective Central Schools'. Both these types of school are at present conducted under the *Code of Regulations for Public Elementary Schools*. In the present Report we adhere whenever possible<sup>(1)</sup> to the terminology employed in our Report on *The Education of the Adolescent*, and for the reasons stated in that Report we urge its general adoption.<sup>(2)</sup>

In addition to Grammar Schools and Modern Schools, there are other schools of a vocational or quasi-vocational type in which adolescent pupils are educated, and which our former Report (p. 79) recognised as giving post-primary education. That Report, however, left the position of these schools in the system of secondary education to be settled in the light of a wider experience than was then available. Nor did that Report deal explicitly with the particular problems which arise in Grammar Schools, including that of the curriculum suitable for the many pupils in these schools who leave about the age of 16. It is to these two questions, the organisation and interrelation of schools, other than those administered under the Elementary Code, which provide

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(1) Chapter II is an exception. The reason is explained in a note prefixed to that chapter on p. 87.

(2) cf. *The Education of the Adolescent* (1926), pp. 93-9.

education for pupils beyond the age of 11+, and the framework and content of the education given in these schools up to the age of 16, that our reference has directed our attention. It will be noted that it specifically excludes Modern Schools from our consideration. We have, however, found it impossible to discuss the problems with which we are immediately concerned without some reference to post-primary schools which are at present administered under the Elementary Code. Reform in any type of school inevitably raises problems in relation to every other type of school which affords an alternative education to that in question. The better adapted any school becomes to deal with particular types of pupils, the more important it becomes that in fact the school should be dealing with such pupils and not with children admitted for reasons other than the kind of education which it provides.

We shall deal later in this Introduction and more fully in the Report itself (Chapter IX) with the conclusions which appear to us to follow from these considerations. We refer to them here in order to guard against an initial misunderstanding. We are of opinion that the schools which are directly covered by our reference should retain a special character and must retain a special importance. It does not follow that they should enjoy specially favourable conditions : on the contrary, we consider that the existence of different conditions, except in so far as they are justified by differences of curriculum, is open to grave objection.

Before reaching the conclusion that these schools must remain a separate type of school, we considered carefully the possibility of *multilateral schools*.<sup>(1)</sup> The special characteristics of this type of school are the provision of a good general education for two or three years for all pupils over 11+ in a given area, and the organisation of four or five 'streams', so that the pupils at the age of 13 or 14 years may follow courses that are suited to their individual needs and capacity. There would be a common core in these several courses, but they would differ in the time and emphasis given

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(1) We use the term 'multilateral' to describe a school which, by means of separate 'streams,' would provide for all types of secondary education, with the exception of that provided by Junior Technical Schools in so far as these depend on their association with a Technical College and the equipment there available.

to certain groups of subjects. There would, for example, be a literary and linguistic course; a mathematical and scientific course; and other courses in which the pupils would devote more time to subjects leading on to technological studies, to commercial studies or to practical or artistic pursuits. In this way the ordinary grammar school courses would, it is maintained, be fully provided for, and separate Grammar Schools would not be necessary. The policy of substituting such multilateral schools for Grammar Schools, for Modern (Senior) Schools, and, to some extent, for Junior Technical Schools, has recently been advocated and has received considerable support. It is a policy which is very attractive: it would secure in the first place the close association, to their mutual advantage, of pupils of more varied ability, and with more varied interests and objectives, than are normally found in a school of any one type. Further, pupils could be transferred from an academic to a less academic curriculum without change of school. But in spite of these advantages we have reluctantly decided that we could not advocate as a general policy the substitution of such multilateral schools for separate schools of the existing types.

The reasons which weighed with us in favour of the existing system are as follows:—

- (i) In order to secure a satisfactory number of pupils in each 'stream' in a multilateral school, the size of the school would have to be very considerable, say 800 or possibly larger, and we believe that the majority of pupils gain more from being in smaller schools.
- (ii) There is general agreement that much of what is most valuable in the grammar school tradition depends on the existence of a Sixth Form. But a Sixth Form can only play its traditional part in the life of a school if it contains a reasonably high proportion of the pupils in the school. This could scarcely be the case if only half the pupils, or probably less, were on the grammar school 'side' and were with comparatively few exceptions the only recruits for a Sixth Form. It is in general difficult enough to secure adequate Sixth Forms in ordinary Grammar Schools as a result of the large proportion of pupils who leave before or about the age of 16.

- (iii) Even where geographical and other conditions admit of relatively large schools there is much to be said for their being wholly of the grammar school type. This is so, in view of the importance of having large Sixth Forms which render economically possible a considerable variety of Sixth Form courses.
- (iv) We attach great importance to the steady evolution of the curriculum and methods of teaching in Modern Schools, and equal importance to carrying further certain reforms in the curriculum of Grammar Schools with which this Report will be concerned. We believe that it would be very difficult, if multi-lateral schools became common, even in certain areas, to find Heads who would be as competent to control and inspire *both* developments as to control and inspire *one* or *other*; and we cannot accept the view that the influence of Heads of 'sides' can be a complete substitute for the influence of a Head Master or Head Mistress. There is, moreover, the risk that if a 'Grammar' and 'Modern' curriculum existed in the same school the former might, as a result of its long established prestige, exert an excessive influence on the latter. We are therefore of opinion that it is in general best for Grammar Schools and Modern Schools to exist and develop independently.
- (v) The special value of Junior Technical Schools depends in our opinion on their contact with the staff and the equipment of a Technical College. In consequence special 'courses' in multilateral schools would not be a satisfactory substitute for Junior Technical Schools. This view would probably be accepted by the majority even of those who would wish to substitute multilateral schools for Grammar and Modern Schools.

Any general policy of establishing multilateral schools would now be very expensive, and it would be justified, more especially in view of the 'Hadow reorganisation', only if it were clear that a substantial balance of advantage would result. For the reasons given above we do not think this would be the case, and we cannot therefore recommend the general creation of multilateral schools, even as the goal of a long range policy.

We are, however, of opinion that some measure of experiment with multilateral schools may be desirable, especially in new areas; and also that there is one set of circumstances in which multilateral schools ought almost certainly to be provided. These circumstances arise in districts where the Grammar School is too small either to give an adequate school life or to combine reasonable economy with the provision of an adequate staff. Some experiments have already been made, and others have been contemplated. It is important that administrative and other difficulties which stand in their way should be removed without delay. What modifications would be necessary in existing regulations is discussed in Chapter IX.

## II. *Problems of the Grammar School Curriculum*

The development of the grammar school curriculum is traced in Chapter I of our Report. A careful study of the present position has led us to the belief that the existing arrangements for the whole-time education of boys and girls above the age of 11+ in England and Wales have ceased to correspond with the actual structure of modern society and with the economic facts of the situation. The grammar school curriculum is still largely planned in the interest of pupils who intend to proceed to a University, although 85 per cent. of the pupils do not remain at school beyond the age of 16. The Grammar School must obviously safeguard the interests of those pupils who are going on to a Sixth Form and perhaps to a University, but it must also safeguard the interests of those who leave about the age of 16. In their case, courses of study whose essential value is that they are a foundation for further study at a later age are clearly unsuitable, and efforts are already being made to improve the position in this respect.

An obvious example of such an attempt is afforded by the provision of courses (and papers in the School Certificate) in General Science as alternatives to courses in particular sciences. These courses in General Science aim at relating science to everyday life and explaining its general principles and laws in a more popular manner than is possible in the early stages of a systematic study of any particular science. It appears probable that in those parts of the syllabus which deal with the older subjects in the curriculum (i.e., Physics and Chemistry) 'General Science' has even now not moved far enough away

from the syllabuses of the particular sciences ; and they should include popular accounts of relatively advanced work.

In the interests of the large numbers of pupils who will leave school at, or shortly after, the age of 16, we regard it as one among a number of essential conditions that the courses of instruction up to that age should be in some sense complete in themselves, i.e., should not consist to any considerable extent in courses which have their main value only if formal education in the subjects in question is carried further. Nor do we consider that this need or should prejudice the interests of those pupils who continue an academic education at school or elsewhere and go ultimately to a University. It is important that in the last year, possibly in the last two years, before the School Certificate is taken, such pupils should have had instruction in the subject or subjects in which they will later specialise, of such a character as to lay the necessary foundations for their Sixth Form work ; and in our Report we indicate how in our judgment this can be secured. In subjects other than those in which these pupils later specialise, their needs are, however, very similar to the needs of those who leave at 16. They also, save to a very limited extent, will not be pursuing the formal study of these other subjects. What is needed is, here also, such a treatment of subjects as will give some knowledge of their content, and arouse interest.

Further, the governing principle adopted in our Reports on *The Primary School* and on *Infant and Nursery Schools* is in our opinion equally applicable here, whether pupils leave school at 16 or remain after that age. The prime duty of the secondary school is to provide for the needs of children who are entering and passing through the stage of adolescence ; and it is useless, if not harmful, to try to inculcate ideas, however valuable they may be at a later stage of growth, which have at the time no bearing on a child's natural activities of mind and body, and do nothing to guide his experience. A further consideration appears to us to be of great importance. The traditional grammar school curriculum is still coloured by obsolete doctrines of the faculties and of formal training ; and the endeavour to teach a wide range of subjects to the same high level to all pupils has led to the overcrowding of the time-table. We are convinced that this burden must be lightened, and that from the age of 13+, or as soon as special interests or aptitudes become evident, a pupil should concentrate on a smaller range of subjects, so long as these include English, a language, and Science or Mathematics.



With these reservations, we see no reason to recommend any revolutionary change in the subjects and activities for which a Grammar School must offer facilities. Where we believe change is necessary to meet the conditions of modern life is in the emphasis to be laid on particular subjects and above all in the content of these subjects. We recognise that a curriculum, even for pupils up to the age of 16, gains greatly from being centred round some main core or branch of study. This used to be provided by the study of the Classics. We share the opinion that in modern conditions it should be secured in and through what are often described as the English subjects. By these we mean careful training in comprehension of what is read and in the expression of ideas both orally and in writing; History; Geography (which is however closely related also to the scientific subjects); English Literature; and Scripture. One of the gravest criticisms alike of Public School and of Grammar School education turns on failure to do all which might be done to educate the powers of comprehension and composition. Both appear to us to require markedly greater attention, and in regard to the latter it appears to us that there is much to be learnt from the methods of teaching employed in France.

We welcome, and would wish to see extended, the tendency to pay greater attention than in the past to recent history. We recognise the importance of knowledge of the classic periods of British history, and of some knowledge also of the histories of Greece and Rome. Without such knowledge it is impossible to understand our own institutions, or to appreciate our own literature. But the importance of recent history is enhanced for pupils under 16, since at that age the theoretical discussion of economic questions is difficult and inadvisable, and since the direct discussion of current political questions is often open to considerable objection. Recent political and economic history affords in consequence the best introduction to an interest in politics. Such history supplies necessary information, and, of even greater importance, can be so taught as to induce a balanced attitude which recognises different points of view and sees the good on each side.

In regard to the study of English literature we are recommending that set books should not be prepared for examination. We believe that the form of study which these involve does real harm to the growth of an interest in literature which ought rather specially to characterise a grammar school education.

In regard to Scripture we make in Chapter V certain recommendations which we regard as of great importance.

Apart from the English subjects, we desire to see the study in all Grammar Schools of at least one foreign language ; but we recommend that the efforts of those pupils with relatively little linguistic ability should be concentrated on acquiring a capacity to read rather than to write the language in question. Of Science we have already spoken. We recommend that substantially less time than at present should be given to Mathematics, but we recommend that it should be taught to all, and so far as possible in such a way as to lead to the recognition that mathematics constitutes one of the main achievements of the human mind. We attach great importance to the further development of the tendency to give more time and attention to physical education, to the artistic subjects and to handicrafts.

Two further recommendations remain to be mentioned at this stage. We are anxious that in country Grammar Schools a rural background and colour should be given to the teaching, especially in General Science. In the main body of country schools, we have primarily in view not vocational training for agriculture, but rather the restoration of what used to be more widespread characteristics of English life than they are today, appreciation and understanding of the countryside. On the other hand, we hope that local authorities will seriously undertake the provision, in a certain number of country Grammar Schools, of courses with a definite 'agricultural bias' which would afford from about the age of 15 a preliminary vocational training.

In urban schools also, when it is possible to give satisfactorily a preliminary training of direct vocational value, we consider that a limited number of periods might with advantage be devoted to such training in the last year at school even in the case of those leaving at the age of 16. We have in mind three considerations : first, of course, the practical advantage to the pupil ; secondly, the argument afforded for retaining the pupil at school during the year in question ; and, lastly, the gain from work which the pupil himself recognises as possessing value for the next stage of his life, since such work serves to hold and to stimulate his interest, and is likely to react favourably on all his work.

Before leaving the important question of the curriculum of Grammar Schools, certain further remarks should be made.

We recognise that our recommendations follow lines which have already been widely suggested and along which experiments have already been made with marked success. We should indeed have made them with far greater hesitation had this not been so. On the other hand we believe it to be of vital importance to the future of education in this country, that reform along the lines we have indicated should be concerted, general, and far more radical than hitherto. We have in mind particularly the contrast between courses primarily designed to lay the foundation for further study and those which are suitable when further academic study is in fact improbable, the relief of the curriculum for the individual pupil, and the teaching of English composition. Secondly, we recognise that to carry out these proposals is impracticable without further and drastic reform of the School Certificate Examination. We believe that the changes which we recommend in Chapter VII present no insuperable difficulties; in the main, they are changes which are already widely advocated. On the other hand, we are of opinion that the existence of an examination taken at about the same age as at present is desirable, as stimulating and testing the work alike of the schools and of individual pupils.

### III. *Vocational and quasi-vocational schools; Technical High Schools*

We turn now to those schools, other than Grammar Schools, which are directly covered by the terms of our reference, i.e., 'Junior Technical Schools'. We think it necessary, however, to draw an important distinction. There are schools (e.g., schools of printing, dressmaking, laundrywork, waiting) which prepare for single and definite vocations and to which, as we think, it is desirable to restrict the term *vocational schools*. There are other schools (e.g., many Junior Technical Schools, Junior Commercial Schools and Junior Art Departments) each of which can prepare for a considerable variety of vocations. Both classes of schools are doing valuable and important work, and provide, in almost every case, not only for technical instruction but for the continuation of general education. With regard to technical instruction we do not think that we can usefully or properly make any recommendations. With regard to the general education which is provided we desire to recommend here again that ample time should be given to English, along the lines already indicated, and to

recent history. In certain cases it appears important also that pupils should have opportunities for learning a modern language.

The suggestion has been made by the three professional associations principally concerned (The Association of Technical Institutions, and the Associations of Principals and of Assistants in such Institutions) that at least in certain of these schools recruitment should take place at 11+, i.e., at the same age as recruitment for Grammar Schools. After very full consideration we have reached definite conclusions on this issue. We consider that vocational schools, in the narrow sense, ought not to recruit before the age of 13 and with the raising of the 'school leaving age' we consider 14 to be preferable. We do not consider that pupils ought to make at an earlier age a decision which goes far to commit them to a specific vocation. Secondly, although these schools provide for a continuance of general education, this is necessarily not the *primary* interest of those responsible for such a school and still less of the pupils. We consider that a general education ought to be the primary concern until, at the most, two years before the normal age for leaving school. In the case of Junior Art Departments the first of these considerations does not apply in the same degree, in view of the general educational value of an art training. On the other hand as much art training as is necessary or desirable before the age of 13, if not before 14, can be given both in Grammar Schools and in Modern (Senior) Schools. Further, in all but the most exceptional cases the range and proportion of a pupil's special aptitudes are not so clear before say 13½ as to justify transfer to a Junior Art Department.

After careful consideration of the evidence, we have reached the conclusion, however, that those Junior Technical Schools which are based on the engineering and building industries, demand different treatment. They appear to us to be capable of developing, and indeed in a large degree already to have developed, a form of secondary education which ought to be regarded as an alternative to that of a Grammar School. We have accordingly decided to recommend the conversion of a number of these schools into Technical High Schools in every respect equal in status to Grammar Schools. These schools should provide a five-year course, from the age of 11+, on the basis of the general selective examination at that age; admission being determined (among those pupils who reach the necessary standard in the examination) in accordance

with the wishes of the parents, with the accommodation available, with the suitability of the boy as determined on the report of the Head of the primary school, and on the result of an interview with the Head of the Technical High School.

We recognise that in the majority of cases such boys are likely to enter the engineering or building industries ; but our recommendation is based not only on the variety of openings these industries afford but also, and very largely, on the view that the education in question will best develop the abilities of pupils with certain interests and with the necessary aptitudes, and will be, in consequence, the best education for them, even if they do not eventually enter these industries. The engineering and other subjects, which will be studied in the last three years of the course, involve an intellectual discipline, which, though severe, is within the capacity of pupils between the ages of 13 and 16, and includes and depends on the apprehension and application of a variety of related principles.

So far as the evidence at present goes we are not convinced that the courses of study in Junior Commercial Schools and Home Training Schools have developed a similar discipline. Further, it is difficult to see how they could do so. Economics provides a body of principles which relate the problems of commerce ; but Economics, carried sufficiently far to fulfil this purpose, is in our judgment beyond the grasp of pupils under the age of 16. The special courses in Home Training Schools are also, and inevitably, lacking in any coherent range of underlying theory. The chemistry of cookery, for example, is far too complicated for the purpose. In consequence we do not recommend that Junior Commercial Schools and Home Training Schools should be converted into Technical High Schools. We consider that a child who desires to receive either type of training but who has the necessary ability to profit from a grammar school education, should go first to a Grammar School and should only proceed to a Technical Institution at the age of 16 or in exceptional cases at about 14. We wish to add that, though we consider that the teaching, in Grammar Schools, of Commercial Subjects and Domestic Science might usefully be extended, especially by means of Sixth Form courses, we are clear that in a considerable number of cases transfer may be desirable at 16 to a suitable Technical Institution. We believe, however, that, while close relations should be established between Grammar Schools and Technical High Schools, so that opportunity for transfer may be afforded to those pupils whose later development makes it clear that they

will be better suited by an alternative form of secondary education, such considerations do not apply to the transfer of pupils from Grammar Schools to vocational schools before sitting for the School Certificate. We think that the latter type of transfer should be exceptional.

Two further points should be mentioned in order to make clear our proposals in regard to Technical High Schools. We feel that it will be desirable to introduce some form of school leaving certificate for pupils in Technical High Schools, not only as evidence of their status, but also as providing a record of attainment. At the same time we have been impressed by the conviction of all witnesses representing Junior Technical Schools that their freedom from external examinations has been a vital factor in their success. In consequence we would not seek to impose any system of external examinations on Technical High Schools, and recommend that a form of school leaving certificate be established which shall be awarded on the result of internal examinations conducted by each Technical High School under conditions of assessment approved by the Board of Education, who would endorse the certificates.

Secondly, we realise that there would probably be some boys in these Technical High Schools who would desire to defer their entry into industry till an age later than that of 16. Such boys could either remain in these schools or proceed, as at present, either to a higher technical course, which may in many instances be provided within the Technical College in or near which the Technical High School may be housed, or to a University or University College. We have decided to recommend that the upper age limit in the Technical High Schools should in general be 16+. We reached this conclusion only after considerable deliberation. The immensely important part played by Sixth Forms in Grammar Schools pointed in another direction. On the other hand we became convinced that in Technical High Schools boys will be matured, as they have been in Junior Technical Schools, not so much (although even here this is a substantial factor) through self-government in the school, as through being taught by men who are normally teaching adults and whose methods of teaching and control have, in consequence, a special character, and more generally through forming part of an institution which is largely concerned with adults. We reached the view that, while different, the process was no less effective, and in consequence we do not consider that a higher age limit

than 16 is necessary or, in general, desirable. We are, however, disposed to think that a few of these schools may in course of time develop the equivalent to a 'Sixth Form', which would contain the boys referred to at the beginning of this paragraph.

Whilst we do not recommend that every Junior Technical School should as a matter of course be converted into a Technical High School, we do consider that a generous provision of such Technical High Schools should be made, by the conversion of existing schools and the establishment of new schools. The special educational value and character of these schools depend, however, on their employment of the teaching staff, and their use of the engineering plant and equipment, of a Technical College; and, since such colleges cannot be provided in all types of area, we fully recognise that in a number of areas provision ought to be made in Grammar Schools, by means of 'engineering sides', for the pupils who in other conditions might go to Technical High Schools. We consider the making of such provision in these circumstances to be a matter of great importance, but we consider also that success will depend both on adequate equipment and on employing teachers who have had a training in engineering which has included actual practical experience.

IV.—*Interrelation of secondary schools of different types, particularly Grammar Schools and Modern Schools: the allocation of children between these schools: the extent of the provision for grammar school education*

There remains the whole range of questions concerning the relation of education in schools of the grammar school type, and in the proposed Technical High Schools, with that in other schools. A conventional phrase describes the function of Grammar Schools as training children to work 'with their heads rather than with their hands'. That phrase indicates a real distinction, but it does not do so with any accuracy. It is open to the obvious criticism that it is essential to many vocations, and is desirable in all, that work with the hands should involve the use, and the conscious use, of intelligence. The phrase may be restated more aptly by contrasting work with the hands with work with tongue and pen. The Grammar Schools afford in general (although not for every child) the best training for professions which involve work with tongue

and pen ; and, so far as they can be differentiated from other schools by reference to the vocational training they afford, they are differentiated by this as well as by the related fact that they prepare for the Universities. Nor is it improper, as is sometimes supposed, to differentiate the Grammar Schools by the vocational training which they give. From the first they were designed to give the preliminary training necessary for those who were to enter the learned professions. It was by a later development that the training which was given for this purpose, and more especially the training in the Classics, came to be regarded as having an independent and inherent value as a 'general liberal education'. But conditions have changed, and the vocational training given in Grammar Schools is now best secured by a greater concern than in the past with other subjects and especially with the English subjects. This change of emphasis is also necessary in changed conditions in order that they may better afford a 'liberal education', this phrase being taken to mean such an education as will enable men and women to understand the world in which they live and to contribute to the understanding of its problems. The history of Greece and Rome and the conceptions which they gave to the world retain immense importance for the proper understanding of the modern world ; but, save as these conceptions have been interpreted in the thought of later times or are embodied in existing institutions, they are less widely relevant than, for example, recent history, English literature, and some appreciation of the significance of modern science. Further, capacity to use and to understand accurately both English and, so far as possible, modern languages has become both the key to the most relevant literature and the most vital factor in the exchange of ideas.

The situation has changed radically in another respect. Democracy is now challenged, and the duty of citizenship in a democracy renders it essential that all should be taught to understand and to think to the best of their ability. It is likely to remain true that *in general* those pupils who are most capable of being taught to think in abstract terms will best be taught to do so by a curriculum of a more academic and scientific character than is provided in Modern Schools. It is accordingly important that these children should receive a grammar school or a technical high school education. But it is equally important to give a modern school education to those children, including a fair proportion of children of marked ability, who will best profit from that type of education.



We are thus brought to the fundamental problems of the proper allocation of children as between schools of different types.

We have deliberately made no attempt to discuss in this Report the selective examination at the age of 11+ for Grammar (Secondary) Schools. That topic was dealt with at considerable length in Chapter VII of our Report on *The Education of the Adolescent* (1926) and in Chapter X of our Report on *The Primary School* (1931). Moreover, a Committee of Inspectors is at present considering various aspects of the examination, and it appeared to us that no useful purpose would be served, and that the preparation of the present Report would inevitably be delayed, if we tried to cover the same ground.

We desire, however, to make two observations on the bearing of our present Report on this examination. We believe that the examination is capable of selecting in a high proportion of cases those pupils who quite certainly have so much intelligence and intelligence of such a character that without doubt they ought to receive a secondary education of the grammar school type, and also those pupils who quite certainly would not benefit from such an education; and we believe that the examination will be so improved in the light of experience and as a result of the report of the Committee of Inspectors, as to increase the accuracy with which these two classes are delimited. We are recommending that choice for grammar school places as between pupils who fall into neither of these classes should be by selection rather than by their relative place in an order determined by the examination. We make this recommendation, as we explain, primarily for the reason that with these pupils the question as to which will benefit most from and contribute most to a Grammar School will very often depend on qualities which no written examination can test; but we make our recommendation the more readily since, even in regard to examinable capacities, an examination, however devised, is far less trustworthy as a means of placing in order of merit a middle group than in determining whether particular candidates are definitely above or are definitely below such a group.

Secondly, we desire to emphasise that no method of choice, whether by examination or by selection, can work satisfactorily if there is not an adequate supply of grammar school places; and we are clear that the supply is not adequate

until there are enough places to secure a grammar school education for those pupils who, all things considered, will benefit more from such a course than from other forms of secondary education.

Our recommendations regarding the amount of provision of grammar school education are based on this assumption. After an examination of the progress made in the building of new Grammar Schools and the enlargement of old ones during the past 30 years, we sought to arrive at a working standard by which local authorities might measure their provision, always with regard to what they judged to be the particular needs of their areas. The standard we have adopted is an annual admission of 15 per cent. of the 'secondary school age-group', i.e., the age-group '10 to 11 years', in the public elementary schools of the area. The number of children annually admitted from other than public elementary schools for whom additional provision is required, is equivalent on the average to a further 3 per cent. of the same age-group. The necessity for some such standard was borne in upon us by the fact that the existing percentage varies in England from 4.2 to 26.4.<sup>(1)</sup> So striking a disparity as was revealed by a ratio of 1:6 in the scale of provision did not appear to us to correspond with any conceivable differences in the abilities and interests of the children, in the character and traditions of the areas, in industrial conditions, or even in the uses which had been made of Grammar Schools. In mentioning this standard, however, we have realised that it might require considerable modification in some areas in order to conform to the governing principle to which we have already referred.

*V.—Transfer of pupils at the age of 13+ parity of status among secondary schools: administrative recommendations*

All our witnesses insisted that a selective examination at the early age of 11+ should not be a decisive factor in determining a child's career. Not only is there need for some means of correcting initial errors in the classification of the children, but some means also of providing for those pupils whose later development makes it clear that an alternative form of secondary education would be better for them. We received convincing evidence as to various circumstances which may arise to render a change of school desirable at a later age than 11+. We consider it essential that there

<sup>(1)</sup> In Wales from 17.7 to 55 per cent

We are thus brought to the fundamental problems of the proper allocation of children as between schools of different types.

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We desire, however, to make two observations on the bearing of our present Report on this examination. We believe that the examination is capable of selecting in a high proportion of cases those pupils who quite certainly have so much intelligence and intelligence of such a character that without doubt they ought to receive a secondary education of the grammar school type, and also those pupils who quite certainly would not benefit from such an education; and we believe that the examination will be so improved in the light of experience and as a result of the report of the Committee of Inspectors, as to increase the accuracy with which these two classes are delimited. We are recommending that choice for grammar school places as between pupils who fall into neither of these classes should be by selection rather than by their relative place in an order determined by the examination. We make this recommendation, as we explain, primarily for the reason that with these pupils the question as to which will benefit most from and contribute most to a Grammar School will very often depend on qualities which no written examination can test; but we make our recommendation the more readily since, even in regard to examinable capacities, an examination, however devised, is far less trustworthy as a means of placing in order of merit a middle group than in determining whether particular candidates are definitely above or are definitely below such a group.

Secondly, we desire to emphasise that no method of choice, whether by examination or by selection, can work satisfactorily if there is not an adequate supply of grammar school places; and we are clear that the supply is not adequate

until there are enough places to secure a grammar school education for those pupils who, all things considered, will benefit more from such a course than from other forms of secondary education.

Our recommendations regarding the amount of provision of grammar school education are based on this assumption. After an examination of the progress made in the building of new Grammar Schools and the enlargement of old ones during the past 30 years, we sought to arrive at a working standard by which local authorities might measure their provision always with regard to what they judged to be the particular needs of their areas. The standard we have adopted is an annual admission of 15 per cent. of the 'secondary school age-group', i.e., the age-group '10 to 11 years', in the public elementary schools of the area. The number of children annually admitted from other than public elementary schools for whom additional provision is required, is equivalent on the average to a further 3 per cent. of the same age-group. The necessity for some such standard was borne in upon us by the fact that the existing percentage varies in England from 4.2 to 26.4.<sup>(1)</sup> So striking a disparity as was revealed by a ratio of 1:6 in the scale of provision did not appear to us to correspond with any conceivable differences in the abilities and interests of the children, in the character and traditions of the areas, in industrial conditions, or even in the uses which had been made of Grammar Schools. In mentioning this standard, however, we have realised that it might require considerable modification in some areas in order to conform to the governing principle to which we have already referred.

*V.—Transfer of pupils at the age of 13+ parity of status among secondary schools: administrative recommendations*

All our witnesses insisted that a selective examination at the early age of 11+ should not be a decisive factor in determining a child's career. Not only is there need for some means of correcting initial errors in the classification of the children, but some means also of providing for those pupils whose later development makes clear that an alternative form of secondary education would be better for them. We received convincing evidence as to various circumstances which may arise to render a change of school desirable at a later age than 11+. We consider it essential that there

<sup>(1)</sup> In Wales from 17.7 to 55 per cent

should be a regular review of the distribution of pupils as between different schools, preferably at about the age of 13. We do not recommend for this purpose a further examination ; we do recommend the requirement of returns from the heads of schools as to which pupils might, in their opinion, be better placed in other types of school ; and we desire to see definite administrative machinery created for this purpose.

An educational principle which we advocate on general grounds has an important bearing on the later transfer of pupils between those types of school which have an age range starting at 11+, namely, that the courses of study in all schools between the ages of 11 and 13 should not differ to any marked extent. While we recognise that not all the pupils in a Modern School should study a foreign language, we consider that whenever possible a foreign language should be included in the curriculum of pupils who show academic ability, both because these pupils are most likely to gain educationally from this provision, and because it is in regard to them that the question of transfer is most likely to arise.

It is important that the question of transfer should be determined simply by educational considerations. It is even more important that the original preference of parents as between a Grammar School and a Modern School should be determined by such considerations. We recognise that in existing social conditions vocations are determined not only by aptitude but by family circumstances and tradition ; and in consequence some pupils may be destined to work 'with tongue and pen' even when such natural aptitudes as they have point elsewhere. In certain cases, and while existing social conditions remain, this may supply an argument in favour of that curriculum and those methods which in general best prepare for work of the type in question, even in cases where a modern school education would be otherwise desirable. Again, for pupils who combine intellectual ability with a practical and especially a strong mechanical bent, a Technical High School will often provide a better alternative to a grammar school education than will a Modern School. But we are convinced that a number of pupils who enter Grammar Schools would have their intellectual interests and powers of thought better developed by the education provided by Modern Schools. Moreover, by no means all who succeed in commerce or industry are of the type which benefits at all obviously from a technical and scientific education ; and it is very probable that we are clear

more from the curriculum of a Modern School, especially if, as might well have been the case, they were more attracted by such a curriculum and more industrious in pursuing it. On the one hand Grammar Schools are not really likely to supply so well the form of education which Modern Schools exist to supply and develop. On the other hand, the interests and energies of Grammar Schools ought not to be engaged, and their vacancies ought not to be occupied, in attempting to educate pupils who are not suited to the education which they exist to provide.

At present parents are influenced in their preference between Grammar and Modern Schools not only by educational, including vocational, considerations, but by the greater prestige of Grammar Schools. These schools have an ancient and great tradition. They retain a considerable proportion of their pupils to 17 or 18 years of age. Even more important is the fact that, since most other aptitudes are more often associated with academic ability than with its absence, the average general intelligence of the pupils in Grammar Schools is likely to be higher than that of the pupils in Modern Schools. Intelligence of this sort is not, however, the only or the most important thing in life nor is it regarded as such by most persons; and, other things being equal, it should not be an insuperable task to persuade parents to prefer for their children another form of education if in fact they were likely to gain more from this.

Unfortunately, in present circumstances other things are not equal. Grammar Schools and Modern Schools are administered under different Codes and often by different Authorities. They have different salary scales, and the required conditions of building and equipment and size of classes show differences which are not merely such as are involved in differences of curriculum. These differences, taken as a whole, are such as to give the impression that the Grammar School is necessarily better than the Modern School.

For these reasons, we consider it of great importance that everything possible should be done to secure parity of status for Grammar Schools, Technical High Schools, and Modern Schools. This means in effect that the *multilateral idea*, although it may not be expressed by means of multilateral schools<sup>(1)</sup>, must be inherent in any truly national system of

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(1) See pp. xix-xxii and pp. 291-4.

secondary education. Consequently, in Chapter IX, we have re-affirmed, and revised in the light of later experience, certain administrative principles which were implicit in our earlier Report on *The Education of the Adolescent* (1926). We recommend that the three types of school mentioned above should be conducted under a new Code of Regulations for Secondary Schools, and we have examined certain administrative consequences of this proposal.<sup>(1)</sup> We recommend the adoption of similar standards for the size of classes, and for the planning and assessment of school buildings, save in so far as differences of curriculum justify different requirements. We recognise also the desirability of a uniform minimum leaving-age for all secondary schools. Another measure which we consider of vital concern to the attainment of parity of schools is the framing of Establishments of Teaching Posts, in order that a teacher's remuneration shall not be so dependent as it is at present upon the particular type of school in which he is working: we hope to see posts on the 'higher' scale of salary, the present 'secondary' scale, available in all schools, although not in the same proportion.

We attach great importance to all these recommendations. We believe that no satisfactory solution can be secured for the educational problems of the country until they are carried out. How quickly this could be done is not for us to say. We feel bound, however, to make clear that in our judgment such reforms as we have indicated, and any legislation necessary to secure these, are essential to the future well-being of education, and we recommend that action should be taken with the least possible delay.

It will be noticed that so far we have said nothing about one great difference between Grammar Schools and Modern Schools, namely, the fact that fees are charged in the former but not in the latter. We hold that the conditions which apply to Modern Schools should be extended to Grammar Schools and Technical High Schools as soon as the national finances permit. But, provided there is an adequate supply of Special Places and a generous scale for remission of fees, we do not consider that this difference is as important in its effect on parity of status as might have been expected. Meanwhile we consider that, for an independent reason, the special place system

<sup>(1)</sup> These have not included one matter which is of vital importance in both central and local administration, viz., the Inspectorate for different types of secondary school. It is essential, in our opinion, that inspection should be sufficiently specialised to ensure the free development of the different types. ●

requires reform. Where the cost of education in a school is being reduced for all parents by substantial grants from public funds, it is obviously desirable that the children whose parents are thus assisted should be the children who will most benefit from the schooling in question. We therefore recommend that the system known as '100 per cent. Special Places' should be generally adopted in regard to such schools. We are conscious, however, that if this were done otherwise than gradually, or without certain further provisions, notably as to the method of selection, or even if this policy was adopted immediately or without further consideration in regard to certain classes of schools, the result might well be to level down rather than, as we wish, to level up the reputation of schools. In consequence, in Chapter IX we recommend the adoption of the '100 per cent. special place' system; but we do so subject to the adoption of certain other recommendations designed to afford safeguards against this danger.<sup>(1)</sup>

#### VI. *Education for Citizenship*

In speaking of the importance of recent history we have already referred to 'education for citizenship'. When we said at the beginning of this Introduction that we proposed to deal briefly with the problem which it presents we had in mind more than this. The importance of the problem has been emphasised in recent years from many quarters. It is scarcely possible to exaggerate that importance, and it is not too much to say that all teaching should contribute to this end. On the extent to which the youth of this country can be fitted to fulfil later their duties, and to take advantage of their opportunities, as citizens of a democratic State may well turn the whole future of democracy, and that not only in this island. It is impossible to deal here with all the problems involved in supplying suitable training, the more so since we are here primarily concerned with those who leave school at 16, and since few things are more certain than that study of the issues involved in national and international politics must in the main come at a later age and be continued throughout life. On the other hand we believe that valuable foundations for this can be laid before the age of 16.

We do not underestimate the value of imparting to pupils, even those under 16, information about national and international affairs and, not least, about local government. We

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(1) We realise that the extension of the special place system raises the question of an extension of the system of maintenance allowances.



recognise the excellent use which has been made by certain teachers of courses of 'civics'. But, as we indicated when emphasising the importance of teaching recent history, we believe that in general this information can best be imparted to pupils under the age of 16 in the course of such teaching, and as arising from it. Further, what is most important is inculcating a habit of mind. This may be done by emphasising the serious character of the social and other problems which have to be faced, and at the same time by insisting that, while there is need for enthusiasm in causes which are felt to be vital, there is need also for study and judgment, so that not only the reality of political differences but the measure of common ground may be fully recognised. All this, in our judgment, is best secured in and through the teaching of history provided always that this is so given as to bring out the general necessity of these qualities and not merely their desirability or value in certain circumstances in the past.

Further, History is not the only subject which can be made the vehicle of teaching which is valuable for this purpose. It does not follow that, because people have learnt to apply logical processes in mathematics, they will think logically about politics, nor that, because they have learnt to verify facts, and to try to check theories by facts, in the physical sciences, they will realise automatically the desirability of this procedure in other fields. On the other hand such 'transfers' can be made at the least far more probable if in teaching, say, mathematics a real effort is made to bring out the significance of logical argument and to emphasise the desirability of such argument whenever possible, and if in teaching science the scientific method is expounded as a method which ought to be employed in other fields. By such means we can do something to counteract the excessive influence of emotional interests and inhibitions in the consideration of matters with which men are deeply concerned.

It is obvious that education for citizenship along these lines depends at every point on conscious effort by teachers to use their opportunities. Success will, however, inevitably depend even more on the unconscious influence of example than on the most skilful use of opportunities. It is not possible to exaggerate the debt in this connexion which may be owed to a teacher by boys and girls who in their last years at school have come under the influence of someone who is able to combine with clear political opinions both wide sympathies and the habit of dispassionate criticism of political creeds.

## APPENDIX I.

## (A) LIST OF WITNESSES.

## (i) Government Departments.

## Board of Education.

- Mr. E. M. O'R. Dickey, H.M. Staff Inspector of Art.  
 Mr. F. R. G. Duckworth, Chief Inspector of Secondary Schools.  
 Mr. W. C. Eaton, C.B., late Principal Assistant Secretary for Technical Education.  
 Miss R. E. Hewetson, H.M. Staff Inspector of Secondary Schools.  
 Sir Maurice Holmes, K.C.B., O.B.E., Permanent Secretary.  
 Miss E. H. Horniblow, C.B.E., H.M. Staff Inspector of Women's Subjects in Technical Schools.  
 Mr. E. J. W. Jackson, M.C., H.M. Staff Inspector of Commercial Subjects.  
 Miss H. M. Johnston, late H.M. Staff Inspector of Women's Subjects in Technical Schools.  
 Mr. A. Morley, D.Sc., late H.M. Staff Inspector of Engineering.  
 Mr. T. Owen, M.C., late H.M. Inspector of Schools.  
 Mr. C. W. Parkes, H.M. Staff Inspector of Mathematics.  
 Miss A. G. Philip, C.B.E., late Chief Woman Inspector.  
 Mr. C. A. Richardson, H. M. Staff Inspector of Training Colleges.  
 Mr. C. A. Ronald, H.M. Staff Inspector of Modern Languages.  
 Mr. E. G. Savage, C.B., H.M. Senior Chief Inspector and Chief Inspector of Technical and Continuation Schools.  
 Mr. G. T. Shaw, Mus.Doc., H.M. Staff Inspector of Music.  
 Mr. F. B. Stead, C.B., late Chief Inspector of Secondary Schools.  
 Mr. G. K. Sutherland, D.Sc., H.M. Divisional Inspector.

*Welsh Department—*

- Miss M. Davies, H.M. Inspector of Schools.  
 Mr. M. H. Davies, M.C., H.M. Inspector of Schools.  
 Mr. Prys-Jones, H.M. Inspector of Schools.  
 Mr. W. P. Wheldon, D.S.O., Permanent Secretary.  
 Mr. W. J. Williams, H.M. Chief Inspector for Wales.

*Scottish Education Department—*

- Mr. G. Andrew, C.B.E., H.M. Senior Chief Inspector of Schools for Scotland.  
 Mr. W. E. Philip, late H.M. Senior Chief Inspector of Schools for Scotland.

## (ii) Directors of Education and Members of Local Education Authorities.

- Mr. W. P. Alexander, Ph.D., Director of Education for Margate.  
 Mr. J. W. Bispham, O.B.E., Senior Assistant Education Officer, London County Council.  
 Col. E. P. Le Breton, Chairman of the Dorset Education Committee.

- Mr. J. B. Evans, O.B.E., J.P., Director of Education for Flintshire.  
 Mr. P. D. Innes, C.B.E., D.Sc., Chief Education Officer for Birmingham.  
 Mrs. E. M. Lowe, J.P., late Chairman of the London County Council Education Committee.  
 Mr. E. M. Rich, Education Officer, London County Council.  
 Mr. J. P. Sargent, Director of Education for Essex.  
 Mr. H. M. Spink, M.C., Director of Education for Northumberland.  
 Mr. T. Walling, Director of Education for Newcastle-upon-Tyne.

(iii) **Associations representing Members and Officials of Local Education Authorities.**

**Association of Directors and Secretaries for Education :—**

- Mr. C. F. Mott, late President of the Association, and Director of Education for Liverpool.  
 Mr. J. E. Smart, M.C., Ph.D., late Vice-President of the Association, and Director of Education for Acton.  
 Sir Percy Meadon, C.B.E., Director of Education for Lancashire.  
 Mr. J. P. Sargent, Director of Education for Essex.  
 Mr. F. H. Toyne, Hon. Secretary of the Association, and Education Officer for Brighton.

**Association of Education Committees :—**

- Sir Percy Meadon, C.B.E., Director of Education for Lancashire.  
 Mr. J. E. Smart, M.C., Ph.D., Director of Education for Acton.  
 Mr. T. Walling, Director of Education for Newcastle-upon-Tyne.

**Association of Municipal Corporations :—**

- Councillor R. H. Hume, Chairman of the Education Committee of the Association.  
 Mr. T. Boyce, Director of Education for Bradford.  
 Mr. P. D. Innes, C.B.E., D.Sc., Chief Education Officer for Birmingham.

**County Councils Association :—**

- Mr. E. Salter Davies, C.B.E., late Director of Education for Kent.  
 Sir Percy Meadon, C.B.E., Director of Education for Lancashire.  
 Mr. R. N. Armfelt, Secretary of Education for Devon.

**Federation of Education Committees (Wales and Monmouthshire) :—**

- Mr. J. B. Evans, O.B.E., J.P., Director of Education for Flintshire.  
 Mr. W. E. Evans, Director of Education for Brecknockshire.  
 Mr. D. T. Jones, Director of Education for Pembrokeshire.  
 Mr. F. E. Rees, Director of Education for Glamorgan.

**National Association of Inspectors of Schools and Educational Organisers :—**

- Mr. L. Brooks, Divisional Inspector under the London County Council.  
 Mr. B. Ingram, Divisional Inspector under the London County Council.  
 Mr. G. H. Leslie, District Inspector under the London County Council.  
 Mr. G. Lilley, Divisional Inspector under the London County Council.

**(iv) Organisations representing Teachers.****Association of Assistant Mistresses in Secondary Schools :—**

- Miss M. S. Chamberlain, Grey Coat Hospital School, London.  
 Miss F. M. Forrest, Enfield County School for Girls, Middlesex.  
 Miss H. D. Pearson, Newland High School, Kingston-upon-Hull.

**Association of Head Mistresses :—**

- Miss I. M. Drummond, O.B.E., Head Mistress of the North London Collegiate School.  
 Miss E. R. Gwatkin, Head Mistress of the Streatham Hill and Brixton High School for Girls, London.  
 Miss D. E. de Zouche, Head Mistress of the Wolverhampton Girls' High School.

**Association of Principals of Technical Institutes :—**

- Mr. J. H. Everett, Principal of Leeds College of Technology.  
 Mr. D. Humphrey, Director of Education, Regent Street Polytechnic, London.

**Association of Teachers in Technical Institutions :—**

- Mr. H. J. Cull, President of the Association.  
 Mr. F. H. Reid, Ex-President of the Association.  
 Mr. A. E. Evans, Hon. Secretary of the Association.  
 Mr. J. Wickham Murray, Secretary of the Association.

**Association of Technical Institutions :—**

- Mr. R. G. Hosking, Director of Messrs. S. Russell and Son, Engineers, Leicester; Chairman of the Governors of the Rugby College of Technology and Arts.  
 Mr. P. I. Kitchen, Principal of Rugby College of Technology and Arts.  
 Alderman Wright Robinson, J.P., Chairman of Governors, Manchester Municipal College of Technology.

**Headmasters' Conference :—**

- Mr. S. S. G. Leeson, Head Master of Winchester College, late Head Master of Merchant Taylors' School.  
 Mr. G. C. Turner, M.C., Master of Marlborough College.

**The Incorporated Association of Assistant Masters in Secondary Schools :—**

- Mr. P. E. Herrick, Strand School, London.  
 Mr. W. H. Jenkinson, Central Secondary School for Boys, Sheffield  
 Mr. A. J. Treves, City of Oxford High School for Boys.

**The Incorporated Association of Head Masters :—**

- Mr. F. R. Hurlstone-Jones, Head Master of Holloway School, London.  
 Mr. W. J. Thomas, late Head Master of the London County Council Hackney Downs School, London.  
 Mr. F. S. Orme, Head Master of Reigate Grammar School, Surrey.  
 Mr. T. Thomas, D.Sc., Head Master of Leeds Grammar School.  
 Mr. L. W. Taylor, Secretary to the Association.

**Joint Standing Committee of the Training College Association and the Council of Principals :—**

Miss M. M. Allan, late Principal of Homerton Training College, Cambridge.

Mr. A. E. Dean, Principal of Goldsmiths' College Training Department, London.

Mr. E. R. Hamilton, Principal of Borough Road Training College, Middlesex.

Miss C. Stewart, Principal of Lincoln Training College.

**London Association of Head Teachers of Central Schools :—**

Mr. J. H. Engledow, "The Lyulph Stanley" Boys' Central Council School, St. Pancras, London.

Miss L. L. Kipps, Woolwich Girls' Central Council School, London.

Mr. H. Millward, The Fleet Central Council School, Hampstead, London.

Mr. R. J. Shambrook, North Paddington Boys' Central Council School, London.

**National Association of Teachers in Selective Central Schools :—**

Mr. E. H. Axton, Commercial Department, Pendower Council School, Newcastle-upon-Tyne.

Miss M. A. Button, Hastings Girls' Central Council School.

Mr. H. J. Odell, The Beal Modern Council School, Ilford, Essex.

Mr. F. J. Williams, Longcar Central Council School, Barnsley.

**National Union of Teachers :—**

Mr. J. W. H. Brown, President of the Union.

Mr. W. Merrick, Chairman of the Education Committee.

Mr. R. Hall, Vice-Chairman of the Education Committee.

Mr. W. H. Spikes, Member of the Advisory Committee for Higher Education.

Sir Frederick Mander, General Secretary.

Mr. A. E. Henshall, Secretary to the Education Committees.

**National Union of Women Teachers :—**

Miss C. Fisher, President of the Union.

Miss E. R. Crosby, Chairman of the Education Committee of the Union.

Miss H. R. Walmesley, Vice-Chairman of the Education Committee.

Miss G. I. Cottell, Member of the Education Committee.

Miss E. E. Froud, General Secretary.

**(v) Other Organisations.**

**Association for Education in Citizenship :—**

Sir Ernest Simon, Chairman of the Association.

Mrs. E. M. Hubback, Hon. Secretary of the Association.

**The British Association for Commercial and Industrial Education :—**

Sir Francis Goodenough, Chairman of the Association.

Mr. R. W. Ferguson, Hon. Treasurer of the Association and formerly Education Officer for Messrs. Cadbury Bros., Ltd.

Mr. H. Rostrom, Education Officer for Messrs. Tootal Broadhurst Lee Co., Ltd., Manchester.

Mr. A. Abbott, C.B.E., Hon. Secretary of the Association.

Central Welsh Board (in respect of their general examinations) :—

Alderman the Rev. W. Saunders, Chairman of the Executive Committee of the Central Welsh Board.

Mr. D. Vaughan Johnston, Chief Inspector of the Central Welsh Board.

Mr. W. H. Robinson, Inspector of the Central Welsh Board.

Central Welsh Board (in respect of their examinations in Scripture):—

Rev. Griffith Rees,

Incorporated Association of Preparatory Schools :—

Mr. A. E. Lynam, Head Master of Dragon School, Oxford.

Mr. J. E. Maitland, late Head Master of Banstead Hall School, Surrey.

Mr. D. H. Wagner, Spencer House, Parkside, Wimbledon, Surrey.

Mr. H. C. King, Secretary of the Association.

Institute of Christian Education :—

Rev. Canon Tissington Tatlow, D.D., Director of the Institute.

Miss E. A. Phillips, Hon. Executive Officer of the Institute.

National Institute of Industrial Psychology :—

Mr. C. S. Myers, C.B.E., M.D., Sc.D., F.R.S., Principal of the Institute.

Mr. A. Macrae, M.B., late Head of the Educational Department.

New Education Fellowship :—

Mr. F. Clarke, Professor of Education and Director of the Institute of Education, University of London.

Mr. F. C. Happold, D.S.O., Head Master of Bishop Wordsworth's School, Salisbury.

Mr. W. T. R. Rawson, Joint Organising Director of the Fellowship.

Mr. R. H. Tawney, D.Litt., Professor of Economic Geography, University of London.

Miss M. Wise, Head Mistress of The Cambell Council School, Barking, Essex.

Oxford and Cambridge Joint Board (in respect of their examinations in Scripture) :—

The Very Rev. S. C. Carpenter, D.D., Dean of Exeter.

Rev. Canon D. C. Simpson, D.D., Oriel Professor of Interpretation of Holy Scripture, Oxford.

Secondary School Examinations Council :—

Sir. C. Norwood, D.Lit.

Mr. F. B. Stead, C.B.E.

Standing Joint Committee of Industrial Women's Organisations :—

Mrs. E. Barton, J.P.

Miss G. Colman.

Alderman Mrs. B. Drake.

Mrs. Shortt.

Surrey Education Committee :—

Mr. J. Chuter Ede, M.P., J.P., late Chairman of Surrey County Council.

Mr. W. R. Skeet, J.P.

Mr. H. E. Haig-Brown, Chief Education Officer.

**The Trades Union Congress General Council :—**

- Sir Arthur Pugh, C.B.E., Chairman of the Education Committee.  
 Mr. Morgan Jones, M.P.  
 Alderman Wright Robinson.  
 Mr. J. V. C. Wray, Secretary to the Education Committee.

**University of Cambridge Local Examinations Syndicate :—**

- Canon P. H. L. Brereton, Chief Examiner in Religious Knowledge.

**Welsh Secondary Schools Association :—**

- Mr. J. Grey Morgans, Head Master of Swansea Intermediate and Technical School, Glamorgan.  
 Mr. H. Rees, Head Master of Ystalyfera County School, Glamorgan.

**(vi) Individual Witnesses.**

- Mr. A. Abbott, C.B.E., late H.M. Chief Inspector of Technical Schools.  
 Miss D. Batho, Assistant Mistress at Roedean School, Brighton.  
 Mr. C. Burt, D.Sc., Professor of Psychology, University College, London.  
 Miss G. M. Bush, Assistant Mistress at Howell's Glamorgan County School, Cardiff.  
 Mr. F. A. Cavanagh, Professor of Education, King's College, London.  
 Mr. R. F. Cholmeley, C.B.E., Secretary to Trustees of the Kitchener Fund; late Head Master of Dame Alice Owen's Boys' School, London.  
 Miss C. Clark, Art Mistress at Mary Datchelor Girls' School, London.  
 Mr. C. A. Elliott, Head Master of Eton College.  
 Mr. B. A. Fletcher, late Head Master of Chippenham District County School, Wiltshire.  
 Mr. A. M. Gibson, Head Master of Liverpool Collegiate High School.  
 Mr. H. A. Harris, M.D., D.Sc., Professor of Anatomy in the University of Cambridge.  
 Mr. M. L. Jacks, Director of Department of Education, Oxford University; late Head Master of The Mill Hill School.  
 Mr. I. L. Kandel, Ph.D., Professor of Education, Teachers College, Columbia University, New York.  
 Mr. S. S. G. Leeson, Head Master of Winchester College.  
 Sir Cyril Norwood, D.Lit., President of St. John's College, Oxford; late Head Master of Harrow School.  
 Mr. G. W. Olive, Head Master of Dauntsey's School, West Lavington, Wiltshire.  
 Mr. J. L. Paton, late High Master of Manchester Grammar School; late President of Memorial University College, St. John's, Newfoundland.  
 The Right Hon. The Lord Eustace Percy, P.C., Rector of King's College, Newcastle-upon-Tyne; late President of the Board of Education.  
 Mr. C. W. Valentine, D.Phil., Professor of Education in the University of Birmingham.  
 Mr. P. C. Vellacott, Head Master of Harrow School.

(B) LIST OF ORGANISATIONS AND PERSONS WHO SENT  
MEMORANDA, STATISTICS AND OTHER DATA FOR  
THE USE OF THE COMMITTEE

Miss M. F. Adams, Head Mistress of Queen Mary High School,  
Liverpool.

The Advertising Association.

The Advisory Council for Technical Education in South Wales and  
Monmouthshire.

Mr. R. M. Allardyce, O.B.E., J.P., LL.D., Director of Education for  
Glasgow.

Miss E. M. Almond, Head Mistress of the Clergy Daughters' School,  
Bristol.

Annual Meeting of the Part III Education Authorities of England  
and Wales.

Mr. A. B. Archer, Head Master of Oldershaw School for Boys,  
Wallasey.

Mr. R. L. Archer, Professor of Education, University College of  
North Wales, Bangor.

Miss C. M. Arcott, Ph.D., Head Mistress of Whalley Range Municipal  
High School, Manchester.

The Art Teachers' Guild.

The Associated Equipment Co., Ltd., Southall, Middlesex.

Association of Convent Schools.

Association of Head Mistresses of Recognised Private Schools.

Association of Teachers of Domestic Subjects.

Association of Women Science Teachers.

The Auctioneers' and Estate Agents' Institute of the United  
Kingdom.

Monsieur E. Audra, Professor of English Literature at the University  
of Lille.

Mr. G. H. Austin, Ph.D., Principal of Leeds College of Commerce.

Miss E. M. Backett.

Rev. J. H. Bailey, D.D., Head Master of the Royal Grammar School,  
Lancaster.

Mr. S. T. Baker, Head Master of the Municipal Secondary School,  
Wolverhampton.

Mr. P. B. Ballard, D.Litt., late Divisional Inspector under the L.C.C.  
Education Committee.

Rev. H. Balmforth, Head Master of St. Edmund's School, Canterbury.

Miss E. M. Bancroft, late Head Mistress of the County High School,  
Chelmsford.

Mr. Ernest Barker, Litt.D., LL.D., Professor of Political Science,  
Cambridge University.

Sir Ross Barker, K.C.I.E., C.B., President and Chairman of the  
Royal Society of Teachers.

Mr. H. C. Barnard, D.Lit., Professor of Education, Reading  
University; late Head Master of Gillingham County School, Kent.

Mr. R. H. Barrow, H.M. Staff Inspector for Classics.

Miss W. M. Barrow, Head Mistress of Barr's Hill Secondary School,  
Coventry.

Mr. F. C. Bartlett, The Psychological Laboratory, Cambridge.

Mr. J. E. Barton, Head Master of Bristol Grammar School.



- Mr. E. P. Bates, Principal of Kingston-upon-Hull Municipal Technical College.
- Mr. C. W. Baty, Head Master of King's School, Chester.
- Miss E. Beames.
- Mr. C. G. Beardwell, late Principal of Worsley Technical School, Walkden, Manchester.
- Mr. A. H. Bennett, Assistant Master at King's School, Chester.
- Major R. Sterndale Bennett, Music and Choir Master at Uppingham School.
- Mr. L. B. Benny, Principal of the Municipal College, Portsmouth.
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## APPENDIX II

NOTE BY THE SECRETARY ON THE DEVELOPMENT OF  
THE CONCEPTION OF GENERAL LIBERAL EDUCATION

The Greek sophists of the fifth century before Christ professed to teach most of those arts (*technai*) which in later times were included in the regular course of education (*enkyklios paideia*). It seems probable that Hippias of Elis (about 425 B.C.) should be regarded as the founder of the system of education based on the liberal arts. So far as can be ascertained from ancient sources, he professed to teach all the standard subjects—rhetoric, dialectic, astronomy, geometry, arithmetic, grammar and music.<sup>(1)</sup>

The distinction between liberal and illiberal education underlay all Greek thinking<sup>(2)</sup> on educational values. This could readily be illustrated by quotations from Plato (427–347 B.C.) and Isocrates (436–338 B.C.). It is perhaps most clearly and explicitly stated in the following passage from Aristotle's *Politics* :—" It is therefore evident that we shall have to teach our children such useful knowledge as is indispensable for them, but it is equally clear that all useful knowledge is not appropriate for education. There is a distinction between liberal and illiberal pursuits, and it is manifest that only such knowledge as does not make the learner mechanical (vulgar) should form a part of education. By mechanical pursuits we should understand all arts and studies that make the body, soul, or intellect of free men unserviceable for the use and exercise of virtue. This is the reason why we call mechanical such arts as produce an inferior condition of body, and all wage-earning occupations. They allow the mind no leisure and degrade it to a lower level. There are even some liberal branches of knowledge,<sup>(3)</sup> the acquisition of which up to a certain point is not unworthy of freemen, but which, if studied with undue intensiveness or minuteness, are open to the charge of being injurious in the manner described above. The object with which we engage in the arts or study them, also makes a great difference. If it be for our own sakes or that of our friends, or to produce goodness, they are not illiberal, while a man engaged in these very same pursuits to please strangers would in many instances be regarded as following the occupations of a slave or a serf."<sup>(4)</sup>

In later phases of Greek thought in the Alexandrian period, there was a growing tendency to stereotype the so called liberal arts or studies (*eleuthera mathemata*) which were regarded as constituting the general education or regular round of education (*enkyklios paideia*) appropriate for freemen, namely, grammar, music, geometry, arithmetic,

(1) Hippias of Elis, unlike most Greek thinkers, did not despise the so-called illiberal arts. He made with his own hands his clothes, his ring, and his shoes. Cicero, *De Oratore*, III, 32, 127.

(2) M. Guggenheim, *Die Stellung der liberalen Künste oder encyclopedischen Wissenschaften im Altertum*. Programm der Kantonschule Zürich, 1893.  
Werner Jaeger, *Paideia, die Formung des griechischen Menschen*. Band I. Berlin, 1936. pp. 364–404.

(3) *Eleutherioi epistamai*. On p. 1338a32 he uses the expression 'liberal education' (*eleutherios paideia*).

(4) *Politics*, p. 1337b4–21.

astronomy and certain aspects of rhetoric and dialectic. This conception of the seven liberal arts or branches of knowledge, which so profoundly influenced education in Western Europe and in England during the Middle Ages and down to the eighteenth century, is first found explicitly stated in the lost treatise of M. Terentius Varro (116 B.C.—27 B.C.) entitled *Disciplinarum Libri IX*, in which he discussed the seven liberal arts<sup>(1)</sup>, to which he added medicine and architecture. It is almost certain that Varro took the idea of the seven liberal arts from some Hellenistic writer or writers of the first or second century B.C.—possibly from Poseidonius of Apamea (135 B.C.—50 B.C.).<sup>(2)</sup>

These arts were called liberal because they were originally regarded as the branches of knowledge appropriate for freemen as opposed to those trades and skills practised for economic purposes by slaves or persons without political rights. For instance, Proclus in his Commentary on Euclid (I, p. 19) states that Pythagoras (about 530 B.C.) converted geometrical learning into a form of education suitable for freemen, as opposed to surveyors and business people, many of whom were slaves, or at any rate did not possess full civil rights.

Plutarch in Chapter XVII of his *Life of Marcellus* explains that Archimedes (287—212 B.C.) had such an exalted spirit, so profound a soul and such a wealth of scientific theories that, though his discoveries had gained for him a name and reputation for an understanding more than human, he would not consent to leave behind him any formal work on mechanics. Regarding engineering and every art that ministers to the necessities of life as mean and vulgar, he devoted his strenuous efforts only to those studies the subtlety and charm of which were not affected by the claims of necessity.<sup>(3)</sup>

Cicero (106—43 B.C.) uses the expression free born, humane or liberal arts, which in his view consisted of geometry, literature, poetry, natural science, ethics and politics, and contrasts these liberal arts with the mean or illiberal arts (*artes illiberales vel sordidas*) which he describes as the mechanical occupations of slaves.<sup>(4)</sup> (*De officiis* I, 42.)

Seneca (4 B.C.—65 A.D.) refers to the liberal studies or liberal arts and to the 'primary course' in grammar given to boys to prepare the ground for instruction in the liberal arts. He quotes the Hellenistic

(1) The expression 'liberal arts' (*eleutherioi technai*) is first found in extant Greek literature in Plutarch (50—120 A.D.) *De tuenda sanitate*, p. 122E.

(2) Schanz-Hosius, *Geschichte der römischen Literatur* (1927) I. 567.

Pauly-Wissowa, *Realencyclopädie*, Supplementband, VI, col. 1255—1259.

Marron, *Saint Augustin et la fin de la culture antique*, pp. 215—217.

(3) cf. Chapter XIV, §§ 5 and 6 of Plutarch's *Life of Marcellus*, in which he says that the art of mechanics had formerly been entirely separated from geometry and had for a long time been ignored by philosophers, who thought that it detracted from the pure excellence of geometry to leave the incorporeal things of abstract thought and descend to the things of sense, making use, moreover, of objects which required much mean and manual labour. For this reason, mechanics, which in Plutarch's time was so celebrated and admired, had formerly come to be regarded as one of the military arts, and had been separated from geometry.

(4) Ovid refers to "the free born arts"—

"Adde quod ingenuas didicisse fideliter artes  
Emollit mores nec sinit esse ferus".

*Epistolae ex Ponto*, II, 47—48.

Stoic philosopher Poseidonius, as contrasting the arts which are common and low, belonging to workmen and concerned only with equipping life, with the liberal arts which the Greeks called the cycle of studies or the regular course of education " but which we Romans call the liberal arts." (*Ad Lucilium epistolae morales*. LXXXVIII § 23.)

Seneca gives his general views about liberal studies at the beginning of Letter LXXXVIII as follows :—

" You desire to know my opinion regarding liberal studies. I neither respect nor rank with manifestations of the good any study which sets out to get money. Such studies are profit-making crafts, useful just so far as they train the intellect without engrossing it. We should linger over them only so long as the mind can do nothing more important. They are our elementary schooling, not our real work. You know why liberal studies are so called : because they are worthy of a free man."

Among the Romans grammar and rhetoric were the first of the liberal arts to obtain general recognition. The Romans were inclined to identify culture with eloquence, as the art of speaking and the mastering of the spoken word, based on a varied and extensive knowledge of things. In his great work on the *Education of an Orator*, Quintilian (35 A.D.—88 A.D.) begins his course of instruction with grammar (i.e., Latin and Greek grammar). He then proceeds to mathematics and music, and concludes with rhetoric, which in his view comprise not only elocution and an extensive knowledge of literature, but also logical, or in other words dialectical, instruction. As is shown in a later paragraph, this view of the liberal arts was adopted by the scholars of the Renaissance and tended to displace the mediaeval view of the seven liberal arts, which was based on the ideas of later Greek thinkers such as the Stoic philosopher, Poseidonius. In the view of the ancient Greek writers philosophy was the culmination of these seven encyclical studies, which stood to it in the relation of maids to a mistress. Thus the conception of the liberal arts originated in a society based on the slave system, was essentially aristocratic, and was divorced from the practical illiberal arts.

The idea of the seven liberal arts was taken over as part of the cultural heritage of the Western Church from the ancient world and was transmitted to the Middle Ages largely through the writings of St. Augustine of Hippo (354—430 A.D.), Martianus Capella of Carthage (about 430 A.D.) and Cassiodorus (490—570).<sup>(1)</sup> St. Augustine wrote short treatises on each of the seven liberal arts, or *disciplinae*, as he himself calls them.<sup>(2)</sup> Capella in the first two books of his text-book entitled *Satyricon Libri IX* allegorically describes Phoebus as presenting the seven liberal arts to the bride Philology who is wedded to Mercury.

Cassiodorus describes the seven liberal arts in the second book of his little treatise entitled *Institutiones saecularium litterarum*, which was intended chiefly for the monks of his foundation at Vivarium near Squillace.

<sup>(1)</sup> P. Gabriel Meier, *Die sieben freien Künste im Mittelalter*, two articles in *Jahresbericht über die Lehr- u. Erziehungs-Anst. des Benediktiner-Stiftes Maria-Einsiedeln*, Studienjahr 1885—86, pp. 1—30, and Studienjahr 1886—87, pp. 1—36.

H. I. Marrou, *Saint Augustin et la fin de la culture antique*, Paris (1933), pp. 187—275.

<sup>(2)</sup> *Retractiones*, I.6, printed in *Patrologia Latina* (ed. Migne) XXXII, col. 591.

He quaintly derives the word *liberalis* not from *liber*, free, but from *liber*, a book. The seven liberal arts were thus regarded by Cassiodorus, and probably by many mediaeval writers<sup>(1)</sup>, as the literary or bookish studies. The seven arts are described by St. Isidore of Seville (570-636) at the beginning of his encyclopaedic compilation entitled *Etymologiae* which was widely read in the Middle Ages. The English ecclesiastic, Alcuin (Albinus) (735-804), the adviser of Charlemagne, discussed the liberal arts in several works, of which only the treatises intended as guides to the *trivium* are extant. In his *Grammatica* Alcuin sees in the words in Proverbs IX, 1.—“Wisdom hath built herself a house, she hath hewn herself out seven pillars”—a reference to the seven liberal arts. (P.L. CI. col. 853 B.) It is unnecessary to attempt to trace in detail the development of the seven arts through the Middle Ages.<sup>(2)</sup> It is, however, broadly true to say that the mediaeval view of the seven arts or sciences<sup>(3)</sup> with which the three philosophies, natural, moral and mental, were associated from the twelfth century onwards, had a closer connexion with the Hellenistic conception of the arts than with the ordinary Roman conception of these arts as a mere appanage to rhetoric the view of writers such as Cicero, Quintilian and Tacitus. The reason for this was that the *trivium* was regarded as having a formal character and as aiming at training the mind rather than imparting knowledge.<sup>(4)</sup> For instance, John of Salisbury (1120-1180), Bishop of Chartres, writes—“If grammar be the key of all literature, and the mother and mistress of knowledge, who will be bold enough to turn her away from the threshold of philosophy?”<sup>(5)</sup> The mediaeval universities, which developed all over Western Europe from the thirteenth century onwards, accepted the arts as a part of their course.<sup>(6)</sup> The *ordo artistarum*, afterwards called the faculty of philosophy or the faculty of arts, was the basic faculty in the four faculties (*ordines*)—“Universitas fundatur in artibus.” The philosophical or

(1) Norden, Eduard. Die Stellung der artes liberales im mittelalterlichen Bildungswesen. In: *Antike Kunstprosa*, 2, Leipzig, 1898. p. 670 ff.

Paré, G. *La Renaissance du XIIIe siècle. Les écoles et l'enseignement*, par G. Paré, A. Brunet, P. Tremblay. Paris: Ottawa, 1933. p. 97 ff.

(2) In the early Middle Ages the seven arts were described as *Methodus Hybernica* on account of the educational activities of the Irish monks in Germany and Northern Italy.

The arts are enumerated in the mediaeval hexameter: “Lingua, tropus, ratio, numerus, tonus, angulus, astra”.

cf. the following line from the metrical epitaph on Gilbert Crispin, Abbot of Westminster (died 1117) “Doctus quadrivio, nec minus in trivio”. (John Flete's *History of Westminster Abbey*, edited by J. A. Robinson, p. 87.)

(3) The terms ‘arts’ and ‘sciences’ were used almost interchangeably in the Middle Ages and down to the end of the eighteenth century. See *A New English Dictionary*. ‘Science,’ 3.

cf. also the Royal Charter (dated 1693) for the establishment of the College of William and Mary at Williamsburg, Virginia, as “a place of universal study or perpetual College of divinity, philosophy, languages and other good arts and sciences.”

The text of the Charter of 1693 is printed in *History of the College of William and Mary*, Charleston (1874).

(4) “Light sciences called trivials, be grammar, logyk and rhetorick in comparison of the quadrivial sciences.” Botoner, *Tulle on Old Age* (1481).

(5) *Metalogicon*, I, 21.

(6) The seven liberal arts were frequently represented in sculpture and painting. Among the most famous representations are those in Pinturicchio's frescoes (1493) in the Appartamento Borgia in the Vatican.

arts faculty furnished a preparation for the superior faculties of theology, law and medicine. The general aim of these seven liberal arts was to prepare the student not primarily for earning a livelihood, but for the pursuit of science in the strict sense of the term (i.e., the combination of philosophy and theology known as scholasticism). The arts were disposed in two groups. The first, known as the *trivium*, included grammar, rhetoric, and dialectic, in other words, the science of language, oratory and logic. These were known as the language studies (*artes sermocinales*). The second group, known as the *quadrivium*, comprised arithmetic, geometry, astronomy and music, i.e. the mathematico-physical studies or disciplines, known as the *artes reales vel physicae*.<sup>(1)</sup>

The important place occupied by the faculty of the liberal arts in mediaeval universities may still be traced in expressions such as 'Arts and Sciences'; 'Bachelor of Arts'; 'Master of Arts.' In some continental universities the title "Master of the Liberal Arts" is still granted in connexion with the Doctorate of Philosophy.

In practical teaching the importance of the seven liberal arts has steadily declined since the Renaissance, though in England and Wales the ancient universities of Oxford and Cambridge and the grammar schools, local and non-local, which were so intimately connected with them retained the framework of the system till the middle of the eighteenth century.<sup>(2)</sup> In practice, the scholars of the Renaissance regarded the technique of style (*eloquentia*) in Latin or in the vernacular, and the miscellaneous learning required for understanding the classical authors (*eruditio*), as the main object of collegiate education. This tendency may be clearly observed in the original statutes of Harvard College founded by the Puritan settlers at Cambridge in Massachusetts in 1636. In their main outlines the courses of study prescribed at Harvard were modelled on those of Cambridge University. Thus, in practice, grammar and rhetoric came to be the principal elements of the preparatory studies in the grammar schools<sup>(3)</sup>, while the sciences of the *quadrivium* were incorporated in the miscellaneous learning (*eruditio*) associated with rhetoric. In the higher schools in Roman Catholic countries philosophy remained as the intermediate stage between philological studies and professional studies, but in the Protestant States of Europe philosophy was usually transferred to the university as a faculty subject. The Jesuit schools had the following gradation

(1) The terms *trivium* and *quadrivium* first came into general use in the ninth century. P. Rajna, *Le denominazioni Trivium e Quadrivium in Studi medievali*, (1928) I., pp. 10-35. The term *quadrivium* in this sense first occurs in extant Latin literature in Boethius (480-525 A.D.), *Institutio Arithmetica* I. 1, printed in P.L. (ed. Migne), LXIII, col. 1079D.

(2) Skelton, *Why Not to Court* (1522)

"A poors maister of arts . . . had lyttel parte of the quadrivials, nor yet of trivials"

cf. M. Davies, *Athemas Brit.* (1712) II, 12.

"Edward Seymour was educated in trivials and partly in quadrivials at Oxon."

(3) *New Englands First Fruits, etc.*, London (1643), reprinted as Appendix D to *The Founding of Harvard College* by S. E. Morison, Cambridge, Mass. (1935), p. 433:—

"Rules, and Precepts that are observed in the Colledge. When any Schollar is able to understand Tully, or such like classically Latine Author *extempore*, and make and speake true Latine in Verse and Prose, *suo ut aiunt Marte*; And decline perfectly the Paradigm's of Nounes and Verbes in the Greek tongue: Let him then and not before be capable of admission into the Colledge."

of studies :—grammar, rhetoric, philosophy (including logic and dialectic). The miscellaneous learning (*studitio*) was the germ of that encyclopaedic learning which was regarded with such respect in the seventeenth century. J. A. Comenius (1592–1670), the best known exponent of this tendency, sought in his *Janua Linguarum* (1631) and *Orbis Pictus* (1658) to make the ‘small encyclopaedia’ the basis of the earliest grammatical instruction. He speaks with contempt of those seven liberal arts a knowledge of which is demanded from a doctor of philosophy.<sup>(1)</sup>

In most of the grammar schools, local and non-local, in England and Wales the main subject of school ‘business’ from the sixteenth century onwards was in practice Latin literature based on an intensive study of Latin grammar. Thus, the *trivium* had, in effect, been reduced to grammar and rhetoric, logic having dropped out or having been relegated to the academic course at the University.<sup>(2)</sup> Nevertheless, though the system of the arts was, in effect, disintegrated and was a mere shadow of its former self, the expression ‘liberal education,’ which had originally meant a training in the liberal or free arts, survived to describe an education based on the classical languages.

A liberal education was regarded as the appropriate preparation for the ‘liberal’ professions.

In the latter half of the 18th century several factors combined to give a new or at any rate an enhanced value to classical education as a social label. Among these factors were the revival of interest in Greek studies in the Universities and Public Schools about 1765 ; the convention that a gentleman should be able to quote Virgil and Horace ; the art of cultured conversation, which involved some knowledge of classical literature ; the cult of antiquarianism and archaeology ; the prestige of Westminster and Eton among the governing class. The expression ‘liberal education’ was used by a succession of writers as meaning primarily an education based chiefly on the classics<sup>(3)</sup>, e.g. Vicesimus Knox, *Liberal Education* (1789); *Essays on Liberal Education* (1867) edited by the Rev. F. W. Farrar (afterwards Dean of Canterbury). In most instances, however, no attempt was made to define the precise meaning of the expression ‘liberal education,’ save for the assumption that it was to be based on the classics. In the nineteenth century, however, largely owing to the influence exerted by Matthew Arnold on the Schools Inquiry Commission (1864–68), for which he prepared in 1866 special reports on the systems of secondary education in France, Germany, Italy and the Canton of Zürich, an effort was made to evolve a more reasoned concept of a ‘liberal education’ based on the neo-humanistic conception of general culture (*Allgemeine Bildung*) which had dominated the Prussian gymnasia since the time of Wilhelm von Humboldt (1809) and which also had a wide vogue in France owing to the influence of Victor Cousin (1792–1867), Villemain (1790–1865) and Victor Duruy (1811–1894). It is accordingly necessary for our purpose

<sup>(1)</sup> *Great Didactic* (1657) xxx, 2.

<sup>(2)</sup> cf. Pepys’ *Diary* under date 4 February, 1662–63 :—

“ . . . from him to Paul’s School it being Apposition Day there. I heard some of their speeches, and they were just as schoolboys used to be, of the seven liberal sciences : but I think not so good as ours were in our time ”.

<sup>(3)</sup> cf. Joseph Priestley (1733–1804) : *A Course of Liberal Education for Civil and Active Life* (1765).

Priestley used the expression “ liberal education ” in a wider sense.



to give a very brief account of the evolution of this conception of higher education based on general culture in Prussia, and of the parallel development in France down to 1866.

The idea of general liberal education in the form in which Matthew Arnold gave it a wide currency in England in 1866, derives from the celebrated Karl Wilhelm von Humboldt (1767-1835), who was head of the newly created Prussian Bureau of Education<sup>(1)</sup> at Berlin from 1808 to 1810. In the sphere of secondary education Humboldt defined the aim which continued to be accepted in Prussia for the next hundred years.

Von Humboldt, who was himself a distinguished scholar, was a convinced supporter of the neo-humanist movement, which had been gathering force in German educational circles since about 1755, largely owing to the influence of Winckelmann (1717-1768) and Lessing (1729-1781). He believed that the highest example of human development was to be found in ancient Greece. Inspiration and guidance might accordingly be drawn from a study of that wonderful period of human development, which harmonized with the new national movement in Germany in seeking to release the potentialities of the individual in the interests of a self-governing community of fellow citizens. An all-round education on humanistic lines was now to replace the old narrow training in Latin grammar, Latin speaking and religious instruction.

Real insight into the spirit of the Greek and Roman civilisations and the assimilation of their great literary masterpieces in form and content, were to furnish solid foundations for a new nationalism expressing the living spirit and genius of the German people.

Von Humboldt's basic idea was to make a synthesis between the humanity of the old world and the ideals of the modern world. His zeal for classical culture did not however lead him to ignore the value of modern studies and so the purpose of the secondary school (*gymnasium*) was defined by him to be the promotion of comprehensive general culture (*Allgemeine Bildung*). A revised scheme for the secondary school course was drawn up under von Humboldt's guidance. The length of the course was ten years and the subjects to which the greater part of the time was allotted were Latin, Greek, German and Mathematics. Religious Instruction, Natural Sciences, History, Geography, Drawing and Writing occupied the remainder of the time. Hebrew and French and other modern languages were optional. The general purpose of higher or secondary education was envisaged as the harmonious development of all the faculties with the comprehensive formal cultivation of intelligence, a mastery of languages, a considerable attainment in Mathematics, and some knowledge of Science and History.

This higher education was designed for a limited number of boys who were preparing for university studies leading to the learned professions and from whose ranks were to be recruited the higher officials of the Prussian State.<sup>(2)</sup>

The liberal phase in Prussian higher education did not last for long, and the enlightened ideas of von Humboldt and his collaborator Saevern were considerably modified by a succession of reactionary Ministers and permanent officials between 1819 and 1856. The general subjects of instruction in all Prussian *gymnasien* when Matthew Arnold visited them in 1866, were—Languages, viz., German, Latin and Greek ;

(1) This newly established Education Department was organised at that time (1808) as a branch of the Ministry of the Interior at Berlin.

(2) F. Paulsen, *Geschichte des gelehrten Unterrichts*, II, 281-299.

Religion ; Mathematics with Physics and Natural History ; Writing ; Drawing and Singing.<sup>(1)</sup>

Matthew Arnold was also much influenced in the development of his conception of general liberal education by the ideals underlying the State secondary schools in France (*lycées* and *collèges*), which he visited in 1866. The curriculum of these schools in their main outlines embodied the reaction against the modern and scientific curriculum of the *écoles centrales* established by the Directory in 1795 and abolished under the Consulate in 1802.<sup>(2)</sup> The system established by Napoleon under the Consulate and the First Empire thus represented in the main a reversion to the tradition of the colleges kept by the various teaching Orders and Congregations in the eighteenth century. Classics and literary studies occupied the principal place in the curriculum though a considerable amount of time was also assigned to Mathematics and various branches of Science. Under the liberal monarchy of Louis Philippe (1830–1848) and during the Second Empire repeated attempts were made to break down the dominance of the Classics and to secure more time for the study of the Sciences and of Modern Languages. It was urged that France required more industrialists and engineers, who might be prepared by a scientific course, and fewer journalists and lawyers, produced by a training that was mainly literary. Accordingly, on 30 August, 1852, a decree was issued establishing a common course of studies in the *lycées* for three years, followed by a bifurcation<sup>(3)</sup> into two courses, one of which was literary and the other scientific, with a number of subjects (Latin, French, History, Geography, Modern Languages) common to both. The literary course led up to the *baccalauréat des lettres* and to the Faculties of Letters and Law at the University; the scientific course led up to the *baccalauréat des sciences* and to the Faculties of Medicine and Sciences and to special schools or to commercial and industrial careers. This experiment was not a success. The scientific course was regarded as a method of escaping from Latin, and the teaching of Modern Languages largely failed through a shortage of suitable teachers. Accordingly, in 1863, M. Victor Duruy, the Minister of Education, suppressed the system of bifurcation and in 1865 established a special course (*enseignement spécial*) intended for managers and foremen of industrial and commercial undertakings and for minor officials. This course, planned as a three or four years' continuation of elementary education, was to exclude the Classics and to comprise French, Modern Languages, Mathematics and Science, Geography, History, Drawing, Surveying and Book-keeping.

The passages in Matthew Arnold's Report on secondary education in France, Germany, Italy and Switzerland (1866) outlining his own views on general liberal education run as follows :—

" The ideal of a general liberal training is, to carry us to a knowledge of ourselves and the world. We are called to this knowledge by special aptitudes which are born with us ; the grand thing in teaching is to have faith that some aptitudes of this kind everyone has. This one's special aptitudes are for knowing men—the study of the humanities ; that one's special aptitudes are for knowing the world—the study of

(1) F. Paulsen, *op. cit.* II, 316–351 ; 445–542.

(2) F. Vial, *Trois Siècles d'Histoire de l'Enseignement Secondaire*, Paris, 1936, pp. 71–126 ; pp. 170–218.

G. Compayré, *Histoire Critique des Doctrines de l'Éducation en France, depuis le Sixième Siècle*, Paris, 1879, II, 359–373.

(3) F. Vial, *op. cit.* pp. 206–218 ; pp. 217–231.

nature. The circle of knowledge comprehends both, and we should all have some notion, at any rate, of the whole circle of knowledge. . . . He whose aptitudes carry him to the study of nature should have some notion of the humanities; he whose aptitudes carry him to the humanities should have some notion of the phenomena and laws of nature. Evidently, therefore, the beginnings of a liberal culture should be the same for both. The mother tongue, the elements of Latin and of the chief modern languages, the elements of history, of arithmetic and geometry, of geography, and of the knowledge of nature, should be the same for all boys at this stage. So far, therefore, there is no reason for a division of schools. But then comes a *bifurcation*, according to the boy's aptitudes and aims. Either the study of the humanities or the study of nature is henceforth to be the predominating part of his instruction." (*Schools Inquiry Commission*, VI, 599.)

"The secondary school has essentially for its object a general liberal culture; whether this culture is chiefly reached through the group of aptitudes which carry us to the humanities, or through the group of aptitudes which carry us to the world of nature. It is a mistake to make the secondary school a direct professional school, though a boy's aims in life and his future profession will naturally determine, in the absence of an overpowering bent, the group of aptitudes he will seek to develop. It is the function of the special school to give a professional direction to what a boy has learnt at the secondary school, at the same time that it makes his knowledge, as far as possible, systematic—develops it into science. It is the function of the University to develop into science the knowledge a boy brings with him from the secondary school, at the same time that it directs him towards the profession in which his knowledge may most naturally be exercised. Thus, in the University, the idea of science is primary, that of the profession secondary; in the special school, the idea of the profession is primary, that of science, secondary." (*ibid.*, VI, 601).

If these passages from Matthew Arnold be carefully studied in the light of the brief account given above of developments in the French and Prussian systems of secondary education at this period (1866), it will be seen that Arnold endeavoured to make our traditional insular conception of 'liberal education' more precise by describing it as 'general liberal culture'.<sup>(1)</sup> He took the expression 'general culture' from Humboldt's *Allgemeine Bildung*. Again, Arnold borrowed the idea of the bifurcation of humane and scientific studies, respectively, from the decree issued by the French Ministry of Public Instruction on 30 August, 1852.<sup>(2)</sup> It will be noted that no explicit reference is made either to physical education or to the aesthetic subjects. The fact is that at the time when Matthew Arnold adumbrated this conception of general liberal education, largely on the basis of existing arrangements in secondary schools in France and Prussia, the whole

<sup>(1)</sup> No reference is made here to T. H. Huxley's famous definition of a liberally educated man, or to the description of liberal education given by Cardinal Newman in his *University Education* (1852), since they relate to liberal education at the university stage. It is probable, however, that these and similar descriptions of general academic culture exercised some influence on the development of the conception of liberal education at the grammar school stage.

<sup>(2)</sup> In Russia bifurcation between the classical and realistic courses within the secondary school system had been introduced as early as 1829, but it is improbable that Matthew Arnold knew about educational developments in that country.

idea of a general liberal culture for a limited *élite* of future professional men and higher officials was beginning to disintegrate, partly owing to changes in the structure of society, partly to the development of the sciences, partly to the vast increase in knowledge about literary subjects, and partly to the demand of modern industry and commerce for *techniciens* and specialists. It will be noted that there is hardly any recognition of the desirability or indeed of the need of some infiltration of quasi-technical or quasi-vocational work at some stage of the course in a general liberal education. In the latter part of the nineteenth century, public opinion came more and more to recognise the claims of technical education and, as is shown in Chapter I of this Report, the best educational opinion in England and Wales during the last two decades of the century was reluctant to draw any rigid line of division between Secondary education and Technical education. An excellent statement of this new point of view is to be found in the passage from the Report of the Royal Commission on Secondary Education (1895) quoted in §31 of Chapter I. In point of fact, a series of great thinkers in England and on the Continent had long before that period recognised that the antithesis between a liberal education and a technical or quasi-vocational education was unreal and misleading. There can be no adequate technical education which is not in some sense liberal, and no liberal education which is not, from some aspects, technical.

For instance, in the seventeenth century G. W. Leibniz (1646-1716), who was not only a distinguished humanist, historian and diplomat, but also a great mathematician and man of science, criticised the traditional training given in the higher schools and Universities of Western Europe in the most scathing manner, protesting especially against the use of Latin and the survival of the scholastic tradition in the Universities. Leibniz urged that the teaching of youth should be centred not so much upon poetry, logic and scholastic philosophy as upon *realia*, history, mathematics, geography, *vera physica*, *moralia et civilia studia*; instruction in *realia* should be pursued in collections of rarities, the study of man in anatomical theatres, chemistry in the apothecary's shop, botany in botanical gardens, zoology in zoological gardens. The pupil should constantly move in the *theatrum naturae et artis*, receiving living knowledge and impressions".<sup>(1)</sup>

(1) A. Foucher de Careil, *Oeuvres de Leibniz* (Paris, 1875) VII. 52; Leibnizens Gedanken über die Erziehung eines Prinzen, printed in G. W. Böhmer, *Magazin für das Kirchenrecht*, Band I, Göttingen, (1787), pp. 188-190.

cf. Francis Bacon (1561-1626): *Two Books of the Advancement of Learning* (1605) :-

"But this is that which will indeed dignify and exalt knowledge, if contemplation and action may be more nearly and straitly conjoined and united together than they have been; a conjunction like unto that of the two highest planets, Saturn, the planet of rest and contemplation, and Jupiter, the planet of civil society and action." (Book I.)

"In general, there will hardly be any main proficience in the disclosing of nature, except there be some allowance for expenses about experiments; whether they be experiments appertaining to Vulcanus or Daedalus, furnace or engine, or any other kind; and therefore as secretaries and spials of princes and states bring in bills for intelligence, so you must allow the spials and intelligencers of nature to bring in their bills, or else you shall be ill advertised." (Book II.)

There is an instructive passage on the difference between liberal and technical education in a valuable work by the Rev. Henry Latham (1821-1902), Master of Trinity Hall, Cambridge, entitled *The Action of Examinations* (1877), pp. 5-7:—

“ It will be of service to fix precisely the meanings in which the terms Liberal and Technical Education will be used. These two phrases are commonly employed so loosely as to be useless where precision is required. I propose to use them in a rigorous sense; premising that most Liberal Educations are so far Technical that they enable a man to do something which he could not do before, and most Technical Educations are Liberal ones also in so far as they really improve the man by disciplining his attention and forcing him to care and accuracy; moreover, it has a good moral effect on a youth to feel that he has acquired a mastery over matter, or the power of doing something which is of service to other people.

“ An education is liberal so far as it concerns itself with the good and the cultivation of the pupil; valuing any accomplishment it may give him, for the new perceptions it opens out, for the new powers it confers, or for any other good it may do the man, and not regarding the work produced: Liberal Education would like to make a man an artist, that he may have a delightful occupation, and acquire an eye for beauty and for truth; she would like him to paint well because this would shew the possession of such an eye and many other qualities as well, but she would not care much about the pictures themselves; she would not care a bit whether his pictures were valuable or not.

“ An education so far as it is technical is careful not for the workman but for the work: Technical Education wants to get good pictures, and she only values any qualities of an artist so far as they conduce to this end. She aims at moulding the man into a perfect instrument for a particular purpose.”

Professor A. N. Whitehead in his volume of essays entitled *The Aims of Education and Other Essays* (1929), p. 74, writes:—

“ The antithesis between a technical and a liberal education is fallacious. There can be no adequate technical education which is not liberal, and no liberal education which is not technical: that is, no education which does not impart both technique and intellectual vision. In simpler language, education should turn out the pupil with something he knows well and something he can do well. This intimate union of practice and theory aids both. The intellect does not work best in a vacuum. The stimulation of creative impulse requires, especially in the case of a child, the quick transition to practice. Geometry and mechanics, followed by workshop practice, gain that reality without which mathematics is verbiage.

“ There are three main methods which are required in a national system of education, namely, the literary curriculum, the scientific curriculum, the technical curriculum. But each of these curricula should include the other two. What I mean is that every form of education should give the pupil a technique, a science, an assortment of general ideas, and aesthetic appreciation, and that each of these sides of his training should be illuminated by the others. Lack of time, even for the most favoured pupil, makes it impossible to develop fully each curriculum. Always there must be a dominant emphasis. The most direct aesthetic training naturally falls in the technical curriculum in those cases when the

training is that requisite for some art or artistic craft. But it is of high importance in both a literary and a scientific education." In another passage, on pages 84-85 of the same book, Professor Whitehead writes :—

" No human being can attain to anything but fragmentary knowledge and a fragmentary training of his capacities. There are, however, three main roads along which we can proceed with good hope of advancing towards the best balance of intellect and character : these are the way of literary culture, the way of scientific culture, the way of technical culture. No one of these methods can be exclusively followed without grave loss of intellectual activity and of character. But a mere mechanical mixture of the three curricula will produce bad results in the shape of scraps of information never interconnected or utilised. We have already noted as one of the strong points of the traditional literary culture that all its parts are co-ordinated. The problem of education is to retain the dominant emphasis, whether literary, scientific, or technical, and without loss of co-ordination to infuse into each way of education something of the other two."

Professor John Dewey gives an admirable statement regarding the misleading antithesis between culture and utility in the following passage of his work entitled *Democracy and Education* (1922), page 305:—

" Of the segregations of educational values discussed in the last chapter, that between culture and utility is probably the most fundamental. While the distinction is often thought to be intrinsic and absolute, it is really historical and social. It originated, so far as conscious formulation is concerned, in Greece, and was based upon the fact that the truly human life was lived only by a few who subsisted upon the results of the labour of others. This fact affected the psychological doctrine of the relation of intelligence and desire, theory and practice.

" It was embodied in a political theory of a permanent division of human beings into those capable of a life of reason and hence having their own ends, and those capable only of desire and work, and needing to have their ends provided by others. The two distinctions, psychological and political, translated into educational terms, effected a division between a liberal education, having to do with the self-sufficing life of leisure devoted to knowing for its own sake, and a useful, practical training for mechanical occupations, devoid of intellectual and aesthetic content. While the present situation is radically diverse in theory and much changed in fact, the factors of the older historic situation still persist sufficiently to maintain the educational distinction, along with compromises which often reduce the efficacy of the educational measures. The problem of education in a democratic society is to do away with the dualism and to construct a course of studies which makes thought a guide of free practice for all and which makes leisure a reward of accepting responsibility for service, rather than a state of exemption from it."

## APPENDIX III

MEMORANDUM ON THE SECONDARY SCHOOL CURRICULUM  
BY Dr. I. L. KANDEL, M.A., MANCHESTER, Ph.D.,  
COLUMBIA, Litt.D., MELBOURNE, PROFESSOR OF  
EDUCATION, TEACHERS COLLEGE, COLUMBIA UNI-  
VERSITY, NEW YORK

The most outstanding problem with which educators and statesmen are confronted today virtually throughout the whole world is that of the education of the adolescent. Just as one hundred years ago the leading countries of the world began to recognise the importance of providing universal compulsory elementary education, so today the chief concern is to organise satisfactory systems of post-primary education. While there is more or less general agreement about the function and content of the elementary school, which is determined in large part by the age and interests of the pupils, no such agreement can be found either on the form of organisation or on the content and purposes of education beyond the elementary level. Nor can the difficulties be eliminated or even minimised by the demand for a common primary school and for secondary education for all. The difficulties with which the educational world is confronted are due to a great variety of causes. Except the United States most countries in the nineteenth century developed dual systems of education—the elementary for the masses and the secondary for the group selected on the basis either of wealth or of intellectual ability. As the elementary school established itself and as national needs, especially on the industrial and commercial side, developed, the elementary branch of education itself expanded upwards and specialised vocational schools were provided, and both types paralleled and to some extent overlapped the traditional systems of secondary education. At the same time secondary education itself felt the impact of the changes which proceeded during the nineteenth century and after a period of unrest the curricula were expanded to include, in addition to the traditional classics and mathematics, modern languages and sciences but without disturbing the aims of general cultural education and preparation for higher institutions of learning.

A new period was ushered in during and after the War. Nations began to evaluate and to compare their educational systems and to estimate them in terms of their contribution to national welfare as a whole. It was recognised that elementary education alone provided inadequate opportunities for the development of the potentialities of the individual and insufficient preparation for living in the complex civilisation of the twentieth century. From another point of view it began to be recognised that the dual systems of educational organisation which had been inherited from the nineteenth century involved the sacrifice of large numbers of pupils of ability, of pupils capable of profiting from further education which the existing systems did not provide adequately. Out of this unrest, which, unlike the unrest of the last two decades of the nineteenth century, was not concerned primarily with matters of curriculum in the secondary school but with the organisation of education on a national basis, there resulted the

movement for the unified educational systems,—the *Einheitsschule* in Germany, the *école unique* in France, and secondary education for all in England. From these three countries the movement spread rapidly to others until it has today become world-wide.

Of the general program implied in this movement two items appear to have gained acceptance already. The first is the general recognition of the need of a common foundation for all up to the threshold of adolescence, that is, up to the age of eleven or twelve. The second is the unification of the administration of all types of education under one authority; thus in Italy and France the Ministries of Public Instruction have become National Ministries of Education to administer and supervise both general and vocational education in their various branches, in the United States the Federal Bureau for Vocational Education has been made a division of the United States Office of Education; in Germany this unification has only recently been adopted in the Third *Reich*, while in England it had already been anticipated when the Board of Education was established in 1899.

The adoption of a common foundation for the large majority of children and the unification of administration of all types of education have only revealed the difficulties involved in the whole question of post-primary education. To demand secondary education for all in the interests of equalisation of educational opportunities is one thing; to devise methods by which the individual pupil may receive the kind of education from which he can best profit is another. Only two aspects of the problem are clear; first, under present economic conditions and the prospects of technological developments in the future adolescents will become increasingly unemployable, which means that society must extend its educational guardianship over them; and, second, if the function of education is the preparation of citizens,—intelligent to the world around them, conscious of their duties and responsible, equipped for the work which they are best fitted to undertake, and trained to the extent of their abilities and interests to enjoy the cultural and spiritual things of life—an extension of education becomes inevitable. Leaving on one side those who are not likely to profit at all from such an extension—and with educational programs and teachers of vision the number is probably far smaller than is usually supposed—it is no more unreasonable to expect a gradual extension of education for all up to the age of eighteen than it was a hundred years ago when an extension to fourteen was regarded as impracticable and undesirable. Without attempting any prophecy as to the time when such an extension may take place, the fact at present and in most countries is that an immediate extension of compulsory education is necessary, if the world is to be saved from the dangers which menace it from allowing hordes of unemployed, unsupervised youth to enter adult life completely unequipped, untrained, and illiterate as citizens.

If this general thesis is sound, and an analysis of conditions in most countries would prove it to be sound, the problem with which educators and statesmen are confronted is not that of providing secondary education for all, but rather to discover varieties of types of education for the adolescent groups from which each individual is most capable of profiting. In other words the problem is one of the distribution and differentiation of facilities and opportunities for education. The problem is not simplified even in such a country as the United States,



where the single or comprehensive high school, organised end-on with the elementary school, has attempted to meet the needs of all the adolescent population and to provide curricula and courses suited to the capacities of each individual pupil. Simplification of administration has in the United States not provided a solution. It is beginning at last to be admitted that the single school may cater to the average but it does justice neither to the bright nor to the dull pupils, and that the attempt to provide general cultural and vocational courses side by side in the same institution tends to militate against the success of both. A glance at the leading journal for secondary education, *School Review*, reveals an increase in the number of articles which have appeared advocating or describing methods of selection or grouping of pupils according to abilities and interests within the same school. More recently Dr. John L. Tildsley, Acting Head of the High School Division in the educational system of New York City, has urged in his Annual Report to the Superintendent of Schools the organisation within the existing high schools of "honors" schools for gifted pupils and special provisions for those pupils who show no likelihood of success in academic subjects.<sup>(1)</sup> In the extensive discussions which have taken place in France during the past ten years on the organisation of the *écoles uniques* nothing is more striking than the repeated suggestion that a permanent commission for selection and guidance (*Commission Permanente de Selection et Orientation*) be established in the National Ministry of Education. Nor is the idea entirely novel, for although it was not at the time intended to meet the present situation, no more pertinent definition of the purpose of administration has ever been formulated than that of Sir Graham Balfour. "The purpose of administration," wrote Sir Graham in his lecture on *Educational Administration*, "is to enable the right pupils to receive the right education from the right teachers, at a cost within the means of the State, under conditions which will enable the pupils best to profit by their training."

M. de Monzie, formerly Minister of Education, in discussing the problem confronting France in the provision of post-primary education, only stated the same idea in different terms when he said that it involves free tuition (*gratuité*), selection (*sélection*), and distribution (*rationalisation*); he might have added to this guidance (*orientation*) as the necessary corollary of selection and distribution.<sup>(2)</sup>

The discovery of the "right education" for the "right pupils" is today one of the most crucial tasks with which the administrator is confronted. It is difficult enough in the American high school which is open to all pupils on equal terms; it is far more difficult in those systems in which various types of education are offered not in the same but in different schools and in which fees are charged in some but not in others. The problem is as acute in Germany where fees are charged in most post-primary schools and the provision for free places is slight, as in France where fees in the secondary schools proper have been abolished; it is as serious in Italy where fees in the post-primary

<sup>(1)</sup> See Tildsley, John L., *The Mounting Waste of the American Secondary School* (Cambridge, Mass., 1936).

<sup>(2)</sup> By an *arrêté* of April 22, 1937, and subsequent circulars *classes d'orientation* have been introduced in a number of French *lycées* and *collèges* by way of experiment to advise parents and pupils in the choice of suitable secondary school courses.

schools are nominal as in the United States where the high schools are free ; and it is the subject of inquiry in the Scandinavian countries. To solve this problem of distribution would be a sufficiently difficult task even if it were limited merely to the discovery of technical devices for evaluating individual ability and promise ; it becomes intensified when the complexities of social and traditional values must be taken into account.

Secondary education as it is generally conceived in the popular mind has come to be regarded as the education of the privileged few, as an education for status. It is looked upon as a preparation for what are called the " white collar " or " black coat " jobs and consequently as a method of release from manual occupations. This popular attitude is manifested even in the American high school in which, although opportunities for academic, semi-academic and vocational training are provided, the academic courses seem to be preferred by the majority of parents and pupils, despite the fact that manual occupations enjoy a higher status than in less democratic countries. The abolition of fees in the secondary schools of France has resulted in an increased enrolment of more than 60,000 pupils in less than ten years. In Germany the reduction in the opportunities for employment in the wage-earning occupations in the years following the War resulted in overcrowding both in the secondary schools and in the universities. An analogous situation presents itself in the Scandinavian countries. That this condition has not been escaped in England is indicated by the fact that some " central " schools have departed from their original aims and are preparing their pupils for the first secondary schools examination. The preferred place enjoyed by the traditional secondary school in social esteem and in the competition for employment renders the task of finding the right education for the right pupils more difficult than is realised by those who pin their faith in the developments of scientific tests of ability. The difficulty is still further increased in those school systems in which some pupils are given " free " or " special " places as the result of a competitive examination, while others are admitted, and not always on the same standards, as fee-payers. France, for example, only discovered another problem when she sought by abolishing fees in secondary schools to assert the right of the state to exclude the *non-scolars* from the advantages of secondary education at public expense ; the authorities concerned are at present struggling with the problem of devising suitable methods of selection. Only the totalitarian state at one extreme and those countries which have a sublime faith in the magic of " scientific tests " at the other seem to be ready to embark on a policy of " human engineering " which overrides human nature and certain social prepossessions and attitudes ; the National Socialist authorities in Germany, by restricting admission to the universities, have inevitably deflected large numbers from the existing secondary schools without, however, having given thought to the need of providing new types of schools for the pupils so diverted ; in the United States, on the other hand, it remains to be seen whether faith in the recently developed movement for coöperative testing and cumulative record cards as bases for guidance will be sufficiently strong to overcome the popular and democratic demand for equality of opportunity. In both cases it remains to be seen how successfully Plato's theory of social and educational organisation will be vindicated in the twentieth century.

And yet, although one may shrink from the extravagances suggested by the term "human engineering," the provision of the right education for the right pupils does imply some sort of control over the destinies of the pupils. Up to the present, however, this control is in most systems of public education exercised by means of an examination, supplemented in some cases by a scrutiny of school records and teachers' reports, or by both. In other words, the educational and later career of a large majority of the pupils (the minority whose parents can afford to pay fees is not so much affected at this stage) is made dependent upon a single examination taken at the close of the period of primary education; the fate of all who are admitted to the secondary school is decided four years later. It is not necessary here to discuss the cases of late developers, the *tard-arrivés*, or the provisions made for them in some systems. The important question is whether the one examination is an adequate test when so much is at stake not only for individual pupils but for society as a whole. That there is some unrest on the subject is obvious; it is only necessary to refer to Professor C. W. Valentine's study of *The Reliability of Examinations* (London, 1932) which, although it deals only with the technical aspects of examinations, carries certain very definite social implications. Examinations, particularly as a method of selection, have for the last eight years been the subject of intensive investigations by special committees in England, Scotland, France and Germany.<sup>(1)</sup> For the present all that can be said is that while the selective examinations serve as a method for ranking pupils they are under suspicion on two grounds,—first, that they are not reliable, and secondly, that on the whole they are not adequately valid indices of the aptitudes of pupils. A pupil who ranks high in arithmetic and English (and perhaps, general information) does not necessarily and invariably show promise of success in what are regarded as the basic secondary school subjects (foreign languages, mathematics, and sciences).

Such in general are some of the questions which arise at the outset in a consideration of the organisation and interrelation of schools which provide education for pupils beyond the age of 11 plus. They cannot be settled by the adoption of such a slogan as "secondary education for all." On the other hand, considerable progress can be made by bringing the traditional secondary schools within the general purview of the problem of the education of the adolescent. From the social and national points of view it would also be advantageous to include within the general scheme those post-primary schools which are at present administered under the Elementary Code. This was in fact the scheme recommended in the Report on *The Education of the Adolescent*

(1) Sir Michael Sadler is chairman of the English committee, whose investigation is being conducted by Sir Philip Hartog; the Committee has already published a number of volumes, including *An Examination of Examinations* (London, 1935). The German committee has recently published some of the results of its investigation in *Schülerauslese, Kritik und Erfolge* by Otto Bobertag (Berlin, 1934). The creation of the committees was the result of an international conference on examinations held at Eastbourne in 1931 under the auspices of the Carnegie Corporation and Carnegie Foundation of New York and of the International Institute, Teachers College, Columbia University. (See *Conference on Examinations*, New York, 1931; *Conference on Examinations*, New York, 1936; and Kandel, I.L., *Examinations and Their Substitutes in the United States*, New York, 1937.)

(see page 173 f.). Only in this way can the problem of the education of the adolescent or of post-primary education be viewed as a whole, if by this is meant such a selection and distribution of education as will enable each pupil to receive that education for which he is best fitted. Should a scheme of this kind be adopted, it must inevitably bring in its train the problem of devising more satisfactory methods of distributing pupils into the different types of school than those which are immediately available. For those countries which have only recently undertaken the task of breaking down the traditional dual systems of education and developing a unified, articulated system in their place as much as in the United States with its single high school catering in the same institution to the highly differentiated needs and capacities of all adolescents this is the crucial problem to be solved in the immediate future. Since the problem is new, it must be solved by new methods, less open to criticism than the hazard of a single examination.

The selection or preferably the distribution of pupils, since the majority of the adolescent or post-primary group is being considered, is intimately connected with the next problem, the organisation of curricula and courses suitable for the differentiated abilities and capacities of the pupils. This problem may be considered from a variety of points of view—the nature of individual differences, the duration of the courses to be taken, the probable destination of the pupils, and the culture in which they live. But over and above all these is the fact common to the members of all groups that they are to be citizens. Accordingly the first principle laid down as a result of the conference in 1916 between the Council for Humanistic Studies and the Joint Board of Scientific Studies, although intended at the time for secondary schools only, will apply equally to all phases of post-primary education in the early stages. The principle was stated as follows :—

The first object in education is the training of human beings in mind and character, as citizens of a free country, and any technical training of boys and girls for a particular profession, occupation or work must be consistent with this principle.

The same principle, although applied to a more or less specialised type of school, is emphasised in Board of Education *Educational Pamphlet*, No. 83 (1930), issued by the Board of Education, London, in the statement that :—

The training given in the Junior Technical Schools ought to be, and in actual practice is a truly cultural education.

Obviously for the age group under consideration, boys and girls between the ages of 11 plus and 15 or 16, vocational training or preparation for a particular occupation is undesirable and under present conditions of juvenile employment probably unwise. The character of vocational training, its organisation and duration, whether it should be given wholly in schools or wholly in the trades concerned or under a scheme of partnership of both is, therefore, not a question which need be considered here. The courses provided in post-primary schools should, then, be general and liberal in character, aiming to give the individual an understanding and appreciation of himself and his world and laying the foundations for the life of a citizen through physical, moral, aesthetic, and intellectual training. Of the numerous definitions

of educational aims none is more applicable to all times and conditions than that of Vittorino da Feltre :—

Not every one is called upon to be a lawyer, a physician, a philosopher, to live in the public eye, nor has every one outstanding gifts of natural capacity, but all of us are created for the life of social duty, all are responsible for the personal influence which goes forth from us.

The general aim of all post-primary schools should be the same, but beyond this the work of each type of school should be determined by the differences in the "gifts of natural capacity" among the pupils. Up to a certain point the basic subjects which go to make up a general education should be the same for all types, but to grant this is not to admit that either the content or the methods of instruction should be the same. Indeed, the primary object of distributing pupils according to ability and probable length of schooling would otherwise be defeated. The adoption of a common core of subjects is desirable not merely in the interests of the common general aim of education but in order to make possible the transfer of late developers to the type of school best adapted to their abilities. It is for this reason, for example, that pupils who hold national scholarships in France may be transferred from the *écoles primaires supérieures* to *lycées* or *collèges* or vice versa as their capacities are revealed.

The curricula of post-primary schools other than secondary have been so fully and so ably discussed in the Report on *The Education of the Adolescent*, and those for senior schools are being developed with such insight into the needs of the pupils concerned in the published courses which have come to my attention that it is unnecessary to deal with them here. It is pertinent, however, before dealing with the curricula of secondary schools to consider some of the principles underlying the new curricula of the senior and central schools. In the first place traditional preconceptions about the curricula appear to have been discarded. Secondly, they have been adapted more closely in accordance with the needs and abilities of the pupils and the local circumstances in which they live. Thirdly, the work of the schools concerned is not for the present dominated by the exigencies of external examinations, a fact which makes possible greater flexibility and elasticity than would otherwise be possible. This was equally true of the central schools in the early years of their development and until, for reasons which were not primarily determined by educational considerations, they undertook in some cases to depart from their original purpose and to prepare pupils for the first secondary school examination. It may in time be possible out of this experiment to develop methods of establishing standards without resorting to the practice of external examinations. The essential feature of the new curricula is that they represent an attempt to put into practice a new interpretation of a liberal education. It is, in fact, not an exaggeration to say that the most significant statement in the Report on *The Education of the Adolescent* (1926) is the new definition of a humane or liberal education.

A humane or liberal education, says the *Report*, is not one given through books alone, but one which brings children into contact with the larger interests of mankind. It should be the aim of schools of the last three types (i.e. selective central schools, non-selective central schools, and senior classes, etc.) to provide such an education by means of a curriculum containing large opportunities for practical work, and closely related to living interests.<sup>(1)</sup>

(1) Report on *The Education of the Adolescent* (1926), pp. 84 and 174.

The aim of the "modern" schools, stated so admirably, seems to be contrasted with the aim of the secondary schools proper, which is literary and scientific training. There appears to lurk in the two aims a distinction between "living interests" and "academic" training. History has played curious tricks with the curriculum of secondary schools. The humanistic curriculum, which became the foundation of secondary education during the Renaissance, was advocated because the curriculum of the medieval secondary school had become formal, sterile, and unrelated to life; the new curriculum of Latin and Greek was to serve as a preparation for the "living interests" of mankind. Within a comparatively short time the new education had in turn become formal and lifeless, and by the beginning of the seventeenth century Bacon (and Bacon did not stand alone in his criticisms of contemporary education) could write:—

These four causes concurring, the admiration of ancient authors, the hate of the schoolmen, the exact study of languages, and the efficacy of preaching, did bring in an affectionate study of eloquence, and *copia* of speech, which then began to flourish. This grew speedily into an excess: for men began to hunt more after words than matter; and more after the choiceness of phrase, and the round and clean composition of the sentence, and the sweet falling of the clauses, and the varying and illustration of their works with tropes and figures, than after the weight of matter, worth of subject, soundness of argument, life of invention, or depth of judgment. (Bacon, *Advancement of Learning*, Book I.)

He deplored the lack of teaching of "histories, modern languages, books of policy and civil discourses, and other the like embellishments unto service of state," or, to use another of Bacon's phrases, studies of "substance and profit," that is, an education related to "living interests." The same principle governed his advocacy of the sciences, for "the true and legitimate goal of the sciences is none other than this, to endow human life with new discoveries and resources," "to extend more widely the powers and greatness of man's estate, to secure the sovereignty of man over nature," "for the finding out of the true nature of all things, whereby God might have the more glory in the workmanship of them, and men the more fruit of them." Nearly three centuries were to elapse before modern languages and sciences, history and English were to find an assured and recognised place in the curricula of secondary schools.

In the meantime the classical studies themselves were saved from the sterile formalism into which they had fallen by the Neohumanistic revival, which consisted in relating them more nearly to "living interests". This movement, which originated in the German universities and secondary schools, strongly influenced Thomas Arnold's reform in the teaching of Latin, Greek and ancient history, and again secured the pre-eminence of classical studies in the secondary schools. This claim to pre-eminence was further supported by the doctrine of formal discipline, with the result that, if the study of classics could not be justified on their own merits as humanities related to "living interests", an argument could be made for them on the ground that they trained the mind. Hence, when modern languages, sciences and other modern subjects began to assert claims for inclusion in the secondary curriculum, both arguments were used, that they were "living interests" and as good vehicles for mental training as the classics. But the new subjects for the sake of protective coloration soon adapted themselves to an organi-

sation which had become traditional in the teaching of the classics, and sought to prove that they could be just as "academic" as the established studies, and just as "liberal" because they were not practical.

It was, however, rather on the theory of mental training that the retention of vast numbers of pupils who did not or could not complete courses definitely intended, among other purposes, as a preparation for admission to the universities was justified. That many profited from the corporate life which had been developed in the secondary schools in the second half of the nineteenth century cannot be denied; the present discussion is, however, limited to the curriculum. At the same time, in order to avoid the dangers of control by a government authority, the secondary schools had invited the universities to conduct external examinations as a measure of evaluating their work and setting up standards.

Accordingly when the system of secondary education began to be extended at the beginning of the present century and schools maintained at public expense were established certain very definite traditions had already been established—the pre-eminence of the classics, the academic organisation of the modern subjects in content and methods of instruction, and the theory of mental training. Thus the Board of Education in their Regulations for Secondary Schools stated that the instruction must be general, that is, "must give a reasonable degree of exercise and development of the whole of the faculties". While the aim continues to be the same, its definition in terms of a psychology now discarded has been dropped.

The development of the secondary school curriculum has been devoted in the main to securing a proper balance between subjects and the postponement of specialisation. This was all the more necessary since the Public Schools had brought with them a strong tradition of classical studies, while many of the new council schools grew out of the older organised science schools. In an effort to promote a proper balance the Board's Regulations have laid down the following general requirements for the first four years of the curriculum, that, for boys and girls between twelve and sixteen:—

Except with the previous permission of the Board, adequate provision must be made for instruction in the English language and literature, at least one language other than English, geography, history, mathematics, science, drawing, singing, manual instruction in the case of boys, domestic subjects in the case of girls, physical exercises, and for organised games.

So long as the number of pupils in the secondary schools remained small and consequently highly selected, such a curriculum may have been adequately adapted to their needs and abilities. The last thirty years, however, have witnessed in England as elsewhere a remarkable increase in the number of pupils attending the secondary schools. A curriculum suited to a limited group of pupils is not necessarily adequate to meet the widened range of the abilities of a far larger group, drawn from a wider range of social and cultural backgrounds and selected on the basis of an examination which in itself is not necessarily a guarantee of ability to pursue a curriculum which is narrowly defined. Under such circumstances there inevitably but not deliberately results a tendency to adjust the pupils to the curriculum rather than the curriculum to the needs and abilities of the pupils. There is no intention

of suggesting here that the needs and abilities of pupils can be the sole criterion for the development of courses of instruction. The American experiment of the past thirty years may be used as a warning on this point. The danger of providing a Procrustean bed in the form of a somewhat inelastic curriculum directs attention to the need of a more generous interpretation of another of the Board's requirements which furnishes a better guide to the organization of courses than a statement of subjects. This requirement is that a secondary school must provide a progressive course of general education of a kind and amount suited to an age range at least from twelve to seventeen.

The problem may be considered from another point of view. In the absence of the type of control and supervision of the schools which is found in those systems of education which are strongly dominated by official regulations and prescriptions, England has resorted to the practice of external examinations by non-official examining boards. Despite the reduction in the number of examinations for which pupils may be presented, and despite the limitation in the number of examining boards concerned with secondary schools, the fact remains that the work of the schools must be affected by the requirements of the external examinations. It would be foolish to deny that some form of standardisation and some means of comparing the work of secondary schools of such a great variety as exists in England is necessary. The question must be seriously considered whether the present system of examinations is the best that can be devised and whether external examinations of any kind can be developed which do not result in restricting the work of the schools to be examined. Even if examination requirements were flexible as to the number of subjects to be permitted, the question would still remain whether they do not restrict the work of teachers both in the range of content within each subject and in the methods of instruction, whether they do not tend to produce an emphasis on those aspects of a curriculum which lend themselves to examination. It is not necessary to raise the whole question of the reliability and validity of marking, which may open up an entirely different method of attack upon examinations.

A further complication has been introduced into the English situation which is peculiar to England. Secondary Education has by tradition come to be regarded essentially as preparatory to the universities or some other form of higher education. With the increased numbers attending the secondary schools it is no longer true that even a majority of the pupils will continue their studies even beyond the first four years of the secondary schools. As has already been proved in most European countries, there is considerable danger both to the individual and to society in looking upon secondary education as preparatory to higher education; such a situation must inevitably lead to an over-production of intellectuals and the unrest consequent on their inability to find the niches in the economic world for which they regard themselves as fitted and prepared. This condition for the present has not yet been reached in England but there is no reason to suppose that it may not develop in time if secondary education and preparation for higher education come to be regarded as synonymous. The difficulty cannot be solved by the assumption that what is good for a liberal or general education is equally acceptable for admission to universities. In practice this assumption tends to be reversed and what the universities regard as essential for admission or matriculation comes to be the accepted definition of a sound liberal education.



This is in fact what has happened in England and the first school examination certificate is under certain conditions accepted as the equivalent of a matriculation examination, and in the public mind no distinction is made between them. It is this confusion of aims and purposes which has led to the unrest which has prevailed on the subject of examinations during the past fifteen years. The resolution passed in 1928 by headmasters and headmistresses is only one among many signs of this unrest. The resolution ran as follows :—

That the imposition upon the secondary schools of a school certificate examination of the present type is having a very unfortunate influence upon the attainments, character, and opportunities of at least half of the pupils in those schools, who do not benefit by the course of education prescribed or the methods of teaching which it necessitates.<sup>(1)</sup>

An investigation of examination results reveals that of those who take the first examination, and probably not all pupils who leave school at sixteen do so, about two-thirds are successful. The large majority of the pupils, probably 80 per cent., enter commercial and industrial life, or, in the case of girls, remain at home. This means that the pupils leave with a truncated course and a smattering of subjects selected as the basis for further study and adapted to the needs of a minority. The interests of a general education tend to be sacrificed to the interests of preparation for further study. This does not and ought not to mean that a four year course of secondary education should be the end of education for those who leave school ; but it does mean that a general education should be so organised that it develops certain abiding interests in the pupils. The question must be faced whether tests in examinable knowledge and information in a narrow range of subjects can serve to develop such interests. With some pupils it may, but with the large majority life interests must be continuous with the environment and the world in which they live. Here lies the real distinction between what are called the "academic" and "living interests". This, indeed, has been the secular quarrel between "schools" and educational theorists. This was the burden of Montaigne's jibe at the schools of his day, "The most great clerkes are not the most wisest men".

What are some of these abiding interests which are continuous with the environment and the world in which we live ? Obviously a command of English language, clarity of expression in speech and writing, and appreciation and understanding of literature should be the first essential requirement for all. The citizen of today must have an understanding of social, economic and political questions at home and abroad, and a knowledge of how these questions have emerged—an important aspect of contemporary education which has not yet received the attention that it deserves.<sup>(2)</sup> The study of history alone and certainly the study

(1) That this resolution has not been ineffective is indicated by the announcement in June, 1935, by the Northern Universities Joint Matriculation Board that it would in 1938 differentiate the first secondary school certificate from the matriculation certificate, a proposal which should result in differentiation of courses in the secondary schools.

(2) The Association for Education in Citizenship was established to stimulate national interest in the importance of instruction in these fields, all the more important to-day if the ideals of democracy are to be preserved.

of sections of history, however desirable the development of the historical sense may be, cannot achieve these ends. For the general student history must be meaningless unless it is brought down to the present, nor is it of great significance for the present unless it is studied from as many points of view as possible and particularly as the development of living peoples. Intelligent reading even of the newspaper demands today a knowledge of geography, an excellent vehicle for the study of the world of man and nature. The same criterion can be applied to the sciences, as avenues to an understanding of the world around us and of the influence of scientific development on the economic and intellectual life of modern society. For the average pupil, that is, for the pupil who leaves school at about sixteen, a general introduction to the sciences, which might be called the intelligent man's guide to sciences, is likely to be of greater permanent value than the science of the specialist. The same arguments would apply to the study of mathematics; an appreciation of their place in the everyday world and in intellectual life may in the long run prove more valuable for the enrichment of interests than intensive training in skill in manipulating mathematical concepts which are not likely to be used again once a pupil has left school. Without depreciating the important changes which have already been made in the teaching of foreign languages, much still remains to be done in two directions, to develop ability to read foreign literatures with enjoyment and to inculcate in pupils the realisation that foreign languages and literatures are expressions of living people and institutions, whether in the present or in the past. In the case of modern languages opportunities for travel, the development of the wireless, and the interchange of foreign films give new meaning to the desirability of training in ability to speak one or more of them, but for the majority, it still remains true that reading ability should receive the first emphasis.

Probably none of the suggestions made for reform are novel and as one examines modern textbooks one becomes impressed with the changes which have been proceeding in the attitude to the traditional subjects. But suggestive as new textbooks may be, they do not furnish evidence of widespread acceptance of new ideas. The exigencies of external examinations may still continue to be insurmountable obstacles to the main ends of a sound education, just as they have tended to restrict the development of new aspects of the curriculum which represents important interests of the individual. Music and the arts have long been regarded as extras and as extras they have been relegated to the fringe of the curriculum. If, however, they have a rightful place among the "living interests" of today and as instruments for the enrichment of life, they deserve greater attention than has been given to them in the past. The inclusion of drawing and singing does not satisfy the demands which should be met. What place should be assigned to skill in music and the arts can only be determined by the amount of time available and by the abilities of the pupils. But much more can be done than is done at present for the development of understanding and appreciation of these important expressions of man's interests. It is not a question merely of training for leisure—all the subjects which have been mentioned should meet this aim—but of preparation to understand and enjoy the increasingly rich contribution of our modern environment. If no reference has been made to the importance of sound health and physical well-being, it is because no one concerned with education in England is likely to overlook it.

There may still remain pupils who even with a reform in the content and methods of instruction are unable to profit by it. The problem has already presented itself under the present requirements for the school certificate examination. It is a nice question whether such pupils should be transferred to other types of schools at the secondary level, or whether other methods of approach should be made in existing schools through more practical subjects. The question has already been answered by the adoption, for example, in the West Riding, of alternative courses, which, while they are not specifically vocational, seek to attain the ends of a general education by other means than books alone. Essentially this is a method of meeting Thring's challenge that "there is no dull boy", and Sir Graham Balfour's definition of the function of educational administration.

The unrest with respect to examinations and the development of new experiments and their recognition by some examining boards point in the direction of greater flexibility in the organisation of the curriculum; such flexibility, however, must be dominated by the ends of a humane or liberal education. But whatever subjects may be added, they must be justified on the basis that they are, as Sir Percy Nunn has so well stated in a classic definition of general culture, differentiated modes of intellectual activity thought of, not statically, but dynamically, that is, intimately related to and significant for the environment for which they aim to prepare, on the one hand, and for the interests and abilities of the pupils on the other. Ultimately there is no particular merit in subjects *qua* subjects; to accept this is to perpetuate the so-called academic tradition. Subjects can have meaning only as they are treated as aspects of active and living human experience. Whether, if considered from this point of view, they can continue to be examinable in the traditional manner, is at least an open question. It is equally problematical whether external examinations constitute a better method of maintaining standards than sound professional preparation of teachers. That all teachers must be masters of the subjects which they teach is too obvious a requirement to be discussed, but it is not equally obvious that such mastery may itself lead to a certain myopia that prevents the teacher from seeing the relations of his special subject to the whole aim of education to which he along with other subject matter specialists should contribute. The intrinsic value of professional preparation can best be measured by the extent to which the prospective teacher realises, as Sir John Adams once pointed out, that his task is to educate the pupil rather than to teach a subject. It is only when adequate standards of certification of teachers are adopted, that a system of school certification based on the pupils' scholastic and general record and the teachers' estimates can be instituted, and the confusion of purposes between a school certificate and a matriculation examination can be avoided.

This important aspect of secondary education need not be discussed further here. It is, however, pertinent in this connection to refer to the efforts made in Germany under the republican *régime*, first, to reorganise the curriculum from the point of view of the contribution which each subject can make to the total preparation of pupils for the world around them, and, second, to substitute for the traditional examinations a new form based upon the pupils' records, the teachers' estimates of ability, and exercises which seek to discover not so much what the pupils can at a given moment remember of their studies but what they

can do with the materials which they have studied. In other words, all subjects were according to this scheme to develop living interests and the ultimate test of an education was to be not one of memory but of capacity. Even though this scheme in its full implications remained largely on paper, it suggests desirable lines of development, for it means that education can no longer be regarded merely as the mastery of a number of subjects but as the use of aspects of human activities to train individuals as human beings in mind and character, as citizens of a free country, with an understanding and appreciation of the world in which they live.

## APPENDIX IV

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 HISTORICAL NOTE ON FACULTY PSYCHOLOGY BY DR. CYRIL BURT, PROFESSOR OF PSYCHOLOGY, UNIVERSITY COLLEGE, LONDON
 

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" Faculty Psychology is the attempt to explain mental phenomena by referring them to certain relatively independent agencies which are in truth only class concepts invested with a fictitious reality."<sup>(1)</sup>

It was natural that the efforts of the earliest students of the mind should be towards classifying mental processes and explaining their causes. It was perhaps almost equally natural that each class of process should be attributed to a specific cause of its own and that the causation should be conceived after the analogy of that of bodily processes. Just as we have legs for walking, eyes for seeing, and a tongue for talking—different parts of the body for different bodily functions—so it was supposed that there might be "parts" in the soul with functions or duties of their own. Of the earlier speculations in this direction, the most famous is the Platonic<sup>(2)</sup> doctrine of the *μέρη* (parts) and *δυνάμεις* (powers) of the soul. Similar anticipations are found in pre-Platonic philosophy. Thus several Pythagorean philosophers attempted to locate different mental functions in different parts of the body.<sup>(3)</sup> Aristotle asserted the ultimate unity of all mental function, and described the Platonic parts or divisions of the soul as activities of this one conscious principle.<sup>(4)</sup>

The classifications adumbrated in these earlier Greek writings gradually took shape in the distinction between, first, the intellectual

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<sup>(1)</sup> G.F. Stout, 'Herbart compared with English Psychologists,' *Mind*, XIV (1889) p. 1.

<sup>(2)</sup> *Tim.* 42A, 61C, *Polit.* 309C, *Rep.* X. 477C, 580D, 611C.

<sup>(3)</sup> cf. *Philabus*, 159.

<sup>(4)</sup> It has not, I think, been noted that some of the latest and most characteristic doctrines of modern psychology and of modern physics find remarkable anticipations in the writings of Plato and Aristotle. Modern psychology corrects the simple view of the early experimental and physiological psychologists (the followers of Weber and Fechner, for example), and insists that in sense-perception what we perceive are, not isolated stimuli, but patterns or *Gestalten*—such as shape, movement, size, number, and the like—characteristics which are perceived in common by more than one sense-organ: but already in the Aristotelian doctrine of the "common sense" (a misleading title) we find the same insistence on the "common or central unifying function of sense by which we perceive τὰ κοινὰ αἰσθητὰ i.e., number, figure, magnitude, movement, etc." (Ross, *Aristotle: De Sensu et de Memoria*, p. 14; see especially Aristotle, *De Anima*, 425a, 14-30). Modern physics, quite independently of modern psychology, has reached an analogous conclusion: it insists that "what physics ultimately finds in the atom or in any other entity" are not isolated individual substances, but only "structures" or patterns, which thus "become for us the sole realities," and are perceived as relatively constant or

or theoretical functions of the mind, and, secondly, the practical or moral functions of the mind, with the emotional sometimes added as a third division. An emphasis on the practical or moral activities appears in St. Augustine<sup>(1)</sup>; but otherwise the interest chiefly centres in an attempt to classify what we should nowadays call the cognitive rather than the orectic processes. Thus Avicenna (d. 1037) distinguished the outer senses from the inner, enumerating five of each—the inner senses (common-sense, memory, fancy, imagination, and judgment) being all located in the brain. Similar classifications appear and reappear in the writings of the scholastic philosophers; and it is with them that the doctrine of faculties takes explicit and dogmatic shape.

Of the earlier scholastic writers, Thomas Aquinas (d. 1274) offered an analysis of the faculties which has proved at once the clearest and the most influential.<sup>(2)</sup> His scheme is as follows:

Psyche	
Knowledge (cognition)	Desire (appetition)
Intellectual	Intellect
Sensory	Sense
	Will
	Impulse
	<span style="font-size: 2em; vertical-align: middle;">{</span> <span style="display: inline-block; vertical-align: middle; padding-left: 5px;">Concupiscible Irrascible.</span>

stable beneath a changing interplay of unknown operations between unknown materials (Eddington, *New Pathways in Science*, p. 262). What is this but a re-formulation in more explicit terms of Plato's famous doctrine of *εἶδη* and *ἰδέαι* ("forms" and "pattern-forms")?

No doubt, the originators of the *Gestalt* theory would have admitted a continuity of doctrine, though its more recent advocates appear to have forgotten it, for, both in this country and on the continent, the theory is, in its essence, an offshoot of the teaching of Brentano; and Brentano no doubt was greatly influenced by the classical and scholastic tradition surviving in the Catholic University at which he taught. But the wide acceptance today of the Gestalt theory in psychology, as of the analogous theory in quantum physics, is the outcome, not of the plausible advocacy of some intuitive genius, but of experimental research and of rigid logical deduction: for example, in psychology as in physics, the new mathematical instrument is now the comprehensive algebra of 'matrices' (*patterns* of numbers), which replaces the older algebra of isolated numbers, and will no doubt be in turn replaced by the 'theory of groups'. But what is most striking is that the two bodies of scientists—physicists, on the one hand, and psychologists, on the other—each largely in ignorance of what the other was doing, should have been forced to much the same conclusions—conclusions which to the simple materialists of the 19th century would have seemed revolutionary, but are in fact entirely consistent with the teaching of the older idealists. To discuss the philosophy of education is beyond the province of an educational psychologist; but he may at least be permitted to deprecate the widespread notion that modern psychology (so often wrongly identified in the popular mind with psycho-analysis or behaviourism), or for that matter modern science, must tend to promote a materialistic view of human life and education. It is evident that the trend of present-day psychology is in exactly the opposite direction.

(1) *Confessiones*, Bk. X, Ch. xiii *et seq.*

(2) *Summ. Theol.*, Pt. I. Q. lxxx, Act. 2 *et seq.*

Feeling (fruition) appears not as a separate fundamental faculty but as 'an (incidental) act of the appetitive power.' Duns Scotus (d. 1308), on the other hand, following Augustine, regarded Feeling as something separate from and co-ordinate with Desire.<sup>(1)</sup>

Both Aquinas and Duns Scotus sub-classified the intellectual faculties along much the same lines as their predecessors; and, with numerous minor variations, these subdivisions were preserved almost unchallenged to the 17th century. Thus Giordano Bruno (d. 1600) enumerates as separate faculties those of sensation, memory, imagination, and reasoning—a fourfold classification that is found surviving in books on education even in our own time. Bacon, it may be remembered, analysed the faculties of knowledge, and classified the sciences, under similar headings.

Against this traditional view the first clear protest is sounded by Locke (d. 1704). He retains the distinction between an outer and an inner sense, and admits that the mind has certain 'powers' which are native to it; but he regards these powers as merely abstract descriptions of the mind's way of working. There is only one agent—the person himself—and he has the 'ideas': 'ideas' are not created by the faculties. They are aroused "by way of" sensation, memory, imagination, and the like; but these names do not denote causal entities. In a famous passage he lays his finger on the fallacy involved: "We may as properly say that the singing faculty sings, and that the dancing faculty dances, as that will chooses or that the understanding conceives".<sup>(2)</sup> Nevertheless, Locke himself did not entirely succeed in freeing psychology from the notion of separate faculties. "He wished to shift the point of view from agencies to activities; but his rejection of 'faculties' is followed by the adoption of 'powers', which have no advantage over faculties except in being less real".<sup>(3)</sup>

In German philosophy the doctrine still lingered, and reached its most systematic exposition in the writings of Christian Wolff (d. 1754). Wolff sought to define and systematise the views of Leibniz and his followers. He argues that the activity of the mind operates in different directions, and thus displays separate faculties. The faculties of memory, imagination, reasoning, will, and the like, are arranged by him in a kind of hierarchical order, and discussed in somewhat dogmatic terms, but not without considerable insight into actual mental processes.<sup>(4)</sup>

Kant (d. 1804) was interested more in forms of cognition than in faculties of cognition. He is usually credited with finally laying down a clear distinction between the threefold aspects of mental life—knowing, feeling, and willing, or, as they are now called, the cognitive, the

(1) Leibniz and Hamilton reserved the term faculty for 'active' experiences and proposed the term capacity for the two 'passive' experiences of feeling and fruition (pleasure and pain). As noted below, the threefold division was reintroduced by Kant; it has been preserved by Ward and Stout, and so lasted to the present day. The work of the correlational and the biological schools in psychology, however, has led many to recombine 'conation' (desire) and 'affection' (feeling) under the single Aristotelian heading of 'orexis.'

(2) *Essay on Human Understanding*, Book II.

(3) Brett, *History of Psychology*, Vol. II, page 260.

(4) C. F. von Wolff (1679-1754), *Psychologia Empirica*, Leipzig, 1732.

affective, and the conative aspects, but still treats them as separate functions to be discussed in separate treatises. On the cognitive side, his sharp distinctions of sense, intelligence and reason are strongly reminiscent of the traditional faculties, though the epistemological account of them is given a very different turn.

The popular notion of mental faculties is probably due not so much to the recognized authorities on philosophy and psychology as to the writings of the early phrenologists, F. J. Gall (1758-1828) and J. C. Spurzheim (1776-1832). At the beginning of the 19th century the study of the brain had led physiologists to regard it as a single organ homogeneous throughout. The phrenologists advocated a theory of strict localisation. They split up the mind into 37 faculties. These were separated into two main groups—the intellectual and the affective. The intellectual group was further subdivided into a perceptive and a reflective subgroup, while the affective faculties were subdivided into propensities and sentiments. Each faculty was supposed to be lodged in a separate organ of the brain. This doctrine was based on no first-hand study of cerebral anatomy or physiology, and was quickly demolished by experimental work, which showed that, so far as processes can be localised, their distribution corresponds, not to the so-called faculties, but to the organs of the body to which the issuing nerves fibres ultimately go, i.e., the muscles and the several senses.

On the Continent, the doctrine of faculties was successfully attacked by J. F. Herbart, (1776-1841), who, in this respect, has probably influenced subsequent psychologists and educationists more than any other man. His argument is that, once we start postulating a different faculty for every distinguishable process of the mind, there can be no end to our list. Each fresh writer makes a new catalogue, and finality will never be reached. According to Herbart, the essential processes of the mind are due not to the operation of separate faculties, but to the activities of presentations—of what Locke would have called ideas. He distinguishes, not different kinds of faculty, but different degrees of activity; and of these he names four, viz., (1) memory, (2) imagination, (3) judgment, and (4) understanding, the two former being of a lower degree and the two latter of a higher degree. Nor are the activities to be sharply distinguished. Each activity passes gradually into another. Thus "his picture of the mind is so far new that it may be said to abandon entirely what is usually called the doctrine of faculties."<sup>(1)</sup>

In this country the doctrine of faculties has been finally overthrown by the work of the Associationists. They have sought to show that all forms of cognition can be described as the effects of association working on or combining sensory elements, and have further indicated that much the same laws of association operate in the domain of feeling and of volition. Thus the mind is no longer regarded as "made up of a number of separate powers, each of which carries on its operations with supreme indifference to all the rest, and as having no more organic unity than a number of sticks fastened together in a bundle". All parts of our mental life are regarded as "having the same fundamental texture". This standpoint, particularly on the Continent and in America, has been further reinforced by the endeavour to explain the principle of association as essentially a physiological association, i.e.,

(<sup>1</sup>) Brett, *History of Psychology*, Vol. III, p. 55.



as the formation of nerve paths or nerve connections between cell-groups within the brain. As a result, the lines of division between different mental processes become somewhat blurred. We cannot distinguish an act of will from an act of reasoning, for whenever we reason we are also exercising volition. Nor can reasoning be sharply distinguished from perception; for perception can be shown to have the germs of implicit inference, and when we reason we nearly always perceive.

In rejecting the doctrine of faculties as a basis for the theory of teaching, English educationists have probably been influenced most of all by Sir John Adams' early book on *The Herbartian Psychology* (1897). He regards the predominance of the faculty doctrine among English educationists as due to the writings of Locke. "Teachers suck in Locke from the introductions to their earliest school-management books." "Locke got rid of innate ideas; but he could not free himself of innate faculties. And Herbart did for innate faculties what Locke had done for the innate ideas. He swept away for ever the whole brood."<sup>(1)</sup>

In America the attack starts with James' vigorous polemic against phrenology. "The faculties are fully equipped persons in a particular attitude. . . . The 'faculty of language' involves a host of distinct powers (corresponding to memories, ideas, words, judgments, hearing of the ears, utterances of the lips, etc.). An organ of the brain, to be the seat of such a faculty, would be a complete brain in miniature, just as each faculty is a homunculus doing this or that. A science of the mind must reduce such complex manifestations to their elements."<sup>(2)</sup> Thus such arguments bring us ultimately to the point most succinctly expressed by Ward. "There is only one faculty of the mind—attentive consciousness: instead of a congeries of faculties we must assume a single subjective activity which we may call attention."<sup>(3)</sup>

For educational practice, the most important consequence of this change of view has been the progressive discrediting of the old hypothesis which rested on the doctrine of faculties and by which the traditional curriculum has largely been supported—the doctrine of 'mental discipline' or 'formal training'. If the mind consisted essentially of a number of faculties, it would follow that education should consist essentially in the training of those faculties through exercise or discipline. But if the differences between one mental process and another depend solely on the mental contents and not on the mental activities, it follows that education must deal, not with activities, but with contents. For example, if each memory is due to its own specific association, we can no longer speak of memory but only of memories; and the learning of one set of facts will not strengthen any 'organ of memory' which can be used in the learning of another set of facts. Here again Professor Adams was one of the earliest to draw the inevitable deduction from the new views: "In the war of competing subjects," he writes, "the main point of popular discussion is: which is best fitted to cultivate the mind—Classics, Science, Mathematics? The Herbartian sweeps aside these claims, and raises the preliminary question: Do any of them train the mind at all? Pupils now learn poetry for the

<sup>(1)</sup> *Loc. cit.*, pp. 33, 47-8.

<sup>(2)</sup> *Principles of Psychology*, Vol. I, pp. 28-9.

<sup>(3)</sup> Ward, art. 'Psychology,' *Encyclopædia Britannica*, 9th ed., vol. XX, pp. 37 *et seq.*

sake of the poetry, not to train the faculty of memory: would it not be well if the same change of view took place with regard to other subjects?"<sup>(1)</sup>

The first to put the corollary to an experimental test was James himself. Following his lead, Thorndike and his associates in an elaborate series of experiments dealt what is described as the death-blow to the doctrine of mental faculties. These experiments<sup>(2)</sup> clearly demonstrated that, whether the processes concerned were simple or complex, the effects of special training were transferred to a far more limited extent than previous educationists had supposed. Transference was found to be exceptional rather than inevitable; deleterious as well as beneficial; and apparently the outcome of processes quite different from those which had popularly been assumed. Hence, the problem with which recent investigators have been concerned is not so much whether transfer of training occurs, but rather under what conditions it occurs. The general conclusion to which most of them have been led is that transfer of training may be most effectively ensured when the methods or the ideals learnt during the training period are made clearly *conscious* and so freed of their context.<sup>(3)</sup> The practical consequence might be summed up as follows. If the pupil is intelligent enough to understand the logical technique involved in a given subject (mathematics, for example), then we may expect a transfer of this technique to other subjects (e.g., to non-mathematical problems), when—some would say only when—the teaching is so arranged as to make the pupil clearly conscious of the method implied and of the ideals pursued. If, on the other hand, either from his youth or from his dullness he has not sufficient intelligence to grasp this abstract technique or to pursue this abstract ideal, then it may still prove possible to impart the correct method as a habit, but this habit, being mainly unconscious, will now be confined to the particular context in which it has been acquired: for such children, therefore, the training must be incorporated in that specific subject-matter to which they will be required to re-apply the habits later on.

In making this statement, however, one important reservation must be added, which was too often overlooked by the early anti-formalists.

<sup>(1)</sup> *Loc. cit.*, pp. 107, 134.

<sup>(2)</sup> The first and most famous of these investigations was that carried out by Thorndike and Woodworth in 1901: 'Influence of Improvement in One Mental Function upon the Efficiency in other Functions,' *Psychological Review*, VIII, pp. 250 *et seq.* The long series of researches which followed this pioneer effort will be found summarised in Whipple's chapter on 'The Transfer of Training' in the *Twenty-Seventh Yearbook of the National Society for the Study of Education* (Part II, Chapter 13), and in the monograph by Rugg and Blair (prepared for the National Committee of the Mathematical Association of America on Mathematical Requirements) entitled *The Present Status of Disciplinary Values in Education*.

<sup>(3)</sup> "From experiments of an exact nature and from much more numerous rough-and-ready unrecorded experiments which teachers are every day making, it seems very probable that transfer can be greatly aided by methods of teaching: in general, the rule appears to be that any teaching which makes the pupil more *conscious* of how successful results are obtained is likely to assist transfer" (Godfrey Thomson, *Instinct, Intelligence & Character* (1924), pp. 143-5: (author's own italics). Cf. Nunn, *Education: Its Data and First Principles* (1930), pp. 239-242).

Because we learn a thing best when we attend to it, it does not follow that unless we attend we shall never learn. Some of the most complex of intellectual processes (e.g., grammatical speech) are picked up, as we say, 'unconsciously': they are acquired out of school and during the very earliest years by what may be termed '*incidental learning*'. This, as is now generally admitted, cannot be explained by mere 'association'; and just as faculty psychology sank into discredit under the blows of the associationists, so an exclusively associationist psychology has been gradually discredited by the work of the new 'hormic' and 'Gestalt' schools. The doctrine of Gestalt is too recent to have had much influence on the exposition of the current educational textbooks; and I have therefore been asked to discuss in somewhat greater detail its bearing on the problem of formal training.

The early anti-formalists, as we have seen, built up their revolutionary conclusions on a psychology which regarded mental processes as consisting essentially in the 'association of ideas' or rather of 'the linkage of brain-paths'. They viewed this linkage as purely mechanical and physiological. One early outcome of intelligence-testing, however, was to demonstrate that, in the intelligent activities of school children, a purely mechanical or physiological association is by no means the only process at work. The associations themselves may be cognised; and—what is far more important—the cognition may be implicit as well as explicit. Such conscious or cognised associations are termed 'relations'. Thus, one of the best of the early tests of intelligence involved reasoning by what the teacher calls 'rule of 3' and what Aristotle called 'analogy'. The child is given problems based on a scheme such as the following, but generally in words rather than numbers or symbols:—

$$(i) \quad \frac{1}{10} \times 20 : 2 :: \frac{1}{10} \times 90 : \dots\dots\dots ? "$$

$$(ii) \quad "ABC : BCD :: CDE : \dots\dots\dots ? "$$

Problems such as these involve something more than the mechanical reproduction of associations already formed: they "involve (a) the perception, implicit or explicit, of a relation, and (b) the transfer of this relation to a new problem, evoking a new idea, not by association, but by so-called relative suggestion".<sup>(1)</sup> It will be observed that instead of forming the association the child is required to perceive it; and then, instead of reproducing an old idea, the transference of the perceived relation enables him to produce a new idea. What holds of ideas holds also of actions: so that all transfer of training can be reduced to this scheme; but this scheme cannot be reduced to the effects of past association.

Professor Spearman<sup>(2)</sup> has made these two 'neogenetic principles'—the 'eduction of the relation' and the 'eduction of the correlate' as he terms them—the basis of the whole psychology of knowledge. But although the attention of the experimental psychologist has only recently been drawn to this double principle by his search for intelligence tests, under various names it has been frequently mentioned by older

<sup>(1)</sup> Burt, 'Experimental Tests of Higher Mental Processes,' *Journal of Experimental Pedagogy*, I, 1911, p. 101. cf. *id.*, 'Experimental Investigations of Formal Training,' *Report of L.C.C. Conference of Teachers*, 1912.

<sup>(2)</sup> *The Nature of Intelligence & the Principles of Cognition*, (1923).

writers.<sup>(1)</sup> Thomas Brown<sup>(2)</sup> distinguished 'relative suggestion' (i.e., the suggestion of a new idea by 'the perception of a relation') from 'simple suggestion'; Bain called it 'constructive association'; Spencer<sup>(3)</sup> made his double 'axiom of relations' the basis of all thinking and considered it to characterise the 'highest form of intelligence'. It was, however, Stout who first developed the full implications of what he proposes to re-name 'proportional or analogical production.' He points out that the principle involves the final surrender of the old associationist doctrine as a complete account of intellectual process; and he strengthens his argument by emphasising that what is transferred need not be a simple relation but a relational system or (as he terms it) a 'thought-schema'.<sup>(4)</sup>

Now, whereas simple relations can be clearly perceived, a complex system can, as a rule, only be grasped implicitly. We see the grin without seeing the cat.<sup>(5)</sup> In the first example given above, the child will often formulate the relation implied by the first pair of terms: ('you knock off the nought'); but in the second example he will more probably continue the series on the basis of a kind of rhythm or 'tune'. Moreover, direct experiment reveals that the explicit education of

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(1) Logicians have long recognised that "all reasoning depends on the properties of relations." But this view has had little influence on psychology, first, because it has been traditionally assumed that "a relation cannot exist apart from its terms" and indeed may be reduced to a kind of 'adjective,' and secondly because, until recently, almost the sole relation considered by the logician has been the predicative relation. Only since James' emphatic pronouncements on the subject have psychologists been willing to admit that, whatever has been the correct view in logic, in consciousness the awareness of a relation may certainly exist without any awareness of its terms.

The first explicit discussion of the 'eduction of correlates' is to be found in Hume—one of the earliest and most thoroughgoing of all associationists. "Suppose," he says, "a person to have become perfectly well acquainted with colours of all kinds except one particular shade of blue. Let all the different shades of that colour except that single one be placed before him, descending gradually from the deepest to the lightest. . . . Now I ask whether 'tis possible for him, from his own imagination, to supply this deficiency. I believe there are few but will be of opinion that he can, . . . tho' the instance is so particular and singular that 'tis scarce worth our observing" (*Human Nature*, Book I, pt. i, sect. 1, p. 315).

(2) *Philosophy of the Human Mind*, Lectures xxxiii-xxxvii.

(3) *Principles of Psychology*, Pt. II, chap. vi.

(4) *Mind*, Vol. XVI (O.S.), p. 50. *Analytic Psychology*, Vol. II, pp. 78 *et seq.* In his earlier article he speaks of 'proportional systems' and of 'proportional production'—preferring to borrow his terms from writers on language rather than from writers on logic. In his later book he substitutes Brown's term 'relative or relational suggestion.' I should prefer to speak of a 'mental schema' (rather than of a 'thought schema') to emphasise the fact that it may govern adaptive thoughtless action as well as processes of conscious thought. Here, I fancy, lies the novelty: experiment reveals that 'creative analogy,' which the philosopher held to be characteristic of the original thinking of the genius, appears, not only in the thought-processes of young children, but even in their adaptive actions, where the re-adaptation is immediately carried out without thought and even without relevant consciousness.

(5) Once again, the fact had been recognised by the early associationists who realised that its occurrence offered great difficulties to the associationist theory. Their favourite instance was that of meaning;

relations (though simple) involves a high degree of intelligence, whereas the transference of implicit schemata (though complex) may be carried out by young children at a very early age. A child of three who has heard his father hum a song in a tenor key may reproduce the tune in his own treble voice: the tune forms a pattern which can be transferred from the original context to a context wholly new, and that without any special practice in the new field. A child of four, having heard her mother say: "Tell Jimmy that, if he isn't a better boy tomorrow, I shan't let him go to his auntie's for tea", tells Jimmy the next day: "Mummy says, if you aren't a better boy today she won't let you go to your auntie's for tea".<sup>(1)</sup> How long would it take a French child in the *lycée* to learn and apply correctly all the rules for changing pronouns, adverbs, and verbs when converting such a sentence from *oratio recta* to *oratio obliqua*?

These familiar observations have been confirmed by numerous experiments both on children and on animals. Thus, we seem led back to a view which is as old as Plato<sup>(2)</sup>, namely, that the highest training is often an insensible training; or, to quote the epigram of a famous headmaster: "Education is what remains when the boy has forgotten all he ever learnt". It follows that, in rejecting the doctrine of formal training in its traditional shape, the modern educationist must beware of flying to the opposite extreme, and maintaining that all training must be specific and explicitly conscious. If the earlier experimentalists jumped too rapidly to this conclusion, it was doubtless

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and their problem was to explain why "it is not necessary that significant names should, every time they are used, excite in the understanding the ideas they are made to stand for, being for the most part used as letters are in algebra" (Berkeley, *Works*, Vol. I, p. 150. Cf. Hume, *Treatise on Human Nature*, Bk. I, pt. i., sect. 7). Again it should be noted that the patterns may be patterns of action as well as patterns of ideas. A blind man who has sprained his right wrist may sign his name for the first time with his left hand, and the style of his signature will be much the same as before, although he has never used the muscles of the left hand for writing and has never seen what his signature looks like.

<sup>(1)</sup> It was apparently instances of this sort that led Stout to insist on the importance of the process both in language and in thought. An early discussion of the process and of its unconscious character will be found in M. H. Paul's discussion of "word-combination by analogy" (*Principles of the History of Language*, (1890), chapter V).

<sup>(2)</sup> *Republic*, Book III, 401 D. As early as 1631 Comenius argued that children would learn to read more quickly if they were taught from the very outset to read whole sentences instead of associating isolated letters to form isolated words and then associating words to form sentences. In a dictation given to girls in Standard VII I found that 11 out of 37 could spell the word 'phagocyte' correctly although they had certainly never heard or seen it: think of the numerous elaborate rules that would be required were English orthography to be taught by explicitly educed relations. It may be noted that Woodworth, who, as we have seen, was in 1901 a pioneer in destroying the old notion of formal training, writes thirty years later "the doctrine of Gestalt has made the theory of learning more uncertain than ever" (*Contemporary Schools of Psychology*, (1931), p. 132). As I see it, the immediate problem for experimental education is to ascertain for what pupils and for what parts of the curriculum it is better to teach by educing conscious and explicit relations and for what it is better to teach by the organisation of implicit and complex wholes.

because, in their search for crucial cases, they confined experimental work largely to tasks of a simple and mechanical kind. Always there is a danger that the simplifications of the laboratory may omit what is the most important ingredient in real life, namely, incentive or motive. Too often the problem has been conceived, both by the theoretical psychologist and by the practical teacher, as merely the problem of imparting knowledge or of forming habits; and the emotional and moral aspects of the process, or, in more accurate terms, the affective and the conative aspects, have been overlooked.

Even in the broader implications there is now a disposition to feel that the reaction against faculty psychology may have gone a little too far. Granting that the mind is a unity, and not an aggregate of mental powers, it is not a homogeneous unity, but an organisation. Valuable distinctions, noted and perhaps over-emphasised by the earlier classifications, are now in some danger of being lost; and the later notion of the mind as a simple mechanism for linking up elements by association, much as subscribers are linked up by the switchboard at a central telephone exchange, is not only a gross over-simplification of the facts, but fails to explain the peculiar individual differences observable between individual pupils. It is found that certain children may be peculiarly deficient, not in all-round intelligence, but in some special group of cognitive operations—e.g., in visualisation, in mechanical memorisation, in verbal manipulation, in arithmetical computation, and the like. These peculiarities, which have been studied statistically, have given rise to the description of specific mental 'factors', operating over and above 'general intelligence'. At first sight these new 'factors' are not unlike the old-fashioned 'faculties'. The chief differences are that the factors are statistical abstracts, not causal entities or anatomical organs in the brain, that the lines of distinction are relative rather than absolute, and that the evidence for them rests on an empirical analysis of data collected by means of experimental tests, not upon mere armchair speculation.

The practical corollary is obvious. The problem of the best methods of teaching or training and of the best choice of subjects is to be determined, not merely by a consideration of the general nature of the mind as such, but by a close and first-hand study of the needs and limitations of the particular individuals to be taught.<sup>(1)</sup>

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(1) In a brief *Report on Formal Training* (Report of a Committee appointed by the Education Section of the British Association presented at Bristol, *Annual Report*, 1930, p. 608) I have endeavoured to summarise the educational bearings of current psychological views. A historical survey of the doctrine of faculties is to be found in O. Klemm, *Geschichte der Psychologie* (1912), pp. 44-70. cf. also M. Dessoir, *Geschichte der neueren deutschen Psychologie*, (1911), chap. VI, "German Faculty Psychology following Wolff"; Siebeck, *Geschichte der Psychologie*; Eisler, *Wörterbuch d. philos. Begriffe*, s.v. "Seelenvermögen."

## APPENDIX V

MEMORANDUM ON THE COGNITIVE ASPECTS OF TRANSFER OF TRAINING BY DR. H. R. HAMLEY, PROFESSOR OF EDUCATION AND ACTING DIRECTOR OF THE INSTITUTE OF EDUCATION, UNIVERSITY OF LONDON

Dr. Ballard in his book, *The Changing School* (1925) says: "It sometimes happens that one section of the educational world is torn by eager controversy over some apparently vital problem, while other sections know nothing about it. The formal training controversy is a case in point." I do not see any sign that the educational world is torn by controversy over this subject to-day, but, if I may judge from the letters that I am constantly receiving from teachers and administrators, there seems to be a widespread demand for authoritative information on this still unsettled question. My usual reply is to refer the enquirer to an excellent little report on the subject prepared for the British Association in 1930<sup>(1)</sup>, and, if further details are asked for, to direct him to one of the summaries of experimental researches that have recently appeared.<sup>(2)</sup>

The problem of 'transfer of training,' which is linked up with that of 'formal training' or 'mental discipline' has been stated in various forms: Are the effects of mental exercise general or specific? Can we, by exercising a mental capacity on a particular subject, strengthen that capacity as a whole? If so, is the strength thus gained available for other subjects or in other situations? Can the effects of training be transferred from one mental function to another?<sup>(3)</sup> The older or traditional answer to the last of these questions was emphatically in the affirmative. It was maintained that mental discipline was as essential to the development of the mind as physical discipline was to the development of the character. This belief had its effect on the curriculum; indeed, in large measure it determined it. Latin stood the test because, among other things, it improved the memory and cultivated the faculty of verbal accuracy; mathematics because it developed reasoning ability and science because it stimulated and developed the power of observation. In spite of all that has been asserted, and even proved to the contrary, such beliefs are still voiced today. In the introduction to the Report on *Natural Science in Education* (1918)<sup>(4)</sup>, we are told that "As an intellectual exercise it (science) disciplines our powers of mind and quickens and cultivates directly the faculty of observation." And so, indeed, it may. The trouble is, however, that there is no guarantee that it will.

The main tenets of the doctrine of formal discipline have been well stated by Thorndike: "The common view is that the words accuracy,

<sup>(1)</sup> British Association: *Report on Formal Training*. Bristol (1930).

<sup>(2)</sup> See references below.

<sup>(3)</sup> In this memorandum 'transfer of emotion' from one set of conditions to another is not considered. Such 'conditioning' of emotional expression is a normal accompaniment of all education.

<sup>(4)</sup> *Natural Science in Education*. Report of the Committee appointed by the Prime Minister; Chairman, Sir J. J. Thomson. H.M. Stationery Office (1918).

quickness, discrimination, memory, observation, attention, concentration, judgment, reasoning, etc., stand for some real and elementary abilities which are the same no matter what material they work upon ; that these elemental abilities are altered by special discipline to a large extent ; that they retain those alterations when turned to other fields ; that thus in a more or less mysterious way learning to do one thing well will make one do better things that in concrete appearance have absolutely no community with it.<sup>(1)</sup>

The first murmurs against the faculty doctrine seem to have come from Ward and Herbart, but it was William James who made the first attempt to tackle the problem experimentally. James' conclusion, which was only mildly disturbing, had the effect of stimulating others to like endeavour. It was not until 1901, however, that Thorndike and Woodworth announced the results of the first serious attempt to deal with the problem empirically. Their conclusions have been described by Sandiford as "a veritable bomb-shell in the educational camp," and indeed they were, not only because they seemed to shatter, at a blow, an age-long and cherished tradition, but also because they led the way to a revolution in curriculum construction. The latter consequence of Thorndike's experimental results is seldom realised. The general inference drawn by these workers may be given in their own words : "Improvement in any single mental function need not improve the ability in functions commonly called by the same name. It may injure it. Improvement in any single mental function rarely brings about equal improvement in any other function, no matter how similar, for the working of every mental function-group is conditioned by the nature of the data in each particular case."<sup>(2)</sup> Others had disposed of the 'faculty psychology' by denying that faculties exist ; Thorndike achieved the same result by taking from faculties their real meaning. Henceforth all abilities became individual and specific. That being so, a new interpretation had to be given to the term 'a liberal education.' A liberal education must provide opportunities for a 'liberal' number of subjects. This theory, accepted in the United States, with less criticism than the importance of the subject merited, was largely responsible for the introduction of the 'unit' or 'credit' system, which has done so much to lower American educational standards. On the basis of these experimental findings Thorndike formulated his well-known theory of 'identical elements,' which has persisted, with important modifications of interpretation, until the present day. According to this doctrine "a change in one mental function alters any other only in so far as the two functions have as factors identical elements. The change in the second function is in amount that due to the change in the elements common to it and the first."<sup>(3)</sup> Such a conclusion seems to be demanded as a logical necessity, for, if there is a correspondence or correlation between any two functions, there must be a common factor subsisting between them.

Admitting the theory of 'identical elements' as an explanation of the facts, our next question, and an important one, is : what is the nature

(1) Thorndike, E. L. *Educational Psychology*, (1903), p. 84.

(2) Thorndike, E. L. and Woodworth, R. S. Influence of Improvement in one Mental Function upon the Efficiency in other Functions. *Psychological Review*, (1901), p. 250.

(3) Thorndike, E. L. *Educational Psychology*, (1903), p. 80.



of this common factor or identical element? Is it a mental or subjective factor, or is it a factor inherent in the objective situation? In other words, is it an element of mind or of material? Again, in modern mathematical language, we have to ask ourselves whether a condition which is 'necessary' is also 'sufficient'? There is abundant evidence that in this case it is not. We shall return to these points later, for it is in the neglect of distinction between necessary and sufficient conditions that so many errors of interpretation are to be found.

The long series of researches which followed Thorndike and Woodworth's pioneering effort have been summarised by Whipple in the *Twenty-Seventh Yearbook of the National Society for the Study of Education*<sup>(1)</sup>, by Orata in his *Theory of Identical Elements*<sup>(2)</sup>, and by Rugg and Vevia Blair in a monograph, prepared for the National Committee on Mathematical Requirements (U.S.A.), entitled *The Present Status of 'Disciplinary Values' in Education*.<sup>(3)</sup> The latter, which is a detailed summary of all the important researches on this subject up to 1921, was compiled by Miss Blair on the basis of an earlier summary by Rugg. This appendix to the report of the National Committee is very interesting, for, in addition to the summary of researches, it gives the answers of a number of American psychologists to a questionnaire on 'disciplinary values in education.' The members of the Committee responsible for the report, among whom were some of the most eminent mathematicians in the United States, were driven to examine the disciplinary values of their subject as part of their enquiry into the aims of mathematical education. This admirable report, which is recognised in America as 'the charter of the mathematics teacher,' has laid the foundation for mathematical education in that country which will stand the test of the mathematician and of the psychologist for many years to come. Not the least valuable chapter in this report is that dealing with 'disciplinary values in education.' The balanced statement of the results of research is, I believe, largely responsible for the fact that the leading American teachers of mathematics have strenuously resisted the suggestion of the 'general educator' that the main aim of school mathematics should be utilitarian. As Bagley is sometimes quoted as an opponent of the idea of 'transfer' some of his remarks may be of interest: "In my opinion, the possibilities of transfer are increased by the kind of teaching that makes the student conscious of the procedure as such, and keenly appreciative of its value as a *general* procedure. The theory of 'identical elements' I regard as sound—but it is not rich in pedagogical suggestiveness. The theory

(1) Whipple, G. M. *The Transfer of Training*. 27th Year Book of the National Society for the Study of Education, Pt. II, Ch. XIII. See also Sandiford, Peter. *Educational Psychology*, pp. 279-289, which gives a shorter summary of significant researches up to 1928.

(2) Orata, P. T. *The Theory of Identical Elements*. Ohio (1928). Also *Transfer of Training and Educational Pseudo-Science, Mathematics Teacher*, May, 1935, p. 265.

In the first of these works Orata gives reference to most of the researches up to 1927, and in the second he brings the list of references up to 1935.

(3) *The Present Status of 'Disciplinary Values' in Education*, V. Blair—an Appendix to the Report of the National Committee on Mathematical Requirements entitled: *The Reorganisation of Mathematics in Secondary Education*. Mathematical Association of America, (1923).

of transfer through 'concepts of method' and 'ideals of procedure' furnishes a definite suggestion for teaching. The two theories are not inconsistent with one another; a person who has gained an understanding and an *appreciation* of a procedure will not be limited to the 'identical elements' which come by accident; he will *search* for identities—for places at which the procedure may be applied." It is strange that Orata, in his otherwise thorough analysis of the literature on this subject, makes no reference to this report of the National Committee.

As will be seen from an examination of these summaries, investigations into the subject of formal discipline fall roughly into three classes: those that deal with sensory and perceptual experiences, those that deal with such mental activities as memory, observation and reasoning, and those that have to do with methods of teaching and the relative disciplinary values of various school subjects. Thorndike's earlier investigations came within the first of these categories, but his conclusions were assumed to be of far wider application than the results warranted, and wider, I suspect, than Thorndike himself intended. Later investigations into the more complex mental functions do not, by any means, support the negative conclusions that were drawn from his earlier work. Orata has estimated that in over eighty per cent. of the researches published between 1901 and 1927 there was evidence of 'definite' or 'appreciable' transfer<sup>(1)</sup>; in nearly half of these it could be asserted that there was 'considerable transfer.' Some of these experiments, it is true, may be discounted because of their faulty methods of procedure, and others because of their questionable statistical techniques, but, when these less satisfactory studies have been eliminated, there still remains a substantial balance in favour of formal training; there is certainly very little to support the assertion so frequently heard to-day that the doctrine of formal training is an 'exploded myth.'

The general procedure followed in all these researches was roughly the same, namely that of comparing the improvement shown by individuals or groups of individuals who had been set certain educational tasks. The statistical analysis of the results was not difficult because it involved little more than the computation of sums and differences. There are, however, snares even in simple statistics and these, as I have already indicated, many investigators were unable to avoid. The main weakness of these researches has been the lack of careful planning.

In most of the earlier experiments, and in some of the later ones, two groups of subjects were used for purposes of comparison: one, the 'training' or 'experimental' group, and the other, the 'control' group. It was not until it was realised that the real problem was not whether transfer of training actually occurs, but *under what conditions* it does occur, that the number of groups was increased to three or more. Let us suppose that we wish to compare the effects of a 'special' type of training with those of the accepted or 'conventional' type. Our problem is not only to determine whether the 'special' type of training is more efficacious than the 'conventional,' but also to determine whether it is more effective than no training at all. Therefore, to compare any two methods of training, we have to employ three

(1) It should be noted that in these researches the word 'transfer' is used in relation to many different phenomena.

groups of subjects : the first being the 'training group' which is given 'special' training ; the second, the 'practice' group which is given the 'conventional' training or ordinary practice ; and the third, the 'control' group which is given no training at all. The omission of this third group was a serious defect in the early researches.

Woodrow's experiment<sup>(1)</sup> on the memorisation of poetry may be taken as an illustration of the procedure. The 'training' group were exercised in a definite technique of procedure (learning by wholes, attention to meaning, use of rhythm and grouping, use of secondary associations, etc.) ; the 'practice' group were given memory drill unenlightened by any special method of procedure. The 'control' group were denied both enlightenment and drill. The issue was, then, not between memory practice and no memory practice, but between practice supported by rational principles, and practice not so supported. This emphasis on consciousness of methods and procedures is the keynote of all modern research on this subject.

The results of Woodrow's experiment may be stated in his own words : " In the case of all the end-tests except one, however, the difference in improvement between the practice and control group is small and statistically unreliable. The training group, on the other hand, shows for every end-test a decidedly greater improvement than either the practice or control group." We are justified in concluding from this experiment that little or no 'transfer' follows unintelligent memory drill, but that considerable 'transfer' follows the conscious application of principles and methods of procedure. It may be objected that Woodrow's results do not show transfer of training from one material to another so much as the direct application of the same principles to material of more than one kind. There is point in this objection, of course, but it should be noted that no special effort was made during the course of the experiment to generalise the procedure by relating it directly to materials other than those which formed the subject of the experiment.

The conscious application of a special method to the study of a school subject is well illustrated by Miss E. P. Johnston's investigation into the value of geometry as a training in logical thinking. This experiment, the results of which were published in 1924, is important, for the reason that it was the first attempt, so far as I know, to test the difference between the *conscious* use of a set of principles and a rule-of-thumb or routine application of the same principles. The problem set was this : Can pupils of geometry be taught more effectively when trained to use consciously a technique of logical thinking, and furthermore, does such training, more than the usual method, increase the pupil's ability to analyse and see relationships in other non-geometrical situations ? Miss Johnston's conclusions were set forth in her articles with commendable restraint : " The data would seem to offer conclusive evidence, in so far as one experiment can be considered to do so, that when pupils are taught to use, consciously, a technique of logical thinking, they try more varied methods of attack, reject erroneous suggestions more readily, and without becoming discouraged maintain an attitude of suspended judgment until the method has been shown to be correct. Furthermore, the results in tests of reasoning other than geometrical would seem to indicate that such training in logical

<sup>(1)</sup> Woodrow, H. The Effect of Type of Training upon Transference, *Journal of Educational Psychology*, March, 1927.

thinking with the materials of geometry tends to carry over these methods of attack and these attitudes to other problem situations not concerned with geometry." (1) In other words, a training in demonstrative geometry has disciplinary value in so far as its logical principles are consciously recognised and applied. This is a conclusion with which those who admit a mathematical bias will readily concur.

I have quoted this passage at length because it is an admirable summary of the results that may be expected from teaching by an enlightened method. It is also an excellent example of cautious inference from data which would stand the test of more positive claims.

It is worth noting that Miss Johnston carried out this investigation as part of her ordinary class work and not in preparation for a degree. She had one advantage in that she was able to equate her groups for intelligence and thus eliminate one disturbing factor. I understand, from a private source, that occasionally, she used non-geometrical illustrations. For example, when dealing with 'axioms,' part of the Declaration of Independence was quoted. If it is axiomatic that 'all men are created equal' and 'are endowed by the Creator with certain inalienable rights,' then certain conclusions regarding the Constitution must follow. Such references to non-geometrical illustrations are good teaching method, but to some extent depreciate the value of the experiment. In spite of this defect the main conclusions were, I think, unassailable.

On reviewing the literature on this subject one is struck by the dearth of well-planned and carefully executed research. We have, of course, Thorndike's elaborate statistical investigations into the mental discipline of various school subjects leading to the conclusion that "the intellectual values of studies should be determined largely by the special information, habits, interests, attitudes, and ideals which they demonstrably produce. The expectation of any large difference in general improvement of the mind from one study rather than another seems doomed to disappointment." (2) The problem that we are at present discussing, namely, the *conditions* under which general mental training may be expected from the study of any subject was not the real object of Thorndike's investigation. (3)

Among the experiments that have followed the general lines of those carried out by Woodrow and Miss Johnston the following should be mentioned: Meredith, (4) on the transfer from the definition of scientific

(1) Johnston, Elsie P. Teaching Pupils the Conscious Use of Technique of Thinking. *Mathematics Teacher*, April, 1924.

(2) Thorndike, E. L. Mental Discipline in High School Studies. *Journal of Educational Psychology*, Jan. and Feb., 1924.

Broyler, Thorndike and Woodward. A Second Study of Discipline in High School Studies. *Journal of Educational Psychology*, September, 1927.

(3) Investigations of this type have their value, but so many factors are uncontrolled that a satisfactory interpretation of results is rendered almost impossible. The relative strengths of conscious and unconscious ideas and of interests and sentiments aroused were incapable of assessment.

(4) Meredith, G. P. Consciousness of Method as a Means of Transfer of Training. *The Forum of Education*, Feb., 1927. I regard this as the most significant work on the subject that has been carried out in this country.

terms to the definition of terms in ordinary daily use; Judd<sup>(1)</sup>, on the effect of consciously formulating guiding principles of generalisation; Winch<sup>(2)</sup> on improvement in logical reasoning following practice in problem arithmetic; Coxe<sup>(3)</sup>, Haskell<sup>(4)</sup>, and Hamblen<sup>(5)</sup>, on transfer of training from Latin to English, following a conscious adherence to certain methods of instruction; Ruger<sup>(6)</sup>, on the effect of developing formulae or general rules for the solution of puzzles. All of these investigators stress the importance of 'conscious formulation and application of general principles,' or 'organisation of the material of study,' or 'the development of meanings, concepts and generalisations.'

Space does not admit a detailed discussion of these researches, but since the classics have often been credited with peculiar value as mental discipline, Hamblen's study, which was in its main essentials similar to that of Haskell, may be outlined in a little more detail. The problem he set himself was to determine the extent to which the effect of the study of Latin upon English derivatives could be increased by the conscious adaptation of content and method to the attainment of this objective. In the strict sense some of Hamblen's results do not measure 'transfer,' but rather the direct results of special teaching. He found, as one would expect, that exercise in 'derivative work' led to a great improvement in the students' command of English words. He also found that marked improvement in this respect followed exercise in logical selection and the organisation of subject matter even when derivative work was not given. Coxe's study related to the spelling of English words of Latin derivation. He reached the interesting conclusion that merely pointing out the similarities in spelling between Latin and their English derivatives produced a marked gain in the accuracy of English spelling.

One other study not mentioned in the above list may be cited. This is the investigation made by Whelden on the effect of Latin upon the quality of academic work at Yale. This research is worthy of notice because every precaution was taken to control selective factors by the use of modern statistical analysis. The author reports that no support was given to Latin "as an intellectual discipline serving to extend the scope of intellectual capacity in whatever field it might be applied."<sup>(7)</sup> I do not think the classicist need be unduly disturbed by this pronouncement, for the author goes on to add: "These conclusions should be understood, of course, in terms of 'Latin as taught' and 'Other subjects as taught,' with the possibility remaining that

(1) Judd, C. H. The Relation of Special Training and General Intelligence. *Educational Review*, Vol. XXXVI., 1908.

(2) Winch, W. H. The Transfer of Improvement in Reasoning in School Children. *British Journal of Psychology*, Vol. XIII., 1923.

(3) Coxe, W. W. The Influence of Latin on the Spelling of English Words. *Journal of Educational Research*, March, 1923; March, 1924. Monograph No. 7, 1925.

(4) Haskell, R. I. Doctor's Thesis, University of Pennsylvania, 1923.

(5) Hamblen, A. A. Doctor's Thesis, University of Pennsylvania, 1925. Both theses deal with the effects of the study of Latin upon the knowledge of English derivatives.

(6) Ruger, H. A. The Psychology of Efficiency. *Archives of Psychology*, 1910.

(7) Whelden, C. H. Training in Latin and the Quality of Other Academic Work. *Journal of Educational Psychology*, October, 1933, p. 497.

some change in the type or method of instruction in Latin, or some change in the manner of presentation of other subjects, might affect the relationship between the extent of a man's background in Latin and the quality of his work in other academic fields." These results are, I am afraid, of no great help to the teacher of classics.

This account of researches into the subject of Formal Training would hardly be complete without some reference to ideals, which some writers (e.g. Godfrey Thomson and Fox) consider to be the key to the problem of transfer. According to Thomson, as ideals are progressively clarified they become more potent in transfer value: "There comes first an unconscious employment of certain principles or ideals. These gradually become clearer and more definitely outlined. They are recognised by their owner and named, and thereby gain tremendously in effectiveness and in transfer value."<sup>(1)</sup> Of the experimental investigations into the importance of ideals, that made by Ruediger, following an earlier study by Bagley and Squire, on the effect of inculcating neatness as an ideal, is probably the most reliable yet presented. Ruediger's conclusion may be quoted because there is little doubt that, paucity of evidence notwithstanding, it is capable of fairly wide application. "Neatness made conscious as an ideal or aim in connection with only one school subject does function in other subjects."<sup>(2)</sup>

It is not easy to extract from these researches and the interpretations that have been placed upon the results any central concept or general principle. The conclusion seems to be that transfer of training depends upon the conscious acceptance by the learner of 'methods,' 'procedures,' 'principles,' 'sentiments,' 'ideals,' and schemata or patterns of thought. The only word which emerges from these concepts as common or generally applicable to them all is the word *conscious*. Orata, in his summary of the studies that have appeared since 1927, estimates that 70 per cent. of the studies support the proposition that the effect of training is general and that, therefore, transfer takes place most effectively through *conscious generalisation* (to use the words of Judd), whereas about 30 per cent. may be classified as supporting the theory that practice is specific, and that transfer therefore takes place through *identical elements*.<sup>(3)</sup> If these conclusions are to be reconciled, Thorndike's Theory of Identical Elements must be given a much wider interpretation than that commonly accepted. As Judd has consistently emphasised, common elements are common mental elements; they are not necessarily common elements in the objective situations. They are methods, procedures and ideals that are, in the Gestalt sense, 'functionally similar.' Burt has very clearly expressed this thought in his Report to the British Association:—"Transfer of improvement occurs only when there are *common usable elements*, shared both by the activity used for the training and also by the activity in which the results of the training reappear. The 'common elements' may be elements of (i), material, (ii) method, (iii) ideal; they are most 'usable' when they are conscious. A common element is more likely to be

<sup>(1)</sup> Thomson, G. H. *Instinct, Intelligence and Character* (1936), pp. 144-5.

<sup>(2)</sup> Ruediger, W. C. Indirect Improvement of Mental Function through Ideals, *Educational Review*, No. 1919, p. 364. See also Mental Discipline, *School and Society*, Jan. 13, 1917.

<sup>(3)</sup> Orata, P. T. *Mathematics Teacher*, May, 1935, p. 267.

usable if the learner becomes clearly conscious of its nature and of its general applicability: active or deliberate transfer is far more effective and frequent than passive, automatic or unintentional transfer. This seems especially true when the common element is an element of method rather than of material, an ideal rather than a piece of information." (1) I regard this statement as the best summary of our modern views to be found in the literature on the subject.

The question may be asked: Can we not explain the facts by stating that transfer, when it does occur, is a single function of intelligence? The more intelligent the learner, the greater his powers of generalisation and the more varied his interests and enthusiasms. In other words: "Transfer of training depends upon the degree to which we apply our minds to the task in hand." This would seem to be obvious. More than one investigator has shown that the degree of transfer effected depends upon the intelligence of the learner, but this does not explain why the less intelligent of two groups may, under certain conditions, surpass the more intelligent in the critical tests. Several of my students have shown this to be true, when they have been forced to work by a rotation method with groups of unequal intelligence. If transfer is a function of intelligence, it is a function of all intelligence, low as well as high. My own view, supported by very little evidence, I admit, is that the degree of transfer is not a linear function of intelligence, but that it is a function of intelligence and other variables which are themselves related to intelligence.

It may be, however, that there is more in the statement quoted above than is evident at first sight. Transfer is made possible when we apply our minds, but what is it that impels us to apply our minds to any task? It is *interest* or enthusiasm which gives to intelligence its power. None of the investigators to whom I have referred has made an adequate estimate of the *interest* displayed by his learners; only two of them have mentioned the subject of interest at all. Again, no one seems to have made any estimate of the *effort* put into learning by various methods. Yet it should be evident that the problem of formal training is not a purely cognitive problem—no educational problem ever is. My main objection to the theory of identical elements is that it is expressed in cognitive terms and that it does not, even in its more modern form, give due consideration to the conative and affective concomitants of the cognitive elements involved. In our next advance in this subject we shall have to take much more serious account of these conative and affective aspects of the learning process.

In all transfer there is communication. Transfer of training is not the communication of 'elements' but of life; it is not a process but a living process. Methods, procedures, ideals, principles and patterns of thought are not inert entities; they are mental experiences impregnated with life. As Nunn has expressed it, in another connection: "The prime contribution of the heroes of Science to the world's cultural wealth is not the scientific method but the scientific life. Our business, then, is to teach the realisation of the life, not the mastery of the method." The study of science, or mathematics, or Latin may be justified to a greater or less extent on utilitarian or disciplinary grounds but its full justification can only be sought in terms of a richer and more deeply

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(1) Burt, C. *Formal Training*. Report of a committee appointed by the British Association and presented at Bristol in 1930, pp. 3, 4.

significant mode of life. Method is not enough. This was in our minds when the distinction was drawn between necessary and sufficient conditions.

Statements such as those made above do not, however, indicate ways in which interest may be aroused, nor do they suggest the means by which teaching may be made more vital. Perhaps we shall gain some light on this problem after a short psychological digression.

Spearman has shown, in his "*Principles of Cognition*" that when two 'fundaments' (A and B) are presented to our minds we tend to educe a 'relation' (R) between them. For example, if I were to write two letters O and o, or S and s, a child would say: "One is bigger than the other." Again two numbers 7 and 11 would evoke the response: "Their sum is 18" or "Their difference is 4." This process of eduction may be represented by a formula  $A \rightarrow R \leftarrow B$ , where the arrows express the fact that the relation is 'educed' or drawn from the fundaments. Eduction is not merely a result; it is also a process. The arrows suggest more than mere eduction, however; they suggest a *tendency*, a tendency to think in the direction of the relation, whenever the same fundaments, or similar ones, are presented. For example, having once seen that 7 and 11 lead to the number 4 by a process of subtraction, the child will the more readily educe that relation when the same numbers are again presented. The arrows may, therefore, be said to indicate a certain intentional stress, or, if we prefer it, a certain purposive integrity, which makes further thought in that direction natural and, therefore, easier. Thus, the eduction of a relation secures, at the time of eduction, one of the conditions of its own repetition. The strength of this condition depends partly on the intellectual ability of the person and partly on his interest in the subject. It has been said that the problem of education is the problem of interest. This is, of course, not the whole truth, but no one would doubt that learning is facilitated by interest. Interest gives the bonds that are symbolised by the arrows in the formula  $A \rightarrow R \leftarrow B$  a purposive set in the direction of eduction. Interest, like magnetic influence in a metallic field, gives strength to mental patterns and largely determines their mode of functioning.

When a relation is educed from two fundaments various degrees of eduction intensity are possible. A relation may be so closely held to the fundaments that it is inseparably *bound* to them; on the other hand, the relation may be *free*, that is so fully abstracted that it may be 'intended' apart from its context. Lorimer calls the capacity of the person to deal with relations apart from their fundaments as 'free intelligence.' As an illustration of free relations we may take the inculcation of habits. One teacher of mathematics insists on neatness in the mathematics lesson, on the ground that neatness tends to reduce the liability to error; another teacher of mathematics achieves the same end by presenting neatness as a desirable ideal. In the former of these cases, neatness will in all probability be *bound* to its mathematical associations; in the latter it is likely to be *free*, in the sense that it will be observed in non-mathematical situations. It is not an uncommon experience to find a child neat in the mathematics classroom and slovenly everywhere else.

Other illustrations could be cited from elementary problems of learning. Most teachers who appreciate the importance of concrete



aids in early number teaching, also realise the danger of keeping the child too long in the concrete. Branford gives a very simple illustration of the inability of a child to use relations apart from their perceived fundaments. This child was invited by him to follow a demonstration of congruity with three triangles cut simultaneously from three sheets of paper in contact. The child put triangle A on triangle B and agreed that they were alike. She then put triangle C on triangle B and agreed that they were alike. He was on the point of saying, "You see, then, that *all three* are alike," when the child put A on C. She was unable to reach this conclusion, nor would she agree to it, until A and C had been fitted together.<sup>(1)</sup>

Rignano gives some amusing illustrations of this lack of ability to deal with abstract relations in his "*Psychology of Reasoning*." A neighbour owed an old lady 12 lira but was owed 7 lira by her. The neighbour proposed to settle the account by making a single payment of 5 lira, but the old lady was not satisfied until the whole transaction had been carried out in the concrete in accordance with the equation  $12 - 7 = 5$ .

The bearing of this discussion upon the problem of transfer will be evident, for much depends upon whether an educated relation is 'free' or 'bound,' whether the 'intentional gradient,' if we may call it so, is in the direction of the relation or in the direction of the fundaments.

Miss Johnston's investigation, which I have cited as an example of good experimental procedure, was designed to test whether pupils could be taught geometry more effectively when trained to use consciously a technique of logical thinking. The issue lay, then, between a logical system *bound* to its geometrical fundaments and a logical system as far as possible *free* from its geometrical origins. As I have already indicated, the verdict was in favour of intellectual freedom. This favourable result, it may be noted, was not due to differences in intelligence but to differences in teaching method. The conclusion could have been stated as follows: Geometry should be taught in such a way that the logical relations developed from it are free and accessible, available for use in non-geometrical situations. That is to say, relations and relation systems are of general value in so far as they are free and available for use.

There is one notable omission from Miss Johnston's account of her own work. Only passing reference was made to the interest displayed by her pupils in the work given them, but I understand from those who have been present during her lessons that the 'experimental' class found their work very interesting.

Some years ago I made a comparative study of the heuristic and didactic methods of teaching elementary school mathematics. The results showed that those who had been taught by the heuristic method were not only better able to apply their knowledge to unusual problems, but were also much more eager to do so. At the end of the year both classes were asked whether they had found their mathematical work interesting, and, if so, why? Those who had been taught by the heuristic method admitted two interests, one in the subject itself, and the other in the method by which the subject had been taught. One

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<sup>(1)</sup> Branford, B. *A Study of Mathematical Education*. Oxford, (1921), p. 305.

of the boys, better psychologist than he knew, wrote: "The new method cleans and expands the mind. It gives us the desire to think." When I asked the boy why he had used the word 'cleans,' he replied that he had in mind 'a house kept in order.' I doubt whether any of the authorities I have quoted have set forth the results of true intellectual training with greater insight—a well-ordered mind, ready and eager to expand.

It is unfortunate, especially in view of the extravagant claims that are sometimes made for the disciplinary value of the classics, that no psychological study of classical subjects has been made comparable with those that have been carried out in other school subjects. That the study of Latin or Greek can be made a valuable intellectual discipline few would be ready to dispute. That these subjects are, by their very nature, superior instruments for this purpose is certainly open to question.<sup>(1)</sup> The study of Latin may be as useless as a mental training as that meaningless juggling with symbols which sometimes goes by the name of 'mathematics.' The question is not, whether the classics are valuable instruments of culture or of mental training, but under what conditions they can be made so. It is unfortunate that the answer to this question cannot be given on the basis of facts, for facts, as distinct from opinions, are distressingly few. Perhaps clues to the solution of this problem may be found in some of the conceptions that have been developed in this paper.

The main aim of classical studies is the communication of thought<sup>(2)</sup>, through the agency of languages, which though structurally different, have certain conceptual correspondences. If that is so, translation is the communication not of word, but of thought, which in the process of communication becomes *free* of its linguistic origins. But thought cannot be liberated until words have been discriminated and language forms have been analysed. On the cultural side, classical studies are of value in so far as they refine and enrich the mind; on the disciplinary side they are of value in so far as they provide occasion for what may be called 'functional thinking.' The latter statement will need a word of explanation. The word 'function' may be used in two different senses, one scientific or physical and the other mathematical. When we speak of 'the function of the teacher' or 'the function of the liver,' we use the word 'function' in the physical sense as synonymous with a duty, or a service, that the teacher or the liver is expected to perform, without imputing to either any necessary association with mathematics. But when we assert that 'the temper of the teacher is a function of the condition of his liver,' we imply a correspondence between the state of the one and the condition of the other which could be expressed with equal precision of thought by a mathematical equation. The variables in this case are 'the temper of the teacher' and 'the condition of the liver' and the statement is to the effect that these two variables are related. A functional relationship may be defined as a determinate correspondence between two sets of things, a correspondence which, for mental economy, is sometimes expressed as a law or in a formula.

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(1) For a comprehensive study of the place of Latin in Education see: Valentine, C. W. *Latin: Its Place and Value in Education*, London, (1935).

(2) The word 'thought' is here used generally and includes the expression of feelings as well as ideas.

'Functional thinking' (1) is thinking in terms of numbers, or points, or even words, which exhibit some relationship or correspondence.

It is the mathematical meaning of the word 'function' which is to be read into the statement that the classics provide occasion for 'functional thinking,' although we frequently use the word in the scientific sense, as when we speak of 'the functions of words' or 'functional grammar,' meaning that words have certain duties or offices to perform. In our present discussion the variables are 'Latin' and 'English'—rich enough variables surely—and the relationship between them is that of correspondence of thought. And yet how often it is assumed that in the study of Latin or Greek all that is to be sought is a one-to-one correspondence between word and word. If we examine certain Latin primers, still popular among teachers of the old persuasion, we find that all the earlier exercises consist in the translation of isolated words, usually verbs. Could the subject possibly be made more barren and uninspiring? If the truth be told, as they stand, isolated words may not mean anything. The proper unit of language teaching is not the word but the whole story. It is the old error repeated, the subordination of the pupil's true intellectual needs to the supposed necessities of logical training. So it was with school mathematics until about twenty-five years ago, when Sir Percy Nunn, in a work of real genius, pointed the way out. Nunn's *Algebra*(2), which is a treatise on 'functional thinking,' has rescued school mathematics from the crippling effects of its own relentless logic. I have no doubt that mathematics taught in his way is excellent mental training. Again, I have no doubt that Latin or Greek taught in an analogous way would have the same desirable virtue.

Before Nunn's treatise was published, the subject of algebra was either extremely mechanical or extremely abstract and was almost wholly unrelated to the child's natural interests or future needs. The study of algebra began with arithmetical substitutions, often of a meaningless kind, and continued through the fundamental operations, factors and the like, to quadratic equations. Since the publication of that work these formal exercises have given way definitely and finally to 'formulae,' 'graphical representation,' 'variables and functions,' concepts that are both fundamental and dynamic. School mathematics is now based on the fundamental concepts of the subject rather than upon the acquisition of mechanical skills in logical order.

The comparative study of the heuristic and didactic methods of teaching school mathematics to which I have referred showed that algebra and geometry taught from the 'functional' point of view gave much better results with non-mathematical problem material than the more formal teaching methods.(3) In other words, 'functional' mathematics proved to be better mental training. Whether this

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(1) The expression 'functional thinking' was first used by Felix Klein, the German mathematician. Klein maintained that training in functional thinking given in the mathematics classroom would carry over to similar non-mathematical thought processes.

(2) Nunn, T. P.: *The Teaching of Algebra*, (1914); *Exercises in Algebra, including Trigonometry*, (1913-1914).

(3) Hamley, H. R. *Relational and Functional Thinking in School Mathematics, being the Ninth Yearbook of the National Council of Teachers of Mathematics, America*, 1934. This book gives an outline of the course followed by the experimental group.

superiority was due to the method followed or to the interest engendered by that method need not at present be decided. The one seemed to involve the other.

So far as I am aware, there has not appeared on the teaching of any other school subject, a work comparable with Nunn's *Teaching of Algebra*. The distinctive features of that work are that it is based upon firm philosophical foundations, that it takes full account of the pupil's interest and needs, that it looks backward into the past (historical) and forward to the future (the practical needs of modern life), and that it is dynamic rather than static in its treatment. It is a treatise, indeed, not on mathematics but on mathematical thinking. I am venturing to suggest, with considerable trepidation, that the teacher of the classics would learn much from an examination of the general principles outlined in the *Teaching of Algebra*. He would find, without an undue straining of analogy, that the two subjects have certain common features. Functional mathematics is based upon five main logical concepts: 'the class,' 'order in the class,' 'the variable,' 'correspondence' and 'functional relationship.' These concepts have their counterparts in the study of the classics. For, corresponding to the 'variable,' which is the type or symbol of a set of numbers or points arranged in a particular order, we have the 'word,' which is the type or symbol of certain perceptual or conceptual meanings. With words as our materials translation from one language to another becomes a functional process. Considerations such as these lead one to the conviction that the full mental value of classical education could only be obtained by treating the subject 'functionally.'

## APPENDIX VI

MEMORANDUM ON SOME INFLUENCES AFFECTING  
SECONDARY CURRICULA IN THE DOMINIONS BY MR.  
FRED. CLARKE, PROFESSOR OF EDUCATION AND  
DIRECTOR OF THE INSTITUTE OF EDUCATION  
UNIVERSITY OF LONDON

*(Prefatory Note.*—It seems necessary to indicate at the outset the rather severe limits within which this memorandum is conceived. The four Dominions to which it refers, Canada, Australia, New Zealand and South Africa, offer a field that is wide even for a very cursory survey. An attempt to indicate in any detail what has been happening in recent years in the development of secondary school curricula in these lands—still more any attempt to foreshadow what is likely to happen in the near future—would demand both a large volume and far more of first-hand knowledge than I can claim. Everywhere there are signs of rising ferment and dissatisfaction, and each year brings news from many quarters of significant departures from precedent.

Moreover, from even a detailed analysis of the various prescriptions and of the results of the examinations based on the curricula so framed, one might derive an inadequate and actually misleading idea of what is really happening, if the evidence were derived from the documents alone. Long, intimate and ever-renewed contact with the working of the schools themselves is necessary if one is to understand the real meaning of the new movements, and to estimate rightly the reforms which would bring satisfaction. I know only South Africa and part of Canada at first hand. I left the former nearly seven years, the latter about eighteen months ago. I have visited New Zealand and Australia, but cannot claim any first-hand knowledge of what goes on in the schools of either country. It seems well, therefore, to limit the scope of this memorandum to a very general estimate of the influences which have operated in shaping the Dominion outlook on secondary education, and so on the prescription and working of secondary curricula. Illustrations from the field of practice will be adduced from time to time, but no attempt is here made at anything so ambitious as a comprehensive survey of the facts.)

I. *Some Common Features in Dominion Education*

Hazardous as it may be to generalise I think certain broad statements can be made about Dominion education as a whole. It is necessary to have these common features in mind, not only to facilitate comparison between one Dominion and another, but also to bring into relief certain important differences between the Dominions and the Mother Country in this regard. In all four lands well-developed systems of education are now functioning. So recent are they, however, in their present form, that a considerable number of the very able administrators who did so much to create them are still alive. It is surprising, at first sight, that creations so modern should embody so conservative a spirit. Some reasons for this will be suggested in the sequel. For the present we have to note some outstanding features which all these systems have in common.

They are all popularly controlled, governed by a comprehensive body of legislation, and administered by a permanent official working,

as a rule, under a Minister of Education. All the Departments really *administer* often in minute detail, and even where, as in Canada<sup>(1)</sup>, the duty of providing and maintaining the school is thrown preponderantly upon local funds. Curricula are prescribed often with close precision. Little discretion is left to the teacher, even if he desired it, which is by no means always the case. All the systems are highly sensitive to mass-demands and to a popular criticism which is often neither well-informed nor concerned directly for educational efficiency. Of late years this mass-demand has taken as one of its forms pressure for access to secondary education, and Departments everywhere have been much concerned both to meet the demand and to prevent it from having the effect of depressing standards. Usually they have succeeded to such a degree that popular outcry, as in New Zealand and elsewhere recently, takes the form of a complaint that final examinations are too difficult.

In the maintenance of standards much support has been given by the Universities. Until recently, in South Africa, Australia and New Zealand, the Universities had a virtual monopoly of the examination of secondary school pupils. In Canada the Departments have kept this function in their own hands, the Universities prescribing only the subjects of the Departmental examination in which candidates for matriculation must pass. Recently, however, the Cape and the Transvaal in South Africa have instituted their own Senior Examinations. A year or two ago New Zealand followed suit. In Australia the practice is general to conduct the examination in each State through a Board upon which the University is largely represented. More will be said below of efforts to remedy the alleged consequences of excessive University influence in school examinations. ('Alleged' is used advisedly, for the complaint is loud even in Canada where the Universities as such play little part in the examining.)

The general picture, then, is one of highly centralised, popularly controlled and popularly responsive State systems, increasingly pressed upon by equalitarian demands, and increasingly called upon both to extend and to diversify the provision for secondary education that has been offered hitherto.

But there are also important differences and of these, since they concern vitally the attitude adopted towards secondary education, something must now be said.

## II. Significant Differences

Reference has already been made to one of these, that which concerns the structure of the administrative system. Only in Canada are there to be found local authorities for education with powers of local taxation. In every Canadian Province considerably more than half the cost of maintaining schools is borne by the local School Boards. What may be called vestigial remains of School Boards survive in the South African Provinces (except Natal), and in New Zealand. But, elective as they are, they have no real powers of initiative in policy nor any financial

<sup>(1)</sup> The appearance of decentralisation in Canada—with nearly 24,000 School Boards, one for every 450 of the population—is largely illusory. In all that concerns the day to day procedure of the school and the action of the teacher, the administration is as highly centralised as that of an Australian State where the teacher is a Civil Servant and the whole cost of education is borne by central Government funds.

resources of their own. In effect they are little more than advisory bodies to the central authority, and local agents to do its bidding. Australia has never taken kindly to School Boards, though some States, such as Victoria, have experimented with school committees having a very limited range of purely local duties.

Even in Canada, where a vigorous School Board in a large city will sometimes assert itself with effect on questions of purely educational policy, the threads of control and the statutory monopoly of prescription are in the hands of the central provincial Department. Thus in most of the provinces the prescription of text-books to be used in the schools is a function reserved to the Department, often under severe penalty upon a teacher for permitting the use of unauthorised books. This is typical. There is a good historical explanation of the practice which need not be entered into here.

But while the existence and functioning of local School Boards in Canada does not seriously break the uniformity of the picture of central prescription which is presented by the Dominions, it does influence directly the content and effectiveness of secondary education. So tenacious is the small local unit, so deeply rooted is it in the customs and traditions of the people, pointing back as it does through the New England village to the English Tudor parish (*minus* squire and parson), that all attempts by enlightened administrators to introduce a larger unit, more adequate at least to the needs of secondary education, have been shattered on this rock of tradition. Yet, compared with many a Canadian School Board an English 'Part III' Authority is a vast organisation.

The result is a diffusing of provision for secondary education (or at least of authority to teach the secondary curriculum) which militates seriously against both efficiency and elasticity, and goes far to account for the continuance of minute prescription from the centre. In some parts of Canada it is the practice to allow 'secondary' courses to be taught in one-teacher schools. It is conditions such as this which serve to perpetuate minute and narrow prescription.

Even in the other Dominions the same essential factor operates though not so extensively and so harmfully as, in the special conditions, it does in Canada. The people of sparsely populated areas demand increasingly for their children facilities analogous to those enjoyed by their fellow-citizens in the towns, and where concentration is not feasible, some makeshift must be provided. Not every community can afford the elaborate system of boarding-bursaries by means of which Southern Rhodesia solves this problem.

Facts such as these, operating, be it remembered, in communities which are deeply imbued with an equalitarian spirit, must be kept in mind if we are to judge fairly the practice of centralised prescription that characterises every Dominion. If sheer administrative *form* be taken as a basis of distinction among the four Dominions, Canada would stand by itself, while Australia, New Zealand and South Africa would constitute the 'centralized' group. But, as we have seen, this distinction on the basis of administrative form cuts less deep than might have been expected. There is another distinction to be drawn which is, perhaps, more significant of deep-seated differences of attitude and spirit, and may become even more significant in the future. On this basis the classification would be Australia and New Zealand in one

group, Canada and South Africa in the other. The first two have developed their secondary education mainly on 'English' lines, the other two on lines which can be called 'Scottish' only if a whole genus is confused with one of its species.

In Australia and New Zealand, until the early years of the present century, democratic impulse took the form of a demand that the State should concern itself mainly with elementary education, at a high level of efficiency for all, under a system so planned that the child in the country should be under no disadvantage as compared with his fellow in the town. That teachers in these lands should have become Civil Servants, at the disposal of the Department to go where they are sent, is in some degree a result of this demand.

Secondary education was regarded in a light which is very well expressed by a definition of it recently put forward by the head of one of the large public schools of Australia (i.e., 'public' in the English sense). "Secondary education," he says, "is that extra training to the mind and body which a parent is willing to give his son if he can afford it, or which a State will try to give to its citizens under similar or even without similar qualifications."

The import of the latter part of this definition is not very clear. The really illuminating phrase is that of "extra training." If it be thought strange that societies so thoroughly equalitarian as those of Australia and New Zealand should have acquiesced for so long in such an idea, it might also be recalled that there was the same acquiescence in the United States until near the end of last century.

'Post-primary' provision was made alongside the largely private provision for 'secondary' education, in the shape of higher elementary, central and junior technical schools. The twentieth century was well advanced before the State, influenced perhaps by the English example of 1902, concerned itself seriously with secondary education. The large State secondary schools and the assimilation of existing post-primary forms to the secondary type are a product almost entirely of this century. Australia and New Zealand are thus faced by a problem of 'Hadowisation' not unlike that which is presented in England. We shall have occasion to note later one valuable result of this history in that it served to secure the fixing of standards in secondary education proper at a high level.

Canada and South Africa present a very different picture. A sharp distinction between elementary and secondary as anything more than *stages* in a common course of education has never been popular in these lands. The single school providing for both levels has been the desired and customary type, though schools modelled on English public schools have long existed, and their numbers tend to increase in recent years. Canadian and South African systems of today are thus of the 'single-track' type, a continuous series of grades or standards grouped in sections the limits of which are still matter for experiment. Using American terminology we may say broadly that Canada has had the 8-4 (or 7-5) type which it is now trying to convert into the 6-3-3 type (interposing thus the Junior High School), while South Africa has what may be called a 2-6-4 type, the initial 2 standing for what are known as the "sub-standards," and the final 4 (secondary) tending to subdivide as 2 + 2.



Such a system, revealing as it does a marked social *ethos*, is too narrowly described if it is called just 'Scottish.' For in South Africa its main determinant has been the social philosophy of the Dutch-speaking Afrikaner, rooted historically in the Calvinist Reformation and the Dutch War of Liberation against Spain. In Canada another species of the same genus has been at work, in this case the spirit of New England, with its historic roots in English Calvinism of the sixteenth and seventeenth centuries, brought into Canada by the Loyalists and other settlers from the South who came in after the Revolutionary War. Later, Scottish emigrants coming to either land, found a social and religious temper which was highly congenial to them, and so were able to make a whole-hearted and immensely valuable contribution to its educational expression. Everywhere they did work of the highest value as teachers and organisers and determinants of standards. But that upon which they worked was, in its origins, Dutch Calvinist or Puritan English and not Scottish at all.

It has been left to the twentieth century, with its flood-tide of equalitarian democracy, to formulate the demand that such a system shall now develop its full implications of 'Secondary Education For All.' In meeting this demand South Africa and Canada may encounter more difficulties and dangers than Australia and New Zealand, with their wider diversity of provision, may have to face.

There is the problem, in the first place, of maintaining standards against the flood. Canada has difficulties here, since the tendency in that country has been to construe the term 'secondary' as meaning certain *courses of study* (which might be pursued in a one-teacher school or even by correspondence without a school), rather than as a certain type of *school* with minimum standards of equipment and organisation. Constantly increasing pressure for access to the Universities accentuates the danger of emasculation of standards and a descent into mediocrity, and the absence of a scholarship system contributes in the same direction. But the danger is realised and Universities and Departments are combining to meet it by distinguishing sharply between School Leaving and University Entrance, and by encouraging in the secondary schools work of the Sixth Form type. 'Senior Matriculation' is still, in some areas, accepted as exempting the holder from the first year of the University course, but the tendency is strongly towards bringing the normal standard of University entrance up to this level. The institution in Ontario of 'Honours Matriculation,' like 'Leaving Honours' in Australia, is an intermediate step in this direction.

South Africa is, perhaps, better equipped to face the problem. There the Education Departments do set required minima of staffing and equipment for the recognition of schools as 'secondary,' and reserve the right to determine the level up to which any school may work. Also the Statutory Joint Matriculation Board exercises its powers, not always without friction, to maintain standards both in its own examinations and in those of the Cape and the Transvaal, the two provinces which have instituted senior examinations of their own.

In respect of another difficulty, that of diversifying the forms of provision for secondary education, the relative advantage as between the two countries is reversed. Canada is better placed than South Africa. In both the problem may be indicated as the converse to that

with which England is faced to-day. In England we have to devise some means of *integrating*, with the main structure of 'secondary' education *eo nomine*, forms of post-primary education which have grown up quite independently. In Canada and South Africa the problem is to *discriminate* diversified forms of secondary or post-primary education (particularly for younger adolescents) from the single-track continuum. Canada's effort in this direction has consisted partly in the provision of vocational forms of a secondary school course, and partly in the attempt to establish the Junior High School. This latter effort has proceeded farthest in British Columbia, Manitoba and Nova Scotia. The British Columbia form of the new departure is, perhaps, the most radical and the most interesting. It well repays study. But everywhere the difficulty of giving to the Junior High School a distinctive identity, quite apart from any 'grade' nomenclature, is enormous. The school is only too easily thought of as just three steps of the common ladder—usually Grades VII, VIII and IX—with some special offerings of curricula.

South Africa might almost be described as hamstrung for any effort to meet the problem satisfactorily. For while the provinces have control of education that is 'secondary' in the traditional sense, the Union Department of Education controls vocational and technical education. Thus a wholly artificial attempt is made to divide the seamless vesture; or, as one commentator has put it, the attempt is like trying to use a ray of moonshine for a garden fence. The result is to force the provincial schools back upon 'academic' courses, and to restrict severely that fruitful co-operation among widely diversified institutions which experience is proving to be so essential to the securing of real elasticity and actuality in the devising and adaptation of secondary curricula.

Moreover, South African Universities, exerting powerful influence through the Joint Matriculation Board and through their degree courses, have cast an unfriendly eye upon efforts to establish genuine Sixth Form work in the schools. The result is that schooling ends, for all but a negligible handful, with the passing of the matriculation examination, and thus opportunities for diversification are still further restricted.

Owing to the play of such factors it has to be said that, so far as the provincial systems are concerned, South Africa is the most backward of all the Dominions in respect of the healthy diversification of provision for secondary curricula.

It has seemed well to place some emphasis upon these factors of habit, social ethos and administrative method which determine the general background, in order that the spirit in which secondary curricula are framed and applied may be set in the right perspective. We turn now to some characteristic features of the curricula themselves.

### III. *Some General Features of Curricula*

At first sight it would seem a surprising thing to say that the most conspicuous feature of secondary curricula in the Dominions is their marked *conservatism*. But it is true, nevertheless. The conservative spirit, in spite of some appearances to the contrary, is certainly stronger than it is in England. Some reasons which may account for this will be adduced presently; the fact itself is borne in irrefutably upon any observer

who studies the situation sufficiently closely. Mathematics with the traditional content are still taught in the traditional divisions. Generally in Canada any one of Arithmetic, Algebra and Geometry may be taken apart from the rest, and everywhere the text-book plays a dominant part. General Science is becoming more and more common in the early stages, but after that Physics and Chemistry, with the customary content, reign almost unquestioned. Biology, however, is beginning to appear, particularly in schools with an agricultural bias.

Detailed prescription of texts in English literature is practically universal, and in some parts of Canada "The Lady of the Lake" has had an unbroken run for many years. In Canada again the practice is general (and not unknown elsewhere) of prescribing in detail the passages of verse and prose which have to be committed to memory.

Latin, though showing signs of decline, is still studied by great masses of pupils, by many of them, it is to be feared, for a short time and with little profit. Two-thirds of the pupils in the secondary schools of New Brunswick are recorded as doing Latin. In Ontario in 1933 the numbers recorded as taking Latin in the 'Lower School' course (Junior) are 31,524 as against English—which may be regarded as compulsory—35,880. In the Middle School (Senior) for the same year the numbers for Latin are 17,151. It would seem that very many pupils are studying Latin for not more than about two years.

The State of Victoria has recently determined that Latin shall be the first language to be taken up in secondary schools.

Some Universities still demand Latin for matriculation at least into the Faculty of Arts, but the tendency to relax the requirement seems to be growing. In South Africa pupils may matriculate with no languages but the two official ones, English and Afrikaans, and there Latin is being displaced in the schools in favour of German. Similarly in Canada it may yield more and more to French.

Examinations present the same picture of prescription and uniformity. Entrance examinations for High School are being relaxed, though at least one Australian State holds a full-dress examination of *all* pupils at the end of the elementary course. In Canada the practice of examining pupils for 'grade-promotion' in the secondary stage is dying out, and in Ontario and the State of Victoria much progress has been made in the 'accrediting' of schools for matriculation purposes so as to dispense even with the matriculation examination. Tentative moves in the same direction are being made elsewhere.

But, in general, the official examiner still rules the scene with a rigour of standards that is still commendably high.<sup>(1)</sup> And the practice is quite common of indicating passages in a prescribed text-book which are "not required for examination." It is to be feared that, in some parts of Canada especially, the study of 'Science' consists in not much more than learning certain essentials from a text-book. The examination is often the only means of guaranteeing that there has been serious study at all, and it is inevitable that, on the one hand, modes of study should adapt themselves to the recognised modes of testing, and that, on the other hand, prescriptions by authority should be laid down with the examination in view. It is only in the more

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(1) Though there are some indications that a high standard in the setting of papers is not always accompanied by a high standard of marking.

developed and densely-populated areas that experiment with more flexible forms of guarantee is at all safe or even practicable. Yet the man on the land, little disposed to forego his rights, demands a fair chance for his children, remote from the large centres as they may be. In such circumstances uniform prescription and uniform examination assume the character of the equalitarian instrument which they so often are.

A 'halfway' examination at the end of a stage (usually two years) which is variously called Junior or Intermediate or Lower has a place in three of the four Dominions. In Australia it comes appropriately at the point where the older post-primary courses 'engage' with the system both of the newer State secondary and the earlier private secondary schools. Transfer to a full secondary school on the completion of a Junior (or Intermediate) stage appears to be common in Australia.

In South Africa where there is no post-primary system parallel to the lower stages of the secondary, the junior examination tends to fall into disuse, except as a final examination for pupils who do not propose to go beyond Standard VIII.

In Canada, by reason of the working of the traditional 8-4 system, the Grade VIII, or High School Entrance Examination, has discharged the function of a Junior examination. With the introduction of the 6-3-3 plan and with it the Junior High School, Canada is moving nearer to the Australian pattern.

Everywhere Junior curricula are somewhat closely prescribed, with a very narrow range of options. Further, the desire to have a common Junior course, and the difficulty of meeting varied needs in a sparse population, involves sometimes undue postponement of work in foreign languages. In at least one Canadian province a plan is about to be put into effect whereby the language cannot be begun until Grade X.

At the senior level the opposite difficulty arises, that of a considerable variety of options to be equated in a common certificate. New South Wales, for instance, it would appear, has tended to reduce the value of its certificate as a guarantee of general education in the effort to cover a wide range of options in one examination scheme.<sup>(1)</sup>

Canada endeavours to organize distinctive curricula such as Academic, General, Commercial, Agricultural and Industrial, and to mark the certificate accordingly. Everywhere, however, in spite of all that has been done, the pressure is toward the academic form, whatever the more direct needs of the pupil may be. Australia, perhaps, has gone farthest in the successful encouragement of courses other than that for matriculation.

Generally then the conservatism that has been noted as a conspicuous quality of the practice of Dominion systems of secondary education refuses to yield. Efforts to relax the rigidity of prescriptions and examinations, to emancipate teaching, and to heighten relevance and actuality in studies generally, have met with only a limited degree of success. One would suspect, therefore, that there must be operating, to produce such tenacity, certain powerful factors inherent in the

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(1) See "Secondary Education in New South Wales," by W. J. Elliott, Educational Research Series No. 38, Australian Council for Educational Research, Melbourne.

situation in which the Dominions find themselves. This does actually seem to be the case. Something in the very situation of a 'new' country forces it to cling to established ways with a quite special tenacity—at least in education. It may be worth while to suggest very cursorily some of the influences which may be contributory to an effect so different from what might have been expected.

In the first place, operating with overwhelming power in the formative stages of Dominion history, there is the great force of cultural self-respect and cultural loyalty. The danger that children brought up in the new land may fall below the cultural standards of the land from which their progenitors come is a very real one during the pioneer stages. There persists also, in great strength even to-day, a profound loyalty to Western culture, even if not necessarily to the British form of it. And as schools and universities become well established, the desire to win and to retain recognition and standing performs the same function as that discharged by fear of degeneration in the pioneer days. One must at all costs continue to stand well with the academic world outside, and so one must resist all risky tinkering with the respectable and time-honoured in the curriculum. The powerful influence of the Universities has been very strongly exerted in this direction, and it has been reinforced by the influence of immigrant teachers—not from Britain alone—who from vanity, prejudice, cultural insight, or whatever reason, have been disposed to impress their own inherited standards and pattern. Once set, as the result of such forces, the pattern finds prescriptive powers enough to maintain itself. For a long time, and especially when economic development is proceeding apace, good teachers are not easy to secure and still harder to keep. And in days when population and desire for advanced schooling are both expanding rapidly, the difficulty becomes acute. Hence the task of maintaining standards and of holding together the essential structure of a cultural education is thrown back upon a central authority. Not able as yet to shift the burden on to individual schools and teachers, it must carry the load by the only methods open to it, those of rigorous bureaucratic prescription. Practically every system which is producing real results to-day has had to pass through the 'martinet' period, and the marks of that are strong upon every one of them. Yet even now the great and necessary service that was performed by the martinets is not always fully appreciated.

The influence of the professions, desiring to have a qualification that would be recognized in other lands, has worked in the same direction. So, too, has a very general aversion from the large multi-bias school that is so common in the United States. The 'academic' tradition has thus been kept clear and free even in Canada, where, although there are some large High Schools, the great central core of traditional studies has been kept largely intact. 'Technical' education, even when provided by the same authority as that which provides secondary, has usually been treated as a thing apart, and secondary schools have sniffed at it even more forcibly than have those in England. In Canada, where the Dominion Government provides much of the cost of technical education, and in South Africa, where the Union Government has the rights of control, there are additional factors making for segregation. No one can doubt that, in the long run, it is secondary rather than technical education which suffers more from this detachment. Where a school for adolescents works with a curriculum having a vocational

colour, there is a curious aversion from calling it secondary at all. Even if the title 'High School' is conceded, it must be preceded by a qualifying epithet as though to save the purity of the real thing. It is a Technical, Vocational, Commercial or Agricultural School rather than just plain secondary. In South Africa a claim might even be raised for transferring such a school from the control of a province to that of the Union!

Thus do elements which might enrich the normal secondary curriculum come to be regarded almost as a kind of contamination, so that culture, it would seem, is to remain unhandy, and practical skill to be considered uncultural. Not until the Dominions feel fully assured of the security of the replanted culture in its new home, and more clear than they are to-day as to the distinctive qualities of their own culture, will they feel it safe to break down this curious segregation.

It may be relevant to add that the Dominions are still dependent upon Great Britain for much of their current literature and for their ideas about science, though everywhere there are signs of a growth of a native point of view, and of native cultural products. The influence of the United States is growing, as is to be expected in the nature of the case, but even in Canada it has made very little impression on the central tradition of the secondary curricula. This is due, no doubt, not so much to influence directly exerted from Britain, as to strong persistence of the old 'Loyalist' attitude towards culture, brought mainly from New England after the Revolutionary War.

#### IV. Conclusion

The general impression of a sturdy conservatism must not be allowed to obscure the very real fact that each Dominion is beginning to feel its way towards a distinctive outlook of its own upon secondary curricula. Perhaps it is to be expected that this disposition would find its strongest reflection in the History courses. In some parts of Australia there is a tendency to restrict History teaching proper to British and Australian history. But generally there is strong evidence in the courses provided, especially those for the later years of the secondary school, of a desire to send pupils out with a well-compacted knowledge of modern history as a whole. The intention is evidently to equip the adolescent with the necessary historical keys for the interpretation of the modern world as viewed from the standpoint of his native land. Canada, in particular, has devoted much thought and experiment to the task of selecting and organising relevant historical material for this purpose. The subject appears usually under the heading of 'Social Studies,' and includes some civics and elementary economics. But the material is mainly historical. British Columbia, in particular, has worked out elaborate schemes for the presentation of history in a series of 'units' designed to shape a balanced perspective. English teachers might learn much from such schemes, especially those teachers who are dissatisfied with what they regard as the undue provincialism and limitation of some English schemes of teaching.

Canada, too, has gone far in the development and use of school libraries, and this will, in due course, react on the still-continuing disposition towards minute prescription of studies in literature.

Some Australian States are experimenting with Economics and Economic History as secondary school courses. One even allows for

Logic! New South Wales offers Japanese, and South Africa includes the Bantu languages in its lists. A South Australian report (1934) remarks that: "A marked departure from the traditional course of study is gradually taking shape in some of the country High Schools." Reference is made particularly to agricultural science, biology, increased practical work, and the growing demand for arts and crafts.

Australia again, particularly in Victoria, has made a real success of its Schools of Domestic Arts for girls. Elsewhere one hears increasingly of pressure from pupils and parents alike for more relevant and realistic courses. This is a good sign, for if tradition and orthodoxy have been overdone, the blame must not be laid on the shoulders of the Universities and the administrators alone. Public opinion has its responsibility also for, frequently enough, the administrators are ready to move but public opinion checks them. The following from a recent report of the Superintendent of one of the Maritime Provinces of Canada is typical: "I wish to recommend and even urge that a curriculum committee be appointed to study the whole matter of courses of study and text-books with a view to improving the courses by making them less rigid and more elastic, that there may be fewer compulsory and more elective subjects in high school. Agriculture, social studies, art, music might be added, the amount of classics and mathematics reduced, and the amount of science increased. Above all the course in English should be improved by having less formal grammar and more practice in both speaking and writing, a wider range of general reading, a less intensive study of prose and poetry, more extensive reading for enjoyment and appreciation."

The writer of this passage may have been influenced by the achievement of a neighbouring province which, after exhaustive study, produced a stout handbook of over 600 pages, giving not only courses of study primary and secondary, but much admirable advice to teachers, and much enlightened comment on the grounds for including given material in the courses of study.

Among the influences making for reform is a growing sense of the high educational value of training in arts and crafts, of the special need that young countries have of citizens thus trained, and of the deleterious effect which examination emphasis on the orthodox 'academic' curriculum has upon arts and crafts in the school. Expense and the large number of small schools interpose serious obstacles in the way of reform, but neither is so serious as the swollen state of the 'academic' subjects, fed as they are on a diet of examination prestige, and encouraging, as they tend to do, an over-valuation of facile verbalism.

Such work as is done in the arts is apt to be perfunctory, formal and old-fashioned, though there are schools in Canada which are doing really distinguished work in art and music and drama. Speech, on the whole, is seriously neglected, and all the emphasis on physical training seems to issue in more vigour than grace. Genuine and significant artistic movements, such as are gathering strength in Canada and Australia for instance, seem to have little or no connection with the schools. But the ferment of dissatisfaction is working, and the Australian Director of Education, recently returned from England, who gave utterance to the following downright opinion, would, doubtless, find his opinion echoed by colleagues elsewhere in the Dominions. He is reported as having said:—"I doubt if one pupil in a hundred in the schools of Britain could pass our Scholarship Examination at the age

of 13½ years. But these same boys can draw plans of a reasonably complicated article, make it out of wood, hammer it out of bronze or some other metal, carve or otherwise form on it some neat design, which has been previously worked out on paper. They can fashion an article out of clay, paint a design on it, glaze it and bake it in a kiln. The girls can spin and weave, draw and paint, design and put their designs to practical use. They can cook, make garments, arrange the furniture in the rooms of a house or flat, model in clay and fashion toys. Both boys and girls at 13½ have, in the great majority of cases, a good knowledge of science acquired practically, and experimentally. No one will deny that skill in wood and metal work, in art and design, with a good general science knowledge, is a greater asset to a youth today than a knowledge of the History or Geography required for the examination in question."

But no change from orthodoxy has proceeded very far yet. It would appear that the Dominion communities are not yet sufficiently sure of themselves, not ready to follow political with cultural autonomy, afraid of the consequences of a too-hasty casting off of a dependence which they feel rather than openly admit. Thus they have not yet faced squarely the question of Latin, to discover what specific value it can have for them in their special situation, and how it should be taught and handled to achieve that value. Up to the present the disposition has been one either of drift or of uncritical orthodoxy. There are signs now of an awakening to the essential task of re-interpretation. Some investigators may even come to the conclusion that if the criterion is to be purely cultural values relevant to the needs of new democracies oversea, Greek may have more to offer than Latin. But little systematic thought has been given to the matter so far.

Thus the general picture is still one of conservative acquiescence in a tradition, the tradition being maintained by a rather rigorous use of prescription and examination. But the days are coming when the Dominions, each in its own peculiar situation, so different from that of the Mother-Country, will feel ready to offer and to take firm stand upon that variant reading of Western culture which, with an increasing awareness of what they are doing, they are now working out. For the present the initiative is still with Britain; Britain is still the land of intellectual and educational adventure, one of "those tradition-ridden centres where men are adventurously thinking" of which an Australian writer speaks. But it will not always be so. Interchange will, at least, become more equal, and there are abundant signs that this new epoch is beginning. The creative possibilities of British education can no longer be adequately known by concentration solely upon what is achieved in this country.



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